



digital production partnership

MEET THE IMF PIONEERS

SEPTEMBER 2018

Enabled by



THE IMF PIONEERS



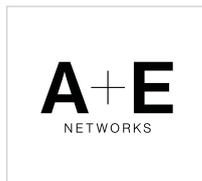
CHRIS JOHNS
Chief Engineer,
Broadcast Strategy
Sky



BILL BROWN
Head of Media Standards
ITV



CAROLINE EWERTON
Business Change Manager
ITV



LOIS NEMCOVSKY
Senior Vice President,
International Media Operations
A+E Networks



TIM BERTIOLI
Vice President,
International Operations
Vice Media



MICHAEL KOETTER
Senior Vice President, Media
Technology and Development
Turner Broadcasting

HOSTED BY



ROWAN DE POMERAÏ
Head of Delivery & Growth
DPP



STEFANIE GAMBERG
Vice President,
Product Management
Deluxe

INTRODUCTION

The modern media landscape is one in which content owners are producing more and more versions of their content, in more languages, for more markets, to be delivered to more devices.

A NEW SPECIFICATION: TSP 2121

The spiralling complexity of the workflows required to deliver all these versions, and the huge growth in storage required to keep them, creates a new series of challenges for content producers and distributors. The movie industry moved some time ago to address these challenges by creating the Interoperable Master Format (IMF) – a suite of SMPTE standards which define a high quality format for mastering and versioning. Recognising that the broadcast and online content industries could also benefit from the application of IMF, the DPP set about a programme of works called IMF for Broadcast and Online, which reached a significant milestone this summer with the publication of SMPTE TSP 2121:2018 IMF Application ProRes (DPP).

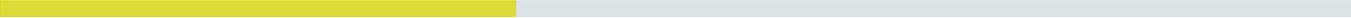
IMPLEMENTATION STARTS HERE

Yet as with any piece of DPP technical work, the publication of a specification alone is not enough. The DPP seeks to deliver real-world benefit by enabling and supporting the adoption of new technology.



The DPP seeks to deliver real-world benefit by enabling and supporting the adoption of new technology

So at IBC 2018 the DPP hosted a Members' Briefing to examine the state of the industry when it comes to adoption of IMF for broadcast and online. The event was highly oversubscribed – a demonstration of the eagerness to hear about IMF implementation plans from such a diverse and important group of content providers as Turner, Vice, A+E Networks, Sky and ITV.



The picture painted by the speakers was one of optimism and excitement, but also one of realism and practicality. While some are striding ahead with building brand new cloud-native IMF workflows for managing their media supply chain, others are taking smaller but no less practical steps, with pilot implementations, proofs of concept, and the preparation of business cases to explain to finance executives the benefit that IMF will deliver.

This report summarises the discussion at our briefing event, and looks forward to the coming months and years when IMF adoption will deliver benefits across the media supply chain.



STEFANIE GAMBERG

Vice President,
Product Strategy

Deluxe

Stefanie Gamberg is part of the product management team for Deluxe One, a cloud platform for media creation and delivery.

Stefanie opened our briefing by discussing how the standardisation work that the DPP, SMPTE and other groups are doing around IMF enables true interoperability when exchanging content worldwide. The normalisation of media and metadata in line with common standards, allows Deluxe to streamline their workflows in order to deliver a more flexible and cost effective platform for their customers.



Standardisation by the DPP, SMPTE and others around IMF enables true interoperability worldwide

Deluxe supports IMF in their Media Asset Management services, explained Stefanie, and they model IMF metadata and CPLs in their Metadata Repository. Meanwhile, their Specification Repository manages the technical specifications for output formats, for generating OPLs and delivering IMF packages to other systems and organisations.

By offering media management and content transformations services based on IMF compatible products. Deluxe's aim is to pass on the benefits of componentised workflows to their customers worldwide.

CHRIS JOHNS

Chief Engineer,
Broadcast Strategy

Sky

Chris Johns is chair of the DPP's working group on IMF for broadcast online.

Chris reminded everyone of the evolution of media mastering and delivery, from film, to tape, and, only recently, to files. So why, he asked, do we need a new format and a new set of change?

