dpp®

Cloud Native Distribution

Akamai

Foreword

Content streaming in the 21st century is not for the faint-hearted. Viewers expect a first-class experience anytime, anywhere, and on any device — whether it's their phone, TV, tablet, set-top box, laptop, games console, or even their car. They demand nearly instant playback, fantastic audio and visual quality, and seamless performance.

For modern media enterprises, delivering this level of quality is no small feat. They must balance the complexities of massive catalogues, international rights, mounting egress costs, and fierce competition for attention and revenue. Providing peak streaming experiences while managing scale, controlling costs, and maintaining flexibility is an ever-evolving challenge.

With operational expenses on the rise, businesses are rethinking how and where they manage their cloud workloads while enhancing performance to meet consumer demand. In 2025, cost-conscious cloud strategies will be paramount — optimising storage, processing, delivery, and infrastructure to reduce costs.

Artificial intelligence is also reshaping the game. No longer just a buzzword, AI is now a strategic priority and will be essential for creating a competitive edge in the industry. AI dominated discussions in the workshops that led to this report, driving transformative changes in automated content tagging, metadata enrichment, targeted advertising, intelligent scheduling, and personalised recommendations.

However, AI's insatiable hunger for data presents a new set of challenges. High egress costs and proprietary AI technologies from traditional cloud providers are major barriers to innovation. Increasingly, companies are shifting towards low-cost and open cloud models to meet the demands of AI workloads and large-scale data processing. Distributed Cloud Computing is emerging as a powerful solution, processing data closer to users to enhance performance and reduce latency. Additionally, companies are exploring open-source AI platforms and models to maintain control and reduce dependency on proprietary services.

Akamai's full-stack cloud solutions tackle these challenges head-on. As the world's most distributed cloud platform, Akamai empowers media companies to store and process vast video libraries, scale effortlessly to meet surging demand, and optimise cloud investments with transparent pricing and lower egress costs. Leveraging high-performance GPUs and VPUs optimised for transcoding and content processing, Akamai enables media companies to harness the power of AI without breaking the bank.

Akamai's integrated video workflow capabilities, along with its partner network, allow customers to tailor media experiences to their audiences' needs and business objectives. Akamai helps eliminate vendor lock-in by supporting multi-cloud architectures, allowing media companies to use the right mix of clouds for their evolving workloads.

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The content for *Cloud Native Distribution* has been formed following consultation with subject matter experts from across the industry. We are grateful to all the contributors for their time and consideration, which was provided through a series of online workshops and a survey.

The changing distribution landscape is illustrated using data throughout this report. A broad range of sources were used, and special thanks go to **Hub Entertainment Research** which partnered with us to provide many of the data points.

It should be noted that the views expressed in this report are formed from the DPP's distillation of the survey responses and workshop discussions, and it should not be assumed that all contributors share all the views presented here.

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Introduction

The complexity of video distribution has been rising almost since the moment television was first invented. Linear broadcasting grew to incorporate over-the-air transmission, satellite, cable, and IPTV. Channel choices grew into the hundreds. Then came video on the internet, first popularised by on-demand (VOD) and then linear and live.

And that's just the business-to-consumer (B2C) aspects of distribution. Content creators, rights owners, and distributors also make up a complex web of business-to-business (B2B) distribution deals, which often see a media company's shows become available on its own channels, others' channels, streaming platforms, and more.

That's why media organisations have increasingly been seeking a more agile, responsive, and flexible approach to their media supply chain, from content creation through to consumption.

Media companies need more agile approaches to content distribution

In a world of challenging economics and plateauing subscriber numbers, it is increasingly crucial to have the ability to test new business models, explore new forms of viewing and engagement, and react quickly to market changes. For these reasons, growing numbers of media companies have moved to cloud native architectures for content distribution.

Even those that aren't building in the cloud are often seeking alternative approaches to achieve the same scalability, flexibility, and resilience promised by cloud native design. So in this report, we explore the recent and upcoming changes - and the key business challenges - across all aspects of content distribution.

In the first chapter, we present data about the current overarching trends in distribution and viewing behaviour. In chapter two, we explore the move to the cloud. In chapter three, we break down the broad topic of distribution into ten areas, to identify the areas of greatest change. The words of some of our expert contributors are provided as quotes throughout.

This report takes a broad view of distribution, from managing a catalogue of media and rights, to delivering it to partners and viewers, and managing advertising and subscribers. We'll see that each area poses unique challenges and opportunities.

Executive Summary

1 Media owners need agile distribution

Streaming is now the core of the media business, reaching 94% of US viewers and becoming the primary way to watch content for many.

As consumer behaviours change and platforms rise, fall, and evolve, content owners must be more responsive to different distribution channels and models.

2 D2C and B2B require new skills and capabilities

Direct to consumer streaming has required media companies to develop new capabilities such as subscriber management, billing, and deeper analytics.

Syndication and aggregation are gaining importance; strong B2B partnerships are required, with deeper integrations and data sharing to provide a seamless user experience across platforms.

3 Technology decisions are driven by economics

The cloud is mature for all aspects of distribution. However, 'lift and shift' architectures may not achieve flexibility and scalability, and often cost more. Cloud native solutions deliver greater economic benefits.

Some still face cost challenges related to streaming large live events. New hybrid solutions combine unicast client delivery with a multicast or satellite back-end to reduce costs.

4 Advertising is growing in volume and sophistication

As subscription fatigue bites and streamers look to increase profits, there will be more advertising supported streaming. But in some areas, supply of inventory is outstripping demand.

Media companies are therefore fighting to increase CPMs through innovative advertising formats, behaviour attribution, and above all better targeting.

5 We are entering the age of data and AI

Data is a critical challenge, from data silos and outdated systems to inconsistencies and mismatched identifiers. Inadequate tools and manual processes must be updated.

AI will help interpret contracts, match data across platforms, and generate actionable insights from huge volumes of data. But it will rely on robust data collection and management which are not yet widespread.

1

Distribution disruption

Key Takeaways

Streaming is now the mainstream, reaching 94% of viewers in the US - while almost 30% only use streaming

Connected TVs are the new home of content consumption, becoming the centre of content discovery for many consumers

Digital video advertising already dwarfs TV advertising, and we are approaching the tipping point for streaming TV revenue to overtake traditional pay TV

The next wave of change will likely centre around content aggregation and increased advertising, as viewers seek simplicity and value

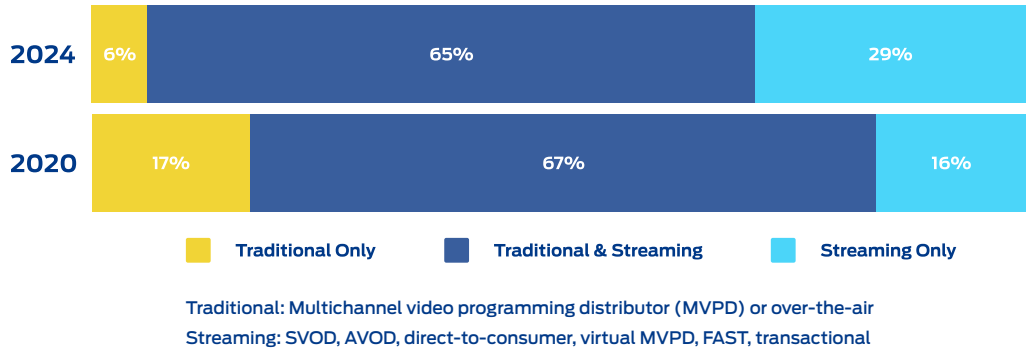
To keep up with the ongoing change, media companies need an agile and responsive approach to content distribution

It's no secret that online viewing is rising as traditional linear (by which we mean over-the-air broadcast, cable, and satellite) are declining. The demise of traditional linear has been frequently overstated, but the trend is nevertheless clear.

In the United States, almost a third now watch streaming only, while well over 90% of viewers use streaming services for at least some of their viewing.

94% of viewers now watch streaming video

Which TV Service do you subscribe to?



Traditional: Multichannel video programming distributor (MVPD) or over-the-air
Streaming: SVOD, AVOD, direct-to-consumer, virtual MVPD, FAST, transactional

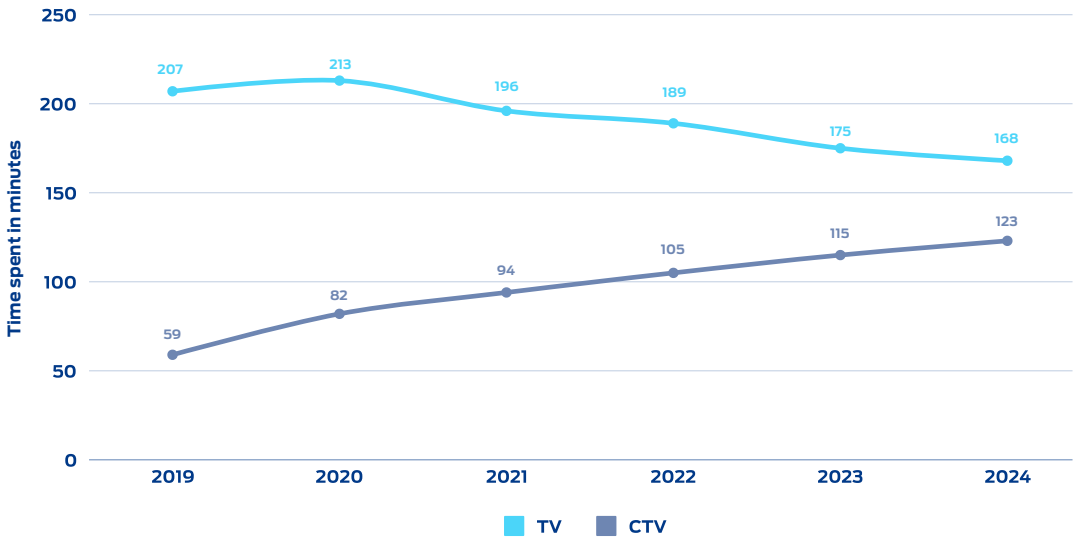
Source: Hub Entertainment Research.

1

Television remains relevant

The shift to online viewing does not mean the end of television, however. The DPP's reporting on consumer and technology trends, most recently *CES 2025: What technology trends mean for the media industry*, illustrates the fact that the television as a device is perennially popular. However the method by which video is delivered to the TV set is changing rapidly. In the USA, penetration of connected televisions (CTVs) reached 88% in 2023[1]. And in 2024, the average daily time spent watching apps on CTVs reached almost 75% of the average daily time spent watching traditional TV.

