IABM SPECIAL REPORT
ADAPT FOR CHANGE

Charting the Course through Media Technology and Business Transformation

iabm

Knowledge, support and leadership for the
Broadcast and Media technology industry

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Introduction

About this Report

The *Adapt for Change Report* aims to identify major drivers of change in media technology business models including the move to next-generation content chains, flexible technology business models and collaborative technology business models. The primary purpose of this report is to enable IABM member companies to understand the effects of these changes on their businesses to transform these into opportunities. Also, this report aims to give broadcast and media organizations a framework for best practice in content chain management and technology business models.
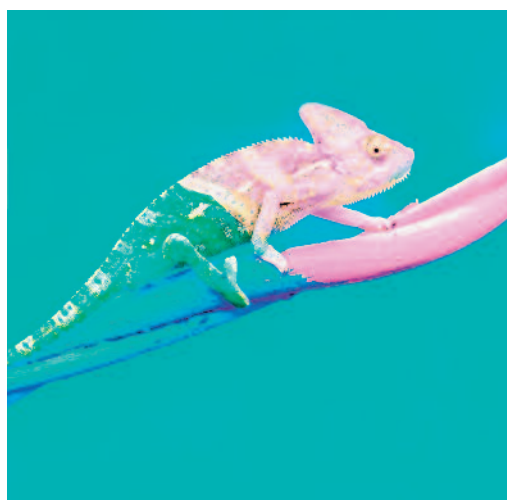
Report Methodology

The information analyzed in this report was derived from both quantitative and qualitative research carried out by IABM. The primary sources used in this report are:

- **Quantitative Evidence:** Public and private financial data of media technology suppliers and broadcast and media organizations gathered and analyzed by IABM
- **Qualitative Evidence:** Expert interviews with both supplier and broadcast and media organizations carried out by IABM as well as survey evidence gathered by IABM.

We use both these pools of information as well as variety of secondary sources – including news, announcements, earnings calls, technology material etc. – to provide users with a comprehensive account of media technology business transformation.

More information about the report's methodology can be found in the **Appendix** of this report.

Report Content

This analysis was undertaken by the IABM Insight & Analysis team. The contents of this report are divided into the following two macro-sections:

- Next-Generation Content Chains
- Media Technology Business Transformation

Users can view the highlights of this report in the **Executive Summary** section of the study.

Words with links to websites and pages within the report appear in **bold and in dark blue**.

Executive Summary

This section includes the main highlights of this report accompanied by the most relevant data visualizations. Key findings of this report are as follows:

Next-Generation Content Chains

Progress to BaM Content Chain Maturity™ entails the increased use of data to power operations (Intelligence), reliance on an efficient and agile infrastructure (Efficiency/Agility) and a clear strategy to manage risk throughout the **BaM Content Chain®** (Reliability)

- IABM has turned these objectives into a framework for content chain maturity which encompasses three **layers** that reflect these objectives and a set of **dimensions** belonging to these layers

- IABM has also produced a **visual journey** to next-generation content chains based on these dimensions as well as a **segmentation of buyer attitudes** based on their background and their level of BaM Content Chain Maturity™

Media Technology Business Transformation

- IABM research shows that media technology buyers are shifting their investment toward **more flexible technology payment models** such as SaaS offerings

Source: IABM

Buyers' Investment Outlook

Legend: ■ Growing ■ Stable ■ Declining
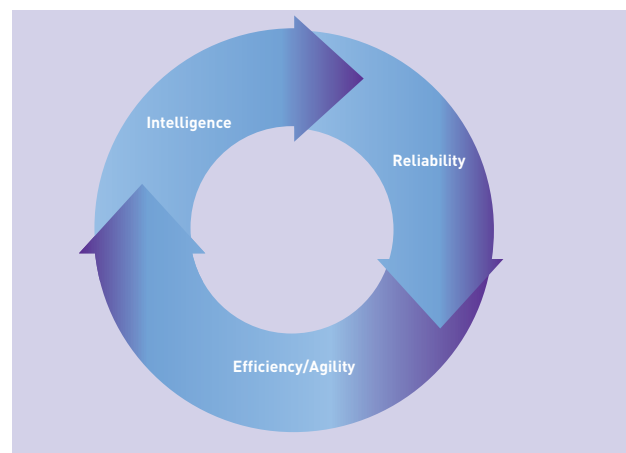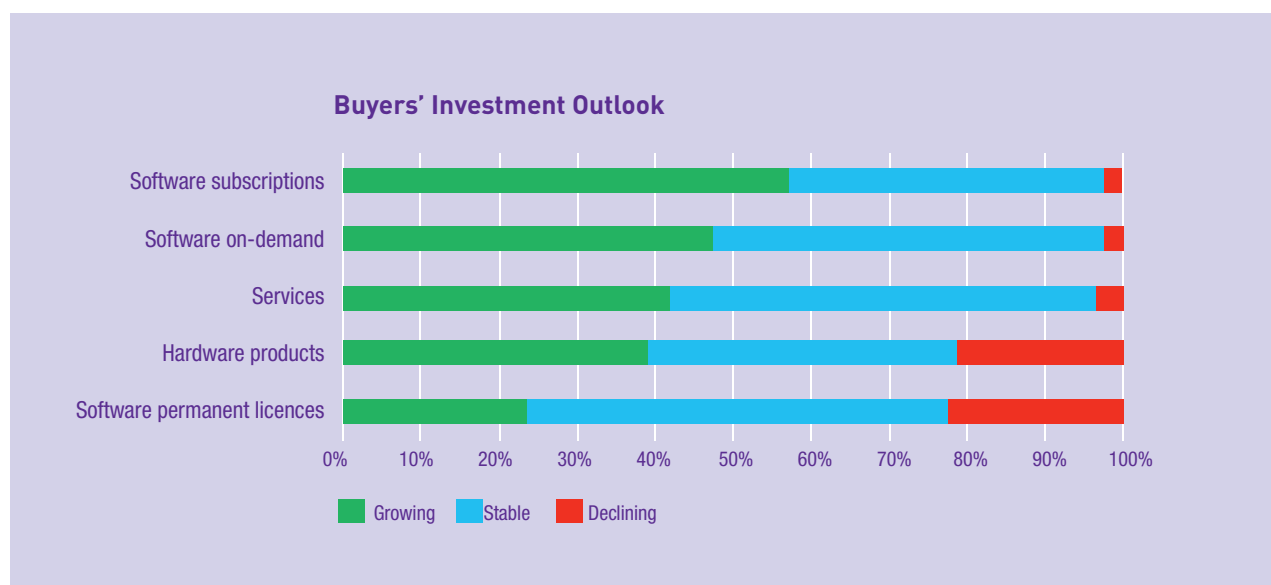
Source: IABM

- Interviews conducted for this report described this transition as **inevitable**, particularly by customers. In fact, an overwhelming majority of them said they are investing only in flexible payment models

- Arguably, the demand for **financial flexibility** is the origin of this unprecedented industry transition. Buyers have often highlighted the need to pay for what they use and move to 'as-a-service' models to better respond to market shifts

- Flexibility also translates into **continuous engagement** by vendors with buyers to constantly tweak and develop offerings

- The unpredictability of the broadcast and media market is often cited as one of the main drivers behind **collaborative technology solutions**

- Most buyers and suppliers agreed that the focus has moved to **long-term partnerships** driven by business, and not technology

- The partnerships between suppliers and buyers increasingly rely on **customization**, from both a business and technology perspective

- **Partnerships** between media technology suppliers and cloud service providers have grown significantly in recent years, giving rise to an ecosystem of specialist media services

The Cloud Ecosystem
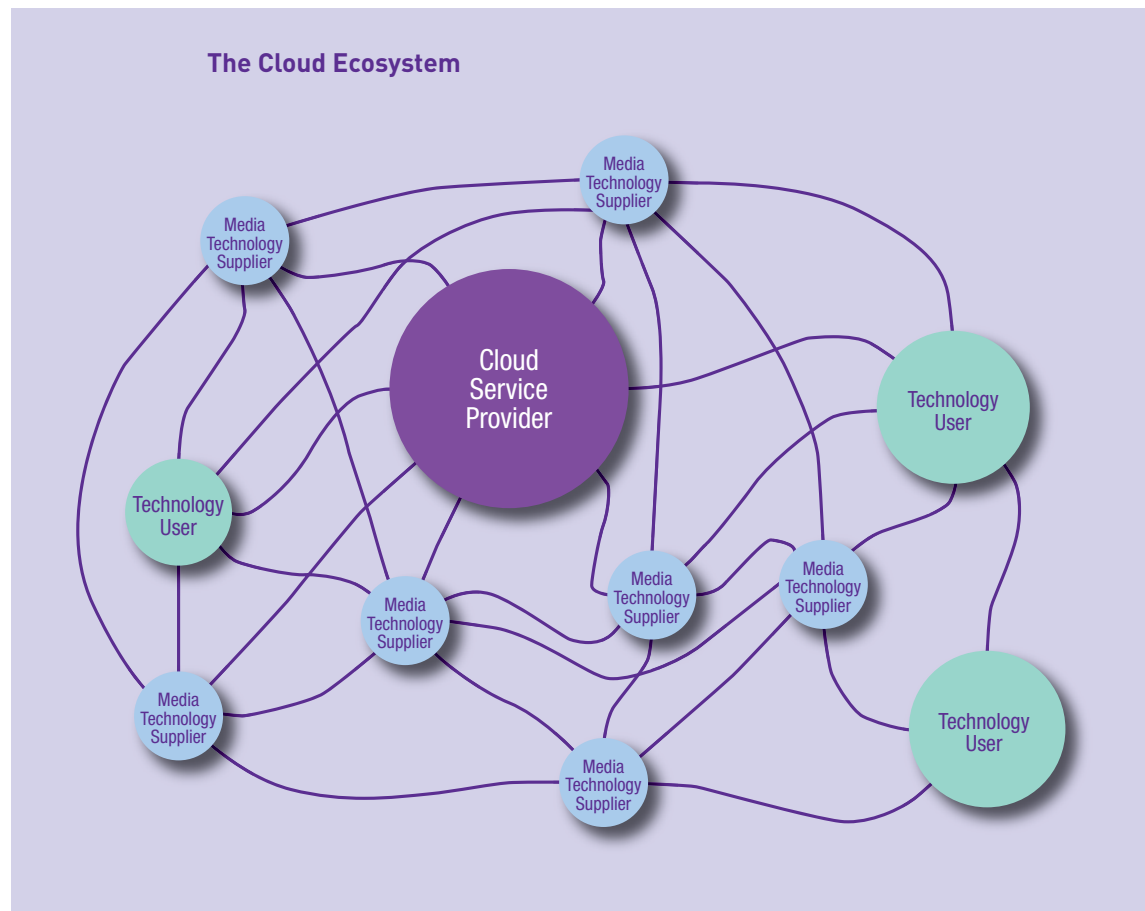
Source: IABM

Next-Generation Content Chains

This chapter includes an analysis of the objectives of next-generation content chains. The analysis includes both suppliers and buyers' perspectives.

The broadcast and media industry has gone through enormous change over the past few years. New customer demands have driven new business models which rely on new technologies to power them. As a result, the journey of content from the creator right through to the consumer is being transformed. This process is increasingly resembling a 'media factory' – which requires a fully connected **BaM Content Chain®** to deliver the efficiency required to compete successfully.

Following interviews with broadcast and media technology users and suppliers as well as extensive research on the topic of supply chain management, we have drafted a list of the possible **layers and dimensions of BaM Content Chain Maturity™** in the broadcast and media industry. We have also produced a **visual journey** to next-generation content chains based on these dimensions as well as a **segmentation of buyer attitudes** based on their background and their level of BaM Content Chain Maturity™.

This framework for BaM Content Chain Maturity™ can be considered a complement of our **BaM Content Chain®** model. In fact, the layers and dimensions in the model described below were designed to be applied to the whole **BaM Content Chain®** or to single content chain blocks. The BaM Content Chain Maturity™ framework is described in more detail below.

THE BaM CONTENT CHAIN®
from **Creator** to **Consumer**
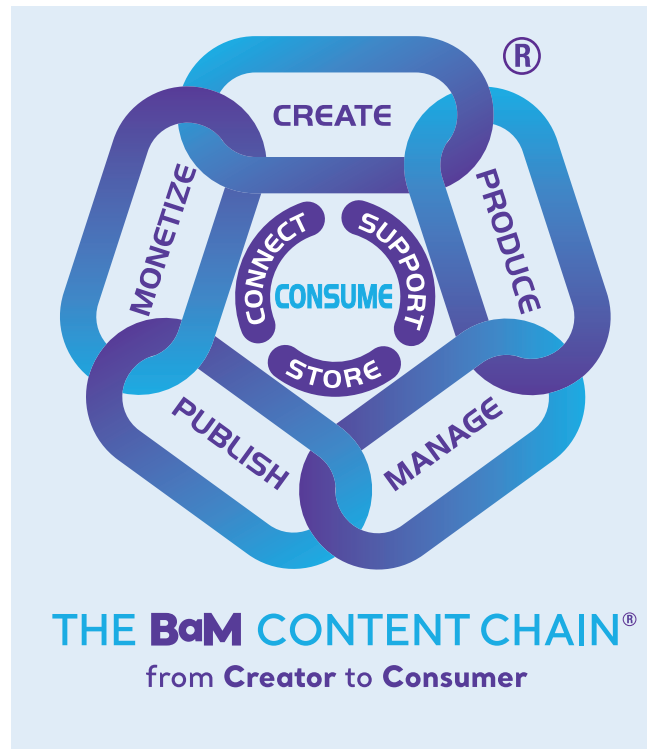
A Framework for BaM Content Chain Maturity™

This section includes an analysis of content chain maturity dimensions and their importance for broadcast and media organizations.

Major Objectives of Next-Generation Content Chains

Our BaM Content Chain Maturity™ framework is designed to provide a set of dimensions against which broadcast and media organizations can measure their own deployment level of next-generation technologies and processes to manage their content chains more effectively, from content creation to consumption. Media technology suppliers can in turn can measure the development of their offerings so as to meet technology users' changing requirements more effectively.