THE CHALLENGE OF VERSIONING HIGH RESOLUTION CONTENT

DPP members were finding that while the AMWA AS-11 UK DPP delivery formats were perfect for delivery to broadcast, the compression in the format may not be ideal to retain the original quality of the footage, and doesn't support the higher resolutions at which production companies increasingly shoot, even when delivering HD. And then there's versioning. Chris told the story of a test Sky did around three years ago with a UHD football match: it took almost 24 hours to replace 10 minutes of content, including the editing, rendering, and transport of the media. Clearly a more efficient process is needed.



AS-11 is great for delivery, but not ideal for retaining higher resolution content

BUILDING ON THE IMF STANDARD

Hollywood made its own transition to the use of files for distribution, with the Digital Cinema Package (DCP). As in television however, the DCP format was ideal for distribution but not perfect for versioning and mastering. So the Hollywood studios worked with SMPTE to define a standard, called the Interoperable Master Format, that enabled them to manage the versioning of their content. The existence of this standard presented the DPP with an opportunity to build on the brilliant work of others, rather than to reinvent the wheel.



IMF was an opportunity to build on the brilliant work of others

UNDERSTANDING THE BUSINESS REQUIREMENTS OF BROADCAST AND ONLINE

There was a need to understand the business requirements of broadcast and online users, and to form a specification based directly on those needs. The movie and television industries have much in common, but also some important differences. Working with the North American Broadcasters Association (NABA) to define the requirements, and with SMPTE to publish the specification, the DPP was able to deliver a specification for IMF that works for our industry.

The specification is based on ProRes, which is a format that's well suited to broadcasters, is ideal for editing, and supports Ultra High Definition (UHD). And the specification remains well aligned to the existing file delivery specifications of the broadcasters, enabling easy output to the AS-11 formats.

The archival use of IMF is important too. It was valuable to be able to keep existing ProRes media and migrate it into IMF without transcoding and degrading quality.

THE NEXT PHASE OF WORK

Looking forwards, it's crucial that the format has longevity and can be read and used for years or even decades to come, which is why it was important to work with SMPTE and to build on existing Standards and RDDs.



We are seeking to create a format that can be read for decades to come

Finally, Chris spoke about some of the remaining work ahead. Output Profile Lists (OPLs) will provide the ability to easily manage the transformation and output of content from an IMF package (IMP), enabling reuse of content as well as delivery to content providers around the world.

The DPP working group will continue to listen to the needs of all DPP members, and deliver updates as required to meet the requirements of the full content supply chain.

BILL BROWN

Head of Media Standards

ITV

and

CAROLINE EWERTON

Business Change Manager

ITV

ITV, the largest commercial broadcaster in the UK, is working on a pilot of IMF, with their high profile drama series, *Vanity Fair*.

THE MOST MODERN OF COSTUME DRAMAS

Bill Brown began by explaining why ITV are interested in IMF for broadcast and online. *Vanity Fair* is the first programme ITV has commissioned in UHD and 5.1 audio, and so IMF will reduce ITV's storage costs when managing multiple versions of such high resolution content. ITV also believes that, even though their existing AS-11 workflows are very efficient, further optimisations can be made using IMF, particularly when considering online delivery. This will be especially true when IMF is paired with cloud-based tools to optimise the supply chain.



ITV seek to pair IMF with cloud-based tools to optimise the supply chain

ITV's approach to the deployment of IMF for broadcast and online has begun with a pilot because it will enable the company to better understand the technology, workflows and business benefits of the new specification.

CENTRALISED CONTENT MANAGEMENT

Caroline Ewerton explained that ITV has moved to a centralised model of content management across its diverse businesses of broadcast, online, and international distribution. As such, a single high quality master package which incorporates metadata, is well aligned to ITV's preferred operating model. IMF for broadcast and online will allow ITV to cease its current practice of storing full resolution ProRes masters for each localised version of the programme. This will dramatically reduce storage costs and simplify processes such as QC. ITV will now be able to store one IMF package (IMP) for the programme, with different Composition Playlists (CPLs) for the different localisations, all referring to the common underlying media.



