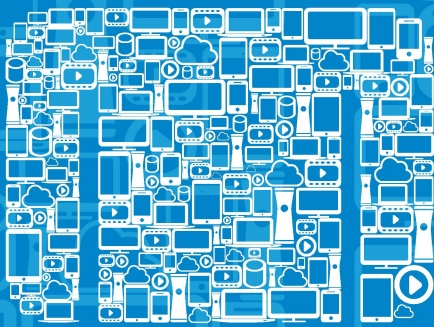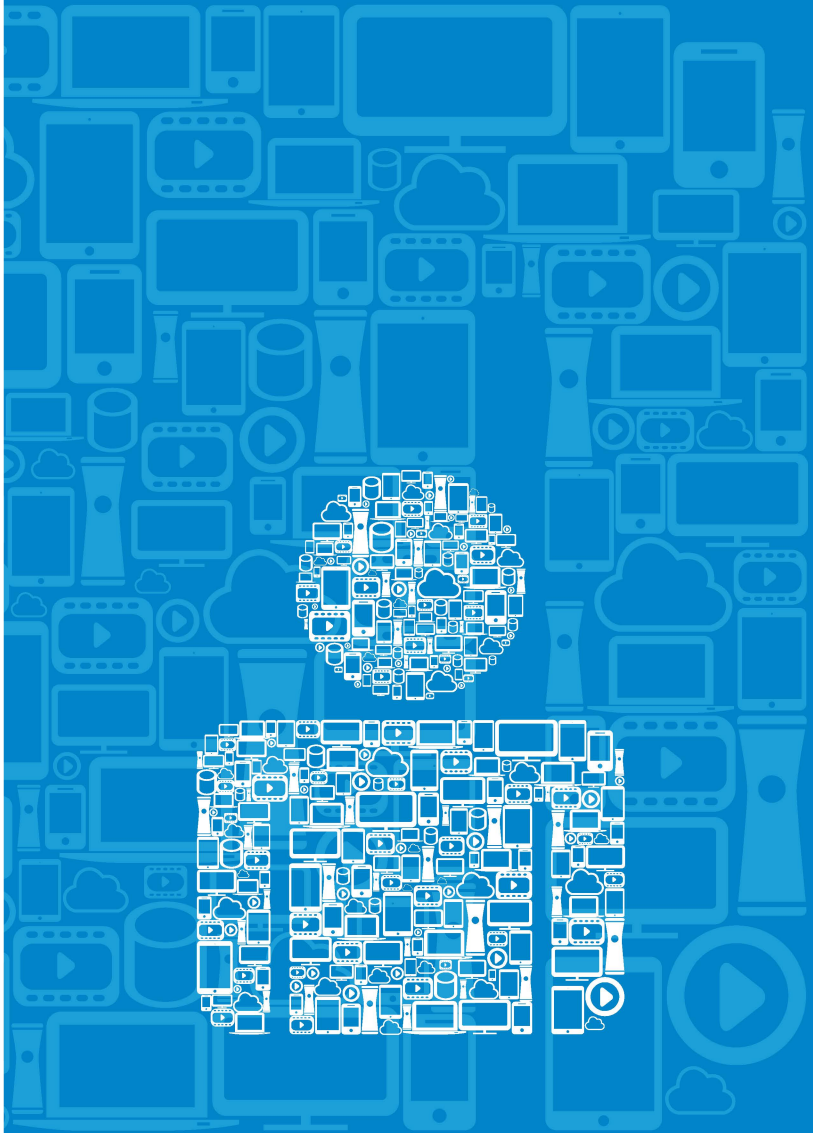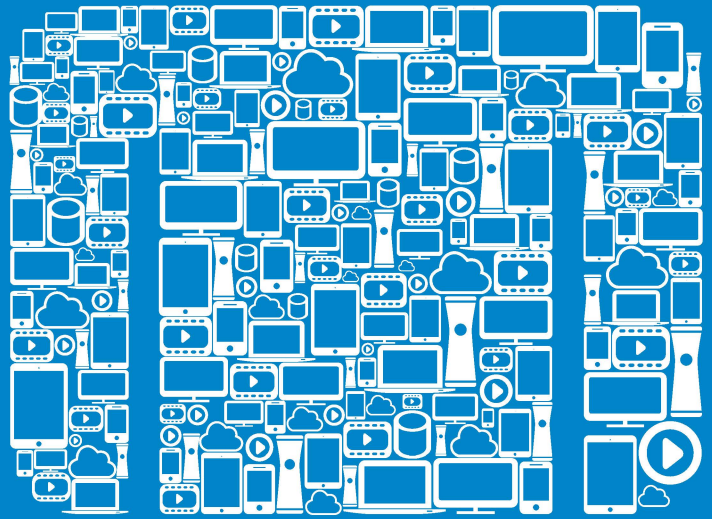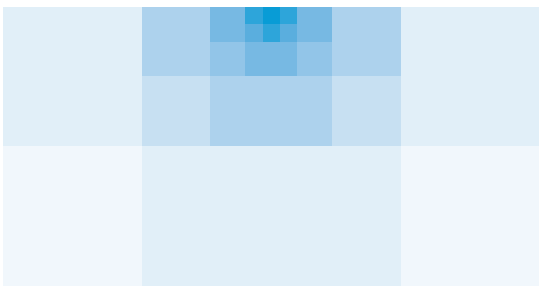# How to attract and serve audiences profitably in the age of hyper-distribution