The maturity dimensions we identified describe objectives that next-generation content chains should achieve to remain competitive. These objectives can be summarised with three terms which our consultations found to be the most important goals/challenges for broadcast and media organizations going forward:

- **Intelligence**
- **Efficiency/Agility**
- **Reliability**

Progress to BaM Content Chain Maturity™ entails the increased use of data to power operations, reliance on an efficient and agile infrastructure and a clear strategy to manage risk throughout the **BaM Content Chain®** (and in single content chain blocks).

Broadcast and media organizations can achieve different levels of maturity in their journey to next-generation content chains. These can, for example, still be legacy, disconnected silos, state-of-the-art connected chains, or anywhere in between – depending on the stage of development in each of the seven dimensions we have identified.

Intelligence, efficiency/agility and reliability and not themselves separate silos but are highly connected in mature content chains. Intelligence on media operations should power efficient and agile activities as well as make them reliable, for example. The linkage between different objectives is further explored later in this chapter but is visually presented in the figure. Below, we explore the link between objectives, layers and dimensions in the maturity framework.

Source: IABM

Next-Generation Content Chains
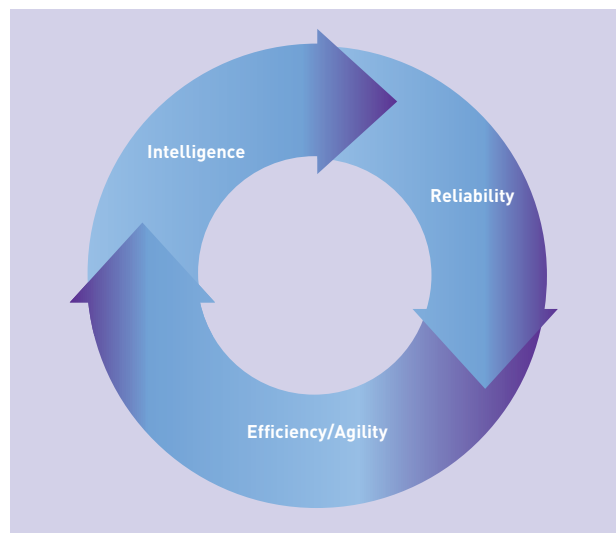
From objectives to layers and dimensions

Having identified the three main objectives of next-generation content chains, we have turned these into three layers at the heart of a maturity framework:

- **Intelligence → Data Layer in the framework**
- **Efficiency/Agility → Infrastructure Layer in the framework**
- **Reliability → Control Layer in the framework**

The first two layers have been further divided into three dimensions each:

- **Data Layer**
  - Gathering data
  - Analyzing data
  - Predicting trends
- **Infrastructure Layer**
  - Optimizing operations
  - Automating operations
  - Accessing content and technology tools

The Control layer is instead made up of only one dimension:

- **Control Layer**
  - Governing risk

Different layers and dimensions are interconnected

As hinted at earlier, the layers and dimensions should not be considered separate silos but rather as deeply interconnected with each other. An example of this is an automated dashboard (i.e. analysing data) enabling users to monitor the status of their content chains (i.e. governing risk).

Relevance to broadcast and media organizations and technology suppliers

This framework and the dimensions outlined below could be used as a reference for broadcast and media organizations embarking on a journey to become more intelligent, agile and reliable.

Technology suppliers can use this framework as a reference for their activities, ranging from product development strategies and customer segmentation to sales and marketing campaigns.

The relevance of this framework relies on the establishment of a common language for **BaM Content Chain®** maturity as well as the definition of maturity steps and activities that both broadcast and media organizations and technology suppliers can use to evaluate their development with respect to their technology solutions.

Dimensions of BaM Content Chain Maturity™

An analysis of the seven dimensions of BaM Content Chain Maturity™ is provided below:

Gather

This dimension is about gathering data on content, rights, operations and audiences.

Research participants highlighted that there are different aspects of BaM Content Chain Maturity™ with regard to data gathering. Firstly, the data infrastructure should be integrated, eliminating data silos to build interconnected data lakes. This was highlighted as a major focus in *Gather* and a costly endeavour with broadcast and media organizations having to make legacy silos work together.

Secondly, different types of data should be gathered, including operational data, financial data, rights data, content data and audience data. It is not just about the metadata, particularly as broadcast and media organizations go direct-to-consumer. Thirdly, data should be cleaned and gathered at scale to be relevant to organizations and power some of the other BaM Content Chain Maturity™ dimensions – particularly *Predict*.

Analyze

This dimension is about analysing the data gathered to power decision-making.

Research participants focused on the increasing importance of data visualizations and dashboarding functionalities in technology solutions. This importance was linked to other parts of the **BaM Content Chain®**, particularly *Govern*, to enable analysts to evaluate potential issues in the content chain in real-time. Some buyers mentioned the need to build dashboards on top of existing vendors' solutions and the fact that these have become essential tools in their everyday job. Some buyers also highlighted the establishment of new KPIs focused on speed of deployment and business agility. Generally, the most mature organizations often referred to data as deeply rooted in the company culture. Indicators of maturity in *Analyze* include the presence of a data analytics department to produce actionable insights as well as tracking usage of business intelligence systems to evaluate the return on investment in these solutions.

Predict

This dimension is about predicting unknown variables and events.

Most research participants highlighted the need for their organizations to further work in this dimension, which is not highly developed at broadcast and media organizations. *Predict* is straightforward to measure through a variety of forecast error measures that can be borrowed from statistical science. The deployment of AI/ML solutions – for prediction and not only for automation – was highlighted as an indicator of development in this category. As in *Analyze*, another indicator of development in *Predict* is the presence of a data analytics department within an organization – the few companies that mentioned this highlighted that these departments have grown significantly in recent years. *Predict* can help organizations with anything from cost models to capacity planning.

Next-Generation Content Chains

Optimize

This dimension is about optimizing the utilization of resources and avoiding effort duplication.

Optimize is mostly related to the deployment of unified content chains for both linear and non-linear publication of content. Most research participants highlighted how a high level of maturity in this dimension is profoundly affected by the level of automation of operations – underscoring the link with *Automate*. In fact, in the most mature organizations, higher levels of resource utilization are driven by increased workflow automation. Both buyers and suppliers agreed that *Optimize* is also linked to business agility and being able to do (and change) things more quickly than ever before. An indicator of this is time to launch or modify a certain technology solution. Buyers highlighted the need to optimize both their on-premise and cloud-based environments alike. Further on-premise optimization can be driven by better utilization of resources without expanding the physical infrastructure's footprint while multi-cloud workflow management and orchestration was highlighted as an area of interest for cloud-based environments – although not a developed area as we will see **later in this report**.

Automate

This dimension is about automating workflows and liberating resources.

As noted above, *Automate* is closely linked to *Optimize* although most research participants stressed that it should be a separate dimension and objective for next-generation content chains. Most buyers highlighted the need to automate any routine workflow but underscored the importance of not automating tasks that are becoming more important for their organizations – with data analytics being one of them, as evidenced in *Analyze* and *Predict*. The most mature buyers are measuring the level of automation in their content chains and analyzing the impact of new initiatives to automate workflows on specific sets of workflows. In the most mature organizations, automation is increasingly being driven by AI/ML solutions powering different services. In the least mature organizations, automation is mostly driven by bespoke solutions providing bespoke broadcast automation tools.

Access

This dimension is about enabling access to content and to technology tools.

In terms of content, buyers highlighted that creating a shared media pipeline that is easily accessible by all supply-chain parties, including partners, is essential for increasing productivity in terms of content production, management and monetization workflows. For example, a cloud-based content ecosystem allows multiple users to edit content at the same time and enables easier discoverability of content for selling it – to consumers or other media companies. From a technology perspective, most buyers mentioned the need to create a software-based, integrated vendor ecosystem through APIs.

Most suppliers agreed with this and highlighted that vendors need to be open. Most research participants highlighted that an indicator of maturity in *Access* is the number of users having access to a certain platform at different stages of the media supply chain – with *Govern* managing entitlements to access a certain piece of content and/or a technology tool.

Govern

This dimension is about managing risk, security and contracts.

Many highlighted the increasing importance of this dimension as broadcast and media organizations move to global interconnected content chains. These content chains present an increasing number of risks from both at security and a legal perspective. From a security perspective, the adoption of automated tools to highlight potential risks within the **BaM Content Chain®** and respond to them was

indicated as a measure of maturity – this is linked to the *Automate* and *Predict* dimensions. Also, the ability to quantitatively assess these risks and rank them on a prioritization scale was highlighted as very important and an area of focus going forward. However, the analysis of the status of the **BaM Content Chain®** through operational dashboards was evidenced as something that should not be completely automated and is mission-critical for media organizations – this is linked to the *Analyze* dimension. From a legal perspective, most broadcast and media organizations were described as not very developed. This is becoming increasingly important as these companies go global – which has implications on rights management and the protection of consumer data (due to direct to consumer). The adoption of clear practices regarding this was highlighted as an indicator of maturity.

Development of Dimensions

Below, we have included some data on the development of each dimension (on a scale from 1 to 5) according to buyers.

Development of Maturity Dimensions
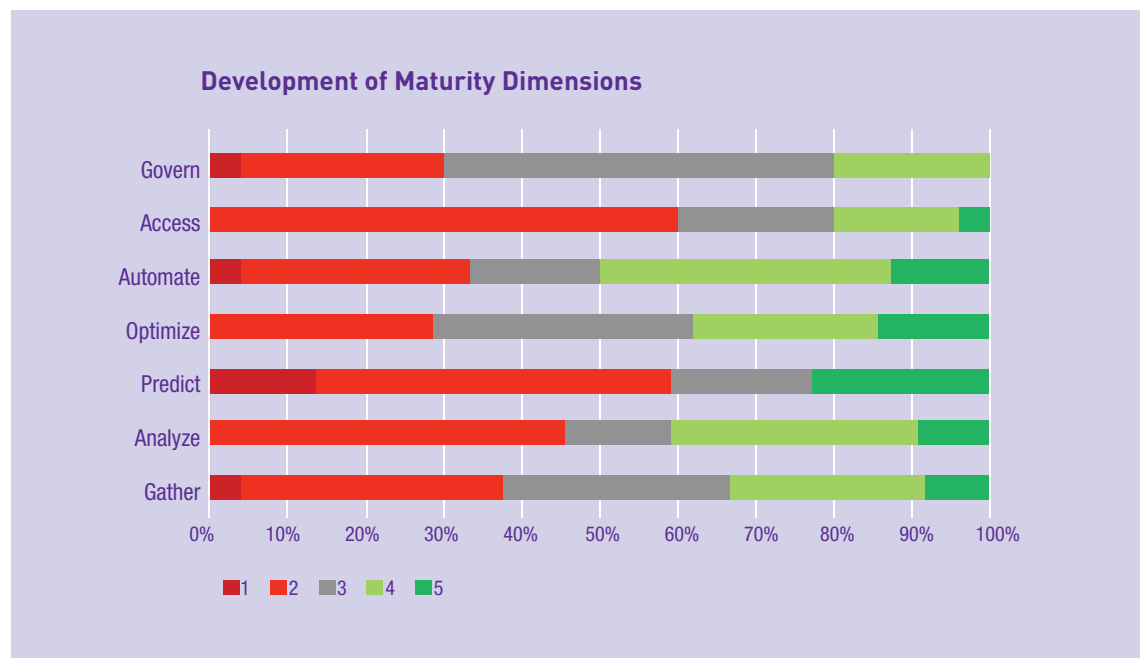
Source: IABM

In terms of development, most buyers think that they are quite developed in the Automate, Analyze and Optimize dimensions and least developed in the Predict and Access dimensions.

Next-Generation Content Chains

BaM Content Chain Maturity™ Steps

Below, we provide a map of BaM Content Chain Maturity™ steps to visualize the progress to next-generation content chains:

Content Chain Maturity Steps

Dimension	Low maturity	Medium maturity	High maturity
Gather	Data infrastructure is still separated in silos with no blending of relevant data points	Data infrastructure is reasonably integrated but little blending of different data types	Data infrastructure is well integrated with variety mix of data used to drive content chain activities
Analyze	Little reliance on data-driven dashboards and KPIs to drive decision-making. No data analytics department	Moderate reliance on data-driven dashboards and KPIs to drive decision-making. No data analytics department	High reliance on data-driven dashboards and KPIs to drive decision-making. Established data analytics department
Predict	No reliance on predictive capabilities but qualitative assessment of future needs	Some reliance on predictive capabilities to understand future needs and no data analytics team	Moderate to high reliance on predictive capabilities and investment in data analytics team
Optimize	Qualitative evaluation of operational optimization and low reliance on cloud-based resources	Objective evaluation of operational optimization wide moderate reliance on cloud-based resources	Data-driven optimization of operational resources and high reliance on cloud-based resources
Automate	Broadcast-level automation of workflows but no reliance on smart automation techniques such as AI/ML	Some reliance on smart automation techniques such as AI/ML but no process in place to measure their effectiveness	Moderate to high reliance on smart automation techniques such as AI/ML and process in place to measure their effectiveness
Access	Disconnected content chain with limited access to content and technology resources	Reasonably connected content chain but some holes in terms of technology integration	Well connected content chain with easy access to contect and integrated technology solutions
Govern	Qualitative risk assessment and control driven by post-accident evaluation of both security and legal risks	Objective risk assessment based on established security policies but low focus on legal risks	Data-driven governance based on clear rules and automated control from both a security and legal perspective

Buyer Segmentation

Below, we provide a qualitative segmentation of buyers based on some traits we observed in our research.
This segmentation gave rise to four clusters of buyers, evaluated from both a background (IT and broadcast engineering) and a maturity perspective (low or high BaM Content Chain Maturity™) compared to the dimensions described earlier.