IMF will dramatically reduce ITV's storage costs

Bill stressed the pilot project has been a true collaboration with the content producers (Mammoth Productions) and post production providers. In addition to managing ProRes video and surround audio in the IMP, ITV is intending also to include subtitles and international language tracks. In so doing, it intends to refine workflows which can then be reused across ITV in the future.

TAKING ON THE BUSINESS CHANGE CHALLENGE

As well as the technical implementation, ITV is focussing on the business change elements of these new workflows. Caroline detailed the programme of educational sessions that ITV is holding internally to explain the business benefits of IMF. There is also an IMF Strategic Group, which gathers key stakeholders from across the company to receive operational feedback and ensure that real business value is delivered.

It's important to ensure that production teams also understand the change. Once producers could hold a physical tape; then they had to get used to files; and now they are being asked to manage an ethereal collection of files and data in the cloud. That requires explanation and reassurance. Caroline highlighted that the editorial control over CPLs will need careful management and communication.



The move to the management of an ethereal collection of files and data needs explaining to producers

ITV is already preparing for its next IMF delivery, which they expect to be a full drama series.

LOIS NEMCOVSKY

Senior Vice President,
International Media Operations

A+E Networks

and

TIM BERTIOLI

Vice President,
International Operations

Vice Media

Lois and Tim, in conversation with the DPP's Rowan de Pomerai, explored how IMF for broadcast and online will affect A+E and Vice. Both these companies distribute content via broadcast and online mechanisms, but arrive there from different perspectives. Vice is a digital-first content producer, that more recently has begun broadcast distribution of programmes and channels; while A+E comes from a strong cable and satellite broadcasting background, with OTT and VOD being newer additions to their portfolio.

THE A+E CASE FOR IMF

Rowan began by asking Lois Nemcovsky what benefit the deployment of IMF will bring to A+E. Lois explained that A+E deal with many content providers, and production companies generally want to spend as much time as possible perfecting the creative and editorial components of their work, sometimes leaving little time for the technical aspects of preparing and delivering content. The aim is that by using common standards and more efficient workflows, A+E will be able to simplify the distribution of that content to owned and operated networks, joint ventures, affiliates, digital platforms, and other content licensees.



Common standards and efficient workflows simplify the distribution process

ENABLING VICE TO GROW FAST

The DPP's IMF Briefing came only days before the second anniversary of the launch of the first Viceland international channels. Tim Bertioli spoke about how the workflows were constructed to reversion and comply content for broadcast before delivering it to Vice's playout provider and VOD affiliates. He also described how Vice's new studios business is now delivering long form content to multiple broadcasters, including Channel 5 in the UK. Vice already master in ProRes, but with the rapid growth of their operation, IMF offers opportunities to simplify versioning and automate delivery.



IMF harmonises workflows across platforms

The discussion moved on to the factors that must be taken into account when preparing a business case for a potential move to IMF, and what the justifications might be for investment in technology upgrades to support such a move. Tim discussed how the technology stack behind the Viceland linear TV network was by necessity built separately from Vice's core digital publishing systems in terms of mastering and distribution. However, with more and more Vice content now appearing across all platforms, the ability to harmonise the workflows and drive online and broadcast from a common repository of master content, is a significant incentive.

THE POWER OF BEING AGILE

Lois explained that A+E are running multiple pilots for implementing IMF, with existing ProRes master content being converted to IMF. The International team are pioneering this approach within A+E, as they have done with previous technical changes, including the launch of the History Channel in HD in the UK, and the move to file-based workflows. This demonstrates the power of taking an agile approach – using the most flexible and entrepreneurial parts of the business to trial new ways of working and ensure they deliver real benefit before rolling out to the rest of the organisation.



A+E is using the most flexible parts of the business to trial the new ways of working

In terms of the practical approach to achieving their implementations, both Vice and A+E are partnering with vendors and suppliers to make the change a reality. A+E aim to expand IMF further next year, and pending positive outcomes from pilots, considering it as an international file master format within 2019.