Average daily time spent watching TV and connected TV in the United States



Source: Statista. Data sources: Media Play News; eMarketer.

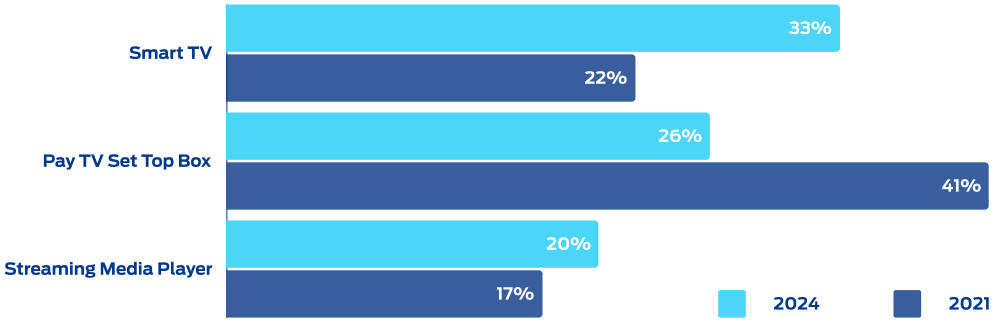
Just as the TV set remains important, so do linear channels. But once again, the delivery of channels is moving online, with free advertising-supported streaming television (FAST) channels now reaching around two thirds of Americans[2] - up from less than half just three years earlier.

These trends are only likely to increase, driven by changes in viewers' habits. The CTV home screen is increasingly the 'home base' for finding content to watch, while the traditional set-top box is slowly being relegated.

[1] *Source: Leichtman Research Group and Digital TV News.* [2] *Source: Hub Entertainment Research.*

1

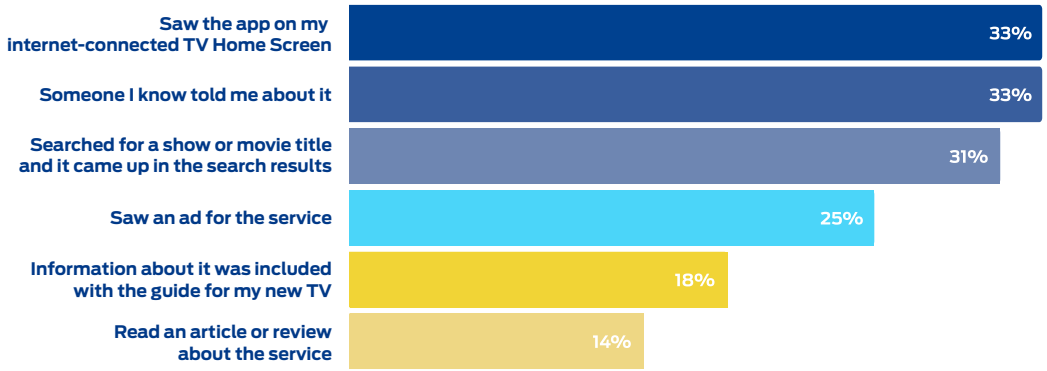
What's the first thing you turn on when you want to watch TV?



Source: Hub Entertainment Research.

Similarly, FAST channels are discovered through the CTV home screen or search functions.

How people find out about FAST services



Source: Hub Entertainment Research & Video Elephant.

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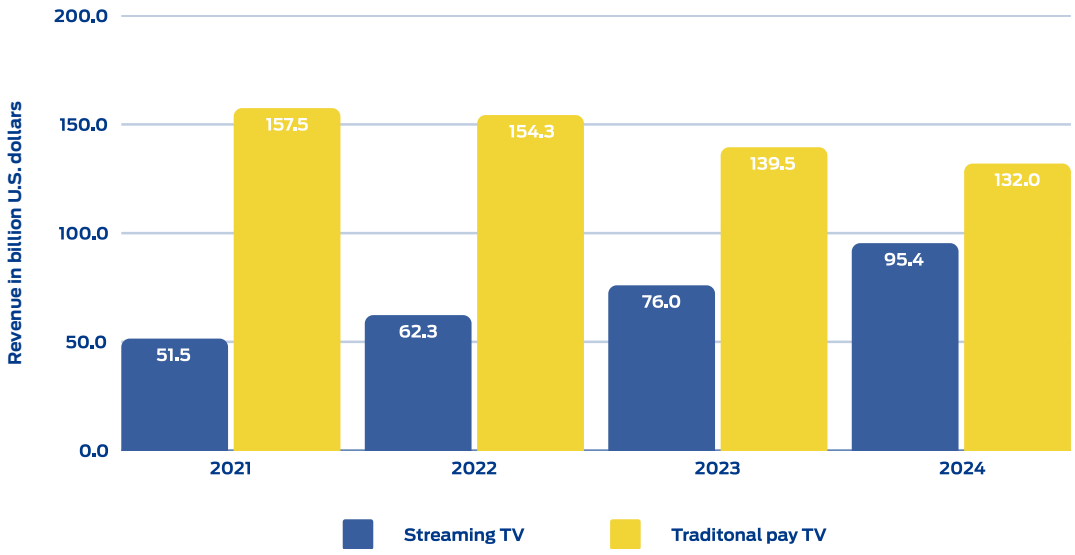
Follow the money

Unsurprisingly, revenue trends align well with viewing trends, as streaming revenues now approach three quarters of those generated from traditional pay TV.

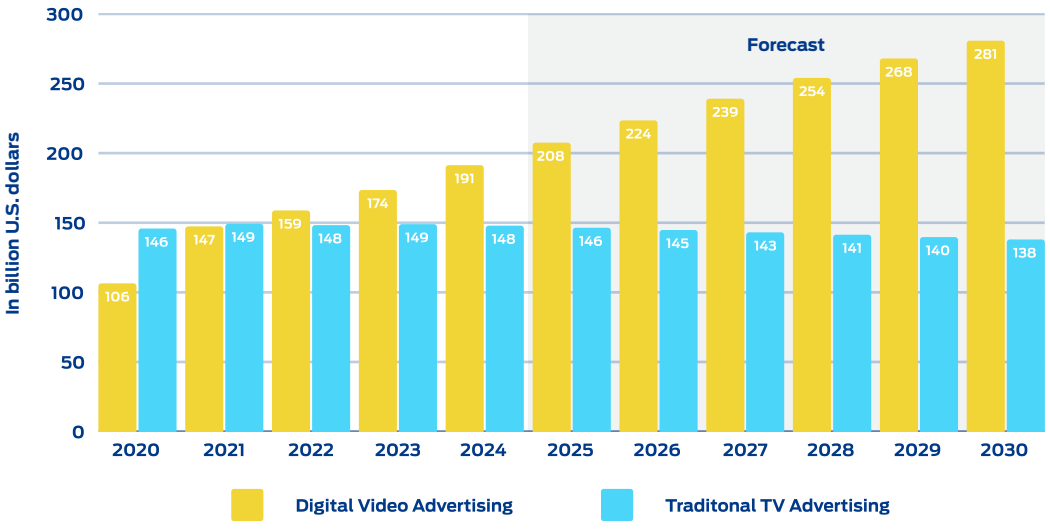
Revenue of traditional pay TV and video streaming in the United States



Source: Statista. Data sources: Digital Entertainment Group; eMarketer; Leichtman Research Group; nScreenMedia.

And although the decline in worldwide TV advertising revenue is gradual, the segment is now dwarfed by the scale of digital video advertising.

Revenue in the TV & video advertising market for different segments worldwide



Source: Statista. Data sources: Statista Market Insights.

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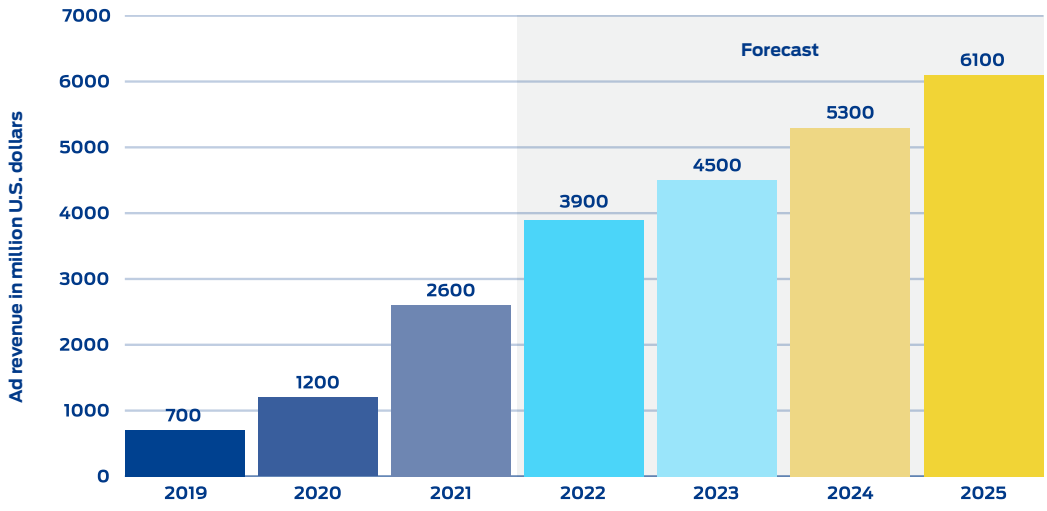
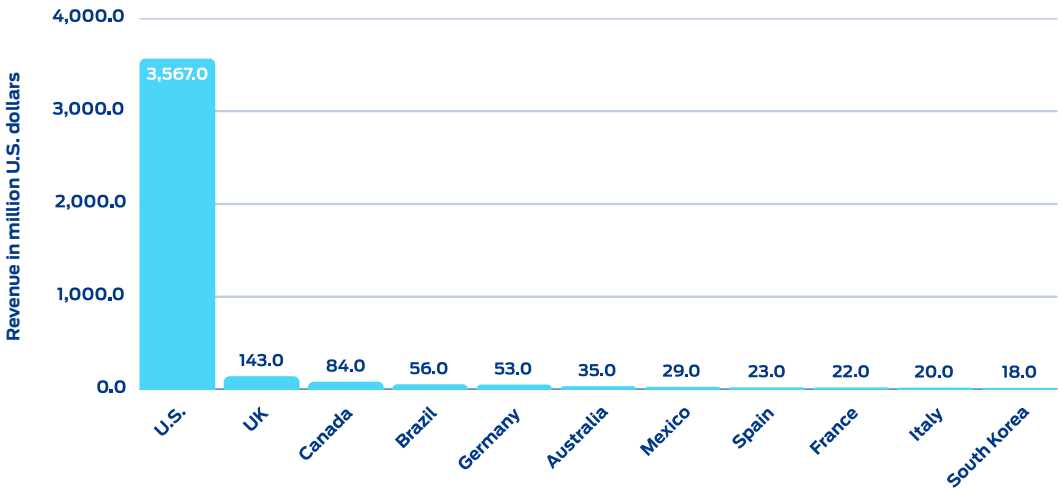
A bright spot is FAST, where advertising revenue is rising steadily. However, it is largely a US phenomenon, with US FAST revenues in 2022 totalling over 7x more than the next ten countries combined.