Removing the limits to content distribution and discovery by transforming metadata and publishing workflows.
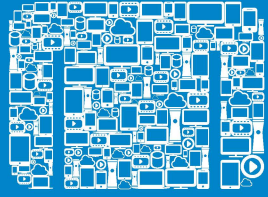
There is unprecedented growth in the number of companies offering content and television services, and therefore the endpoints through which programming is distributed. Competition for viewer attention and wallets has never been fiercer. Aggregators must become the discovery agent of choice, while content owners and curators must make themselves available everywhere, without limits. Achieving these ambitions while making a profit requires a generational upgrade to metadata management and publishing workflows. This paper outlines what a successfully transformed media operation looks like.

Contents

What 21st century curators and aggregators look like

The television industry has never faced disruption on the scale it does today – and probably never will again. There is a new breed of curators. These include generalist and thematic SVOD providers (like Netflix or Crunchyroll, respectively) and sports services (like DAZN or Eleven Sports) – all born online, competing for viewer attention.
There is a new breed of aggregators: digital-native, pulling together streaming channels or apps into one place. Some are from incumbent media companies (like NOW TV or DIRECTV NOW) and some from emerging providers (like Amazon Channels and YouTubeTV).

Sports leagues and federations, studios, major production companies and broadcasters are going direct-to-consumer, offering browser and app-based streaming services that represent a rival source for content, which was once found exclusively within Pay TV or free-to-air broadcast bouquets. Social media provides another home for content, with Facebook Watch and Snapchat Discover among the notable initiatives.

Multiscreen viewing, including through connected TV devices and mobile devices, is mainstream and growing fast. Most young viewers (and a growing number of older ones) think of TV as a combination of established and born-online services, across a portfolio of platforms and screens. The way they find content is becoming more diverse. People are channel-zapping, scanning electronic programme guides, accepting recommendations, using search, responding to social media and email alerts, and harnessing dedicated content discovery apps that deep-link into multiple content sources.

There is more content from more providers, in more places, than ever before and competition for viewers' time and money is fierce. Commercial broadcasters have long understood the attention economy, getting paid more if they can sustain audiences over time. Now, with the proliferation of lower cost and zero-commitment subscription services, and apps that effectively deliver "à la carte" viewing, the danger of churn – so often driven by a lack of engagement with content – is amplified.

How does a television/premium video provider stand out in this hyper-distributed, hyper-competitive environment? By doubling-down on what they do best.

For aggregators:

Become the content discovery agent of choice so that satisfied consumers, who find it consistently easy to reach the content they care about, keep returning to your destination to make their viewing choices. You must be the trusted guide with the high net promoter scores. The less access you have to original or exclusive content, the more important the role of 'discovery agent' becomes.

