SIMPLIFYING

VIDEO FILE
WORKFLOW

Common File Specifications for North America

ELIMINATING... INCOMPATIBILITY, AMBIGUITY, DEVIATION

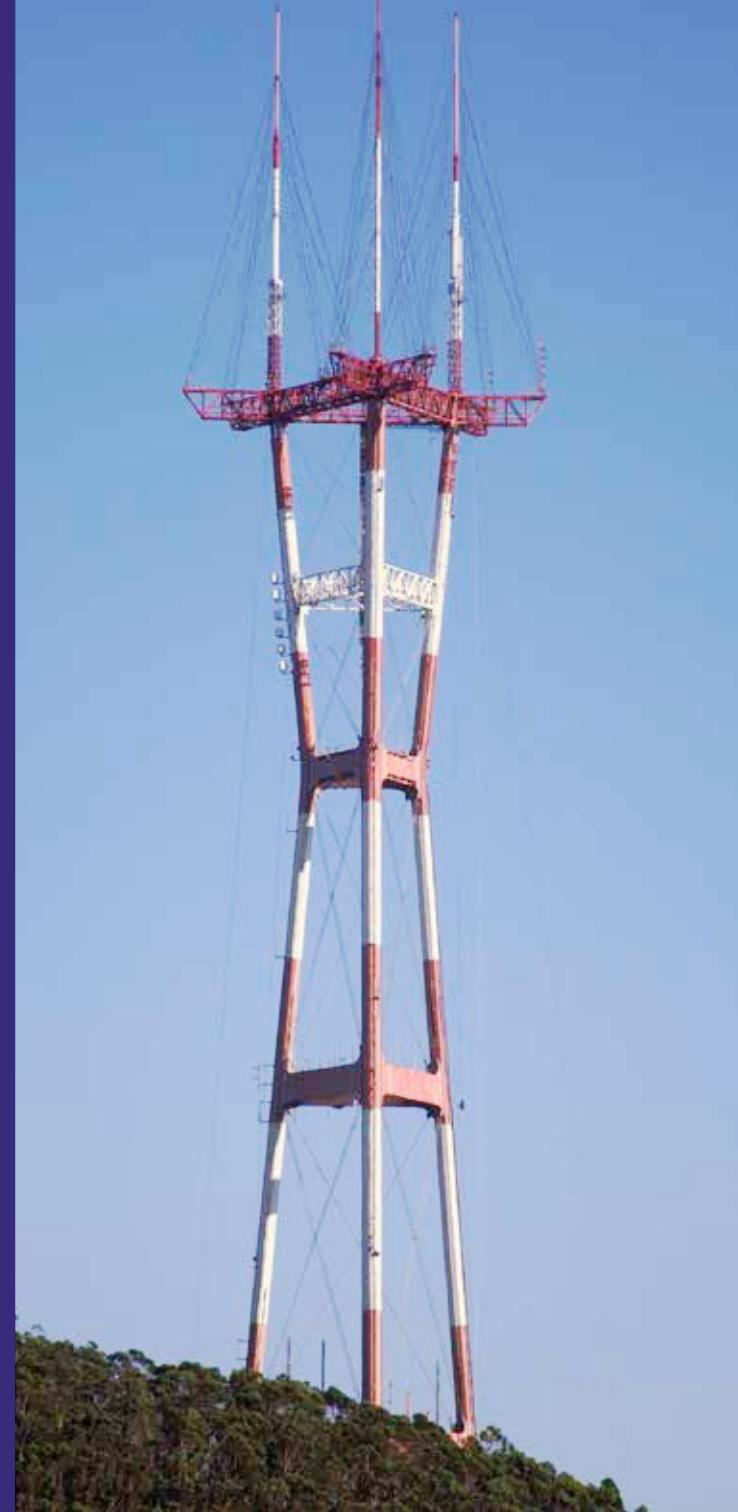PROVIDING... CLARITY, COMPLIANCE, COMMONALITY

SIMPLIFYING **▼IDEO FILE** WORKFLOW

Common File Delivery Specification

Contents

The Advantage of File Based Workflows

The Broadcast industry benefits greatly from its transition to file based workflows. The evolution from physical media to file based media not only improves efficiency, but also removes limitations of time, space and the limited options of many technical parameters, such as the number of audio tracks imposed by physical media.