WORKING WITH BELIEF

Lois then discussed the way that change management will be performed internally. Her view is that the change will be significantly aided by their staff's existing belief in the format. "Operations people at their core want to do things efficiently, cost effectively, with faster speed to air, so that they have more resources for the next project or burst of work."



Operations people at their core want to do things efficiently

The greater challenge will be in managing partners. Lois believes that the further up the supply chain the implementation of IMF goes, the more benefit will be seen downstream. A+E hope to work with the DPP to help solve the challenge of educating production companies about IMF. A+E's policy of purchasing full global rights to commissioned content does at least simplify things somewhat, as management of the technical processes and the storage sit with the broadcaster.

VICE HAS AN INTERNAL CULTURE OF CONTINUOUS CHANGE

For Tim, meanwhile, the internal culture at Vice of continuous change and improvement is on his side. There are significant internal efficiencies to be gained by bringing together domestic and international content workflows, but the efficiencies increase still further as providers and recipients of content all adopt IMF.



As more providers and recipients adopt IMF, efficiencies increase

Both Lois and Tim highlighted the fact that technology implementation for IMF will involve some existing and some new vendors, demonstrating the market opportunity for companies who can really help deliver on the promise of efficient versioning and mastering. Cloud and microservices platforms are high on the agenda when looking at new technology, though it was also clear that practical implementation today will involve a hybrid of cloud and on-premise technology for both organisations.

THE IMPORTANCE OF A COMPLIANCE PROGRAMME

Looking to the immediate future, both speakers were keen to engage at IBC with their suppliers to understand their implementations of TSP 2121 and their technology roadmaps. Tim explained that for him, the DPP's upcoming compliance programme will help a lot with understanding which vendors are truly creating interoperable products to meet the specification. Lois highlighted the need to simplify communication around IMF within the broadcast and online industries, and the fact that organisations such as the DPP need to continue to provide information and education. She also called on the post production community to develop and offer expertise in the format and the workflows around it, in order to offer the services that clients such as A+E need.

MICHAEL KOETTER

Senior Vice President,
Media Technology and
Development

Turner Broadcasting

Michael brings the perspective of an organisation that has made significant progress towards implementing IMF. He spoke about the topic at a DPP event at IBC 2017, and in this session he provided an update about the progress since then.

REINVENTING TELEVISION

Around two years ago, Turner announced a significant initiative to reinvent television, focussing on a direct-to-consumer model with greater audience engagement. The initiative also meant building new master control systems and constructing a new media supply chain, all delivered in the cloud. Their new IP-based systems drive costs down in linear transmission and bring the workflows closer to OTT, yet Turner realise that broadcast and OTT have different requirements, and a single file delivering to both is restrictive. Their OTT platform needs progressive video, with different timings for adverts, and will support HDR and UHD before broadcast TV.



Turner focussed on building a direct-to-consumer model

More than that, the versioning process at Turner is complex and very active, with versions for domestic and international TV, OTT and SVOD platforms, airlines and more. Saving cost meant improving automation and reducing manual post production processes. So the team set about looking at how they could learn from supply chains elsewhere.

A COMPONENT APPROACH TO DELIVERY

Just-in-time processing and pull-based delivery (asking upstream suppliers for the media they need, when they need it) became important aims, often leading to a situation where a programme is not delivered in one go. Video, different language tracks, subtitles, stems, clean graphics and more will arrive piece by piece over months or years. Building a system to handle this capability required a good understanding of media components and how they relate to each other, all bound by metadata. And that's where where IMF becomes a key enabler.



IMF enables media components bound by metadata

However, it was explained that in Turner's cloud systems, data is stored in databases and files become objects in an object store; the strict constructs of IMF such as media files and XML data are pulled apart for storage within the systems. So why, Michael asked, was he here to talk about IMF?

A TECHNOLOGY STACK THAT USES IMF CONCEPTS

The answer is that the data model and wrapping constraints of IMF are highly important. What matters is not storing IMF internally, but using IMF concepts as a basis for the technology stack – as well as using IMF as an interchange format. Turner use ProRes media with separated tracks, and CPLs, and packing lists represented in databases with API methods for operating on them. IMF bundles are then used to deliver the necessary media and metadata to their edit platform, with the resulting edits mapped back into the cloud to create new CPLs referencing the same underlying media.