Meanwhile, take good care of your content partners, who must cope with the disruptions outlined above plus structural threats like content piracy and increased competition for advertising budgets (from the likes of Google and Facebook). Deliver them engaged audiences who are keen for their style of content. Help them move linear viewers into on-demand. Make catch-up assets available quickly. Ensure VOD back-catalogues can be easily found. Remove the temptations of illegitimate streaming services, which feed off consumer frustration.

For content owners and curators:

Ensure your content is available wherever current and potential viewers can be found, without limits. Make sure you can feed multiple endpoints cost-effectively, so capital and staffing costs are no longer a cap on ambition.

Publish content into post-broadcast viewing windows quickly, before consumers seek access via pirates or legal rivals, and while viewing still counts towards the audience total that advertisers pay for (using 'live+Xdays' as the currency). Fulfil deals with new partners (like an SVOD store) quickly, so the invoice can be sent while you further expand your fanbase. Open up your valuable archives, rights permitting.

Give distribution partners the metadata they need to surface your content (including through advanced recommendation and universal search functions) and to make direct associations with other relevant programming. Make sure that when a viewer finishes 'Episode One' of the new linear series, they can be directed to the previous season's box-set. Turn owned-and-operated apps into an example of content discovery best practice (across your own channel and VOD portfolio).

These business objectives prompt a number of technology requirements:

- The ability to make content more discoverable by improving the accuracy and consistency of metadata and by drawing upon rich new sources of metadata, while at the same time streamlining the metadata workflow so it is less labour-intensive and easier to scale.

- The ability to prepare an ever-increasing number of variants for each piece of content, in order to deliver media to all meaningful endpoints, and the ability to do this quickly, without breaking the bank. Both the metadata and digital on-demand publishing workflows must be made more efficient, in part through automation. Scalability and cost issues can be addressed by harnessing the cloud and a SaaS operations model, which also introduces more OpEx-centric financing.

- The ability to converge/rationalise what are currently separate and parallel processes for broadcast and digital, thus removing functional and process duplication to reduce cost.

Piksel anticipated the metadata and publishing transformations needed for a screen-agnostic future and helps broadcasters prepare for it through its Fuse Metadata Manager and Fuse Publisher solutions. These can be deployed independently of each other and they fit into any existing content workflow, integrating with existing products and legacy vendors. They are built upon the Piksel Palette, a modular cloud-based platform that mirrors future mega-trends in TV operations, such as:

- The use of a microservices-based (or 'cloud-native') software architecture that is designed to maximise the benefits of the cloud. Microservices are characterised by relatively small pieces of software that are largely independent of the software around them and that can be developed quickly, at minimal risk. Solutions that use microservices are inherently agile. Services based on this software model can be scaled in the cloud in small increments, making the pay-as-you-use-it model of public cloud services attractive.

- The ultra-efficient use of cloud resource, which removes limits on capacity and allows rapid scaling to suit demand spikes. Applications on the Piksel Palette support geo-diversity and flexible redundancy options. Operations can become more independent of physical location.

- A SaaS-based cloud model that reduces CapEx requirements by removing the need to over-purchase physical capacity to meet infrequent peak loads. It becomes easier for a media company to identify the portion of workflow cost that can be attributed to a minute of content or a unit of content when negotiating new distribution deals.

- The openness to support an environment where few vendors can do everything and where innovation means nothing stays the same for long, and where ecosystems tend to grow rather than shrink.

Content discovery as an engine for revenue growth

Whether it is aggregators trying to become the discovery agent of choice, or content owners vying for attention across a multitude of distribution endpoints, content discovery is key. You must win the battle for consumer attention at key decision moments, then win it again after 30 minutes, and then again 60 minutes later.

Content recommendation is one of the most important uses of entertainment data. Universal search is becoming a must-have capability for every next-generation set-top box platform. Now content discovery is taking another leap forward as machine learning is applied to scene analysis (including face and object recognition and natural language processing of closed-captions) to extract valuable new meaning from video, in the form of metadata.

In the UK, Sky News recently used face recognition to identify guests, live, for an opt-in interactive 'Who's Who' feature during the Royal Wedding of Prince Harry and Meghan Markle. In future, linear news, magazine and sports shows could be chaptered on-the-fly for on-demand viewing based on the people who were on screen, or themes being discussed.