TODAY:
INCOMPATIBLE FILE FORMATS

ALL BROADCASTERS
&
VIDEO DISTRIBUTORS

Video Producers
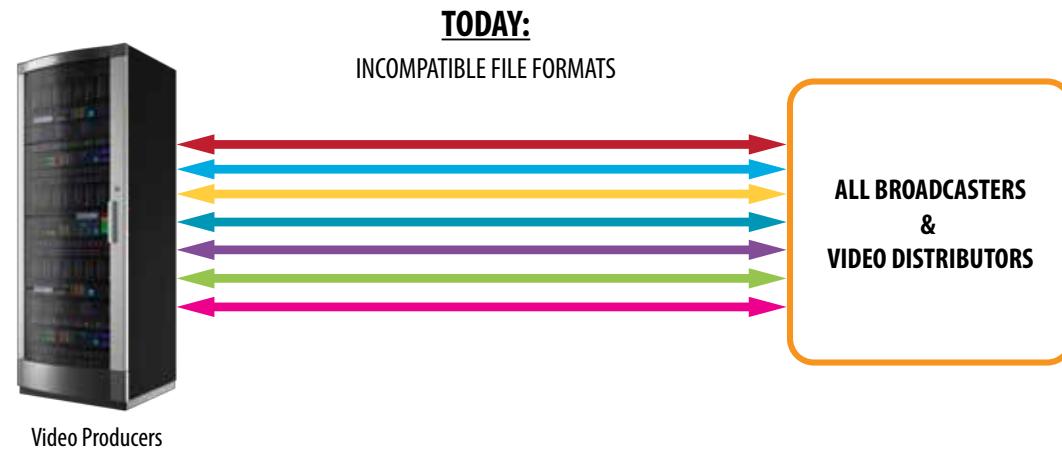
But Here's the Problem:

Compatibility issues often plague new file based workflows. While the workflows are generally stable, interoperability issues regularly arise. Every time a new program is commissioned, a new distributor is engaged, or supporting infrastructure changes are made, a qualification process is needed to ensure compatibility and interoperability. Typically, a broadcaster supplies a specification to the program provider and these specifications state specific requirements for the creation and delivery of program files.

The Solution:

A Standards Based Program File Delivery Specification....

In an increasingly global market, clarity is the best and simplest way to minimize incompatibility, cost and confusion! Standards should be used, but often the exact user requirements may require support of sections and sub-sections from many different Standards.

The industry has longed for a solution and the ability to better control costs. The operational workforce and capital needed for equipment has grown exponentially to handle the multitude of File Format issues.

While addressing the challenge, we observe a media workforce going through rapid, significant and necessary change. Those with purely linear broadcast skills need to get up to speed, in Broadcast Media IP production and delivery (MoIP) workflows. At the same time, an IP-trained workforce is needed that understands the demands of broadcast television when viewed on any platform.

In addition, retirements and reductions in the workforce are taking their toll on skillsets as well. With shrinking headcounts and fewer qualified, available employees, many television operations will not have the staff resources to plan, specify and manage the workload of specifications, standards and the complexities of diverse file formats. Common file format specifications will ease this transition in both people and technology by making as much of our process as transparent and efficient as possible.

Benefits for:

The Production Community

Production, quality control testing and delivery requirements vary greatly across the end user community.

The result is that these processes, timelines and costs may not be fully defined until late in the production process. Also, these requirements may change at any time to address changes in business partners or their infrastructure, workflow and supply chain.

Given the tightening of budgets and delivery schedule requirements, the elimination of these variables is an imperative. The NABA – DPP (Digital Production Partnership) specification does this.

Benefits for:

Broadcasters

Multiple File Formats have become one of broadcast television's most expensive costs, and for the last decade have been the source of frustration and errors in production centers and independent producers.

Benefits for:

Technology Vendors

Without common specifications of the format being interchanged, all the vendors involved in the value chain must implement all the format variations in all the major specifications being used in the industry.

This requires engineering time and effort, adds little overall value and generates large amounts of cost in terms of engineering effort, support, fault finding, regression testing with each new update or release, and other efforts that don't necessarily improve the whole ecosystem.

