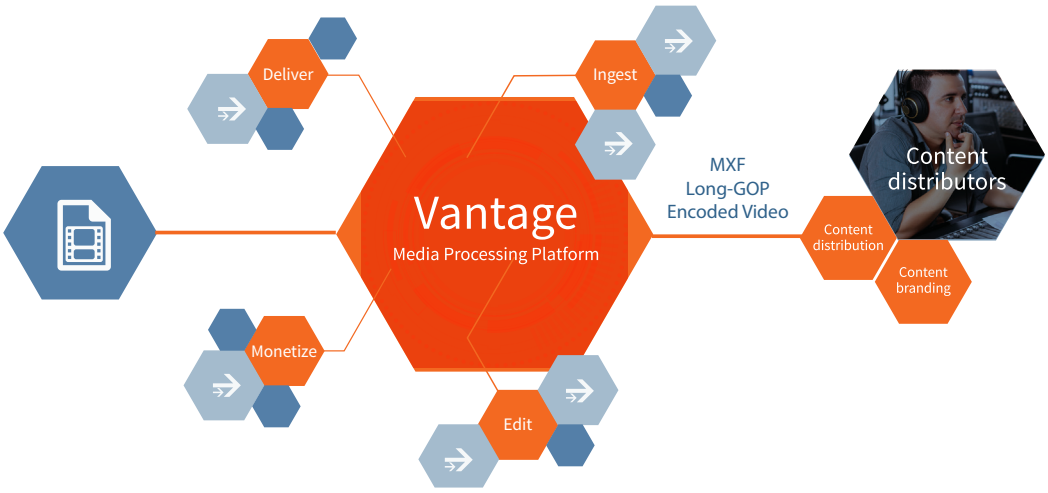


Encoding of AS-10 PAD files for broadcasters in France

Telestream's Vantage media processing platform makes the creation of AS-10 assets quick and simple: a special encoding profile in Vantage Transcode Pro ensures that all video, audio, timecode and structural metadata is correctly encoded and wrapped in order to be fully compliant with the French AS-10 specification.

Standardization in file based workflows

In the days of baseband-based workflows, material interchange between media organizations (what we'd now call "business to business", or "B2B") was simple: the defined protocol was the baseband format used for the real time transmission of media (PAL or NTSC). Storage of material was on video tape, with transport being accomplished by physically shipping a tape, along with a timing sheet which indicated the locations of the various part(s) of the programme (this was metadata, which we'll cover in more detail later in this paper). There was no real need to understand the physical layout of the material on the tape, or to understand how the streamed video was physically being processed inside any piece of equipment.

Nothing changed significantly with the advent of Serial Digital infrastructure – the processors were still their own "islands", simply producing video in the required baseband signal.

As the industry transitioned to file-based workflows, all of this changed. There are real advantages to being able to reach inside processing equipment and transport the media in its native form from machine to machine. Given that the transition to file-based operation is largely triggered by a need to increase efficiency, and that any efficiency gain is itself maximized by automating processes whenever possible, the simultaneous transmission of media and associated business metadata becomes more and more important. Unfortunately, to date, there has not been any standardized formats that allow for such seamless B2B communications. This has meant that some of the predicted efficiency gains have not been realized: the receiving entity has to have workflows to take in media in whatever format the sender happens to send it, and the metadata could be transferred as a printed sheet, a word document, a spreadsheet, an email etc….

This is not a sustainable business model for the industry!

Broadcaster groups in several countries have recognized the need to standardize material interchange, and have looked at ways to achieve this while utilizing as much existing technology as possible. This last point is the key in persuading manufacturers to create products which are sustainable in the market. To that end, most groups are looking at variants of MXF as the main transport mechanism, with various schemes for carrying the associated metadata.

The UK broadcasters have adopted AS-11 DPP, France is in the process of adopting a variant of AS-10, Germany is working on the ARD_ZDF_HDF profile, and several other countries or groups are looking at variants of DPP or IMF for their own specific needs. While Telestream proudly supports all of the existing and emerging broadcast formats in its Vantage platform, this paper explains the details of the French AS-10 implementation, and describes how Vantage makes it easy for programme producers in France to adopt this new file format and gain the operating efficiencies they hope for

Interchange in France

In France, the broadcasting partners of the HD Forum, FICAM and CST collectively published a document outlining the specifications for file interchange. This document includes details on descriptive metadata, to be contained in an external "sidecar" xml file. Each broadcaster adds its own constraints on file naming rules, audio tracks content and layout.

These amendments, collectively known as the "PAD" specification ("PAD" is an acronym for "Prêt à Diffuser" which is French for "Ready to Broadcast"), have now been adopted by many of the broadcast and post production companies in France.

The file format chosen for the essence is MXF, constrained to AS-10 and utilizing the High_HD_2014 shim for structural metadata. Descriptive metadata can be included in the file, but the only mandated field is the shim name. Other metadata may be entered via a (Canal+ supplied) Excel spreadsheet, which then generates the xml metadata file, or it may be created by some other means.

AS-10

AS-10 is an application specification created and maintained by the Advance Media Workflow Association ("AMWA"), which was formed by a significant number of broadcasters and manufacturers with the intent of making MXF workflows easy to implement.