Advertising revenue of FAST services in the United States



Source: Variety

Revenue of FAST channels worldwide in 2022



Source: Statista. Data Sources: Omdia.

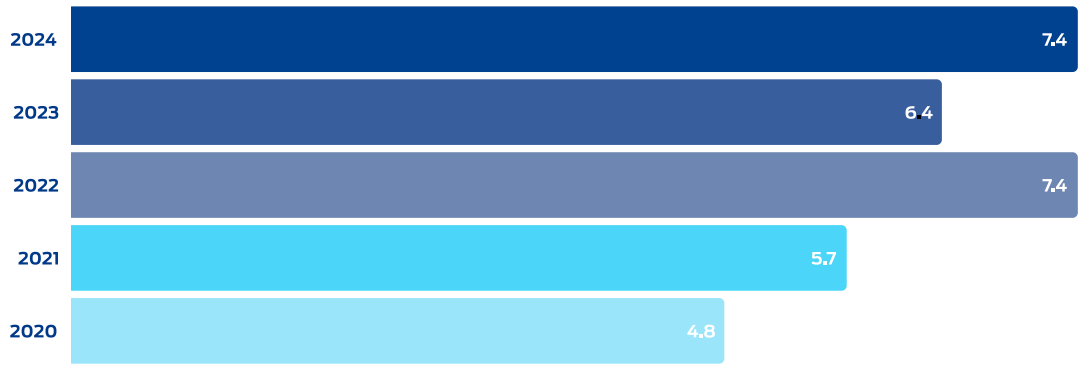
1

Aggregation and advertising

For all the change that has occurred, there is much still to come. Consumer attitudes give a glimpse of what could be ahead.

As the distribution landscape has become more complex, so has the user experience of finding and navigating content. Viewers in the US now have an average of over seven different TV services.

Mean number of TV services, per viewer

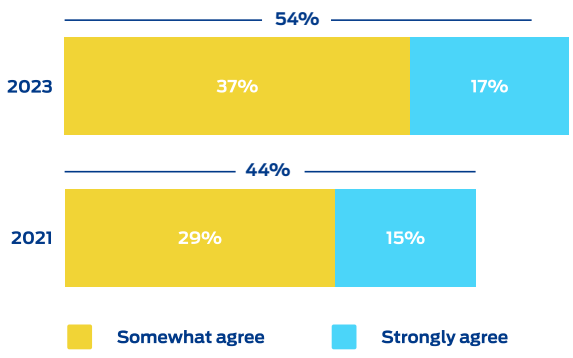


Calculation includes MVPD, VWVPD, SVOD, free-with-ads, over-the-air and transactional sources

Source: Hub Entertainment Research.

While users value choice, they are also increasingly frustrated, with over half now reporting that they find it difficult to know where to start looking for a show to watch. The result is likely to be the increasing importance of aggregated content interfaces such as the CTV home screen.

"There are so many shows to choose from, it's hard to know where to start"

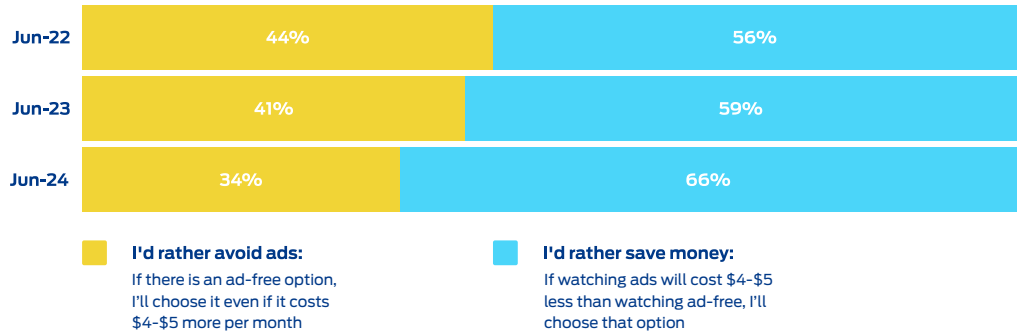


Source: Hub Entertainment Research.

1

With so many services and subscriptions - many of which are now raising prices - consumers are also turning more readily to advertising to help reduce costs. This means that content companies are working hard to deploy the best advertising technology and workflows, and creating new deals to distribute content on advertising supported platforms.

Which statement comes closest to how you feel about ads?



Question: Which of the following statements comes closest to how you feel about ads?

Source: Hub Entertainment Research.

The technology to keep up

With so much change in recent years – and so much potentially still to come – the need for agile distribution operations could not be more clear.

The need for agile distribution could not be more clear

Agile operations are enabled by agile technology. In the next chapter, we explore how media companies' distribution chains have changed, and where the biggest challenges remain.

2

Distributing from the cloud

Key Takeaways

Content distribution in the cloud is mature, so choices between cloud and on-premise will be driven by operational or cost considerations.

As distribution has become more fragmented and changeable, the opex economic model of the cloud could be its biggest advantage

Excitement about AI leads our experts to predict greater change in the next five years than we have experienced in the previous five years

However, data collection, management, and exploitation are still problematic - and getting good data could be the key to future AI success

The market change explored in the last chapter is the driving force behind the technology change that has been taking place.

> **With all this change, there's a pivot point in technology. Media companies are consolidating, increasing efficiency, and upgrading their tech stack.**

Market change has created a pivot point for technology

Streaming and broadcasting often have different technological start points, however. Streaming platforms have commonly been built in the cloud from their inception, but as broadcasters renew their technology for traditional linear broadcasting, they are often also moving this to the cloud.

> **Linear revenue is flatlining - it's no longer decreasing the way it was. So media companies have to update their systems, which some have been holding off on doing for years. We're getting to a crunch point where those systems are ageing to the point of needing to be replaced. And when you do that, do you do it in the traditional way, or do you move it into the cloud?**

Almost all elements of content distribution are now feasible in the cloud. Most areas are mature though of course challenges and opportunities remain.

2

> **We have a gap with cloud providers who are currently unable to deliver broadcast-specific capabilities (around latency, synchronisation and availability) at a viable cost point. This is a real opportunity for differentiation, but it requires cloud providers, vendors and broadcasters to collaborate.**

Nevertheless, a majority of contributors supported the view that new technology installations would be cloud by default. Some were especially direct.

> **Any self respecting system has to be cloud based.**

The economics of cloud

The biggest reason to move to the cloud - and also the biggest challenge - is economics. As content consumption fragments across platforms, it becomes more useful for businesses to be able to align costs to each platform, channel, or even show, in order to understand profitability. This means managing the costs of distribution as operational expenditure (opex) rather than the capital expenditure (Capex) that underpinned traditional broadcast infrastructures.

> **If you can turn the costs variable, you are going to be able to correlate them better with the revenues.**

The fundamental benefit of cloud is not technology, but economics

> **I am absolutely persuaded that the future is in creating margins by making costs visible, and lowering the opex. And that is fundamentally a benefit of cloud - not cloud technology, but cloud economics.**

However, the long history of capex spending creates an inertia that can be difficult for organisations to overcome - especially those that continue to maintain traditional broadcast infrastructures.

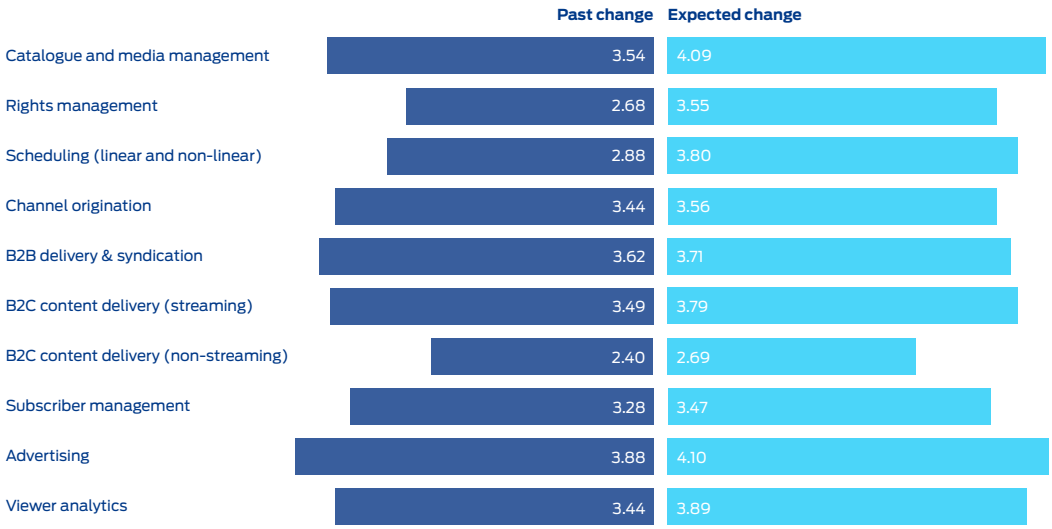
> **As broadcasters, we're accustomed to high fixed costs, long term contracts, and a reasonably reliable source of income against that. That's what all of our business decision making is structured to work with. We're going to have to adapt our decision making, not just our technology, and that takes some getting used to.**

2

“We're going to have to adapt our decision making, not just our technology”

Increasing change

As part of the analysis for this report, we asked the contributors to complete an online survey. We divided the distribution chain into 10 distinct capabilities, then asked about the amount of change experienced in the last five years, and the amount of change expected in the next five years. In each case, these were measured subjectively on a simple 1-5 scale, with five representing the most change. The results were enlightening.



Detailed analysis of these scores is presented in the next chapter. But the first thing one might notice is that, in every area, the expected future change is greater than the perceived past change.

Expected future change is greater than perceived past change

Could this simply be an artefact of human perception? That past change begins to feel self-evident while future change stimulates both excitement and trepidation? Perhaps. But in the workshop sessions, some contributors were adamant that the coming change really will be greater than that which we’ve experienced before.

