ADVANCED MEDIA WORKFLOW ASSOCIATION

Advanced Authoring Format (AAF) Effects Protocol (AS-05)

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1 Scope

This document defines the AAF Effects Protocol, designed for the storage and exchange of selected effect metadata in AAF files. It extends the set of effects specified in the AAF Edit Protocol in order to achieve greater interoperability of effect information between implementations created by different developers.

2 Normative References

The following normative documents contain provisions that, through reference in this text, constitute provisions of this Document. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this document are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative documents referred to applies.

AAF Object Specification Version v1.1

AAF Edit Protocol (2005-04-08)

American Society of Cinematographers Color Decision List Format - Version 1.01 (2007-08-01)

3 Definition of Terms

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119.

4 Introduction

4.1 Goals

The goal of this protocol is to provide users with improved interchange of the following effects metadata:

- Color
- Title
- Opacity

4.2 Precepts

The following guidelines have been followed in drafting this specification document:

4.2.1 AAF Edit Protocol Precepts

This protocol shall follow the precepts of the AAF Edit Protocol.

4.2.2 AAF Edit Protocol Effect Consistency

The new effects shall be defined consistently with the effects defined in the AAF Edit Protocol.

4.2.3 Choice of effects

Only those effects with an immediate and demonstrable use shall be included.

4.2.4 Choice of parameters

The effects shall be expressed using a limited set of parameters that are system-independent and sufficient to reproduce the basic look. Existing specifications for describing effects shall be used where appropriate.

The transfer of effects may not be perfect, but should allow the basic intentions of the user to be communicated more accurately between systems. It should also avoid the need to repeat some of the more time-consuming operations.

4.3 Compliance

AAF Effects Protocol compliance requires AAF Edit Protocol compliance.

5 Importing, Fallback handling and logging

The importing, fallback handling and logging requirements are defined in Section 5 of the AAF Edit Protocol.

6 Effects Model

Effects shall be modelled in accordance with Section 11 of the AAF Edit Protocol.

7 Effects Dictionary

7.1 Video Color effect

The American Society of Cinematographers Color Decision List (CDL) format defines a set of parameters for interchanging basic color correction information between systems. CDL effects shall be specified in AAF using the Video Color effect.

Three parameters (slope, offset and power) are required for each color component (red/green/blue). The saturation of the image and textual descriptions of the color correction, input and viewing conditions may also be specified. The meaning of these parameters is defined in the American Society of Cinematographers Color Decision List specification.

The Video Color effect shall only be used by an OperationGroup not contained within a Transition object.

7.1.1 Video Color effect definition

OperationDefinition property	Value
Name	Video Color
Description	CDL Color Effect
Identification	OperationDef_VideoColor
DataDefinition	DataDef_Picture or DataDef_LegacyPicture
Category	Not specified
NumberInputs	1
InputSegments	The essence to filter
IsTimeWarp	False
DegradeTo	Not specified
Bypass	Not specified
ParametersDefined	ParameterDef_ColorSlopeR (required)
	ParameterDef_ColorSlopeG (required)
	ParameterDef_ColorSlopeB (required)
	ParameterDef_ColorOffsetR (required)
	ParameterDef_ColorOffsetG (required)
	ParameterDef_ColorOffsetB (required)
	ParameterDef_ColorPowerR (required)
	ParameterDef_ColorPowerG (required)
	ParameterDef_ColorPowerB (required)
	ParameterDef_ColorSaturation (optional; default is 1)
	ParameterDef_ColorCorrectionDescription (optional; default is none)
	ParameterDef_ColorInputDescription (optional; default is none)
	ParameterDef_ColorViewingDescription (optional; default is none)

7.1.2 Slope parameter definitions

PropertyDefinition property	Value
Name	Slope R, Slope G, Slope B
Description	Slope parameter for red, green, blue color components
Identification	ParameterDef_ColorSlopeR, ParameterDef_ColorSlopeG, ParameterDef_ColorSlopeB
Type	TypeID_Rational
DisplayUnits	Not specified
Range	0 to (2^31)-1 (1 is no change)

7.1.3 Offset parameter definitions

PropertyDefinition property	Value
Name	Offset R, Offset G, Offset B
Description	Offset parameter for red, green, blue color components
Identification	ParameterDef_ColorOffsetR, ParameterDef_ColorOffsetG, ParameterDef_ColorOffsetB
Type	TypeID_Rational
DisplayUnits	Not specified
Range	-(2^31) to (2^31)-1 (0 is no change)

7.1.4 Power parameter definitions

PropertyDefinition property	Value
Name	Power R, Power G, Power B
Description	Power parameter for red, green, blue color components
Identification	ParameterDef_ColorPowerR, ParameterDef_ColorPowerG, ParameterDef_ColorPowerB
Type	TypeID_Rational
DisplayUnits	Not specified
Range	0 to (2^31)-1 (1 is no change)

7.1.5 Saturation parameter definitions

PropertyDefinition property	Value
Name	Saturation
Description	Saturation of image
Identification	ParameterDef_ColorSaturation
Type	TypeID_Rational
DisplayUnits	Not specified
Range	0 to (2^31)-1 (1 is no change)