Turner will migrate much of its archive to IMF

Michael was asked what Turner's approach is to their existing content, and whether they'll migrate this to IMF. The answer was yes: Turner will migrate much of its archive. Like many broadcasters, Turner have a lot of content in ProRes, and this makes it easy to migrate to IMF using TSP 2121. This compatibility was important in the development of the DPP specification. Nonetheless, it's also important to understand that IMF sits alongside existing business to business exchange formats such as AS-11 X9, and so Turner expects still to use those too.

A COMMON APPROACH TO DELIVERING APIS

Turner will be launching this full end-to-end IMF-based cloud editing workflow at the end of 2018. Michael's concern now is that different MAM vendors may implement very different ways to interact with their IMF workflows – for example adding a new track to an IMF package. He called for a common approach to delivering APIs for interacting with IMF media, building on the great work done so far by the DPP, NABA, SMPTE and the technology vendor community.



Turner will launch an end-to-end IMF-based cloud editing workflow

SUMMARY

Listening to the speakers at this event, it became clear that IMF and its implementation bring together a great many of the themes we've been discussing in media technology for some years now.



IMF is driven by changing audience behaviours

The need for IMF is driven by developments such as UHD, and by changing audience behaviours in accessing content on more devices in more formats – combined with an increasingly global market for programmes translated into many languages.

CONTENT METADATA IS KING

The attempt to deliver solutions to these challenges highlights yet again the importance of good metadata, clear identification of content, and efficient media supply chains. And many successful solutions will build on microservices and cloud.

It's a veritable game of buzzword bingo, and perhaps that signals the significance of this change. IMF is not a simple point solution to one single problem, for many it's the bedrock of building their media businesses going forward.



IMF can offer a bedrock for building media businesses

IMF FOR EVERYONE

Our pioneers of IMF are taking differing approaches to their deployment, from single episode pilots to transformational technology change with end-to-end IMF workflows. It shows us that there is the potential for content producers, owners and distributors across the industry to reap the benefits of IMF, no matter their scale or the point they're at in their technology lifecycles.



All types of content producers, owners and distributors can benefit from IMF

The final question from our audience was whether IMF will have application outside long form entertainment production, such as in news, sport and commercials. The speakers believed that it absolutely will, with sport workflows often involving many video and audio tracks for a particular event, highlights packages being created from these, and news stories being recut for different bulletins and outlets. A lot of interest was expressed around the versioning of commercials and the application of this to addressable advertising.

We're just at the beginning of a journey with IMF, and it looks to be one that will have very wide reaching impacts and benefits across the media industry. The DPP looks forward to taking a leading role in the change.

The *DPP Members' IMF Briefing* at IBC 2018 was produced by **Gill Reston, Rowan de Pomerai** and **Jayne de Ville**. This report was authored by **Rowan de Pomerai** and designed by **Vlad Cohen**. The DPP would like to thank the generosity of the speakers at the Briefing for sharing their work, and making this report possible.

ABOUT THE DPP

The DPP is the media industry's business change network. Originally founded by UK Broadcasters the BBC, ITV and Channel 4, it is now a not-for-profit company with an international membership base drawn from the whole media supply chain – broadcasters and distributors to manufacturers and service providers, production to post production, trade bodies to educational institutions. The DPP harnesses the collective intelligence of that membership to generate insight, enable change and create market opportunity. For more information, or to enquire about membership, visit

www.digitalproductionpartnership.co.uk

ABOUT DELUXE

Deluxe is the world's leading video creation to distribution company offering global, end-to-end services and technology. Through unmatched scale, technology and capabilities, Deluxe enables the worldwide market for professionally created video. The world's leading content creators, broadcasters, OTTs and distributors rely on Deluxe's experience and expertise. With headquarters in Los Angeles and New York and operations in 38 key media markets worldwide, the company relies on the talents of more than 7,500 of the industry's premier artists, experts, engineers and innovators.

www.bydeluxe.com

This publication is copyright © Digital Production Partnership Ltd 2017. All rights reserved.