> **“I'm quite confident that there will be a big change in the future, more than we've seen in the past - mainly because of AI.**

2

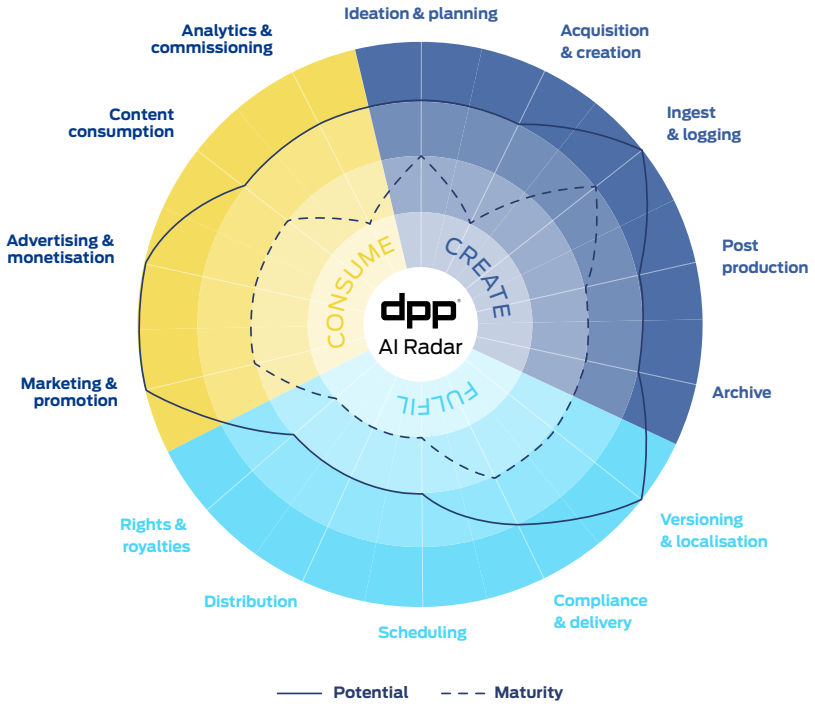
AI in distribution

It is perhaps inevitable that a range of technology and operational specialists will gravitate towards discussing new and upcoming changes in technology and automation, rather than technologies that are becoming mature. Nevertheless, it was startling just how much our experts discussed artificial intelligence. So much so that an observer in the workshop sessions might have wondered if this report was to be titled *AI Native Distribution*.

But despite many experiments and proofs-of-concept, the prevalence of AI in real-world distribution use-cases is still low, beyond the use of AI content recommendation engines.

> **AI is still a bolt-on, not intrinsic to the solution.**

In the DPP's 2024 report, *AI in Media: what does good look like?*, distribution scored just 1/5 for maturity of AI use, and related areas such as advertising only reached 2/5. This can be seen in the DPP Media AI Radar.



So why the excitement for AI? Many experts expect that the integration of AI into tools and workflows will begin to deliver transformative benefits in the coming years.

> **I see it similar to the adoption curve for cloud. We are seeing organisations add AI capabilities to existing tools rather than building with AI from the ground up. But as more companies become "AI native", I expect we will see exponential acceleration of the benefits.**

2

Although levels of bullishness and optimism for AI varied among our group of experts, all seemed to agree that it will have some impact. In the meantime, however, the scalability of cloud computing and storage mean that the cloud is seen by many as a key enabler for applying the kind of automation and machine learning that they are excited for.

The cloud can be a key enabler for AI and automation

Key challenges ahead

Another key enabler for AI is data. And yet data was identified as a key challenge across the whole distribution landscape.

In some areas, the availability of high quality data is an issue. In others, data is available but the ability to analyse, understand, and act upon it presents a problem.

> **Data really is what's important, whether it's for reducing subscriber churn, making recommendations, getting advertisers interested in content, performing user analytics, and more. Data, and what we do with that data, is radically changing.**

There is a real risk - across the industry as a whole perhaps, but certainly in this area of content distribution - that our focus on the AI future distracts us from fixing the challenges of today. Few would dispute the future importance of AI, but its success may be dependent on resolving the infrastructure, operations, and data challenges in front of us now.

The future success of AI may rely on resolving the challenges of today

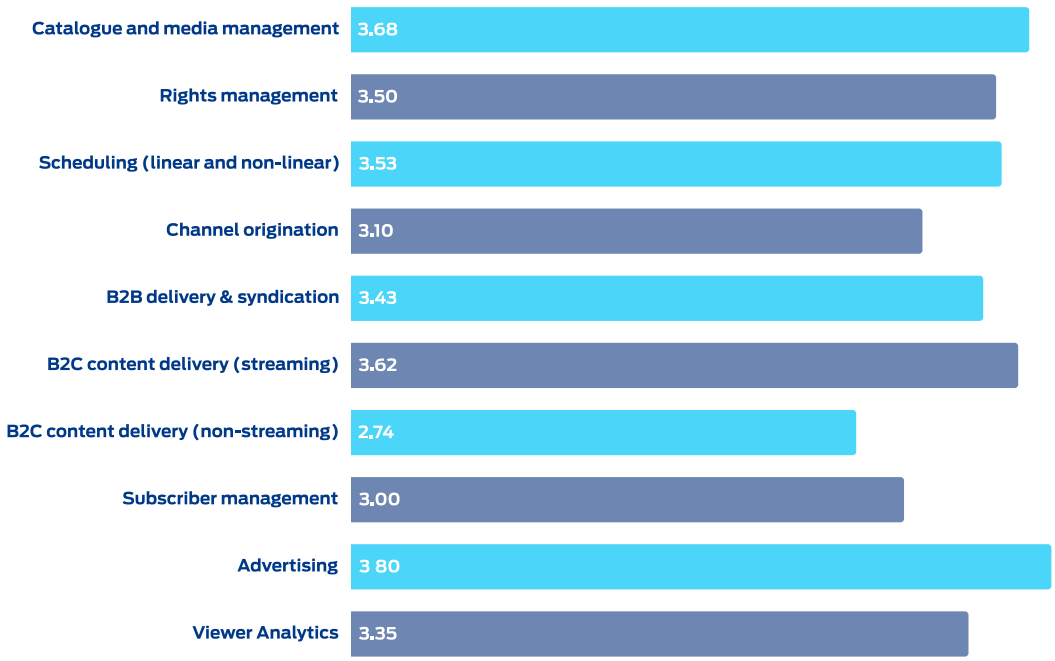
3

Deconstructing distribution

In undertaking this analysis, we took a very broad view of distribution. It incorporated the management of media, metadata, and rights; the scheduling and origination of channels; the fulfilment of content to business partners; the delivery of content to consumers over traditional and new distribution channels; the management of advertising and subscriptions; and the analysis of the resultant viewing.

It is therefore fascinating to contrast the state of each area. Across 10 different capabilities, we asked our experts to identify the level of business challenge on a scale of one to five.

Business Challenge



The average scores undoubtedly paint a picture of the current moment in which the industry exists. Traditional linear distribution is stable and mature, so while its business fundamentals might be in growing question, its technology and operations pose less challenge. Yet as the streaming industry sees the importance of advertising grow at pace, there are struggles to deploy the kind of high value, targeted or even personalised advertising that advertisers demand.

Over the coming pages, we'll explore the stories behind these scores.

3

Catalogue and media management

Key Takeaways

Media companies need to exploit both new and older content, making the catalogue an important business asset

Consolidation of libraries - often into the cloud - has been the driving force of change

AI is already helping to enrich metadata, and many believe it will soon help identify new monetisation opportunities

This capability was defined as the systems, tools, and processes for managing a media company's catalogue of content - including the media and its associated metadata.

Business challenge

HIGH

Many of the challenges in catalogue management relate to growing complexity of the catalogue itself. It can be difficult to manage the large and growing volumes of content, along with its different versions and representations.

Our experts reported inconsistencies and inaccuracies in metadata, along with outdated and unscalable means of data storage such as spreadsheets. These problems all hinder the ability to effectively manage and exploit a content catalogue.

> **If you're not able to discover your assets and understand the state of those assets, that will become a big bottleneck.**

The fragmented nature of some companies' existing technology estates can also prove to be a problem, with large numbers of disconnected systems making effective search and discovery nearly impossible.

> **We're seeing a lot of manual processes and spreadsheets, and the industry is quite late to start investing in this area. So this is the point to jump a few generations of tech, and cloud native is an obvious way to go.**

"We want to jump a few generations of tech, and the cloud is the obvious way to go"

3

Recent change

HIGH

In recent years, there have been meaningful changes in the way the industry approaches the management of media and associated metadata. There have been significant moves to the cloud, as content owners and licence holders have sought to digitise their archives and unify libraries that may have been spread across different systems.

In some cases, the consolidation extends to combining libraries that served different business units, from production to archive, sport to digital, and even radio. Many contributors reported that they have developed, or are working towards, a single catalogue for the whole enterprise.

> **We're focusing on trying to simplify our supply chain technologies as much as possible.**

The pressure to increase the profitability of streaming services, combined with lower volumes of original production, have led to a greater focus on surfacing and monetising catalogue content. This means that the integrity of the catalogue - including the ability to understand and find all the content it contains - has never been more important.

The integrity of the catalogue has never been more important

In addition, the volume of content to be managed continues to rise. Audiences have become more receptive to foreign content, leading to more localised versions of programmes. And platform proliferation had led to growth in the number of formats - and in some cases edits - that each episode or movie might have.

Upcoming change

HIGH

Contributors expect continuation of the themes of harmonisation and simplification, removing silos of both tools and processes.

There will be greater automation of processes such as format conversion or fulfilment to different platform partners, and there is optimism that the use of AI agents will make such capabilities much more sophisticated.

As we explored in *AI in Media: what does good look like?*, the use of AI to index content and create metadata is now widespread. Such metadata enrichment will continue to grow, with many of our experts finding value in capabilities such as automated sports logging.

3

It will also become more common to find recommendation engines - traditionally used to recommend content to viewers - used to suggest content to internal teams such as sales and scheduling. Software products already exist that claim to suggest content that will perform well on particular platforms, in particular windows, and so on. This illustrates the extent to which the unified content catalogue can become the beating heart of a media organisation.

A unified content catalogue is the beating heart of a media organisation

The ongoing change in the commercial landscape of distribution is also a key reason that some media companies favour cloud architectures.