Buyer Segmentation

IT

Buyer Background

High focus on business outcomes. Likely to invest in what works financially

Medium investment in cloud-based operations and IT technology

Medium focus on operational efficiency and flexibility

Low propensity to build technology in-house. Likely to rely on partnerships with vendors

Low focus on data-driven workflows and AI/ML technology

Infrastructure layer is major investment focus going forward

High propensity to build technology in-house. Likely to rely on partners for knowledge and SW development

High focus on business outcomes. Reluctant to invest in hardware and licences

High investment in cloud-based operations and IT technology

High focus on direct-to-consumer platforms and consumer-facing systems

Data layer is major investment focus going forward

High focus on data-driven workflows and AI/ML technology

Infrastructure and Control layers are major investment focus going forward

Low propensity to build technology in-house. Likely to rely on vendors' products

Medium propensity to build technology in-house. Likely to rely on partners for knowledge and SW development

Medium investment in cloud-based operations and IT technology

Focused on technology. Reluctant to move to as-as services models

High focus on traditional broadcast infrastructure

High focus on operational efficiency and flexibility

Data and infrastructure layers and major investment focus going forward

Medium focus on data-driven workflows and AI/ML technology

Low investment in cloud-based operations and IT technology

Low focus on data-driven workflows and AI/ML technology

High focus on both business outcomes and technology. Likely to move to as-a-service models

Broadcast

Low   **Buyer Maturity**   High

The segmentation considers the following characteristics:

- **Buying Focus:** included in orange boxes
- **Operational Focus:** included in the blue boxes
- **Maturity Layer Focus:** included in yellow boxes
- **Propensity to in-house development:** included in purple boxes
- **Cloud/IT Investment:** included in green boxes
- **AI/ML/Data Investment:** included in red boxes

As you can see from above, maturity is determined by different factors, including:

- **A higher focus on business outcomes**
- **A higher focus on operational flexibility and consumer-facing systems**
- **A higher focus on the Data layer of the BaM Content Chain Maturity™ framework**
- **A higher propensity to build technology in-house and establish deeper relationships with vendors**
- **A higher investment in cloud-based operations and as-a-service models**
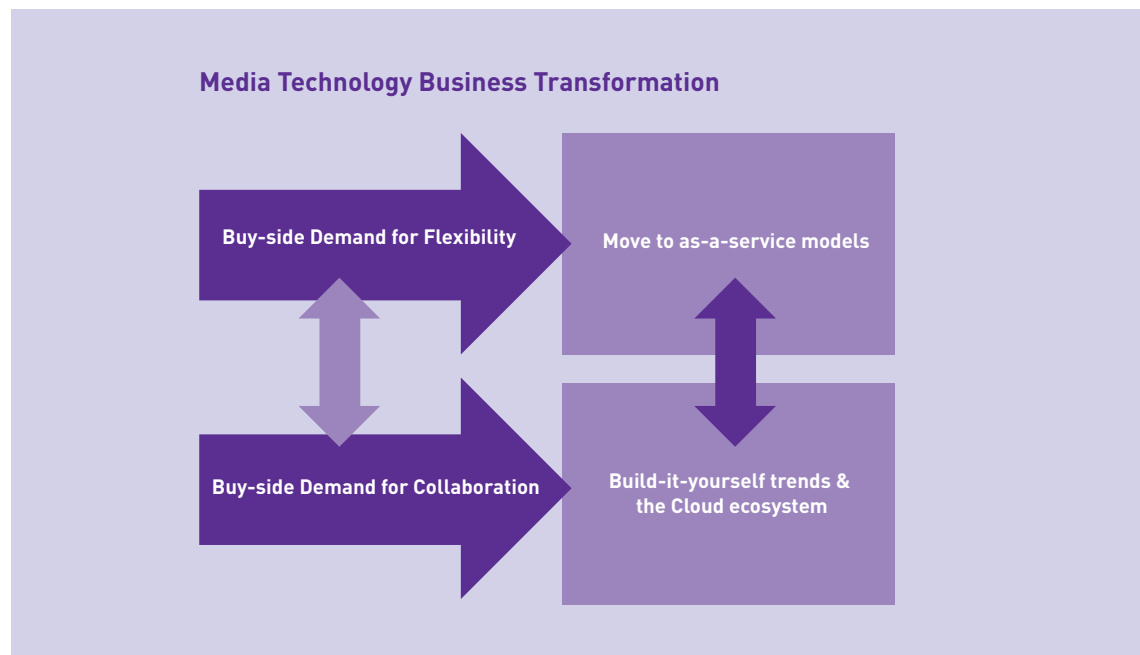- **A higher investment in data-driven workflows**

Media Technology Business Transformation

This chapter includes an analysis of media technology business models emerging as a result of changing industry dynamics. These models focus on flexibility and collaboration. The analysis includes both suppliers and buyers' perspectives and is heavily linked to our previous chapter on next-generation content chains.

Media technology business models are becoming increasingly dynamic as the sector moves to direct-to-consumer paradigms. Their dynamism is analyzed from two different perspectives:

■ **Flexibility:** refers to buyers' demand for flexible payment models and its implications for media technology suppliers

■ **Collaboration:** refers to buyers' demand for collaboration and its implications for media technology suppliers

We start from these two buy-side demands and analyze the most important trends deriving from these. From a flexibility perspective, we mainly focus on the **move to as-a-service models** that is radically influencing supplier business models. From a collaboration perspective, we focus on **buyers' increasing propensity to build technology solutions in-house** as well as the **emerging cloud ecosystem**.

Media Technology Business Transformation

Buy-side Demand for Flexibility

Move to as-a-service models

Buy-side Demand for Collaboration

Build-it-yourself trends & the Cloud ecosystem

Source: IABM

It is important to note that flexibility and collaboration are deeply interlinked (as pictured in the figure) but we have divided them in the subsequent analysis to provide more focus to each of the sections and facilitate navigation throughout this report.

Flexible Technology Business Models

This section includes an analysis of flexible technology business models with a strong focus on the supply-side implications of the transition to software-as-a-service (SaaS) models.

Buy-side Demand for Flexibility

IABM research shows that media technology buyers are shifting their investment towards more flexible technology payment models such as SaaS offerings and away from legacy systems such as hardware equipment and licenses. Recent IABM data shows this clearly with most customers planning to increase their investment in software subscriptions and on-demand models. On the contrary, investment in hardware and software licenses is mostly flat or declining.

Buyers' Investment Outlook
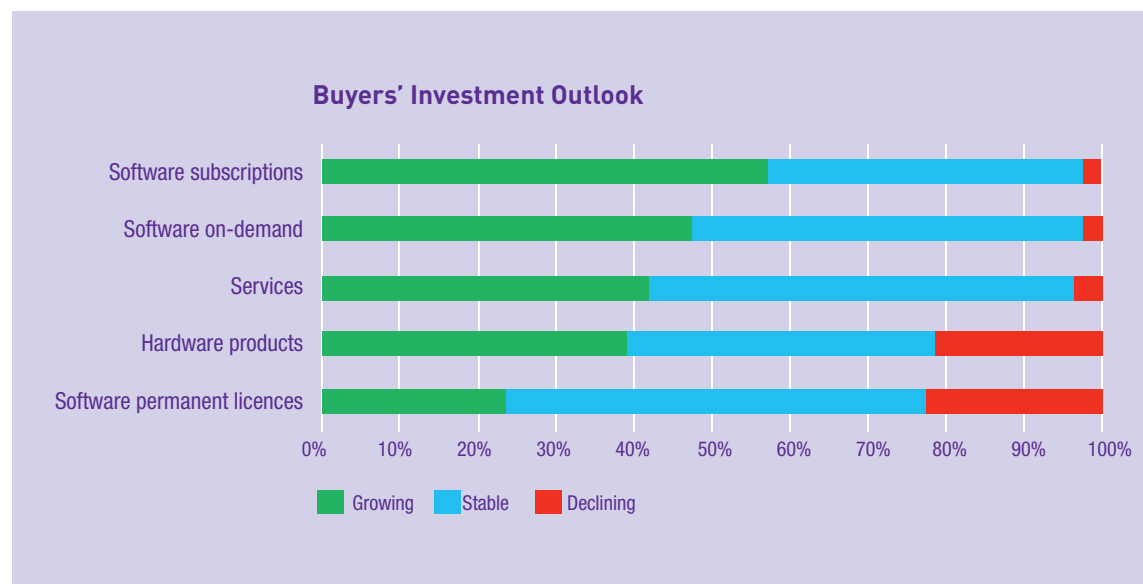
Source: IABM

An inevitable transition

Interviews conducted for this report described this transition as inevitable, particularly by customers. In fact, an overwhelming majority of them said they will be investing only in flexible payment models going forward and building a supplier ecosystem that provides consumption-based options. This was highlighted as a strategic objective by most buyers and is well illustrated by a comment we received in one of our recent Buying Trends surveys:

"A lot of small-scale buys and a lot of SaaS systems in use. But the times for buying multi-million external systems are over."

The unpredictable nature of the market is the main reason behind buyers' reluctance to commit to multi-year technology solutions. The constant change in consumer demands and expectations translates into a demand for flexibility of vendor solutions.

Financial flexibility is the origin of the transition

Arguably, the demand for **financial flexibility** is the origin of this unprecedented industry transition. Buyers have often highlighted the need to pay for what they use and move to 'as-a-service' models to better respond to market shifts. Suppliers are also more likely to highlight the financial impact of this transition on their businesses, and most notably on their cashflows. However, the transition to flexible payment models is not just about financials – it has other important implications for technology suppliers.

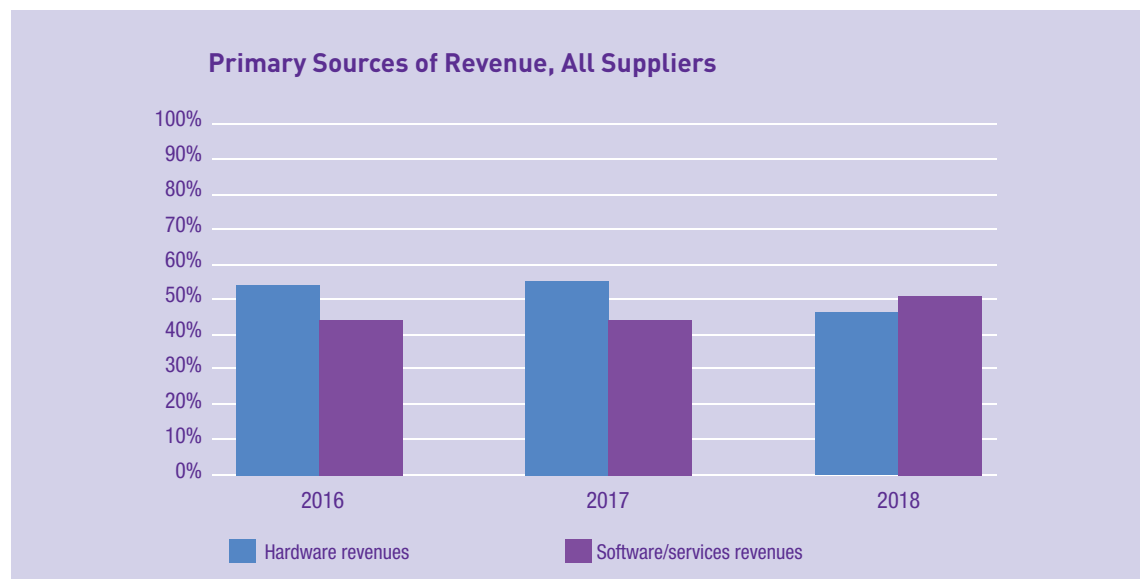## However, it is not just about financial flexibility

Buyers highlighted the need for vendors to be flexible from different perspectives and not just from a financial standpoint. Flexibility also means the ability to adapt to users' requirements and roll out new product features at a fast pace. Flexibility also translates into **continuous engagement** by vendors with end-users to constantly tweak and develop offerings. To do that, the structure of traditional supplier organizations needs changing to fit a Software-as-a-Service (SaaS) paradigm. All the implications of the move to flexible models are described below.

Transition to Software-as-a-Service (SaaS) Offerings

IABM research shows that buyer demand for flexible business models is translating into a shift in media technology suppliers' revenue sources away from hardware and licenses and towards software subscriptions and pay-as-you-go models. This section analyzes the implications of the transition to SaaS models for suppliers, from the financial shift imposed by the transition to the rising importance of customer data within media technology suppliers' organizations.

SaaS is happening

IABM research shows that revenues of media technology suppliers are moving away from hardware – though this remains the primary single source of revenues in the industry – to software and services. Reflecting this shift, software and services revenues surpassed hardware for the first time in 2018.

Primary Sources of Revenue, All Suppliers

Legend: ■ Hardware revenues ■ Software/services revenues

Source: IABM

Media Technology Business Transformation

Another transition – from software licenses towards subscriptions and pay-as-you-go models – is even more clear-cut when looking at historical IABM data for software suppliers only. Although permanent licenses still represent most of software suppliers' revenues, subscription-based and consumption-based revenues are quickly catching up.

Looking at other verticals, the media industry has been quite slow in adopting the SaaS models that are already prevalent in other industries.

Looking at other industries also shows that the transition to SaaS is a natural evolution in technology provision.

Primary Sources of Revenue, Software Suppliers

Software revenues (permanent licences) ■ Software/revenues (subscriptions/on-demand) ■
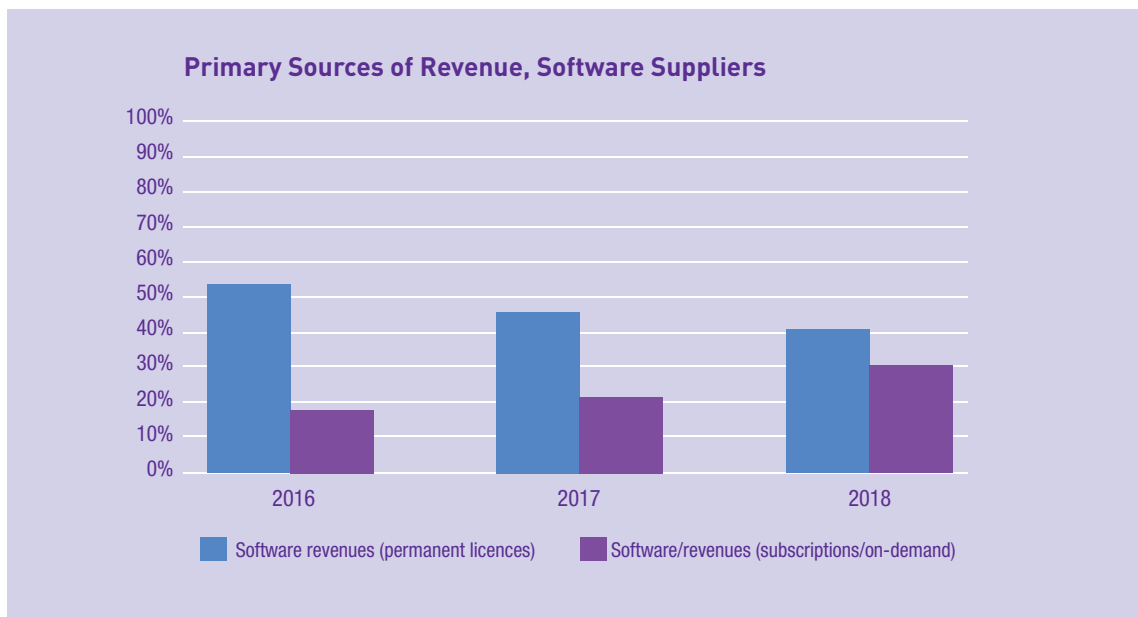
Source: IABM

The implications for the supply-side of media technology are multi-faceted and are further analyzed below.