The UK broadcaster Channel 4 announced a 2018 trial of AI (artificial intelligence) to identify 'contextual moments' that provide positive sentiment around a product category, based on scene analysis. These are opportunities that can be exploited by a relevant advertiser at the next available break.

A key benefit of AI-enabled metadata augmentation is the ability to sub-categorise content according to its mood or plot. So-called 'micro-genres' such as 'quirky thriller' will help with search, and movie plots will be used to drive recommendations. Deeper insights will help AI systems cope with the non-structured requests that consumers make once they talk to their television services (voice search is going to become commonplace).

At the heart of all content discovery lies metadata. In the age of data-driven insights, this is an often-neglected data process that underpins premium user experiences (including genuine content personalisation) and monetisation. There is a powerful and growing incentive for media companies to take a more metadata-centric view of life.

Strong metadata and the ability to expose and harness it efficiently, leads to direct and indirect monetisation opportunities:

- In a world where there is more à la carte content provision, via streaming services and zero-commitment contracts, audience engagement and user satisfaction have an immediate impact on user retention and lifetime customer value.

- As Channel 4 is proving, a better understanding of context within shows creates new advertising possibilities. If programme plots or conversations focus on Paris (in an attractive way), holiday or travel promotions could follow.

- A better understanding of content similarities, looking beyond actors and directors, makes it easier to drive viewers to SVOD, TVOD or AVOD collections. You can link content that is in one monetisation window (like first-run linear) to content that is in a later rights window (maybe download-to-own) but was little known.

- A better understanding of the characteristics of content that works for your audience, and content that does not, improves commissioning and rights negotiations.

The characteristics of a next-generation metadata workflow

Many of today's metadata management and processing systems hinder innovation rather than encourage it, and they need to be transformed. Here are some pointers to what a next-generation approach to metadata looks like:

- There will be a single metadata file (or dataset) relating to a video asset. Currently it is not uncommon to have multiple metadata files associated with the same title, after years of receiving content from multiple providers and years of running the OTT metadata operations in parallel to broadcast operations.

  A future-facing solution converges metadata to create a common dataset and then maintains it, ensuring no future duplication of files. This is far more efficient to manage. It also removes the danger of inconsistencies that diminish the user experience and undermine efforts to associate different content assets with each other.

  This master dataset serves every distribution platform, screen type and market. The images, graphics and synopses needed to populate a set-top box EPG, an Apple TV (or similar) and a smartphone, are all available from this one source. The correct version is automatically selected according to where the video will be displayed. All the language options (for the synopses and cover-art, for example) are available in this common metadata package.

  Descriptive metadata (like a synopsis) may currently reside in a different database to the technical metadata (like available audio tracks) and the rights data (like the windowing rules) for a single piece of content. After a metadata management upgrade, these can be pulled into a common dataset.

  Removing the metadata silos should not require the wholesale replacement of existing systems and vendors. These can be integrated into an intelligent next-generation management and orchestration solution that provides a holistic view of all metadata. The ingest of new metadata can be migrated to a new system, and the wider workflow transformation mapped over a typically 18-36-month project.

- Many media companies have grown through acquisition and have inherited multiple metadata vendors and siloes. This can be a problem, and while a next-generation solution should aim to rationalise this environment, it must also respect the legacy situation.

It should provide a full set of APIs to cope with any workflow configuration. It also needs the ability to enrich data through integrations.

Fuse Metadata Manager has an event/data driven orchestration to enable integration of legacy systems to create a wholistic view. Media companies should keep in mind the critical nature of seamless integrations and when looking for a transformation partner, seek a service-led organisation with first-class software development and support functions.

- Ensuring the accuracy and consistency of metadata (partly to ensure that all content associations are solid, as a cornerstone to competitive content discovery) has never been so important. A modern metadata workflow solution starts with smart ingest. Therefore, checking the accuracy of the information supplied by different content owners, enriching metadata from third-party sources, removing inconsistencies in the way content is identified or presented to consumers, and de-duplicating it.