> **"As a broadcaster and a studio, we're looking at different ways to monetise our content and our formats. And so we need a supply chain capability that's extremely flexible, and we truly believe that moving to proper cloud native architectures - not just old software running in the cloud - is really key to that.**

3

Rights management

Key Takeaways

Media companies are struggling with the growing complexity of rights, with many still reliant on old, inflexible tools

New content platforms and monetisation options are pushing many to implement modern SaaS rights solutions

The potential for AI is very broad - though the risk posed by potential errors is great, so highly mature and reliable AI tools will be needed

This capability was defined as the systems, tools, and processes for managing content rights and sales.

Business challenge

MODERATE

Although survey respondents gave rights management a slightly-above-average business challenge score, workshop participants were vocal about the challenges they see.

The key issues are a growing volume of platforms and rights types, being managed by unsophisticated systems and processes.

> **The explosion of exploitation models that has happened is going to force companies to take rights more seriously.**

Many organisations have historically relied on spreadsheets or bespoke data management tools, and some complained that their rights management products are too rigid, not accounting for modern platforms and rights. This makes it difficult to get a common view of rights across an organisation.

> **A single source of truth is really vital for rights, but very rarely happens in practice.**

Historic contracts also create legal ambiguities where they do not allow for today's proliferation of distribution platforms. And as more media companies sell and distribute content around the world, they are coming to terms with the plethora of legal and regulatory frameworks that they must adhere to. This can all make it very difficult to fulfil rights requests quickly or efficiently.

3

> **I've seen a licensing request coming in from the global sales team and it takes weeks to figure out whether they have the right rights to exploit content in a particular geography on a particular platform.**

Ultimately, rights are one of the organisation's most important assets, but with so many stakeholders - from broadcast schedulers to content sales to legal teams - it can be difficult to manage them effectively.

> **Rights are the bloodstream that runs through the organisation, but no one knows where the heart is.**

"Rights are our lifeblood, but no one knows where the heart is"

Recent change

LOW

The change experienced over the last five years in the tools and processes around rights has not been dramatic.

Rights themselves have continued to get more complicated, as new platforms and monetisation opportunities have required rights models to be updated with new definitions. Some contributors felt that the rights under management have become more granular and more rapidly changing, while others reflected on the convergence between linear and digital. And just as with catalogue management, the growing demand for archive monetisation has implications for rights management.

> **I think the complexity has increased, because we need to find ways to monetise the same assets.**

As a result, a number of companies have moved away from legacy rights management solutions or spreadsheets, towards enterprise rights solutions, which are most commonly provided on a software as a service (SaaS) model.

Rights management is increasingly moving to SaaS

This shift - and other recent changes in the Rights Management landscape - were explored in our 2023 report on *Rights Management*.

3

Upcoming change

MODERATE

As with many of the capabilities investigated in this research, AI is expected to play a large role in the future of rights management. But here, it is has both positive and negative impacts.

On the one hand, our experts were excited about the potential for AI to interpret contracts and other unstructured data, to calculate rights availability across complex data models, and to optimise content windowing strategies.

> **AI is going to transform how contracts are entered into the system, and the matching of data. It's already been happening, and it's going to massively speed up the mapping of rights within the systems.**

On the other hand, the rise of AI-generated content will create a new wave of rights questions and challenges. The intellectual property implications of generative AI were explored in depth in *AI in Media: what does good look like?*, and as these issues are settled there will be new rights, rules, and regulations to be managed in enterprise rights management systems.

Generative AI creates a new series of rights considerations

Workshop and survey contributors felt that there will be ongoing optimisation of windowing and distribution strategies, making it even more important to be able to quickly adjust rights and respond to rights data queries. There was great optimism that AI data analysis and chatbots could be valuable tools for this.

> **If I just want to know: what can I sell in Germany for SVOD platforms that has a holdback on linear? I can very quickly get that answer in a human readable form.**

However, the financial and legal implications of rights are highly significant, so experts also noted that AI tools need to be used with caution. This especially applies to those using generative AI technologies, since 'hallucinations' or other errors could have serious ramifications.

3

Scheduling

Key Takeaways

Scheduling systems are critical, but those in use today are complex and often archaic

There is desire to move to modern alternatives, but it can be an extremely challenging transition

There will be greater separation between scheduling of simple channels that can be highly automated, and complex flagship channels that require human operations

This capability was defined as the systems, tools, and processes for scheduling linear channels and on-demand availability windows.

Business challenge

MODERATE

As with the previous capabilities, the business challenges mostly revolve around a complex data model which is managed in legacy systems with lots of manual work.

Linear and digital scheduling systems are often siloed, and many of the tools in use are based on traditional linear paradigms. One contributor expressed frustration at the lack of progress in how broadcasters think about scheduling.

> **The systems at my clients are archaic. Many of them are 20 years old, and because they're so inflexible, it's certainly not an agile way of working. People often don't even understand that things *could* be automated. So there's a whole lot of work just to open people's eyes up to the possibilities of what automation could even look like.**

But this was not just an over-enthusiastic vendor wanting to sell more products. Multiple media companies agreed, with one broadcaster responding:

> **I totally recognise what's being said. These are the most complex systems we have; they are the media organisation's equivalent of ERP.**

Scheduling systems are the most complex systems we have

3

Another has found legacy systems holding them back, but has also struggled to find a tool that matches their ambitions.

> **One of the key issues we face in being able to change our ways of working is the data models imposed by the scheduling applications. Scheduling focuses on entire programs [but] we have a lot of content that could also be used as discrete segments for other purposes or be published separately on demand.**

And even when a new system is chosen, implementation can be complex.

> **It's a lot of work to integrate something new into [a legacy] environment. When you try to make a small change, it's tied into six other systems that were built at various points in the last few decades, and it can be difficult to achieve.**

Complaints were also raised that the different FAST platforms do not all provide interoperability with all scheduling systems (or indeed other systems such as viewer analytics).

One broadcaster representative explained that they are managing the challenges of inflexible and incompatible systems by consolidating their schedule data into a separate data platform and building their own functionality on top. While this won't be the solution for all, it illustrates the problems that many are facing.

Recent change

LOW

The rise of FAST and the creation of new, digital-only channels has created a need for more linear scheduling than ever. And linear scheduling has moved beyond the concepts of 24/7 channels, as live event streams and 'popup' channels have become hugely popular - especially for sporting events.

The emergence of new, often fully cloud native FAST platforms is juxtaposed with the legacy scheduling systems described above. Media companies looking to move their scheduling tools to the cloud are finding it necessary to migrate to much more modern applications.

> **Lifting and shifting existing software isn't even an option, because the systems are too old.**

Lift and shift isn't even an option

Given the themes of consolidation and simplification explored in previous sections, one might expect new products to integrate linear and VOD scheduling together - and some tools

do. But few organisations have realised this 'single pane of glass' approach to managing all schedules together; and not every content provider finds approach this desirable.

> **Managing linear and nonlinear scheduling together is a bit like managing trains and cars in the same way. They're different sorts of things. One is about keeping a continuous stream of content going; the other is about publication windows. The idea that we'd have one glorious system that does all of it might be unrealistic.**

Integration between platforms is therefore critical, as the underlying rights model impacts both linear and non-linear distribution, even where they might be managed separately.

The topic of data integration are further explored in *The Integration Opportunity*.

Upcoming change

MODERATE

Some experts are looking to dynamically optimise schedules using viewing data, or even factors like global events or weather changes. This is clearly an area in which AI could prove useful, although these ideas were not universally accepted as desirable by all participants.

The greatest focus of conversation, however, was on improving efficiency. Scheduling is currently an operations heavy area, with a great deal of potential for automation.

This is especially true for simpler, thematic channels, which are common on FAST platforms.

> **We've worked on a lot of automation of scheduling, not only programming but also breaks, bumpers, etc. Because these platforms are not as lucrative as the traditional platforms, so you have to become as efficient as possible.**

It's an area that AI could help with, and one content owner reported already using AI to create FAST channel schedules - albeit with human review.

AI is already being used to create FAST channel schedules

However, there was much more scepticism from contributors about the feasibility of applying this kind of automation to highly reactive scheduling such as sports.

> **I've found you can spend so long trying to give your system enough data to be able to be as much as automated as it can be, that you might as well have just done it yourself in the first place.**

3

The applicability of AI automation in sports especially will be correlated to risk: high profile events will require human control for the foreseeable future, whereas lower tier sports may be broadcast on automated channels.

But for some broadcasters, it's not only business risk that's a consideration. There is a fear of losing the creative element of scheduling.

> **Algorithm based decision making is quite derivative, and broadcasters have a history of creating change, and of backing shows that become surprise hits that no one knew they wanted. So there's something interesting about how you navigate the efficiency benefits versus the creative spark that might not emerge out of purely algorithmic scheduling.**

There is a creative spark to scheduling

We therefore expect to see a growing gap between the highly automated or AI-driven schedules of thematic linear channels, and the human curated and operated channels that act as a media company's flagship, or are home to the highest profile live events.

3

Channel origination

Key Takeaways

Coud is now the default for playout - but that can mean private as well as public cloud

Popup channels, live events, and FAST all mean that channel origination will be more flexible, scaling up and down

One size doesn't fit all: solutions must be optimised for the both the use-case and the architecture

This capability was defined as the systems, tools, and processes for creating linear channels, such as playout and traffic management.

Business challenge

LOW

Channel playout is a relatively mature capability, which has been successfully migrated to the cloud by many media organisations. While it received one of the lowest scores for business challenge, there are of course still difficulties to overcome.

For some, it's the preparation of media that causes the challenge.

> **Standing up the channel and creating the playlist and figuring out what content to put out when is not the challenge for us. It's actually getting the media and the metadata in a ready state to be able to fill a channel.**

For others, it's the integration of advertising technology. In particular, the implementation of timing markers (SCTE markers) can be a problem in some cloud deployments, or unavailable in certain products.

> **For customers who are implementing playout in public cloud we're seeing a lot of requirements to do stream adaptation after the playout in areas like SCTE manipulation.**

The biggest issues are often operational, not technical

3

The biggest issues are frequently not technological but operational. Some broadcasters cited a skills gap around cloud in their engineering teams, while others have the skills to operate everything in-house and are frustrated by the managed services model that predominates in FAST platforms.

Recent change

MODERATE

There was lively discussion in our workshops about the recent transition of playout installations to the cloud. This topic was covered in depth in the DPP's 2021 report, *Cloud Playout*.

Contributors agreed that almost all playout use-cases are now possible in the cloud, and the technology is mature. One broadcaster highlighted how comprehensive the transition has been.

> **The move to cloud for origination has been rapid; now I would be surprised if anyone did a playout system on premises.**

The move to cloud for origination has been rapid

Another has taken a more gradual approach, with more complicated reactive channels moving to the cloud more slowly than thematic and digital channels.