SaaS changes everything

SaaS changes everything in supplier organizations. SaaS business models rely on a radically different financial balance that prioritizes subscriptions and consumption-based models over up-front payments. This transition often entails an initial financial shortfall that may be difficult to implement, as it may last for years.

The move to SaaS also entails a complete re-organization of investment and departments such as technology, finance, sales and marketing around the new cashflow paradigms. SaaS models rely on development agility, continuous engagement with technology users throughout the year and a heavier reliance on data.

Financial paradigm shift

The move to SaaS has well-known financial implications for technology suppliers. Companies moving to SaaS business models need to shift from large capital inflows to smaller monthly (or daily) payments. This leads to a cashflow crunch that may last several years.

In the case of Adobe, a company that has implemented the transition to subscriptions very successfully, this crunch has lasted only a few years but, in most cases, the cashflow crunch lasts between five and ten years.

According to IABM data, the cashflow/revenue index at media technology suppliers started decreasing in 2012 – after the end of the transition to HD – and has kept declining in the last six years. It is now declining at a slower rate.

Media Technology Cash Flow over Revenue Index
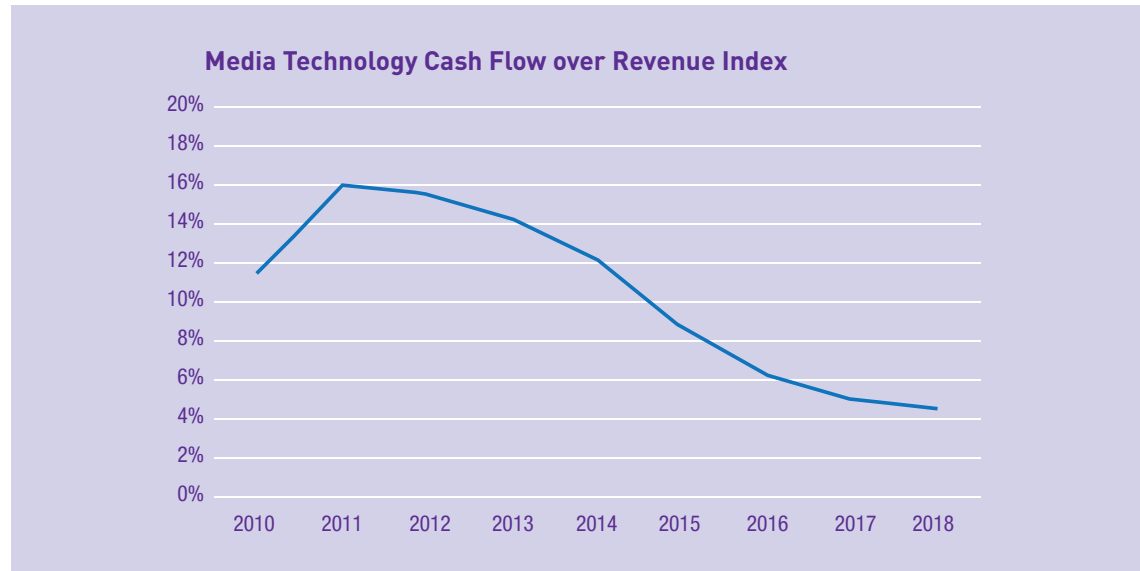
Source: IABM

Some suppliers have successfully gone through this transition while others are still grappling with it. Most research participants highlighted the need to implement a balanced transition where the requirement to maximize the recruitment and retention of customers is balanced against the need to minimize the financial impact of the move on cashflows. This is very important for buyers as the financial viability of their suppliers represents a factor driving purchase decisions.

Internal systems need updating to suit the new financial paradigm and this is of course another important change of the transition. Financial metrics are completely different in a SaaS model with much more emphasis on customer retention and contract duration – these metrics are not further explored in this report due to the abundance of literature available on the topic. This has implications in terms of sales and marketing activities – these are further explored **below**.

Financing of technology development also changes as large upfront payments have historically provided enough resources to fund large and important product launches. In SaaS models, this funding is atomized to enable smaller, continuous updates on software platforms. This translates into a radical shift in technology development that is **further explored below**.

Flexibility of payment models also affects discounting practices with a significant premium being charged for short-term financial commitments and larger discounts being granted for long-term partnerships. This a typical practice for SaaS businesses, which price monthly payments more than annual payments, and cloud service providers, which allow customers to get large discounts based on reserved quantities. Some suppliers told us how these terms are becoming part of new tender agreements.

Media Technology Business Transformation

Some buyers even highlighted the need for suppliers to share the financial risk on digital platforms through revenue sharing arrangements. These arrangements, which put suppliers even closer to buyers, aim to pool the cost of uncertain financial returns on these platforms and align the incentives of all parties involved in a deal.

The reliance on these sharing arrangements is still low with only a few buyers and suppliers saying that they have rolled out such projects – which are generally linked to the launch of a new digital platform. However, a higher percentage of research participants said they have experimented with alternative payment models where payments are split before and after the delivery of a certain project.

This approach also contributes to improving the alignment of incentives among the parties involved in a technology project.

Technology provision becomes agile

In SaaS business models, technology development becomes more agile and thus more collaborative, dynamic and responsive to customer feedback.

Agility translates into continuous software updates driven by customer feedback rather than the release of major products every few years – a major feature of on-premise product releases. Erik Ahlin, CEO of **Vidispine**, told us that he calls this 'constant delivery'. This also implies a better relationship with (small) failures – something at odds with the traditional broadcast industry's mindset, but more akin to a start-up mentality.

As things move more quickly, suppliers are becoming more inclined to roll out small, new features and receive feedback from customers on them on a continuous basis. This is perhaps the most important shift in technology development with some buyers telling us that they won't even consider vendors that do not have this approach.

The changing dynamics in the industry also require statements of work in project-based technology development to be loose enough to accommodate things that were not anticipated in the negotiation phase by both customers and suppliers.

This feedback between customer and suppliers needs to flow seamlessly. Some suppliers told us that they are visiting customers' premises much more frequently than before to almost act as consultants and facilitate the implementation of technology solutions. The increasing use of chat-based messaging tools such as Slack and Teams to enable the constant flow of information was also evident from interviews. Companies like **GrayMeta** told us how they have integrated these tools within their platforms.

These tools enable better communication between customer and supplier but also better communication within a specific customer team that works on a technology platform.

Agility also means flexibility in satisfying different customer requirements from a deployment perspective. While some customers may want to quickly pivot their operations in a SaaS world, others may prefer a more gradual approach with a mixture of on-premise and cloud-based deployments. Flexibility ultimately consists of understanding the specific requirements of different customer organizations and having an agile structure in place to be able to accommodate them.

Agility also encapsulates the capacity to translate business requirements and outcomes into technology solutions. This is something that most buyers are struggling with – and thus constitutes a potential opportunity for suppliers. Although this market seems to be mostly tapped into by large consulting companies with more experience on the business implementation of technology solutions in

various verticals, most suppliers do not charge for the knowledge they provide to their customers or are very unlikely to engage in service-based activities after a certain point.

Agility also translates into a radical reduction of delivery times – from months to weeks. This requires vendors to adapt to these timelines to prevent customers to start thinking about **building a certain technology solution by themselves**. This particularly applies to project-based work where the launch of a new channel or service may need to happen very quickly. Streaming services such as Pluto TV are really embracing this paradigm with their reliance on **pop-up TV channels**.

In SaaS businesses, the reliance on IT skills is much more pronounced than in broadcast technology companies. Attracting and retaining IT talent is very costly, as shown **in the next chapter**. However, investing in talent is essential for SaaS businesses to attract and retain customers.

Coming back to constant technology delivery, emerging organizational models such as **holacracy** fit into this cultural shift and enable technology teams to be quicker in responding to market changes – **RTS used holacracy** to develop its in-house AI platform. Holacracy goes beyond a hierarchical model to empower individuals in a technical team with more freedom and responsibilities.

Customer engagement becomes continuous

As the buying cadence moves from multi-year commitments to monthly or metered payments, engagement with media technology buyers becomes continuous. This requires suppliers to implement a series of organizational changes that range from the creation of new roles to the development of new marketing activities.

In SaaS models, customer retention becomes key to financial success – as it influences customer churn and thus the financial value of customers – requiring vendors to create dedicated positions to manage retention.

Many suppliers highlighted the creation of new customer success managers within their organizations to do this. These roles aim at supporting customers through the implementation of a technology solution, often acting as an intermediary between supplier and buyer technical teams. The need for these roles stems from the constantly changing dynamics in the industry which require technology that is continuously updated, **as mentioned earlier**.

The engagement touchpoints with both customers and prospects within a certain year become multiple, going beyond the traditional model of C-level sales that has characterized industry exhibitions in the past. Although these exhibitions remain essential to cultivate and cement relationships, they are not enough in SaaS models. Customers may need different engagement tools to dive deep into technology applications and roadmaps.

This has led some suppliers to ramp up their digital presence – through, for example, the increasing reliance on how-to webinars and virtual support – and launch their own events to provide customers an additional tool for technical engagement. For example, Skyline Communications often relies on webinars and its own web TV platform to explore specific topics and engage with its customers on a virtual and more continuous basis. Skyline Communications has also launched its own event, **DataMiner Inspire**, this year.

Source: Skyline Communications

Media Technology Business Transformation

Software supplier Vidispine has launched **vortech.by/** which provides customers an opportunity to delve deeper into technology solutions that it provides and provide feedback on them. Vidispine sees this as an industry-led event that can be hosted by different partners and customers each time. According to the website of the event:

"vortech.by/ was created to move away from sales-focused conferences and to put technology deep-dives into the centre of attention."

Other media technology suppliers such as **Avid** have done something similar in recent years. Avid has launched a **Customer Association** and an event (Avid Connect) to further engage with its customers on a more continuous basis.

Source: Vidispine

Cloud service providers such as **AWS**, **Google Cloud** and **Microsoft Azure** also offer a plethora of events to enable customer engagement and provide technology deep dives. Aside from their flagship events, they also offer the possibility to engage on a virtual basis. AWS provides **AWS Innovate**, a series of online conference sessions on a variety of topics, from machine learning and analytics to industry solutions. These events are often very practical and targeted at different users. For example, the AWS Innovate conference on **AI and ML** featured practical presentations on machine learning algorithms followed by demos and practical applications.

As illustrated in the figure, the engagement touchpoints in new SaaS relationships become multiple from both a technology and sales and marketing perspective.

Source: IABM
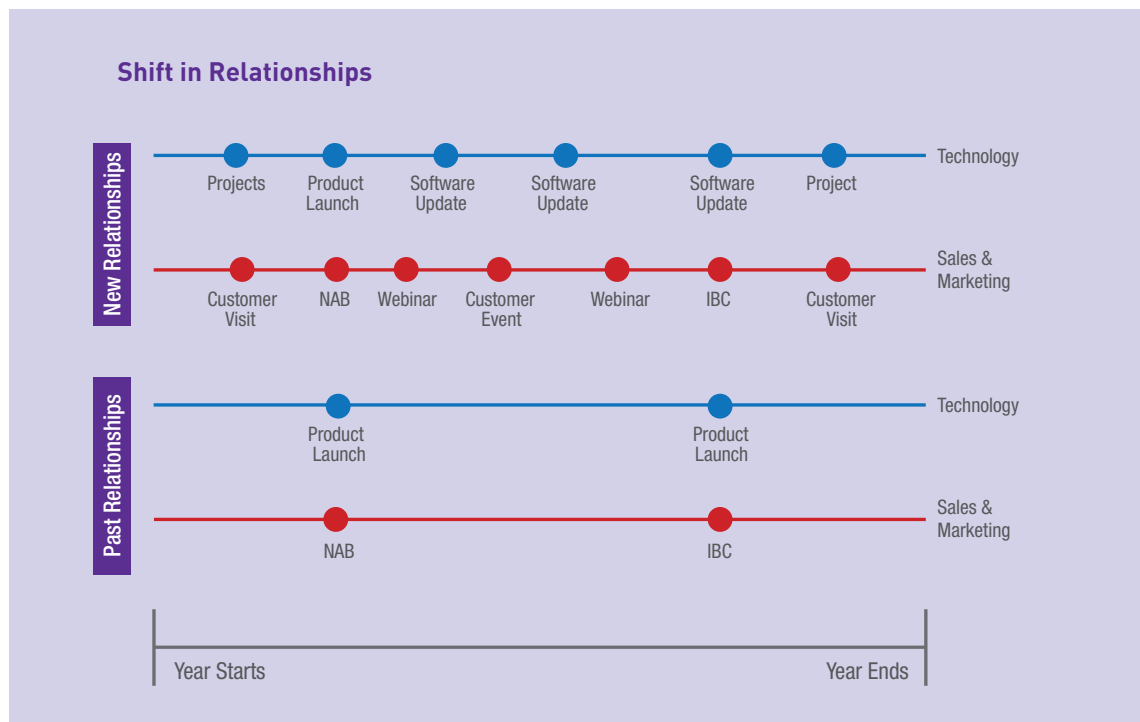
It is important to note that some suppliers are also launching initiatives to improve supply-side interoperability – and not just customer engagement. In April 2019, Grass Valley launched **the Grass Valley Technology Alliance** (GVTA), a new certification program for technology and solutions providers,

to give end-users better access to solutions that are interoperable with a wide range of Grass Valley workflow platforms and components. At IBC 2019, **MediaKind** launched a similar technology partnership program, the MediaKind Universe Alliance. The aim of the alliance is to provide end-users with better access to complete solutions with guaranteed interoperability by combining technologies and services from alliance members and partners in the cloud.