In contrast, using a stable essence and metadata specification, that is created utilizing widely deployed standards, allows technology vendors to put engineering effort into features that add genuine functional and feature value to the ecosystem rather than simply making interchange work.

The DPP initially focused on what was required for B2B interchange of media within the UK. Now NABA and the DPP have expanded their scope internationally, as there is a large overlap in requirements between territories and within territories. Re-using work and engineering that has already been done and creating a delta in the specifications makes sense, not just for the end users, but also for technology vendors since a reasonable engineering effort gives access to new homogeneous markets.

It is the automated workflow that provides the value to a technology vendor's business rather than the file format itself. Better levels of automation are achieved when vendors specialize and work together to deliver systems that are unlikely to be created by any single vendor. This, in turn, increases the opportunities for a technology vendor to sell its products into a growing, automated market. The key to good multi-vendor environments is accurate and appropriate interoperability specifications. The NABA – DPP specification is a key technology upon which automated inter-vendor workflows can be built.

These are the reasons that NABA, in partnership with the UK's DPP, has developed common standards based program file delivery specifications.

What should I do?

- ✓ **Adopt the NABA – DPP Common File Format Specification**
- ✓ **Learn more at http://www.nabanet.com/dpp**
- ✓ **Contact NABA at simplify@nabanet.com**

Industry Benefits

Common File Delivery Specifications benefit the production and broadcast industry in three ways – Economic, Workflow and Staffing:

In an increasingly global market, clarity is the best and simplest way to minimize incompatibility, cost and confusion! Standards should be used but often the exact user requirements may require support of sections and sub-sections from many different Standards.

Economic

▶ Improves efficiency by facilitating automation of workflow with a more precise specification enabling a machine-to-machine exchange of technical requirements. This reduces the cost of operations and increases productivity.

▶ Decreased rejections, repairs and reorders. In today's production environment, deliveries are closer to the time of broadcast than ever before and broadcasters simply can't afford delays caused by errors.

▶ Common specifications can facilitate increased volume in the workflows needed to address emerging preferences of the audience viewing experience as well as other business needs.

Workflow

▶ The adoption of common formats simplifies the complexity of the workflow by eliminating or reducing version confusion, facilitating simplified monitoring and measurement, and achieving enhanced discoverability.

▶ They provide for common templates and profiles for creation, transcoding and testing, thereby facilitating the repurposing of files for uses such as broadcast, online distribution, OTT, VOD and international program delivery.

Staffing

▸ Changes in the workforce and a potential loss of skill sets may lead to operational errors producing delays and causing expensive fixes. Specifications must reflect the experience and knowledge of not only the entire broadcast workflow, but the detailed technical specifics of equipment capabilities, as well as the appropriate standards, their options and modes of operations. Producing common specifications requires the combined knowledge of many disciplines including file formats, wrappers, codec, audio, video, captions, timecode, metadata, accessibility requirements, etc. It is becoming increasing challenging for any one organization to bring to bear appropriate resources with the proper level of subject matter expertise in all these areas.

▸ A common approach to creating these specifications benefits from the knowledge and experience by experts across our industry that understand the standards required, specific operations and technical challenges, requirements and capabilities of our workflows. It is increasingly less possible to have a resource base wide and deep enough in each individual broadcast company to address all these issues.