> **Any FAST channel that we are doing is cloud based. End of conversation. But when you start to look into our flagship channel with 19 regions, six or seven hours of live programming every day, and local programming, it starts to become much more complex. The technology is now there though, and we're moving forwards with it.**

There was, however, less unanimous agreement on the economic case for all playout to be performed in the cloud.

> **There's no way you could deliver the complexity of what we have - with live reactive content and a large volume of studio output - more cost effectively from the cloud at this moment in time. We know that that might change, but we're quite happy with our models at the moment.**

> **A computer you need 24 hours a day, every day, is still cheaper to have yourself than it is to buy from the cloud.**

3

The development of truly cloud native playout applications has impacted the economic decision, compared to earlier 'lift and shift' implementations.

> **The early attempts didn't work too well. They just created a virtual environment and left servers running full time, not taking advantage of the cloud's ability to optimise cost. They cost more money, and they were unreliable, and I think that left a bad taste. However, that bad taste has morphed into an excuse to not make the change.**

The key may simply be to use modern software architectures for efficiency, irrespective of whether they run in public cloud or private data centres. One large media company intends to transition from the former to the latter in the coming years.

> **We're on the public cloud today. We're building a private cloud, but it's a long journey. It's a multi year project operationally, and people need to get familiar with the technology.**

Upcoming change

MODERATE

Many of the same themes of industry change that we've seen in previous sections apply to channel origination too. The growth of streaming linear channels such as FAST creates growing demand for playout, while the increasing use of popup channels and live event streams strengthens the case for the scalability that the cloud can provide.

The strongest area for future improvement will be the optimisation of technology to achieve greater efficiency across different use-cases. Vendors and media companies both described the growing use of automation to quickly instantiate and collapse software services to run popups and event streams. And discussions focused on having the right origination solution for each channel's needs, rather than a 'one size fits all' approach.

> **The solution has to be optimised to support each channel. You can't have the same solution for your tier one sports as for a FAST channel. So a lot of change and a lot of effort will go into having an optimised playout solution at a channel level.**

Some media companies were highly reflective about the impact this will have on their operations. They are considering how channel origination will more closely integrate with a number of the capabilities that we'll explore in later sections of this report.

3

> We've migrated a lot of automation and playout capabilities to software, and that allowed us to migrate services to the cloud. But we migrated a thought process that was the same as we had for many years before that. And now we're looking at new monetisation and personalisation opportunities, we have to move beyond a traditional channel playout, potentially having to make hundreds and hundreds of variants of channels, and that needs a seismic shift in how we think about automation.

"We migrated to the cloud, but we migrated a thought process that was the same as we had for many years"

3

B2B content delivery

Key Takeaways

VOD delivery has changed little, with ongoing frustration about the diversity of metadata and media formats used by different platforms

Live exchange has undergone a major shift towards internet delivery

B2B relationships are becoming deeper, as partners build tighter integrations to enable viewer features like watch lists and 'continue watching' across platforms

This capability was defined as the systems, tools, and processes for delivering content to other businesses, such as streaming platforms and MVPDs (cable, satellite, IPTV platforms).

Business challenge

MODERATE

In 2020, the DPP published *Supplying the VOD Revolution*, which analysed the workflows for delivering content to on-demand streaming platforms. Many of the challenges identified in that report persist today.

There are wide variations between platforms when it comes to delivery formats for media and especially metadata. This comes with a cost.

> **As we adopt new commercial models, and we're delivering to lots of different customers, there is a significant difference in the requirements. Particularly even around things like edits and additional media elements, that make it much more expensive for us to deliver.**

One broadcaster felt that it creates an opportunity cost too, as it distracts them from more valuable endeavours.

> **Every new platform that comes along, we're sort of obliged to join and deliver to. And each has its own set of delivery specs. So you spend a lot of time just keeping up with your commercial objectives around distribution rather than addressing the fundamentals.**

"We spend a lot of time keeping up with delivery specs rather than addressing the fundamentals"

3

It is becoming more common for content owners to have branded areas on third party platforms, which can be valuable; however, it creates additional effort in ensuring the context and presentation of content is as expected.

When it comes to live content, siloed workflows for broadcast and digital at many companies continue to cause issues. Live content exchange is increasingly performed in the cloud or over the internet, which reduces cost but increases operational complexity. It can also come with trade-offs around latency, and encounter challenges with SCTE markers similar to those experienced in channel origination.

Recent change

HIGH

The scores in our survey indicated that recent change has been significant, which might be surprising given the parallels drawn with a report from five years ago. The explanation lies in the difference between live and pre-recorded delivery.

For VOD content, the fundamentals of B2B exchange have changed little, save for the increasing number of platforms to deliver to. However, live delivery has experienced a shift towards internet protocol (IP).

> **“There’s a switch from using traditional satellite or fibre delivery, to IP or internet connectivity - first as a cost effective disaster recovery strategy, and now more often than not it’s becoming the only strategy.**

More often than not, IP delivery is now the only strategy

Satellite and fibre delivery are still popular in some areas, with vendors reporting stable sales of encoders and decoders. But the growth is almost all in IP, and increasingly the use of protocols such as SRT over the internet.

> **“We're using SRT a lot for these types of contribution and distribution feeds. The benefit is that you're only paying for them when you're using them.**

As well as being more cost effective, such connectivity is also more flexible, enabling content owners to scale up and down their distribution, and to more easily offer different variations of feeds, such as different localisations.

Content owners are looking to maximise the value of their content. So they’re offering more feeds that might not be cost effective to put on satellite, such as regionalisation of their world feeds. By using burstable capacity to push out those auxiliary feeds, they’re really trying to increase the value of those rights.

3

> **Content owners are looking to maximise the value of their content. So they're offering more feeds that might not be cost effective to put on satellite, such as regionalisation of their world feeds. By using burstable capacity to push out those auxiliary feeds, they're really trying to increase the value of those rights.**

The flexibility of live IP can help content owners maximise the value of rights

Other changes include growing exchange of 4K content, and increased demands for content security. Distribution watermarking, for example, can help rights owners to identify which licensees are being targeted by pirates.

Finally, as content aggregation grows and users look for platforms that can bring content from multiple sources together, media companies are also looking to work more closely with their distribution partners to deliver a high quality viewer experience.

> **Over the last two or three years we've spent a lot of time on functionality integrations, like 'continue watching' or 'my list' features that can be shared across multiple platforms.**

Upcoming change

MODERATE

Most of the future change predicted by our experts is continuation of the previous trends. There will be more 4K content, more IP video delivery, and deeper integrations between content owners and distribution platforms.

There remain some areas where it's difficult to switch from satellite to IP delivery, due to the many-to-many nature of the distribution.

> **The primary distribution - where we're getting feeds from the networks - is still over satellite. So we need to have master control people, and for our move into the cloud, that's a huge overhead. We would like to see the market move to IP delivery.**

The difficulty comes in the economics of satellite delivery: while there is even a single recipient (affiliate) taking the satellite feed, the sender (network) bears fixed costs of satellite delivery. Eventually, a tipping point will be reached, but we're not at that point yet.

3

B2C streaming

Key Takeaways

The greatest challenge in streaming is the economic impact of unicast delivery at very large scale

Yet no other model has proven effective in real-world use

Unicast will remain dominant, but for the largest live events, it may be coupled with multicast or satellite to offload core networks.

This capability was defined as the systems, tools, and processes for delivering content to consumers online, including encoding and packaging, origins, and content delivery networks (CDNs).

Business challenge

HIGH

Streaming video provides viewers unprecedented opportunities to watch the content they choose on any device, in any location, at any time. Today, this vast flexibility is achieved using a unicast delivery model, where an individual video stream is delivered to each viewer.

This has huge advantages, but it also means that the costs of delivery (including egress from the cloud) can be huge - especially for large events.

> **The greatest challenge in streaming is the economic impact of unicast delivery at very large scale**

It also creates greater complexity, requiring advanced monitoring and observability capabilities in order to assure quality of experience (QoE) at large scale.

The same complexity means that latency is often higher, and may not be equal for all clients. In some cases this doesn't matter, but for live sporting events in particular it can degrade the viewer experience, especially for those who are also following the action on social media or broadcast TV.

The final challenge that our contributors raised was content protection. Digital rights management (DRM), encryption, and other anti-piracy tools are felt by some to be costly and complex to implement. Yet media companies under threat from piracy may have to invest more in implementing them.

3

Recent change

MODERATE

There has been a huge growth in the volume of streaming services, users, and viewing over recent years. Yet the basics of the technology used to deliver video have remained relatively stable.

> **The fundamentals of streaming direct to consumer have not changed much over the past five years. We are still using CDN based infrastructure and roughly the same formats.**

The challenges outlined above will be immediately familiar to readers of 2020's *Delivering the IP Future*. At that time, we investigated a variety of possible architectural changes that would enable the expected growth in streaming, including multicast, peer-to-peer, and 5G broadcast mode. The reality is that huge growth in streaming has happened without any of those technologies becoming widespread.

Huge streaming growth has been delivered without large changes to the fundamental architecture

Now, just as then, the biggest concerns remain the delivery of large scale live events as viewers switch from broadcasting to streaming.

> **The stability and the quality of streaming products in the market now is really strong. The big challenge starts to come as more customers transition to IP, and the scale starts to become really significant. For us, that's predominantly around large scale sporting events or other big simultaneous viewing events.**

Despite high profile disruption to large-scale streamed sporting events as recently as late 2024, there have been more success stories than failures; some were outlined in *Streaming at Scale* in 2021.

And progress has been made. Contributors described improvements in latency, server-side advertising insertion (which is explored further in *Advertising*, below), and video formats. But the bigger question they discussed was the extent to which larger change is coming.

> **Streaming changes have largely been incremental improvements in video quality and latency. With a major shakeup coming to the CDN marketplace and continued growth for streaming - especially for live event streaming - big changes are likely.**

3

Upcoming change

MODERATE

Future changes in streaming will mostly revolve around increasing scale, especially for major live events, as users migrate from traditional linear to live streaming.

> **I think we're at a tipping point. For a lot of broadcasters, streaming is still low volume relative to their core business, but that's changing. The scale at which they'll need to be when DTT is no longer here, or if we come off satellite, is massively beyond what we have today by 10x or 20x.**

Streaming is still low volume relative to the core business, but that's changing

There will be changes in the market for content delivery networks, with many expecting that internet service providers (ISPs) will increasingly be an important part of the delivery chain.