Data becomes an essential asset

In the **first part of this report**, we talked about data becoming an essential asset for broadcast and media organizations with regard to their process to next-generation content chains.

Data also becomes an essential asset in SaaS models, affecting everything from sales and marketing activities to pricing and technology development. In fact, SaaS models provide a plethora of data points on customers' technology usage that should drive supplier strategies in a variety of activities. While customer recruitment may primarily fall in the hands of the marketing department through digital marketing tools and customer segmentation reliant on technology usage data, sales can strengthen retention activities and focus more on upselling active customers to higher subscription tiers. Upselling activities become essential in SaaS model and also rely on technology usage data provided by internal systems. The shifting role of sales requires vendors to carefully think about adjusting their financial incentives.

Some suppliers also mentioned the completely new practice of freemium offerings, where a SaaS offering can be tried for free by the customer for a certain amount of time. This can represent an additional sales tool but also a way to understand prospects' usage of the product.

Pricing should also rely on data and on a sound customer segmentation. This is not easy to implement, particularly for companies moving away from legacy offerings. Bundling features in different subscription tiers to reflect the needs of different customer segments and incentivize upselling when technology engagement overcomes a certain threshold is part of this. SaaS models also require constant experimentation with pricing through the reliance on techniques such as A/B testing to estimate the influence of price tweaking on sales. There are a variety of tools (e.g. **Optimizely**) that allow SaaS companies to experiment with pricing and packages.

In consumption-based models, customers may also find difficult to budget for technology spending, which in turn requires suppliers to provide them with the necessary tools to monitor and predict their investment. These tools again rely on data pulled from internal systems. This issue was highlighted numerous times by buyers and represents a challenge particularly in multi-cloud environments – more on this **later in this report**.

Finally, technology is not immune to the influence of data, as information on technology usage can drive development of new features and bug fixing. Only a few suppliers mentioned the usage of technology usage data to drive product development decisions.

Collaborative Technology Business Models

This section includes an analysis of collaborative technology business models with a strong focus on build-it-yourself (BIY) trends and the emerging cloud ecosystem.

Buy-side Demand for Collaboration

The unpredictability of the broadcast and media market is (again) often cited as one of the main drivers behind collaborative technology solutions. Broadcast and media organizations highlight that the change in the industry is unprecedented, requiring them to collaborate with different media technology suppliers as well as with other broadcasters in an increasingly complex ecosystem powered by new technology such as the cloud.

Long-term partnerships driven by business, not technology

Most buyers and suppliers agreed that the focus has moved to long-term partnerships built on continuous engagement and flexible financial arrangements – these changes were described **in the previous chapter** on flexible business models. In these partnerships, all parties need to make concessions and focus both on what is working now and what is going to work in the future.

According to most companies interviewed for this report, the focus of partnerships between buyers and suppliers has also shifted away from pure technology discussions towards the business outcomes of technology projects. Buyers are generally becoming more focused on use cases and what a new solution is going to enable rather than on technology specifications. Most buyers confirmed that business outcomes are becoming more important than technology in discussing deals. This is not always the case though and suppliers need to consider different segments of buyers as highlighted in our **buyer segmentation** in the previous chapter.
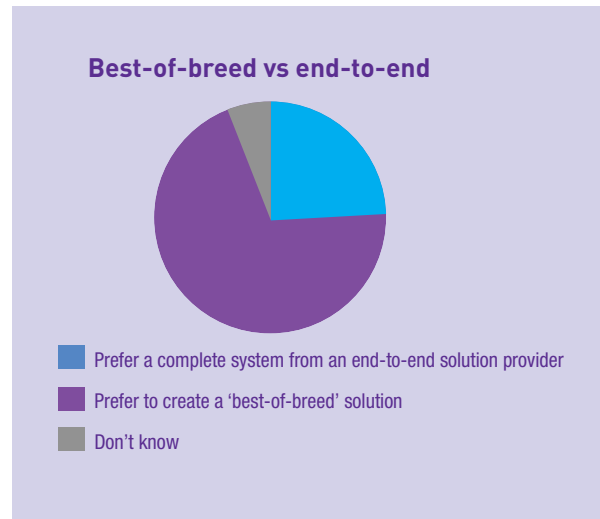
Customization is key

The partnerships between suppliers and buyers increasingly rely on customization, from both a business and technology perspective. From a business perspective, customers are asking suppliers to move to flexible business models as described **in the previous chapter**. From a technology perspective, technology development is increasingly influenced by buyers. This mindset is well illustrated by a comment we received in one of our recent Buying Trends surveys:

"We are not looking for products anymore, we are looking for partnerships where product development is driven by our requirements."

This thinking is in stark contrast with media technology suppliers' need to develop offerings that are suited to different customers. This divide between technology demand and supply has driven a wave of investment by buyers in **in-house technology capabilities**. This trend is explored in detail in the next section. Customization also remains key in a cloud-based environment as buyers still show a strong preference for best-of breed solutions.

Small is beautiful

Finally, one could not talk about media technology collaboration without mentioning the **rising ecosystem of small media specialists** emerging on top of large cloud platforms. Partnerships between media technology suppliers and cloud service providers have grown significantly in recent years, giving rise to an ecosystem of specialist media services. This is what buyers want. As they move an increasing portion of their operations to the cloud, they want to be able to rely on the specialization provided by smaller technology suppliers in a cloud-based environment.
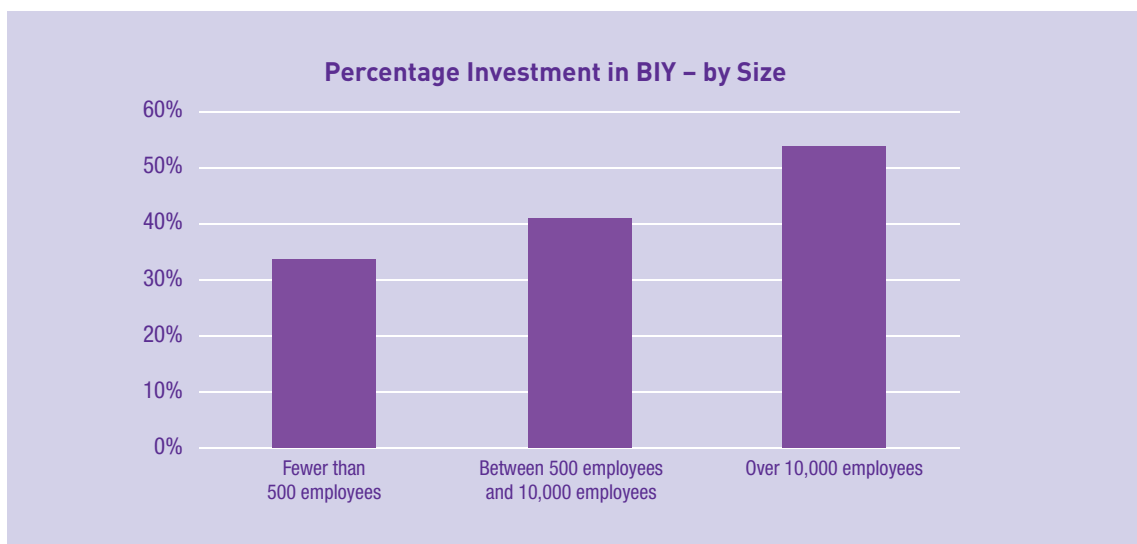
Best-of-breed vs end-to-end

■ Prefer a complete system from an end-to-end solution provider
■ Prefer to create a 'best-of-breed' solution
■ Don't know

Source: IABM

Build-it-yourself (BIY) Trends

IABM research shows that broadcast and media organizations are investing a large share of their technology budgets in building in-house technology capabilities. This section delves deeper into the drivers and challenges of build-it-yourself (BIY), the focus of BIY investment and the opportunities for media technology suppliers to support their customers in collaborative technology models.

Large and developed companies are more inclined to invest in BIY

According to research carried out for this report, large organizations in developed geographies are more inclined to invest resources in internal technology capabilities. This is consistent with IABM data which shows that these organizations are, on average, more likely to invest in in-house technology solutions. **Our buyer segmentation** shows that more mature organizations are more likely to invest in BIY.

Percentage Investment in BIY – by Size

Fewer than 500 employees · Between 500 employees and 10,000 employees · Over 10,000 employees

Source: IABM

Media Technology Business Transformation

The size factor should come as no surprise as BIY requires broadcast and media companies to ramp up their spending – either through direct investment or targeted acquisitions – on in-house technology capabilities, including **investment in a highly skilled development department**.

From a geographical perspective, organizations from developed territories such as North America and Northern Europe were described as more inclined to take on the risk of BIY investment due to the more competitive nature of these markets – i.e. higher penetration of OTT services. Our research shows that these organizations are also more likely already to have invested in modern technology teams relying on IT-based technology tools such as microservices. These teams have blended IT and broadcast skills in one department.

From an organization perspective, broadcasters were indicated as the category of buyers most likely to build BIY capabilities due to the significant impact of OTT on their businesses.

Customization, speed and control drive BIY

According to research carried out for this report, the main drivers behind BIY are customization, speed of deployment and control over technology development.

As evidenced above, customization is an important driver in today's dynamic media marketplace. Some buyers highlighted the unavailability of technology solutions that meet their full requirements and the consequent need to build functionalities on top of existing platforms – or, less often, start from scratch with new ones. An example of this is the need to build dashboards (the *Analyze* dimension in our maturity model) on top of existing vendor solutions that do not provide this.

Customization may also play an important role in enabling interoperability as some buyers told us that they have built bridges between different vendor applications that did not communicate with each other by using microservices.

Need for speed was also evidenced as an important driver with some buyers highlighting that vendors are 'not going fast enough' in their **transition to flexible payment models** that enable them to spin resources up and down. This is well illustrated by a comment we received in one of our recent Buying Trends surveys:

"Challenging times and things move fast. We are now at about 40-50% BIY. External buys are mostly hardware, very few systems bought in the last years."

Suppliers also recognized this as a major BIY driver but highlighted the fact that moving to flexible payment models takes quite some time.

Control over technology development was highlighted as a very important issue by buyers as they lose control over so many variables determining success in their business – i.e. with the power shifting to consumers. As the market dynamics change, buyers want to be able to influence technology development.

Need for speed and control has led to some major broadcast and media organizations acquiring media technology suppliers in revenue-generating activities such as streaming and advertising. Examples of this include Disney buying BAMTech and RTL buying a series of advertising technology vendors (SpotX, Yospace, Smartclip, Clypd). This reflects buyers' need to be in direct control of mission-critical technologies that lay the foundations of new business models for media companies. At the 2019 Disney Investor Day, Kevin A. Mayer, Chairman of Direct-to-Consumer & International Division, said:

"When it comes to delivering a world-class direct-to-consumer experience, phenomenal content is only part of the equation. It also requires cutting edge technology and design capabilities, which is

why we moved quickly, in 2017, to acquire a controlling interest in BAMTech, a company at the forefront of providing live and on-demand video streaming with incredible quality and great reliability. It was a significant investment in our future because it gave us the ability to move into the direct-to-consumer space quickly and effectively."

Acquisitions of media technology suppliers by buyers illustrate the need for closer partnerships that rely on sound business principles mentioned earlier.

Spiralling costs are a major hurdle

As hinted earlier, the main challenge related to BIY investment is cost. While the initial set-up costs of a BIY project may be small, maintaining an in-house technology solution can be very costly. According to some interviews carried out for this report, this has often led some technology buyers to shelve in-house projects or ask for suppliers' support a few years after the project launch. This has been more common at smaller, less developed buyers, consistent with the trend mentioned earlier.

The costs associated with maintaining in-house technology capabilities are multi-faceted and include capital expenses and, more importantly, staffing costs. In fact, to develop successful in-house technology projects, investing in skills is essential. This includes hiring and training new staff.

Emerging industry skills such as software development and data science are not cheap as the broadcast and media industry is in competition for talent with other verticals as well. According to Glassdoor data, the average base salary of a data scientist is almost double that of a broadcast engineer. Software engineers are also significantly more expensive than broadcast engineers.

Average Base Pay in the US

	Broadcast Engineer	Software Engineer	Data Scientist
Average Base Pay	~$67,000	~$103,000	~$117,000
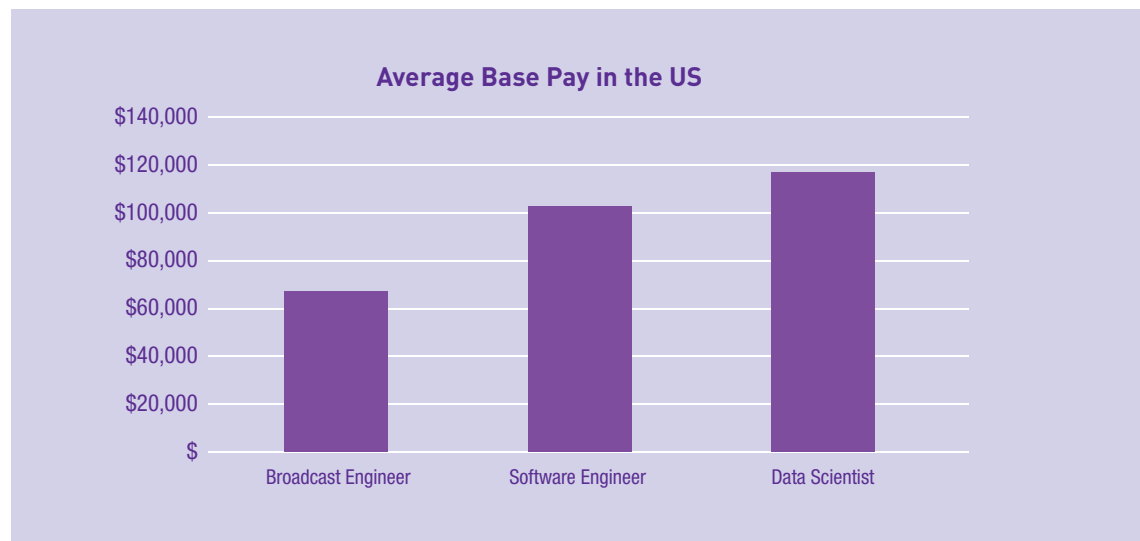
Source: Glassdoor

Most buyers dislike BIY and told us that they would rather buy vendor solutions if they were not forced to build technology in-house due to the BIY drivers mentioned earlier. Smaller buyers also highlighted the need to hire external software development resources without the necessary industry-specific skills when in need of additional technology capabilities.