▸ Imminent change will only make current challenges more difficult. With the coming of UHD, HDR, and Wide Color Gamut, new and potentially unfamiliar requirements are emerging in codec, file formats, wrappers, resolution, bit depth, frame rate, color space, transfer functions, audio formats, etc.
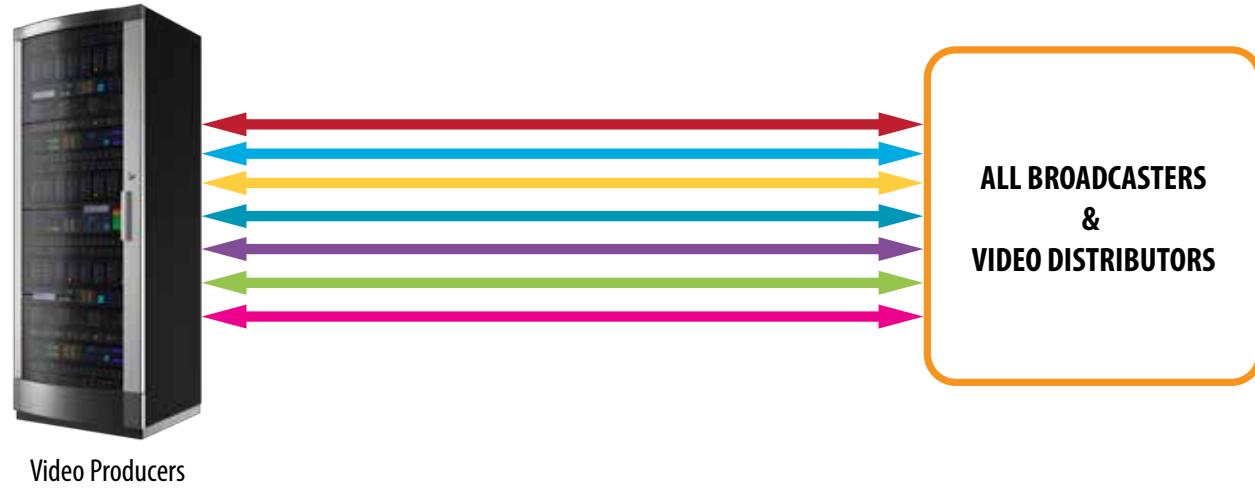
Each of these has a cost, and each impacts all of the other portions of the industry from manufacturing, production, post-production, fulfillment, delivery, playout repurposing for new platforms and delivery models.

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Specification Overview

The Two Components of the NABA – DPP Common File Delivery Specification

Air Ready Masters:

to support legacy workflows, while enabling innovation, in traditional delivery for play to air use cases.

Library Masters for HD and UHD:

for emerging workflows where files are reprocessed to create Air Ready Masters, VOD files, files for Online applications, OTT files for distribution on platforms such as Netflix, Amazon, iTunes, etc.

These specifications would also support the creation and use of templates and profiles for file based production, transcoding and testing to facilitate improvements in workflow automation.

NABA – DPP Air Ready Master allows new workflows to be used with legacy plant infrastructure.

| **AS-11 X-8 supports MPEG 2** | **AS-11 X-9 supports MPEG 4** |

The Specifications were published at NAB 2016. They utilize a rules based approach. The AMWA and the BBC decomposed AS-11 into a set of block-based rules. Blocks, containing standard citations, with all the valid and appropriate modes and options, represent these rules. This approach makes it easier to build new specifications to address regional business, technical and regulatory needs from existing blocks. They also express the Specification in a software based approach and a programmer and "machine friendly" way.

To address the Library Master workflow, NABA and the DPP will publish two additional specifications in 2017.

| **An HD Library Master based on SMPTE IMF App 2** | **A UHD Library Master based on SMPTE IMF App 2e** |

Since the Library Masters are used to create Air Ready Masters, VOD files, files for Online applications, OTT files for distribution on platforms such as Netflix, Amazon, iTunes, etc, the requirements inherited certain characteristics of specifications from those applications for parameters such as codecs, color space, resolution, "native" frame rate, no 3/2 pulldown, etc.

This was just one set of the many differences from the Air Ready Master Specification. SMPTE's IMF Standards meet many, if not all, of these requirements, such as:

▶ The use of a higher quality codec that would permit the retention of quality throughout a workflow with concatenated operations, while additionally improving efficiency in operational workflows.

▶ Support for and use of content playlists supports the creation of specific content versions.

▶ Support for and use of output profile lists supports the production of the appropriate technical parameter for creating multiple service deliverables.

SMPTE's BXF data models have been extended to include appropriate parameters to identify and specify templates and profiles in support of automated workflows. These steps will prove to be beneficial by enabling automated workflow improvements.

The entire NABA – DPP Specification is available at:

http://www.nabanet.com/dpp

Conclusion

Maximizing interoperability and efficiency requires commonly agreed to specifications based on standards.

The NABA – DPP Specifications are being adopted by many production groups, broadcasters and manufacturers.

While timetables may vary based upon existing infrastructure update schedules, widespread implementation will benefit all members of the production, technology and broadcast ecosystem.

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Get in touch...

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