> **We see a lot more ISPs taking on responsibility for the quality. ISPs have their network, and, they partner with CDNs to ensure a good quality of experience for their subscribers. But they also leverage their own infrastructure and in some cases actually build their own CDNs.**

Some contributors hypothesise that traditional CDN architectures will not be enough, and that multicast delivery will become more important for live events. Others feel that the benefits of multicast are not enough to overcome the associated complexity and its lack of support within many networks and ISPs.

> **The complexity of multicast just for live doesn't seem to make sense in a world that's dominated by VOD. And with ISPs trying to push capability deeper into their networks, to put the edges closer to the viewers, they can offload their core networks anyway.**

Some more achievable approaches to large-scale live delivery are emerging, which may be used alongside traditional unicast delivery.

One approach involves an ISP using multicast within its own network to reduce volume of network traffic. An edge device, such as the router within the user's home, translates this multicast stream into unicast for consumption by client devices such as smartphones and computers. (This has been named Multicast-Assisted Unicast Delivery, or MAUD by UK ISP, BT.)

3

Another approach being pioneered by the European Broadcasting Union (EBU) and European Space Agency (ESA) uses satellites to deliver live content to edge servers which then provide unicast streams to client devices.

In either case, the advantages are full compatibility with existing unicast client devices, while reducing load on networks.

New solutions reduce network load while maintaining compatibility with users' devices.

However, while the largest events create the biggest engineering challenges, high volumes of viewers for the *same* content represent only one type of scale. As streaming enables more different content to be available - such as more sports, more games, or more angles - one sports broadcaster explained that their focus is on delivering anywhere up to 100 different content streams at once.

> **We needed to build something in an automatic way that can help us in providing more content to the audience. So it's more about horizontal scale than vertical scale.**

Although there was some talk about ultra low latency technologies for live delivery, scaling was the priority. And for one streaming service provider, the most important requests from clients are not around functionality, but reliability.

> **What we're seeing is not very exotic requirements coming from customers. People don't seem to be interested in ultra low latency. What they really want is to have the monitoring and the stability that they had with broadcast.**

3

Traditional linear delivery

Key Takeaways

This highly mature area has seen little change, and will continue to do so

As viewership declines, costs do not, which will create an economic challenge as audiences switch to streaming

This capability was defined as the systems, tools, and processes for delivering content to consumers via traditional linear platforms including over-the-air broadcast, cable, and satellite.

Business challenge

LOW

This capability received the lowest scores in our survey for business challenge, recent change, and future change. Given the maturity of traditional linear broadcasting, and its gradual decline, perhaps this is unsurprising.

However, there are some challenges. Traditional multi-channel video programming distributors (MVPDs) such as cable and satellite operators have faced both challenges and opportunities integrating streaming and VOD into their offerings. And many companies are seeking to extend the life of their equipment rather than invest, creating challenges for vendors.

But the main challenge is that costs of distribution remain relatively fixed, which will become problematic as viewers move to streaming - especially where traditional broadcasting is still required to reach certain demographics, or even for regulatory reasons.

> **Linear delivery via satellite, terrestrial or cable has one major advantage: the cost structure is clear. However, this is precisely where it has its disadvantage, because with a decreasing number of users, the costs do not scale down.**

Linear broadcasting's key advantage will become its key disadvantage

3

Recent change

LOW

Overall there has been little change in traditional linear distribution.

There has been some technological innovation, including the deployment of addressable advertising technology that can perform local advertising insertion in the set-top box. Advertising innovations are explored in more depth in the next section.

Some platforms have also introduced linking between the linear programme guide (EPG) and VOD content, although this may not be reflected in the change score, since this functionality has been available for more than five years in many places.

Upcoming change

LOW

There are upcoming business strategy changes around traditional linear distribution, such as US media enterprises spinning out their channels businesses. However, technology change is still expected to be minimal.

There are developments in certain regions, such as the rollout of ATSC 3.0 in the USA and Korea, enabling more efficient broadcasting and the deployment of additional data services.

The priority is cheaper operations, as investment is focused on streaming

But elsewhere the main driver is simply to find simpler, cheaper ways to operate services as investment focus is in streaming.

> **We are looking for smaller, smarter solutions for linear broadcasting.**

3

Advertising

Key Takeaways

The proliferation of platforms has created technical challenges around data collection and aggregation, and accurate signaling of advertising insertion points

Advertising is increasingly targeted, although the quality of targeting and the resulting CPMs vary between platforms

Future progress will centre around increasing CPMs through more precise targeting, better advertising formats, and more sophisticated reporting and attribution

This capability was defined as the systems, tools, and processes used to insert advertising into programming, personalise and contextualise it.

Business challenge

HIGH

As we explored in *Distribution disruption* above, there is a strong focus on advertising at the current time. In a push for profitability, more SVOD services have added advertising tiers. AVOD services are growing. And FAST is predicated on advertising. So it is not surprising that the challenge and change scores for this capability are high.

One of the biggest challenges is the consistent collection of data across platforms, which may report information differently, and inconsistently provide proof of delivery. The lack of a universally adopted advertisement identifier (ID) also creates workflow challenges.

Targeted advertising is often spoken about as a panacea, but managing it in a way that respects user privacy can be difficult, especially when distributing via third party platforms which might limit the ability to gain user consent.

> **“Getting consent to track users is intrinsic to the value that can be retrieved. Broadcasters on the FAST platforms assume they’ll get better revenues once consent management is in place, but the revenues don’t always rise.**

Targeted advertising must be managed in a way that respects user privacy

3

The difficulty of managing SCTE advertising insertion markers was raised in the *Channel origination* section, and it was underscored by participants when discussing advertising. It can be highly troublesome to achieve frame-accurate signalling across platforms, especially for FAST channels.

Different platforms use different standards for content delivery, and there are different variations of SCTE standards used in different products and regions, creating complexity that in turn introduces fragility into the advertising workflow.

> **"It used to be: send a SCTE marker that's the trigger for your advert. But it's become: which SCTE markers do you want? The complexity has ballooned, and everyone is having to upskill.**

If these markers are not correctly inserted or interpreted, adverts could be inserted in wrong or random places, degrading the viewer experience.

Recent change

HIGH

There has been a high level of change in advertising technology and workflows; a fact that was also examined in *Content Monetisation*, part of the 2023 series *Making Media Pay*.

The decline in traditional linear TV had caused a corresponding decline in traditional linear advertising models. As more advertising becomes digital, the ways in which it is bought and sold have changed dramatically.

> **"The three-martini lunch for selling ads has gone. Marketplaces and automation will eventually dominate linear TV, though we have only just started the journey.**

The days of doing advertising deals over a three-martini lunch are over

The rise of streaming platforms and CTVs have driven the adoption of Dynamic Ad Insertion (DAI) technologies and programmatic advertising.

This is particularly clear in AVOD and FAST platforms, which brought addressable advertising to the masses. Many set top boxes from traditional MVPDs now sport similar capabilities too, with adverts delivered over the internet and inserted into linear broadcast channels on the device.

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These new capabilities and platforms have opened up new opportunities for content owners, although they have not been without problems. Some contributors reported that the growth of addressable options has had an impact on the value of advertising impressions (CPMs).

> **FAST has created somewhat of a supply and demand problem, as there's been a big influx of inventory, leading to decline in CPMs.**

FAST has created a supply and demand problem

Different platforms have also experimented with different formats of advertising - from vertical advertising in social apps to in-vision advertising alongside content.

> **We're seeing improvements in the less disruptive advertising, for example instead of just cutting to an advert, you squeeze your sports content down and advertise around it. You can put other information too, not just advertising. You can engage with your viewer in a different way.**

Of course, high quality targeting requires an understanding of the user, so there has been a growth in data capture. As advertisers have gained more choice, platforms are working hard to be competitive, and high quality data is a key differentiator.

Upcoming change

HIGH

Experimentation with different advertising formats is expected to continue, as will the quest for higher quality targeting. These factors are necessary to increase advertising revenue.

Technology is available to dynamically insert advertisements directly into content, such as replacing billboards in sports stadia, or implementing virtual product placement. And many CTVs now place advertisements on the home screen or in content carousels.

The big question will ultimately be, how big is the user tolerance for an ever growing ad load? How much is too much?

> **The CPMs in CTV aren't closing the gap that linear advertising has left. And the answer cannot be more ads, more ads, more ads! So we have to get better ads, more engaging and relevant ads, that theoretically drive up the price of the inventory.**

"The answer cannot be more ads, more ads, more ads!"

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Participants were optimistic about more sophisticated targeting, increasingly driven by AI.

> **You ultimately get to go down to a persona of one. So it's no longer, 'we're going to target this demographic', it's now, 'we're going to show ads that are important to John'.**

AI will also be used to place adverts that are appropriate for the content being watched - or especially to avoid placing adverts next to inappropriate content.

> **Contextual advertising is often a kind of anti-targeting, where advertisers want to stay away from content that is not brand safe.**

As AI-driven personalisation advances, one contributor imagined a scenario in which personalised content comes with personalised advertising.

> **I could go to a sports app, and ask it to tell me about the best hockey goalies of all time, and it creates a three minute video. But for that to happen, we're going to be dynamically serving ads into it. I can even envision you asking the agent to create a video and it says, 'while we're preparing that, watch this short ad'.**

Meanwhile, other changes are enabling more familiar advertising models to scale up to accommodate more users streaming more content with more adverts. The choice between client side ad insertion (which is seen as less reliable and less advanced) or server side ad insertion (which is more sophisticated, easier to implement across platforms, but harder to scale) has been a challenge. The emergence of server-guided ad insertion (SGAI) promises to combine the best of both worlds, allowing the server to make targeting decisions, instructing the client player to perform the insertion.

> **We're really interested in SGAI, but not many have deployed it yet.**

> **There's no standard approach yet. It's still a wild west out there.**

Finally, once adverts have been inserted advertisers want more information on whether those adverts triggered action. This level of outcome attribution is now expected in social media and other digital advertising, but remains hard to achieve on TV.

Advertisers want attribution of outcomes

> **How can we do better measurement to defend the CPMs? How can we prove that targeting does indeed give a better return on ad spend?**

3

Subscriber management

Key Takeaways

Management of subscribers and billing are new capabilities for many media companies

As aggregation and bundling increase, there is greater need for technical integration, data exchange, and business cooperation with aggregators

More sophisticated platforms will begin to use AI to help understand each user, in order to provide better content recommendations, adverts, and offers

This capability was defined as the systems, tools, and processes used to manage subscribers or users of streaming and traditional pay-TV services.

Business challenge

LOW

Compared to the other areas we discussed, subscriber management was not seen as especially technically challenging. However it is important, as content platforms seek to retain customers while also fighting account sharing and credential theft. Avoiding the loss of subscribers (churn) is the key focus.