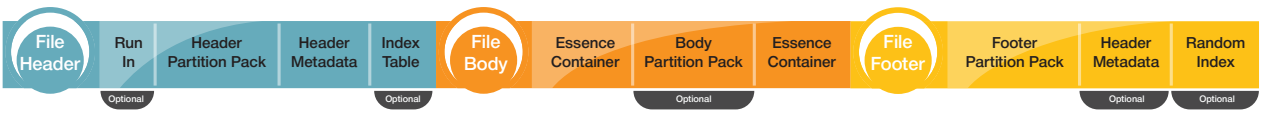
When MXF was being created, the committee recognized that the format was being written to cover a very wide collection of use cases. As such, it could be intimidating to read, and difficult to completely comply with. In order to simplify implementation, and increase the likelihood of interoperability, the committee created some simple sub-categories of files, labelled "Operational Patterns". To further focus attention they allowed for the creation of "Application Specifications". The intent of an application specification is to focus on those facets of MXF that directly relate to a specific use case, while excluding other parameters for consideration. This went a long way towards making MXF more understandable, but the creation of an AS was still a highly technical activity, the simplification of which is the exact reason that the AMWA was formed.

The full range of application specifications ("AS-xx") are available on the AMWA website: www.AWMA.tv. Of particular interest to those looking for simple B2B file interchange are AS-11 and AS-10. AS-11 is the format chosen by the UK DPP, while AS-10 is the format chosen by the French broadcasters.

AS-10 is basically media wrapped in an OP-1A wrapper, targeted at transmitting LongGOP MPEG-2 video and PCM audio – effectively the format used for XDCAMHD.

The High_HD_2014 Shim

Whilst AS-10 represents a tightening in the specification language to those parameters important in the B2B media transfer use case, there are still some parameters which can have one of a number of possible values (bit rate is one such example). In order to further tighten the specification, the AMWA introduced the idea of a "shim", which is a further clarification of the specific parameter values to be used in a single specific use case. For AS-10, there are currently 4 registered shims. The shim for French interchange is called the "High_HD_2014 shim". It specifies that the video should be encoded at the 422P@HL profile, that the color space should be 4:2:2, that the frame size should be 1920x1080, that the bit rate should be 50Mb/s, and that there should be 8 mono PCM audio tracks, sampled 24bit@48KHz. The combination of AS-10 and the High_HD-2014 shim gives programme suppliers the exact details on how to format their finished product in terms of video and audio. Each broadcaster "PAD specification" further supplements that with information on Timecode location, subtitle insertion, and descriptive metadata requirements.



Layout of an OP1a file

As you can see, even with all of the great work done by SMPTE, AMWA and the French broadcasters, the creation of a valid AS-10 asset for use in France is still a highly technical activity, and is generally something that would normally only be attempted by a highly skilled technical operator. Using Vantage, however, this process becomes a very user-friendly activity, which can be successfully achieved by operators of all levels of technical skill.

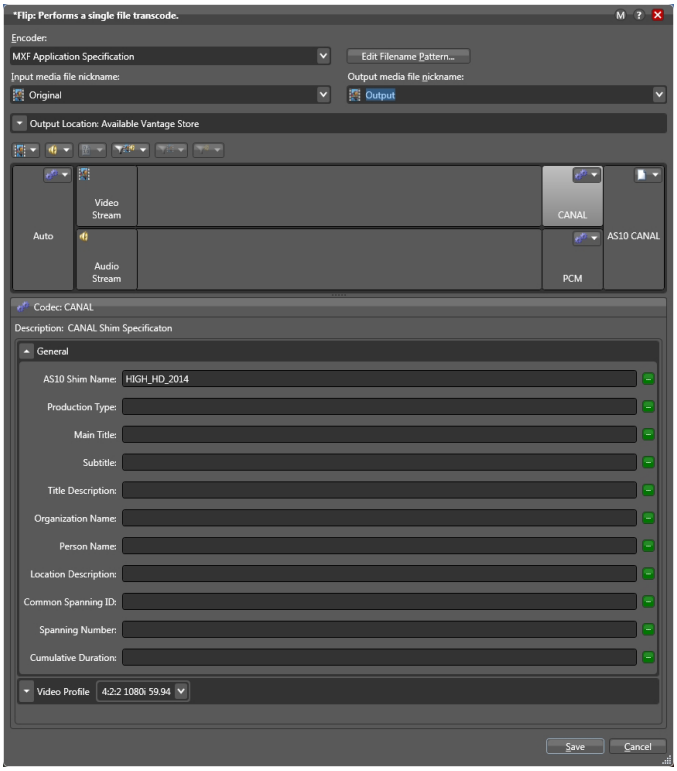
Creating PAD files using Vantage

Telestream's Vantage media processing platform makes the creation of AS-10 assets quick and simple: a special encoding profile in Vantage Transcode Pro ensures that all video, audio, timecode and structural metadata is correctly encoded and wrapped in order to be fully compliant with the French specification. All the operator has to do is enable this profile in a workflow, select the High_HD_2014 shim from a drop-down list of ratified shims, and then submit the media to the activated workflow either directly or via a watch folder. For fully automated workflows, this process can be triggered via Vantage's extensive API. Submit the job, Vantage takes care of all the rest.

Metadata entry is similarly simplified: a custom user portal allows operators to enter any descriptive metadata they require, and upon submission to the workflow, Vantage will format this metadata into the correct xml schema to be delivered with the asset. Visual tools in the portal simplify the dividing up of the media into individual parts by simply marking in and out points in the included proxy viewer. There is no need to understand xml or encoding rules!

As a fully software-based product, there is no danger of obsolescence with Vantage. As the specifications change, or other essence formats such as UHDTV/4K are added, a simple software update is all that is required in order for Vantage to support the latest version of the spec. Vantage truly is the customer's choice in software-based, Enterprise-class media processing platform.

For further information on Telestream and Vantage, visit http://www.telestream.net/vantage



Vantage makes AS -10 creation simple

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