  Each metadata delivery is analysed as it arrives and checked against the existing metadata catalogue. If a match is found, the new metadata can be ignored, parts of it can be merged into the existing metadata, or the new file can replace the old. This ensures the master file contains the best possible information.
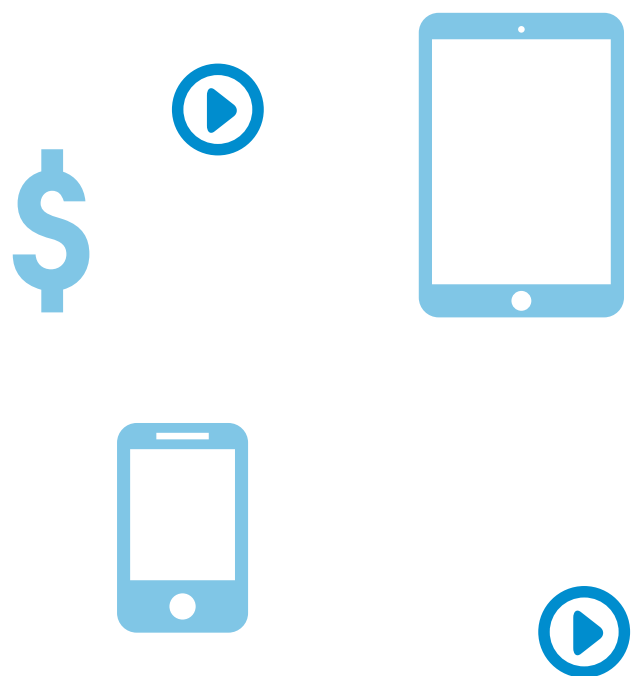
This part of the metadata consolidation process should enforce uniformity upon the way content is described. A TV show will not be classified as 'Season 2, Episode 5' if the next in the series is referred to as 'Episode 18'. Spelling errors are corrected. The use of 'and' or '&' in a title is standardised. This is not pedantry; it is the foundation for consistent content association and discovery.

The creation of a single metadata file for each available title means viewers are never presented with different versions of a programme during search or recommendation – leaving them guessing which version to play. Consumers will not be presented with two X-Men/Wolverine movies on a set-top box and four entirely different titles on their laptop. That only emphasises the differences between viewing platforms, when the ambition is to present TV as a unified, screen-agnostic experience.

- The digital publishing operations, where on-demand content is prepared for streaming/download to multiple digital (OTT/online/multiscreen) endpoints, will have visibility into the metadata system, so it understands what metadata exists already and what needs to be created, to better serve existing or new distribution partners.

An SVOD provider may need both poster-sized and thumbnail-sized artwork. If these reside in the system, they will be pulled from the same existing (single) metadata dataset. If digital operations do not have this visibility into the metadata system (this is especially challenging if metadata records are spread across multiple systems), the default approach is to create new metadata, even if it exists somewhere. This duplicate effort represents pure waste.

Downstream systems/companies often need metadata in specific formats and have carefully defined fields, usages and constraints. It is important to quickly configure a workflow so you can publish using a given template and a set of rules for any given downstream party. Apple and Amazon require different formats for their metadata, for example. All expectations must be accommodated. Some distributors insist there is no branding or text when receiving images.

A digital, on-demand content workflow management system (like Fuse Publisher from Piksel) will understand distributor requirements across a range of parameters. These go beyond metadata and include things like video resolution and bit-rate profiles. If a content owner/broadcaster signs a deal

to supply a new SVOD partner, they need to know all the 'components' that have been created previously - audio/video, closed caption/subtitles and metadata - before instigating workflows to create any required new assets.

Every time you do issue a new job (like adding a language version to the audio track options, creating a new bit-rate option in 4K-HDR, or creating poster-art to fit a new screen size) you reduce the chances that new work is needed to meet the requirements of a future distribution partner.

Unified metadata management, and its close integration with the content workflow, reduces costs while accelerating time-to-market.

- A next-generation metadata system will be highly automated. Metadata management is full of tedious manual tasks today and removing them dramatically increases efficiency. Fuse Metadata Manager sets the benchmark for what is possible.

When checking to see if a new metadata delivery (from a content owner) would duplicate existing data, the system checks the content ID and then compares different metadata fields until it can confidently predict there is a match or no match. Users can set confidence level thresholds that decide the point at which human editors intervene to confirm if the new metadata exists already.