> **Churn is a real issue. Because in the old model, an MVPD had hardware at the consumer's home, and they had years-long contracts. But now you're going direct to consumer, with month-long agreements, and so you have consumers that are binging one series and then switching subscriptions.**

Churn is a real issue as consumers binge series and switch subscriptions

As platforms attempt to address these challenges, effort is needed to identify what factors drive success.

> **We need a serious overhaul of analytics, using more modern technology to understand the actual ROI on the different subscriber retention strategies.**

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As more streaming products are available through aggregators and in bundles, integration challenges emerge and data sharing becomes a primary concern. Churn rates may be lower for an SVOD service when it's bundled through an MVPD, for example, but there will be payment system integrations to build, and the customer data returned may be more restricted than what is available through the content provider's own app.

And as with other areas where user data is involved, there can also be complexity when dealing with differing local laws on user data management.

Recent change

MODERATE

The emergence of direct to consumer streaming has required many broadcasters and traditional media companies to develop capabilities which are new to them. Historically their relationships with customers have been mediated by airwaves or MVPDs, so functions such as user management, payments, and personalisation have been built from scratch. Naturally, they have been able to draw on experience from other sectors.

> **Telcos and other industries have excellent subscriber management tools. The tech is there. We just haven't been used to doing this in media until recently.**

Media companies haven't been used to managing subscribers

More recently, consumer tolerance for a growing number of subscriptions has begun to plateau. Although some services are still growing well, there has been an increasing focus on retention of existing subscribers.

A key approach has been to develop a better understanding of each user, which requires a robust infrastructure for capturing and analysing usage data. As companies work to comply with stringent data protection laws, it has become more important to have good "first party" data (data that is collected by the company itself, rather than via partners).

Nevertheless, gathering data from third parties can be very effective. One company explained their goals when implementing 'single sign on' (SSO) that allows users to sign on using their Google or Apple account.

> **The balance is to make it frictionless for the user, while capturing as much data as possible.**

Ultimately a good understanding of the user enables the right content to be surfaced, in order to maximise engagement and attempt to assure that user's continued custom.

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Upcoming change

LOW

As streaming continues to evolve, so will the platforms' understanding of users. With more aggregation and bundling expected, media companies will experience tension as they seek to better understand viewers who may in fact be customers of a third-party MVPD or CTV manufacturer.

> **Media companies want the luxury of a direct relationship with the viewer, but increasingly there's a reliance on partners like telcos, MVPDs, or aggregators. They will need to work together with the partners to identify and tackle churn.**

Media companies need to work with partners to understand customers and tackle churn

AI will likely be employed to identify patterns of user behaviour, with the intention of identifying likely churn and initiating interventions. And enhanced efforts in subscriber lifecycle management will span everything from content recommendations to customer service.

> **Better data and use of AI to improve personalisation will help keep subscribers engaged, in order to reduce churn.**

Although the term 'subscribers' was used extensively in the discussion, some participants noted that similar techniques apply to advertising supported services too, which still need to retain viewers and engagement in order to monetise through advertising.

In fact, sophisticated platforms will use targeted or personalised offers to identify the right access tier (subscription or free, ad free or ad supported) to offer each user.

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Viewer analytics

Key Takeaways

One of the greatest challenges media organisations face is interpreting and correlating data from a huge volume of sources

There has been significant progress in collecting and analysing viewer behaviour data, but there is still a sense that the capability is nascent in many companies

Successful organisations will use their data to help inform content decisions, improve user experience, and maximise subscribers' lifetime value

This capability was defined as the systems, tools, and processes used to understand viewer behaviours and interactions.

Business challenge

MODERATE

One of the key themes throughout this report has been the need for good data. And little could be more important than understanding viewing patterns and viewer behaviour. But as the last two sections have shown, it is often more difficult than might be expected.

Once again, the biggest challenge is connecting data across sources, partners, and silos. It begins with understanding how viewing is correlated across platforms and devices.

> **"The complexity of integrating data from various sources - streaming platforms, social media, CTVs - presents difficulties in achieving a unified, actionable view.**

The biggest problem is correlating data across platforms

Agencies like Nielsen and BARB now do a good job of tracking viewing on streaming platforms, but reconciling such sources with first party data may not be easy. And when integrating data from partners, there may be different definitions for fundamental terms like a video start - especially in situations like auto-play and continuous play.

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Viewers also have more ways to discover and access content than ever before, through different devices, apps, linear programme guides, VOD collections, and functions such as live restart. Tracking user journeys can become a complex endeavour.

> **You look at how people discover content on TV, on a mobile app, on the web; you see all these interactions which you have to harmonize across different devices. It's not easy.**

And even when data is collected successfully, there can be problems taking advantage of it if it is siloed within a media organisation.

> **A lot of publishers have data locked in silos. Data that's owned by the Chief Marketing Officer, and data that's owned by the Chief Revenue Officer, and data that's owned by the Chief Technology Officer. All of these are separate, and not interoperable and actionable.**

Data is often locked in silos within media companies

Content providers themselves admitted that they find it difficult to share data within the organisation and ensure that it is acted upon.

> **It can be a challenge getting reliable data to the business, not just technical teams, on how the business KPIs are tracking.**

The goal is of course to turn data into insights that are truly actionable. But many experts told us that there is still a gap in capability here.

> **Data driven decision making is not happening as much as we'd like.**

The issue isn't access to data, it's acting upon it

> **Access to data isn't the issue. It's more an issue to really use that massive amount of data and turn them into actual insights.**

Some of the reason for this is that there are not enough appropriate skills in many organisations. Some media companies told us that they worry they do not have sufficient expertise, and that they are at a disadvantage compared to large technology companies when it comes to a data 'arms race'.

3

Recent change

MODERATE

Change in the last five years has been dominated by collecting more data. This has included not only basic viewing figures, but also data on in-app user behaviour and quality of experience (QoE).

> **As an industry, we do have the data we need. We're growing streaming, we're growing FAST, we're growing revenue on YouTube. We know what we need to do, and we have the data points.**

"We know what to do, and we have the data points"

However, some broadcasters feel they have a long way to go in identifying the key metrics and using them to have a laser focus on achieving specific objectives.

> **When it comes to really using the data in a smart way, and making changes based on the data, we're at the very early beginning.**

Upcoming change

MODERATE

The experts who completed our survey and attended the workshops expect to see growing sophistication in both data capture and analysis.

Improving QoE - in part by improving its monitoring - was singled out in one discussion as crucial to enabling streaming to ultimately replace traditional broadcasting.

But most of the conversation centred around improving the ability to understand and react to viewer behaviour in order to increase engagement, advertising efficacy, and subscriber retention. With fears of a ceiling to potential subscriber numbers, there will be a focus on increasing the lifetime value of each customer.

The focus of viewer analytics will be to drive a higher lifetime value per viewer

Ongoing changes in technology, legislation, and user attitudes towards privacy will continue to form constraints, and will increase the importance of having strong first party data.

> **With third party cookies going away, and other privacy issues, companies need to make more of the first party data they've got. Then they can selectively bring in the third party data that's from the best quality sources that they can match really well.**

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With a strong base of data in place, AI is once again expected to be transformative in how organisations take advantage of that data.

It will allow much more granular audience segmentation, moving from demographics to implicit interest groups and beyond.

> **AI has massive potential to improve the ability to glean insights about user behaviours from data, as well as extrapolate additional insights that are not directly observable (preferences, biases, etc.)**

And it will allow users across the business to understand and act on the data.

> **The data platforms will get more user friendly. A normal person will be able to analyse the data. You will ask a business question, and get a response. It will be much faster.**

AI will help regular users generate sophisticated data insights

For the most sophisticated media houses, these insights will be used in a variety of different ways, moving beyond in-app recommendations to inform areas such as future content commissioning. Some broadcasters are already beginning to imagine how they could take advantage of these capabilities.

> **We're really good at using the data to improve our app, see where the pain points are in viewer journeys, create feedback loops into commissioning to create successful shows. But we're not yet doing as good a job as we could at using that data to see how we can better serve diverse audiences, and where we can find gaps in underrepresented groups.**

Conclusion

The media distribution landscape has undergone a seismic shift. Streaming has become mainstream, reaching the vast majority of viewers and becoming the sole viewing method for a significant proportion. This transition, coupled with the rise of connected TVs as content hubs and the dominance of digital video advertising, signals a major transformation.

But it's not a one-time change. Business models and consumer behaviour continue to evolve, and so to remain competitive, broadcasters and media companies must embrace agility and adaptability.

Media companies must embrace distribution agility

The cloud, with its inherent flexibility and scalability, is now a mature tool for content distribution. While specific technical hurdles remain in some of the most complex live workflows, in general it is possible to meet all of a media company's distribution needs in the cloud.

The decision therefore comes down to economics. Some broadcasters have existing infrastructure to depreciate, or relatively fixed 24/7 outputs that are well served by servers on premises or in private data centres. But many would not consider building anywhere other than public cloud, where the opex model enables them to align costs with specific platforms and content.

Distributing from the cloud is now an economic decision, not a technical one

The benefits of cloud native architectures (compared with 'lift and shift' of traditional software architectures into the cloud) have been discussed in DPP research as far back as *The Cloud for Media* in 2020. In areas where scalability is paramount, tools such as microservices and serverless functions can be vital to achieve the required performance and resilience. And in areas such as linear channel origination, lift and shift models are likely to be more costly than on premises equivalents - so cloud native architectures are often the only economically viable option.

Data has become fundamental to the way viewing is measured, user experiences are personalised, and advertising is served. Now, AI is poised to redefine these areas. But while AI's potential is immense, its success hinges on effective data collection and management. Addressing today's data challenges and breaking down data silos will be key to unlocking AI's power.

Addressing data challenges will be key to unlocking AI's power

Content distribution used to be one of the most stable and slow moving parts of the media supply chain. Technology centred on capital intensive fixed infrastructure like transmitters and cable head ends. Deals and partnerships were huge and spanned many years. Viewing data came back overnight.

The content distribution landscape of the future looks very different. It will continue to change at a more rapid pace, requiring responsiveness to viewer behaviours, new platforms, and new devices. More partnerships are needed than ever before. And the volume, complexity, and speed of the data involved are rising exponentially.

To thrive, media companies need to be agile. They need flexible strategies and infrastructures, strong data capabilities, and perhaps in the near future, strong AI capabilities. No company can deliver the agility and functionality they'll need without an appropriate technical infrastructure - and that will mean building a cloud native distribution capability.

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