7.1.6 Color Correction Description parameter definition

PropertyDefinition property	Value
Name	Color Correction Description
Description	Textual description of the color correction
Identification	ParameterDef_ColorCorrectionDescription
Type	TypeID_String
DisplayUnits	-
Range	-

7.1.7 Input Description parameter definition

PropertyDefinition property	Value
Name	Input Description
Description	Textual description of the input format
Identification	ParameterDef_ColorInputDescription
Type	TypeID_String
DisplayUnits	-
Range	-

7.1.8 Viewing Description parameter definition

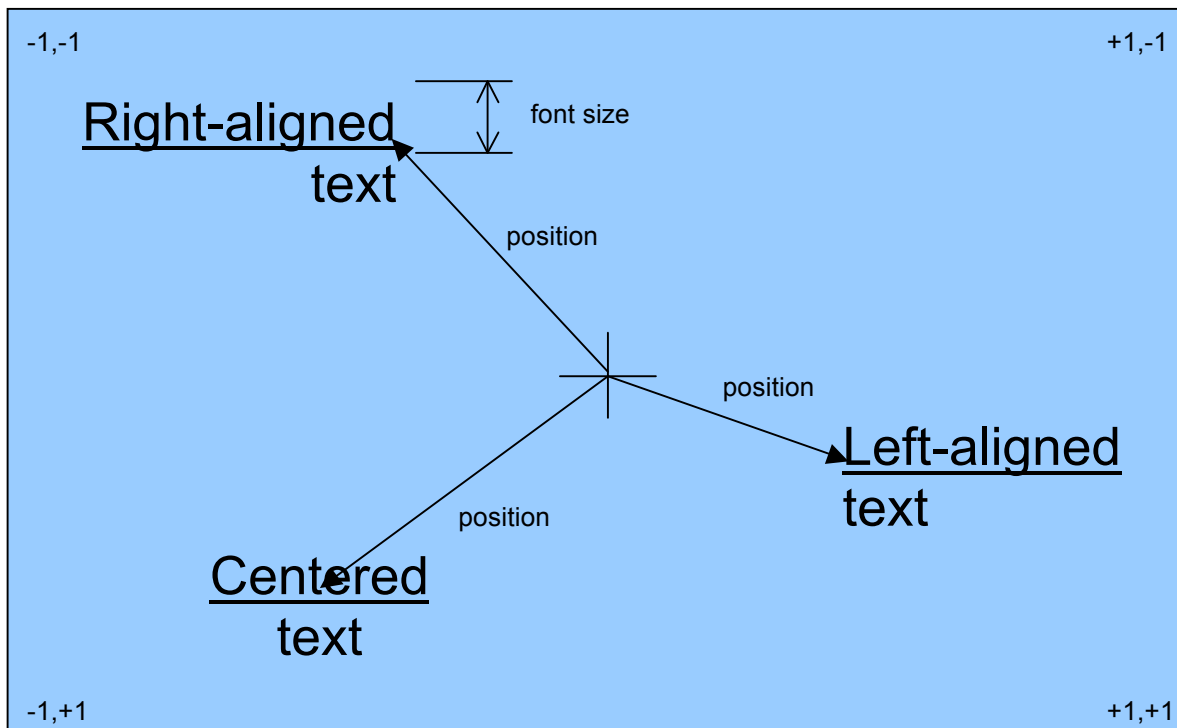| PropertyDefinition property	Value
Name	Viewing Description
Description	Textual description of the viewing conditions
Identification	ParameterDef_ColorViewingDescription
Type	TypeID_String
DisplayUnits	-
Range	-

7.1.9 Importing application

An importing application that supports CDL color effects shall accept and present the Video Color effect, following the precepts of Section 4.2.4 of the AAF Edit Protocol.

7.2 Video Title effect

Title effects shall be specified using the Video Title effect.

The Video Title effect shall only be used by an OperationGroup not contained within a Transition object.

Screen coordinate space x,y

7.2.1 Video Title effect definition

OperationDefinition property	Value
Name	Video Title
Description	Video Title Effect
Identification	OperationDef_VideoTitle
DataDefinition	DataDef_Picture or DataDef_LegacyPicture
Category	Not specified
NumberInputs	1
InputSegments	The essence to filter
IsTimeWarp	False
DegradeTo	Not specified
Bypass	Not specified
ParametersDefined	ParameterDef_TitleText (required)
	ParameterDef_TitleFontName (optional; see section 7.2.3)
	ParameterDef_TitleFontSize (optional; default is 1/10)
	ParameterDef_TitleFontColorR (optional; default is 1)
	ParameterDef_TitleFontColorG (optional; default is 1)
	ParameterDef_TitleFontColorB (optional; default is 1)
	ParameterDef_TitleAlignment (optional; default is TitleAlignmentCenter)
	ParameterDef_TitleBold (optional; default is false)
	ParameterDef_TitleItalic (optional; default is false)
	ParameterDef_TitlePositionX (optional; default is 0)
	ParameterDef_TitlePositionY (optional; default is 0)

7.2.2 Text parameter definition

PropertyDefinition property	Value
Name	Text
Description	Text string
Identification	ParameterDef_TitleText
Type	TypeID_String
DisplayUnits	-
Range	-

7.2.3 Font Name parameter definition

PropertyDefinition property	Value
Name	Font Name
Description	Font Name
Identification	ParameterDef_TitleFontName
Type	TypeID_String
DisplayUnits	-
Range	-

The font is specified using the font name. This may not be a definitive description of the font but is a simple description suitable for interchanging between systems. If the font name parameter is not present or the font is not recognized by the importing application then a suitable available default should be used instead and an appropriate warning presented to the user.