Machine learning can be applied to this process, taking account of the accuracy of metadata previously supplied by different content providers. It will be possible to predict a 75% chance of there being a match, or a 95% chance, for instance. Users could set different thresholds for different categories of content. For example, blockbuster content could require human intervention sooner, but more unsupervised automation is permitted for long-tail titles.

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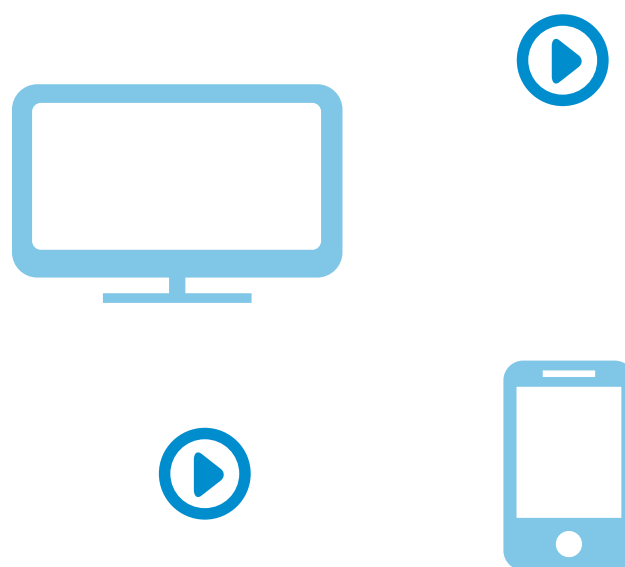
Metadata enrichment (the use of third-party information from companies like Red Bee Media or Rotten Tomatoes) to improve on what the content provider supplies (like expanded cast/crew information) can be automated. You can establish rules, like commanding that user ratings (i.e. an average 8/10 score from people who have watched a title) should be added to every new metadata file.

Metadata enrichment is another foundation for good content discovery. The data that is acquired can provide more search parameters. It gives more reasons to either watch a title or avoid it and quickly move on to a better choice.

Sources of metadata include the content supplier, third-party metadata providers (like Gracenote, IMDB and others), and what is created internally (the work of editors, and the inputs from metadata augmentation solutions that are using scene analysis, including face recognition).

There is another source of internally generated metadata, from the QC (Quality Control) process that is performed on the video/audio files (as opposed to metadata files) when they are ingested. The presence of ad breaks is a good example. A sophisticated metadata system will onboard this knowledge and do so automatically.

The interaction between the Fuse Publisher's digital/on-demand workflow manager and Fuse Metadata Manager can be automated. When the former interrogates the latter to see if existing metadata components are available, rules can instruct what happens if they are not. Thus, a new job can be green-lighted without human intervention.

Automation, next-generation metadata management and advanced digital publishing are symbiotic. A wholistic view of metadata is the foundation stone for the large-scale supply chain automation needed to achieve the efficiencies that make media companies competitive in the age of hyper-distribution. Once streamlined and automated, every step in the workflow will consume, act upon or produce some form of metadata. This, in turn, enables data and event-driven automation throughout. A best-in-class metadata management system will be open to a growing array of third-party metadata providers. From AI-based systems that are creating 'augmented metadata' (using scene analysis), to multi-vendor QC systems, to search and recommendation systems, to legacy metadata management tools, and to multiple databases.

Fuse Metadata Manager has become the hub of a growing ecosystem of third-party metadata suppliers who can serve 'specialist' requirements, notably for multilingual or cross-territory titles. Through this single system, users can select, review, purchase and edit metadata from leading European suppliers like Bindinc (from the Netherlands), Spain's Mediadata TV and Plurimedia of France.