Media Technology Business Transformation

BIY is focusing on the Manage part of the BaM Content Chain®

According to IABM data, most technology buyers plan to focus their in-house technology investment on the Manage part of the **BaM Content Chain®**.

Content management systems have historically been associated with large, complex and expensive installations, requiring extensive customization and integration work by technology suppliers. More recently, technology users have brought some of this work in-house, building new functionalities on top of existing systems and enabling interoperability with new tools needed to manage digital assets, for example.

The increased propensity to internalize technology development of asset management tools is consistent with the central role played by these systems in broadcast and media companies' operations. In fact, as they sit at the center of media workflows, efficiencies gained in content management systems can translate into widespread savings throughout the **BaM Content Chain®**. Also, broadcasters have shifted away from the large and complex installations of the past towards a more flexible deployment approach increasingly reliant on a microservices architecture.

BIY is focusing on the frontend of technology solutions

In-house investment has focused on the frontend of a media technology solution with a vendor platform powering it on the backend. There are many examples of this trend, including **Discovery's move to a cloud-based media supply chain**. Discovery relied on SDVI's Rally platform for the backend of its media supply chain solution but built the user interface (UI) in-house.

Building the frontend of a technology solution in-house has major benefits for broadcast and media companies, including the possibility to optimize and simplify the use of the platform for users as well as enable the interface to pull data from different internal systems that may not interoperate with the vendor solution used.

Optimizing the UI is particularly important for a variety of reasons, including operational efficiency as well as employee branding and retention. In fact, research participants evidenced that a great UI is associated with increased user productivity and a lower likelihood of mistakes. Also, as engineering departments in broadcast and media organizations are increasingly made up of engineers with IT skills, a slick UI is seen as a projection of organizations' technology development and a way to attract and retain high-skilled employees.

Smaller buyers highlighted that their lack of software development resources prevented them from building major platforms in-house. However, some of them pointed out that they are using some of cloud service providers' services (e.g. **AWS Lambda**) to build smaller pieces of software such as middleware.

It is important to note that we have observed this trend also in the deployment of AI/ML solutions as many technology buyers often tell us that they use cloud service providers' capabilities for the deployment of AI/ML algorithms.

Is BIY a cyclical or structural trend?

According to research carried out for this report, there is no consensus on whether BIY is a cyclical or structural trend in the industry.

Although everyone recognised the increasing propensity of buyers to build technology by themselves, some highlighted how this may be just a cyclical trend destined to end when the industry becomes more accustomed to the changing business dynamics. Others pointed out that it is a more structural shift in the relationships between suppliers and buyers.

As often highlighted in this chapter, the only certain thing is the increased collaboration between buyers and suppliers, which provides opportunities for the latter.

Opportunities for media technology suppliers

BIY is generally disliked by both technology buyers and suppliers. In fact, most buyers would prefer focusing their resources on their core business of creating and publishing content while most suppliers see BIY as detrimental to their businesses.

As noted above, buyers remain focused on the frontend of technology solutions, which provides suppliers the opportunity to design offerings that allow users to build customized frontends. Many suppliers highlighted the need to do so and be open through APIs that enable further customization by their customers on the frontend.

Another reason behind BIY is the move to flexible payment models. As evidenced **in our previous chapter**, most buyers highlighted this as a strategic objective for their organizations. Suppliers that understand this, providing consumption-based options or owning some of the risk inherent to the launch of new platforms, particularly in project-based work, may find themselves to be more likely to win customers in the future. A further discussion of some of these financial models is again **provided in the previous chapter**.

In terms of speed of deployment, the new demands require customers to launch new platforms in weeks and not months, which in turn forces vendors to live up to these expectations, always being transparent on what they can achieve in specific timelines.

Also, as evidenced **in the previous chapter**, the demand for business consultation by customers is increasing, even in BIY projects, which may provide vendors the opportunity to offer these services.

Generally, suppliers should be very flexible when evaluating customer requirements and collaborative in their approach, should their customers want to develop things they cannot offer.

Media Technology Business Transformation

The Cloud Ecosystem

Collaborative technology models are increasingly being developed in cloud-based environments. IABM research shows that broadcast and media organizations are increasingly shifting their operations to the cloud. This has major implications for the supply-side of the industry. Buyers are in fact building deeper and more collaborative relationships with cloud service providers as well as with smaller media technology specialists providing services on top of their platforms. These smaller media technology suppliers have relationships with their customers, their cloud service providers and other media specialists in a dynamic ecosystem.

This cloud ecosystem is becoming very intricate, almost like a social network, as illustrated in the figure below. The center of the network is the cloud service provider which provides the platform on which specialist media services are delivered but also provides media services itself. Technology users may use different services, cloud service providers' and media technology specialists', depending on the use case and what they are trying to achieve. They may even develop solutions in collaboration with other users, as shown on the right-hand side of the diagram below.


The Cloud Ecosystem
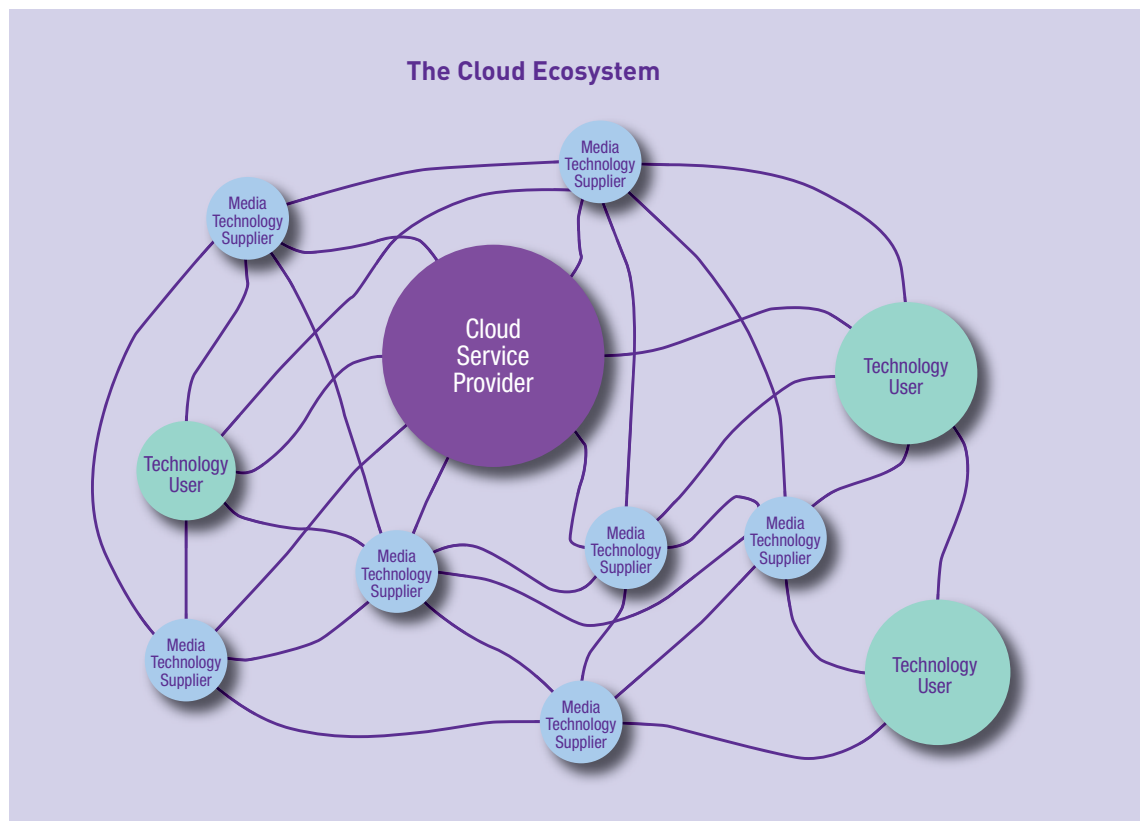
Source: IABM

The cloud ecosystem is full of opportunities but still presents some challenges. We analyze both next.

Buyers' cloud adoption is rising

IABM data shows that cloud adoption in the broadcast and media industry has been rising significantly in the last two years. The chart below shows that adoption has experienced ups and down between 2015 and 2017 but rose significantly up to 47% between 2018 and 2019.

Cloud Adoption Tracker, 2014-2019
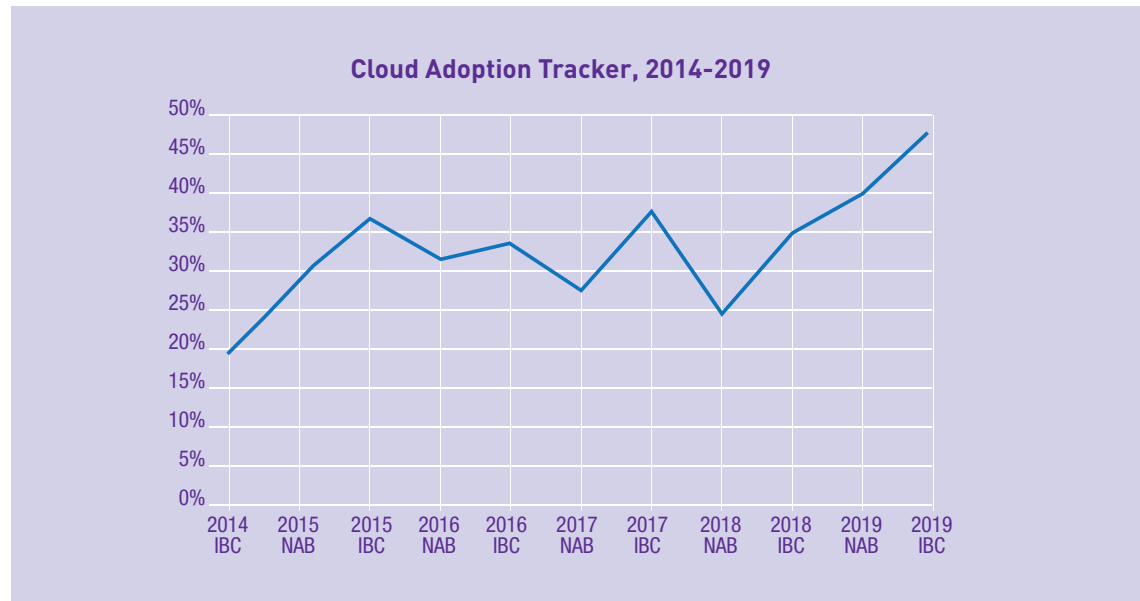
Source: IABM

According to IABM data, cloud adoption is focusing on the Manage and Publish links of the **BaM Content Chain®**. Readers that would like to explore more cloud-related statistics, including cloud deployment models, pain points, adoption constraints and improvements, can check our **Buying Trends Report**.

Broadcast and media organizations are moving workflows to the cloud for a variety of reasons, but most notably for the industry dynamics cited earlier in this report. Technology buyers want flexible and collaborative technology business models as well as needing to dramatically reduce the time-to-market of their services. Cloud technology is helping them do exactly that although different broadcast and media organizations are at different stages of the transition to cloud.

We have found that large and developed organizations – consistent with our **buyer segmentation** – are much more likely to have invested in cloud services. These organizations have also invested in cloud skills which, **as mentioned elsewhere in this chapter**, are in demand and more expensive than traditional broadcast skills.

The rising adoption of cloud technology has obvious implications for the supply-side of the industry as suppliers are required to enter the cloud ecosystem.

Supply-side partnerships with cloud providers are rising

It is no surprise that partnerships between media technology suppliers and cloud service providers are rising. This is evident from the growth of cloud service providers' pavilions at exhibitions. We looked at supply-side partnerships with major cloud providers using the **BaM Content Chain®** and a dataset of about 120 technology vendors to understand the focus of these partnerships. Most partnerships

announced since NAB Show 2018 have focused on Manage (26%) and Publish (24%), followed by Monetize (14%). This is in line with **IABM data** according to which Manage and Publish are the most popular deployment areas for cloud technology. The focus on Manage and Publish can be traced back to the need to streamline content management and publication solutions for direct-to-consumer offerings. In our dataset, vendors' partnerships with AWS accounted for over 70% of the total. The chart below shows the distribution of partnerships between media technology suppliers and the major cloud service providers – AWS, Google Cloud Platform and Microsoft Azure – by supply chain block.

Partnership between media technology suppliers and cloud service providers by BaM Content Chain® Block (2018-2019)
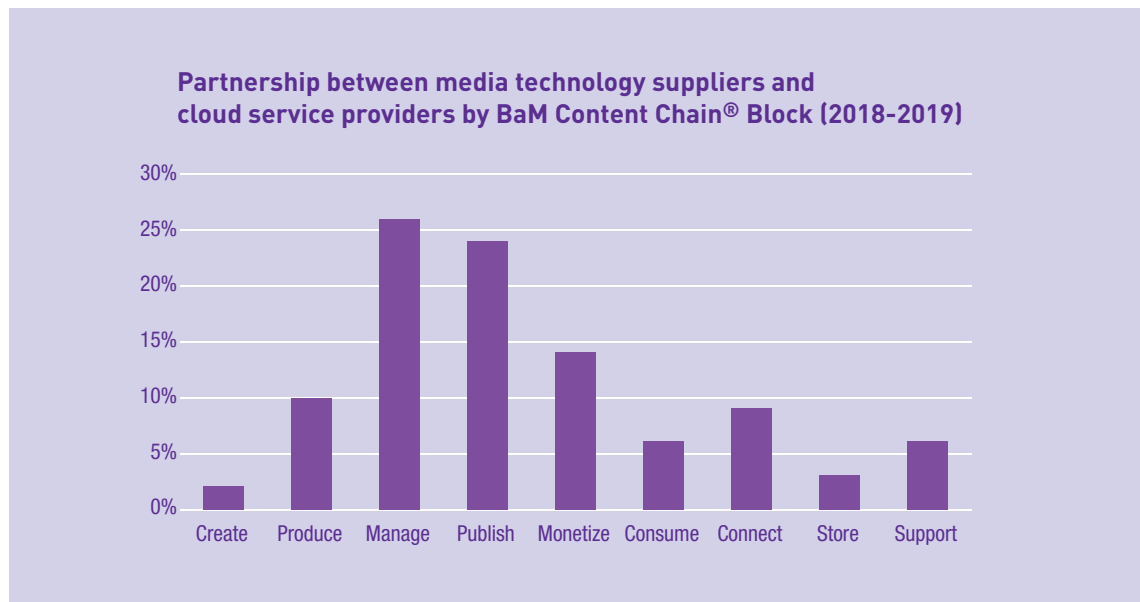
Source: IABM

Co-development projects with buyers are rising

As shown previously, increasing demand for cloud technology has resulted in an exponential rise in partnerships between specialist media technology suppliers and large cloud service providers to enable best-of-breed workflows in the cloud. Partnerships and co-development among suppliers and buyers are also proliferating to allow interoperability of different technology solutions and to address the new problems posed by digital offerings. As highlighted at the **start of this chapter**, relationships between technology suppliers and buyers are moving from transactions to long-term partnerships, in which suppliers are increasingly co-developing solutions with their customers and other suppliers. Also, this is in line with our **previous section on BIY trends**.