7.2.4 Font Size parameter definition

PropertyDefinition property	Value
Name	Font Size
Description	Font Size
Identification	ParameterDef_TitleFontSize
Type	TypeID_Rational
DisplayUnits	Not specified
Range	0 to $(2^{31})-1$

The font size is specified as the height of a line of text relative to the height of the background image. A font size of 1 indicates that a line of text fills the image from top to bottom. The height of a line of text is defined as the distance between the base lines of consecutive lines of text with default leading. The transfer of font size may only be approximate since different systems define font properties in different ways.

7.2.5 Font Color parameter definition

PropertyDefinition property	Value
Name	Font Color R, Font Color G, Font Color B
Description	Font red, green, blue color components
Identification	ParameterDef_TitleFontColorR, ParameterDef_TitleFontColorG, ParameterDef_TitleFontColorB
Type	TypeID_Rational
DisplayUnits	Not specified
Range	0 to 1 (0 is minimum/black, 1 is maximum/white)

7.2.6   Alignment parameter definition

PropertyDefinition property	Value
Name	Alignment
Description	Horizontal Alignment
Identification	ParameterDef_TitleAlignment
Type	TypeID_TitleAlignment
DisplayUnits	-
Range	Left, center, right

The TitleAlignment enumerated type is defined below.

Data Type	Meaning
TitleAlignmentType	Specifies the alignment of the Video Title effect as an enumerated UInt8; may have one of the following values: 0 TitleAlignmentLeft Left aligned text 1 TitleAlignmentCenter Center aligned text 2 TitleAlignmentRight Right aligned text

7.2.7   Bold parameter definition

PropertyDefinition property	Value
Name	Bold
Description	Bold
Identification	ParameterDef_TitleBold
Type	TypeID_Boolean
DisplayUnits	-
Range	True or false

7.2.8   Italic parameter definition

PropertyDefinition property	Value
Name	Italic
Description	Italic
Identification	ParameterDef_TitleItalic
Type	TypeID_Boolean
DisplayUnits	-
Range	True or false

7.2.9 Position parameter definition

PropertyDefinition property	Value
Name	Title Position X, Title Position Y
Description	Position
Identification	ParameterDef_TitlePositionX, ParameterDef_TitlePositionY
Type	TypeID_Rational
DisplayUnits	Not specified
Range	-(2^31) to (2^31)-1

Position is defined using the same coordinate space as the AAF Edit Protocol Video Position effect. The position of a text block is defined from the center of the background image to the base line of the top line of text. The position is relative to left end of base line if left-aligned, to the centre of base line if centred, and to the right end of base line if right-aligned.

7.2.10 Importing application

An importing application that supports title effects shall accept and present the Video Title effect, following the precepts of Section 4.2.4 of the AAF Edit Protocol.

7.3   Video Opacity effect

Simple opacity effects shall be specified using the Video Opacity effect.

The opacity shall be specified using a single parameter.

The Video Opacity effect shall only be used by an OperationGroup not contained within a Transition object.

7.3.1   Video Opacity effect definition

OperationDefinition property	Value
Name	Video Opacity
Description	Video Opacity Effect
Identification	OperationDef_VideoOpacity
DataDefinition	DataDef_Picture or DataDef_LegacyPicture
Category	Not specified
NumberInputs	1
InputSegments	The essence to filter
IsTimeWarp	False
DegradeTo	Not specified
Bypass	Not specified
ParametersDefined	ParameterDef_OpacityLevel (required)

7.3.2   Level parameter definition

PropertyDefinition property	Value
Name	Opacity Level
Description	Opacity Level
Identification	ParameterDef_OpacityLevel
Type	TypeID_Rational
DisplayUnits	Not specified
Range	0 to 1 (0 is transparent, 1 is opaque)

7.3.3   Importing application

An importing application that supports video opacity shall accept and present the Video Opacity effect, following the precepts of Section 4.2.4 of the AAF Edit Protocol.

8 Protocol Label

Header::OperationalPattern should be equal to OpEditProtocol.

9 Bibliography

1. Advanced Authoring Format, http://www.amwa.tv
2. American Society of Cinematographers, http://www.theasc.com

To obtain details of the American Society of Cinematographers Color Decision List format, send an email requesting information to asc-cdl@theasc.com and the system will respond with download instructions. Implementers of this specification are advised that compatibility of this specification with the ASC's Color Decision List format was the case at time of publication of this document in February 2010 and are advised to check carefully that this remains the case.