The metadata management system must integrate effectively with the digital/on-demand publishing workflows. Fuse Publisher, which is an automation and orchestration solution for content ingest, processing, quality assurance and distribution of on-demand assets, is an easy fit. This complementary but separate application runs on the same Piksel Palette platform as Fuse Metadata Manager.
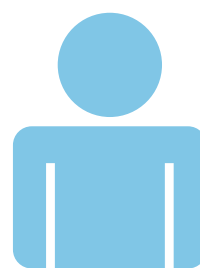
Removing the capacity cap for digital on-demand publishing

Fuse Publisher normalises digital publishing so that the time and human resource needed to distribute to social media sites, TV Everywhere services, direct-to-consumer apps or a digital aggregator like Hulu is greatly reduced. It removes the constraints on digital distribution. Fuse Publisher:

- Understands what components of a content package are needed for different digital distribution endpoints, cherry-picks those that exist and instigates the processes needed to create others, before signing off a package for distribution.

- Orchestrates the digital workflow, including prioritising files and tasks, and provides visibility into workflows, including status updates.

- Works out which processes can be run in parallel, without waiting for every process to be completed before instigating another. Where once you were dependent on someone adding a title to the metadata before you could pull a thumbnail picture from the asset, you can now do both tasks simultaneously, as an example. Parallel processing is possible when there is a single, accurate metadata record that can be worked upon and where every revision and addition is recorded on this original file, which is the 'single source of truth'. It is also easy to run multiple applications on the same assets at the same time if the metadata and audiovisual files are stored and processed in the cloud, where you can fire up additional software instances as required.

- Uses rules-based algorithms to make "yes/no" decisions about whether a task, like a transcode job, is complete. In this example, it would investigate why a transcode failed (if it did) and depending on the reason, can instigate a second attempt - all automatically.

- Automates key parts of the manual QC (Quality Control) and validation process, which today requires human operators check that content packages supplied by a content owner comply with the various requirements of the platform/service. For example, ensuring subtitles are in French and English, and in a specific technical closed-captions format, or that graphical overlays are either inserted or removed.

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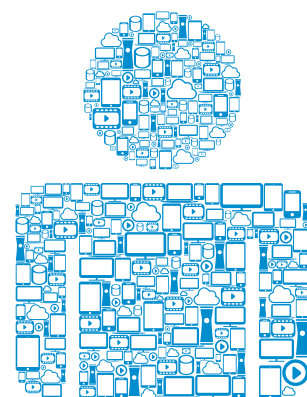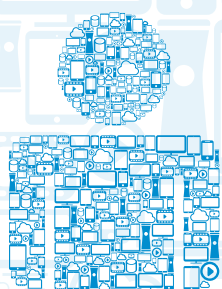
There are some obvious and immediate commercial benefits from a digital on-demand workflow management, automation and orchestration solution of this kind.

- You reduce the time needed to prepare content for digital catch-up TV. It helps commercial broadcasters deliver content at the start of the live+X catch-up window during which non-linear viewers count as advertising eyeballs (and generate a payment).

- It hastens the moment when digital content can be released to all screens/platforms. Content owners and distributors try to avoid an inconsistent multiscreen user experience so prefer to wait until all screens can be 'fed' at the same time, even if the 'fastest' screens are held back by the 'slowest'.

- It reduces the manpower that larger media companies have been throwing at their multiscreen and on-demand workflow in order to achieve competitive timeframes for the publication of on-demand content. It helps smaller media companies hit catch-up deadlines that were simply unachievable.

Preparing TV programmes for the diverse universe of digital endpoints is a complex and, until now, time-consuming process. Fuse Publisher has tackled this issue head-on. Once again, automation is at the heart of the workflow efficiencies. Processes that can be automated using this solution, as well as validation/QC, include: discovery of video files and metadata assets, confirmation that digital packages are complete, and the instigation of processes like transcoding and process reporting.

Conclusion: Opening a new chapter in television

Television is now inherently multiscreen. To create a unified experience across multiple endpoints, and aggregate audiences wherever they can be found, and do this cost-effectively, metadata and content workflows must be transformed. This transformation is also the basis for a generational upgrade in content discovery capabilities.

A metadata-centric approach to life brings handsome rewards in the form of an improved user experience and greater opportunities to monetise content directly and indirectly. The future of metadata and digital on-demand publishing exploits mega-trends that will underpin much of the digital and media transformation of the next five years: microservices-based, cloud-hosted, SaaS-driven, open and agile.

This is the winning formula for smart media companies - for aggregators who are the discovery agent of choice and for curators whose content can be found everywhere, without limits.

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