When looking at how deployments based on collaboration have developed among technology suppliers and buyers, it is important to note that many deployments have focused on Manage – this is in line with our previous findings on supply-side partnerships. The focus of these on Manage can again be explained by the shift towards direct-to-consumer offerings, which has translated into a need for more efficient content management. The table on the right shows different co-development projects and supply-side partnerships submitted for the IABM Collaboration Awards in 2017.

End-user(s)	Vendor(s)	Cloud partner(s)	BaM Content Chain® block	Product category	Project outcome
Honeycomb TV	Telestream, Signiant, Screen MediaMate, IBM Aspera	AWS	**Manage**	Content & Workflow Management, Content Preparation	Cloud-based content management platform for workflow automation (e.g. orchestration, transcoding, QC)
Discovery	Evertz	AWS	**Manage**, Publish	Content & Workflow Management, Linear Playout Systems/Services	Creation of a fully virtualized, scalable linear transmission and MAM solution for Discovery's US Networks when transitioning to a public cloud
FIA Formula E/Aurora Media Worldwide	Wazee Digital, BASE Media Cloud, IBM Aspera	AWS, BASE Media Cloud	Produce, **Manage**, Publish, Connect, Store	Post-Production Software/VFX & Graphics, Content & Workflow Management File & Object Delivery, Cloud Storage	A cloud solution for uploading, searching, playing, delivering and storing FIA Formula E's content to make it instantly accessible during and after live race events
Fox, Discovery, Turner	SDVI Rally	AWS	**Manage**, Connect	Content Preparation/Service, File & Object Delivery	A shared cloud-based SaaS platform for media supply chain automation/optimization to maximize asset utilization and efficiency
The Futore Group	Ross Video		Produce	VFX & Graphics, Post-Production Services	A virtual studio rendering platform called Frontier, providing VXF (VR/AR) features
Anomaly	IBM Aspera	IBM	Produce, **Manage**, Connect	Post-Production Software, Content Preparation, File & Object Delivery	A collaboration, scalable digital asset management system for browse, transfer, sync/exchange large media files store in the cloud
Cologne Broadcasting Centre (of Mediengruppe RTL Deutschland), infoNetwork	Arvato Systems	AWS, Google Cloud platform, Microsoft	Produce, **Manage**	Post-Production Software, Data & Metadata Management	A cross-platform/central hub to search, access, collect and process content from diverse sources (e.g newsfeeds, social media, internal/external archive, MAM systems)
Orange Prestations TV (OPTV)	Cantemo		**Manage**, Store	Content & Workflow Management, Data & Metadata Management, Hybrid Storage	Integration of Canterno Portal MAM solution and Object Matrix's digital content governance platform MatrixStore to make OPTV's content searchable and workflows more efficient
NEP Australia	Ross Video		Content	Video Interfacing & Conversion	Integration of Ross Video's Newt IP signal converters to NEP's new all IP-enabling production infrastructure based on SMPTE ST-2110 standard, enabling signal conversion with software defined production
Talk Talk Kids TV Remote	Omni/Remotes		Support	Access	An access control solution to prevent children from leaving the safe/secure media environment without adult intervention via the master remote
Sky News (NOC) / Sky Studios Sports and Entertainment (MCR)	TAG, Techex		Support	Video Monitoring	Integration of a 2022-6/7 multilever (on COTS hardware) monitoring system to Sky's News, Sports and Entertainment units
Reliance Jio Infocomm	ACCESS		**Manage**, Publish Monetize, Consume	Content Services, Distribution & Re-distribution, Data Analytics, Apps & Platforms	A multiscreen distribution platform with a multiscreen management solutions enabling access/analytics of multiple content sources from the local catalogue, social media, viewers' personal content and other devices
Tiledmedia, Sky	Ericsson Media Solutions		Produce, Consume Connect	VFX & Graphics, UI & UX,Inter-Facility Connectivity	A distribution platform for 360-degree content synchronised to a 4K broadcast experience to mobile and VR devices
Eutelsat	V-Nova		Connect	Inter-Facility Connectivity	A HD studio-quality video contribution solution for satellite delivery
TRACE (TracePlay)	Simplestream	AWS	Produce, **Manage**, Publish	Editing and Finishing, Data & Metadata Management, Content Preparation, Content Protection & Encryption	A cloud-based entertainment SVOD/live TV/radio service (TracePlay) enabling real-time video editing, metadata management, content ingest, transcoding, delivery, user rights
National Women's Soccer League (NWSL), A+E Networks	Simplestream, NWSL Media		Produce, **Manage**	Editing and Finishing, Data & Metadata Management	A free, interactive multiscreen streaming platform with a MAM solution enabling metadata management, encoding, image management
VICE Media	Primestream, Tata Communications	Tata Communications Cloud Storage	Produce, **Manage**, Publish, Connect, Store	Post-Production Software, Data & Metadata Management, Distribution & Re-distribution, Inter-Facility Connectivity, Cloud Storage	A cloud-based, on-premise platform for global asset management for archiving. content contribution, distribution, production

Source: IABM

Media Technology Business Transformation

In 2017, **Honeycomb TV**, a London-based digital delivery service provider, collaborated with a range of technology vendors – Telestream, Signiant, ScreenMedia and Aspera – to co-develop a cloud-based content management platform to automate its workflows. In the project, **Telestream** supplied its technology for transcoding and workflow orchestration, a video player for manual reviews of critical content and a quality control system.

In the same year, **Evertz** helped Discovery's US Networks move its live playout infrastructure to the public cloud. Evertz's solution ensured that the system automated routing to the cloud-based OvertureRT-LIVE system to manage different scenarios with multiple live events. This enabled Discovery to significantly lower capital expenditure and reduce total cost of ownership. The collaborative design of the solution enabled Discovery to dynamically scale its operations and to rapidly spin up/down channels decreasing both their time to market and time to revenue.

VICE Media partnered with Primestream and Tata Communications in 2017 to build up an integrated platform to produce, manage, distribute and archive its global media assets. In the project, all of VICE Media's content was migrated into **Primestream's Xchange MAM solution**. This enabled VICE Media's UK production team to start registering assets with metadata into the MAM system from camera cards and various other sources. Source material was then archived into **Tata Communications Cloud Storage** via Video Connect Network. The co-developed solution helped VICE Media to grow its archive significantly, while its assets become more discoverable and protected.

These partnerships are illustrative of buyers' need to involve different suppliers in the development of new complex solutions that are in line with changing market dynamics.

Cloud service providers' investment in the media industry is rising

Cloud service providers' investment in the media industry is rising. In the last few years, major cloud service providers' media-specific capabilities have significantly grown and now cover content creation, production, content management and distribution. The growth of cloud service providers' media-specific offerings has been both organic and inorganic and has been consistent with broadcast and media organizations' increasing demand for cloud services. Moreover, cloud service providers' knowledge and technology related to consumer-facing interfaces is appealing for many buyers transitioning towards direct-to-consumer offerings.

Accordingly, cloud service providers now highlight their role as facilitators within the growing media cloud ecosystem. Not only do they provide the platform on top of which media specialists can offer their own solutions, but they have also entered direct partnerships with buyers. Major cloud service providers such as AWS, Google Cloud and Microsoft Azure have become strategic providers of a wide range of services in the broadcast and media industry. More recently, the development of AI/ML offerings has represented a differentiator for cloud service providers as the sector increasingly adopts this technology. According to IABM data, most buyers plan to deploy AI/ML using cloud service providers' functionalities; therefore, this is an important area of future development.

When looking at the top three cloud service providers' – AWS, Google Cloud and Microsoft Azure – media-specific capabilities, AWS and Google Cloud are already offering solutions throughout the **BaM Content Chain®**. It is important to note that cloud service providers have significantly augmented their media-specific capabilities in Create, Produce and Manage compared to the past, also thanks to acquisitions. In September 2015, AWS acquired Elemental Technologies, which enabled AWS to integrate Elemental's software-defined video solutions for multiscreen content delivery with its AWS Cloud platform. In July 2016, Google announced that it had acquired **Anvato**, a platform for encoding, editing, publishing and distribution video across different platforms. Since then, all three major cloud service providers have further developed their own media capabilities. It is important to note that cloud service providers offer several tools and capabilities that are not media-specific, but which are widely

used by media technology buyers. For example, Amazon SageMaker, Amazon Transcribe or Amazon CloudFront are general solutions used in different industries, including broadcast and media. The table below provides a comparison of media-focused services offered by the three major cloud service providers in six content chain segments, from Create to Consume.

	CREATE	PRODUCE	MANAGE
AWS Elemental Media Services	**AWS Kinesis Video Streams** — *Streaming video from connected devices to AWS for analytics/processing*	**AWS MediaLive** / **AWS MediaPackage** — *Ingesting, cloud editing, implementation of popular video features*	**AWS MediaConvert** — *File-based video transcoding format/compressing of VOD content*
Google Cloud Platform (GCP)		**GCP Anvato** — *Ingesting, cloud editing, automatic clips from live streams, integration with GlassValley/Avid*	**GCP Anvato** — *Live transcoding, archiving in the cloud*
Microsoft Azure Media Services		**Azure Live Broadcast/ Premium On-Demand** — *Ingesting, cloud editing, implementation of popular video features*	**Azure Video Indexer** — *Automatic extraction of metadata, close captioning, recommendations, automatic creation of clips, topic inferencing, acoustic events, speaker statistics, translations*

	PUBLISH	MONETIZE	CONSUME
AWS Elemental Media Services	**AWS MediaPackage** — *Packaging of incoming live/VOD video streams, encoding, DRM, delivery to output devices*	**AWS MediaTailor** — *Dynamic as insertion (DAI), targeted ads, viewer behaviour analytics (AI/ML)*	**AWS Kinesis Video Streams** — *Computer vision, video recognition, UX&UI optimization*
Google Cloud Platform (GCP)	**GCP Anvato Live to VOD Bridge** — *Broadcast integration, syndication, content delivery*	**GCP Anvato Real-Time Analytics** — *DAI, ad transcoding, ad sponsorships, hyper-personalization (AI/ML)*	**GCP Anvato** — *Close captioning, 360 degree video, adaptive bitrate technology for smooth playback, recommendations*
Microsoft Azure Media Services	**Azure Media Player** — *Live encoding/converting digital video/audio files, dynamic packaging*	**Azure Media Player** — *Video recognition, motion/emotion detection, (linear) ad insertion*	**Azure Media Analytics** — *Video recognition, motion/emotion detection, content moderation, video summarization*

Source: IABM

Media Technology Business Transformation

Recently, major cloud service providers have specifically introduced new, innovative features related to their media services in Manage. In March 2019, AWS announced that its Amazon Rekognition solution – an AI/ML video recognition platform – had been enriched with new face analysis enhancements and emotion detection. Some media companies have already adopted video recognition technology. For example, **NASCAR** uses services such as Amazon Rekognition, Amazon SageMaker and Amazon Transcribe to help streamline its content management processes – NASCAR moved 70 years of archival footage to the AWS cloud in June 2019. Microsoft's Azure Video Indexer – launched in May 2018 – has become an essential part of the Azure Media Services platform providing media technology buyers with an AI/ML metadata extraction service.

Consume is another supply chain block around which the major cloud service providers have been particularly active in building up their capabilities and deploying AI/ML solutions. This is in line with IABM research showing that Consume is becoming a more important investment area for buyers. These 'cognitive services' involving a wide range of analytics tools like AWS Azure Media Analytics and Google Cloud Platform's Anvato are increasingly used by buyers to personalize content discovery experience to each viewer.

In July 2019, the Finnish public broadcaster YLE and **Valossa**, a Finnish content intelligence firm that leverages AWS and Amazon EC2 GPU instances, piloted the world's first live game show judged by a cognitive AI. A group of celebrities ranging from members of Finnish parliament to comedians and athletes competed by telling corny jokes, while Valossa's visual AI tool was scrutinising facial expressions to calculate amusement from the faces of the contestants. The winner in maintaining a poker face throughout was – perhaps inevitably – a politician. The live show was streamed through YLE Areena streaming platform.
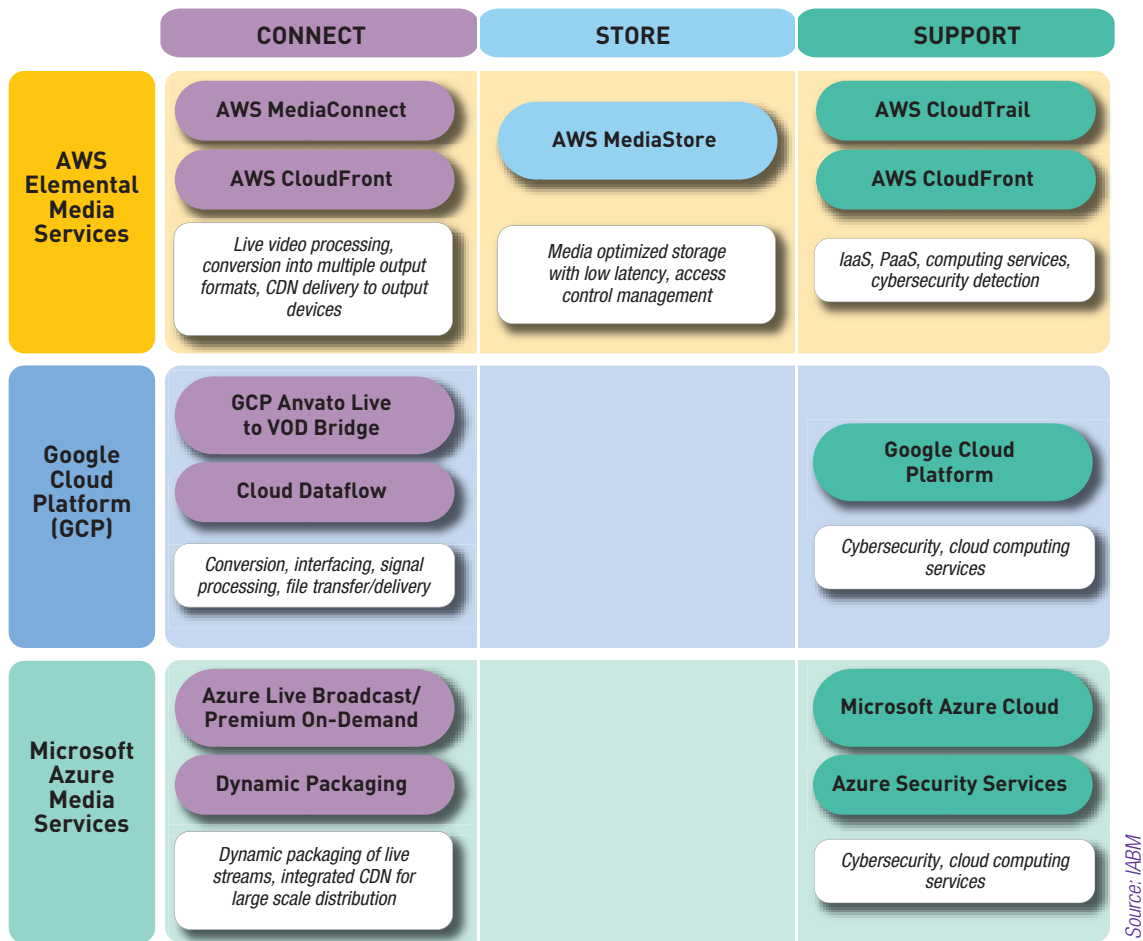
When it comes to Connect, all three major cloud service providers offer media-specific services for video processing, conversion and integrated CDN delivery to multiple platforms.

In Store, AWS MediaStore is a solution specifically optimized for media file storage. In addition, many buyers are already using Amazon's S3 and Glacier storage solutions for storing and archiving media assets. As buyers' investment in original content continues to increase rapidly, the need for moving files quickly to archives at a lower cost has become essential. As a result of this, major cloud service providers have started offering acceleration solutions to allow buyers to move their data into backup storage buckets during off hours to keep the network freed up when creative staff are at work. These acceleration solutions also address the network latency and congestion that typically occur when moving large data sets to/from cloud storage – being the key for disaster recovery as well.

The table on the right compares different services provided by AWS, Google Cloud and Microsoft Azure in Connect, Store and Support.

	CONNECT	STORE	SUPPORT
AWS Elemental Media Services	**AWS MediaConnect** / **AWS CloudFront** — *Live video processing, conversion into multiple output formats, CDN delivery to output devices*	**AWS MediaStore** — *Media optimized storage with low latency, access control management*	**AWS CloudTrail** / **AWS CloudFront** — *IaaS, PaaS, computing services, cybersecurity detection*
Google Cloud Platform (GCP)	**GCP Anvato Live to VOD Bridge** / **Cloud Dataflow** — *Conversion, interfacing, signal processing, file transfer/delivery*		**Google Cloud Platform** — *Cybersecurity, cloud computing services*
Microsoft Azure Media Services	**Azure Live Broadcast/ Premium On-Demand** / **Dynamic Packaging** — *Dynamic packaging of live streams, integrated CDN for large scale distribution*		**Microsoft Azure Cloud** / **Azure Security Services** — *Cybersecurity, cloud computing services*

Source: IABM

The partner ecosystems

The large cloud ecosystem is made up of small partner ecosystems consisting of media technology specialists that appeal to niche markets. Partner programs aim to give members access to business, technical and financial support and represent ecosystems in themselves. In fact, media technology suppliers highlighted that relationships between specialists in these smaller ecosystems are very important for knowledge sharing and customer recruitment.

From a knowledge sharing perspective, these ecosystems represent virtual clusters – these clusters become physical at industry exhibitions – that, like **business clusters**, stimulate innovation through sharing different skillsets and experiences.

From a customer recruitment perspective, companies in the same ecosystem may promote each other through 'word-of-mouth' as often their offerings complement each other. In the case of overlapping offerings, communication is key to avoid conflict within the ecosystem. Companies with offerings that complement each other can also collaborate on joint solutions with common customers.

At IBC 2019, AWS had 12 partners showcasing media-specific solutions on its stand (pictured below) and over 45 partners across the show floor.

Partner ecosystems are growing for cloud service providers across different verticals and represent an important development for them going forward.

Buyers' strong preference for multi-cloud provides challenges and opportunities

According to interviews carried out for this report, all buyers have a strong preference for multi-cloud workflows in order to avoid lock-in to one single cloud vendor and leverage best-of-breed solutions. Running operations on different providers' platforms enables buyers to compare costs and assess the performance offered by these providers. Also, this strategy allows buyers to divert traffic to another provider's cloud in case of a system failure. A multi-cloud infrastructure also provides a higher degree of storage independence, which is critical for many buyers who need to transfer large data volumes quickly. In terms of flexibility, a multi-cloud strategy allows buyers to take advantage of different capabilities and unique services of each cloud provider.

However, the lack of interface standards between different cloud providers creates silos, which makes it difficult to manage traffic and communication among heterogeneous cloud providers and to deploy several applications. Moreover, navigating the connectivity offered by different IaaS and SaaS providers can make managing the overall mix of multi-cloud resources very complex.

For buyers, the increased complexity of a multi-cloud environment can create a need for new technical staff and in-house skills to manage, monitor and maintain a multi-cloud infrastructure, when running operations on different service providers. Buyers may also feel that their vendor management burden increases significantly when entering a multi-cloud environment. Therefore, many buyers are increasingly interested in unified management solutions to control and optimize resources and service configurations across multiple providers.

According to interviews carried out for this report, most buyers highlighted that optimal multi-cloud workflows are not achievable today due to the cost of moving content between different cloud service providers' environments. The so-called egress charges represent a constraint to implementing multi-cloud workflows as suggested by IABM research. In fact, most cloud service providers do not charge anything for ingress but charge for egress. Egress pricing is complex and depends on factors such as location as well. In broadcast and media, egress charges may be substantial given the high data rates of content, particularly as the industry moves to immersive formats.

Most buyers are addressing this issue by using separate cloud service providers, side by side, for different sets of workflows (e.g. video and data-driven workflows). Most users are thus trying to avoid or at least minimize the impact of egress charges on their cost models. Most research participants

remarked that this approach may change as the cloud market becomes more saturated and integration may come to represent a tool for differentiation for cloud service providers.

Industry stakeholders such as cloud service providers and cloud-based suppliers have launched an initiative to try to address the issue of egress charges. In September 2018, a group of ten cloud and networking companies launched the Bandwidth Alliance; an initiative to discount or waive data transfer fees for shared customers through a common agreement. As of October 2019, the Bandwidth Alliance had nearly doubled the number of its members to 18 partners, including many of the major cloud service providers such as Google Cloud Platform (GCP), Microsoft Azure, IBM Cloud and Tencent Cloud.

Adopting multi-cloud can also expose end-users to the risk of volume pricing. This means that buyers may not be able to estimate the overall cloud cost, when workflows and multiple projects are spread across multiple platforms each having its own billing system and pricing model. As a result, end-users might end up paying a higher per-unit price for cloud infrastructure. Therefore, a careful ROI analysis is essential for formulating the overall multi-cloud budget. Some buyers have also set up internal teams to provide cloud cost analysis for specific applications and for overall multi-cloud usage.

As already mentioned above, another challenge – and a possible opportunity – highlighted in this report is the sheer complexity of multi-cloud management, including use cases such as orchestration, monitoring and billing, for example. Buyers are very interested in a unified approach in this and are looking into providers that offer tools to manage, monitor and orchestrate workflows in different cloud environments without having to use different portals that are specific to cloud vendors.

Even though buyers continue to build their own cloud solutions, developing cloud management platforms (CMP) in-house is very challenging due to the high complexity of multi-cloud environments. This has created demand for media-specific CMP solutions related to a wide range of workflows. As each cloud service provider utilizes different hardware and software security policies, mechanisms and methods, new CMP solutions are needed to mitigate increased risks related to data governance and security.

One of the first multi-cloud management platforms in the market was RightScale, which was established in 2007. In September 2018, RightScale was acquired by Flexera, a software asset management firm. Over the past six years, there has been a series of acquisitions targeting cloud management platform firms: RedHat acquired ManageIQ in 2012, while Cisco acquired another CMP firm, Cloupia. In 2013, Dell acquired Enstratius, whereas Oracle acquired Nimbula, a provider of CMP. The same year, CSC acquired ServiceMesh, another CMP firm. In 2014, Citrix acquired ScaleXtreme, a company running a CMP designed for multi-cloud environments. These acquisitions reflect rapidly increasing demand for unified cloud management solutions.

However, as modern cloud applications are built from containers and microservices, the focus of cloud management is gradually shifting from infrastructure-as-a-service (IaaS) to containers-as-a-service (CaaS), led by Kubernetes, an open-source management platform for containerized workloads and services. Google's Anthos – a Kubernetes-based suite of Google Cloud Platform components – is an interesting, recent development in multi-cloud management, because it allows end-users to run applications on-premise, in Google's public cloud as well as to manage workloads on third-party clouds such as Azure and AWS.

As already discussed above, billing and budgeting multi-cloud expenses, and more generally, the variety of consumption-based payment models, are still a challenge for most buyers with some looking at solutions to address this too. This has created business opportunities for vendors offering

multi-cloud orchestration and analytics solutions to control costs and monitor cloud spending. For example, **Morpheus** is a unified multi-cloud orchestration platform that connects developers to self-service infrastructure and offers cost comparisons between various cloud infrastructures and resources. Other multi-cloud management platforms offering cloud spend optimization and container management services are **Scalr** and **Embotics**.

The major cloud service providers also offer similar services. For example, Microsoft Azure Cost Management is a cloud spend monitoring application that helps end-users to monitor, allocate and optimize cloud costs for the Microsoft Azure, AWS and Google Cloud Platform. It also has a forecasting feature to support and plan cloud budgeting.

When it comes addressing buyers' concerns related to high data transfer fees (e.g. egress costs) and storage independence, new vendor technologies such as **Signiant's** cloud-based file transfer solutions have become increasingly important. These technologies allow buyers to choose different storage types for different use cases and to transfer content between them.

In February 2019, Google announced that it had acquired cloud migration start-up Alooma, whose data pipeline technology enables buyers to move their data from multiple sources into one data warehouse. According to Google, Alooma's expertise in both open-source and enterprise databases adds new migration capabilities within the Google Cloud Platform.

In September 2019, Microsoft acquired a cloud migration start-up, Movere. Its platform enables buyers to assess how data centre tools are used and then recommends the best options to move into the public cloud. Some media companies like 21st Century Fox are already using Movere's solution to plan and optimize their cloud migrations. Prior to the acquisition, Movere was certified as a Microsoft Gold Partner and an AWS Advance ISV Partner for Migration.

Media technology suppliers agreed with buyers' view on multi-cloud, highlighting the need for them to connect to multiple cloud service providers' platforms. Some of them also highlighted that multi-cloud integration may come at an extra cost today but may be implemented nonetheless due to customer preferences.

It is worth noting that the discussion on optimal multi-cloud management should also include private cloud and on-premise infrastructure, which are also often linked to separate tools for workflow management.

Methodology

This report is based on both qualitative and quantitative research.

Qualitative research was conducted through an inductive methodology. We had no preconceived hypothesis on the main trends affecting media technology business transformation.

We conducted structured, open-ended interviews and analyzed the patterns. 16 interviews were carried out for this report. A breakdown of research participants – by organization type – is given opposite:

Desk-based research was also carried out to deepen the analysis of some of the trends described above.

Quantitative research for this report includes IABM data on buying trends and financial performance as well as secondary research gathered from websites such as Glassdoor.

Breakdown of Open-Ended Qualitative Interviews

- Media technology buyers
- Media technology suppliers
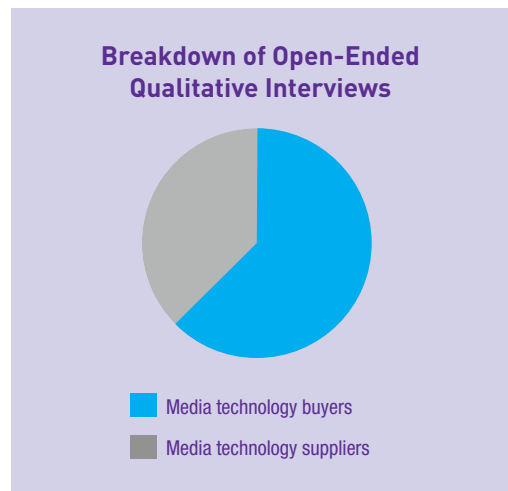
Source: IABM

Report Contribution

Some of the elements of these reports, including our maturity framework, are updated on a continuous basis. Please contact **biu@theiabm.org** if you want to contribute. Your contribution may take any form, from an email to an expert interview with one of our analysts.
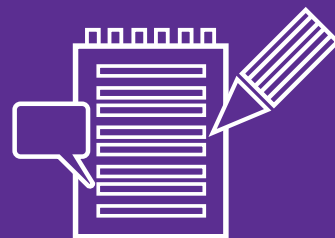
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