

Element	Attribute	Subelement	Attribute	Subelement	Controlled Vocabulary	Usage Note	Editors Note	New to MIC
checksum	method="sha1"					system-supplied checksum value.	AES includes checksumValue (string indicating the checksum signature of the audio object), checksumKind (CRC, MD5, SHA-1), and checksumCreateDate (time and date the checksum value element was generated). AES also includes a soundDataChecksum, which allows you to store a digital signature of the described audio object's sound data separately from the header for the purpose of data integrity verification. This checksum differs from the fileChecksum element which describes the entire file. When computing the checksum of the sound data, header information shall be excluded from the calculation, including any chunk header information associated with a sound data chunk itself. Consider this in next version.	n
fileSize	unit				in bytes	Automatic conversion to bytes. Should be auto-supplied by repository system.	This be elsewhere in the METS wrapper (and checksum is better anyway), per Dave Ackerman.	n
objectArchitecture					Moving image; Sound recording; Graphic; Text; Three-dimensional Object; Interactive Resource [and delete the following:] Article, Audio, Book, Map, Newsletter, Oral-History, Pamphlet, Photograph, Poll, Video			n
preservationLevel					Full; Bit level	Preservation Level will be used to indicate level of service or length of time an object will be preserved. MD group will decide on definitions. Currently, default of "full" is used.		n
Generation					Digital Preservation Master; Born Digital Source; Digital Preservation Master with colorbar; Digital Preservation Master with colorbar and sound check			

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useType							Cf. this element where it appears in SourceMD.	y
storage								
		medium			DVD; CD-ROM; Magnetic Tape; Hard Disk;	Use when a storage medium in addition to the repository mass storage system is used. Revisit in next version. Should we document the storage location? If the mass storage location is reasonably ephemeral, we should document in DigiProv or not at all. When we implement SRB and have a "virtual permanent location," this data element will become meaningful.		
		contentLocation				Medium and ContentLocation are repeatable together and are required for secondary storage of preservation masters, such as audio masters on gold CD, etc.		
			type		hdl; local	Use primarily for local designation of digital master files on secondary storage media such as Gold CD or Gold DVD.		
dateCreated					YYYY-MM-DD			n
operatingSystem	name					Name of the operating system used when object was created.		
		version				Format as 1.0, 1.1, etc. Version is required whenever operatingSystemName s supplied		
Select Format (from DescMD typeOfResource)					text, sound recording, moving image, still image, three-dimensional object;	cartographic and software will be added in v. 2		
MovingImage								n
timeCode	type				Simple timecode, SMPTE nondrop frame, SMPTE drop frame			n
duration					HH:MM:SS:SS/1000			n
fileFormat					RealMedia; WindowsMedia; QuickTime; Other	Video or multimedia file format or container type; do not confuse with codec.		y
signalFormat					PAL; SECAM; NTSC (composite color); composite monochrome; analog component; digital component; Other	Signal format of the video source item.	Term source is AV Prototype	y
appSpecificData						Indicates the existence of embedded private application data within the described video object.		y
	name					Name of the application that has deposited private data into the video object as a data string.		y
	version					Version of the application that has deposited private data into the video object as a data string.		y
bitRateReduction								y
		codecName				Name of the codec (compression algorithm) used to process the video data		y
		codecNameVersion			Numeric identifier	Version of the compression algorithm used to process the video data. Format as 1.0, 1.1, etc.		y
		creatingApplication				Codec creator application. [Moved under the specific (moving image) format to customize pulldowns by format.]		n
			name			Name of the software program that created the object; for audio and video, the codec creator application (the software application used to apply the codec, e.g., SoundForge)		n
			version		Numeric identifier	Format as 1.0, 1.1, etc. Version is required whenever creatingApplicationName is supplied; for audio and video, the codec creator application version		n
		codecQuality			lossy; code regenerating	Indication of whether the codec is lossy or lossless.		y
		dataRate				Number of kbps used in a compressed file, e.g., 64, 128, 256, etc.; AKA bit rate		y
		dataRateMode			fixed; variable	Indication of whether the video data has been processed to achieve a fixed (constant) or variable bit rate.		y
sampling	samplingSize				4:1:1; 4:2:0; 4:2:2; 4:4:4; Other	Sampling format as expressed as luminance-chrominance ratio.		n
		bitsPerSample			8-bit; 10-bit; 16-bit; 20-bit; 24-bit; 32-bit; 48-bit; Other	Bit depth; number of bits per sample.	Term source is PBCore.	n
		wordSize				Number of bytes used to represent a single video sample, which generally maps to bits per sample. Files with a bit depth of 24 will usually be expressed as a 3-byte word size; however some applications may store 24-bit video in a 4-byte word.		y
videoDataEncoding						Indicates the encoding scheme used		y
byteOrder					little endian; big endian	Indicates the 'endianness' of the digital video data		y
frame	height					positive integer, in pixels		n
	width					positive integer, in pixels		n
		aspectRatio			4:3, 4:3 (16:9 letterbox), 4:3 (16:9 anamorphic), 16:9, 5.5:3, 7:3 (Panavision or Conemascope), 2.35:1, 1.85:1			n
		rate				frames per second		n

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		structure			progressive; interlaced	Temporal sampling structure for coding of the video	Is this necessary? Interlaced is analog only, no? Progressive is digital, but is all digital progressive?	n
soundPresent					yes; no			y
audio		channels				Audio elements only display when soundPresent=yes		n
				numberOfChannels	Positive integer	The number of audio streams present in the described audio object.		n
				channelAssignment		The area of the audio sound stage occupied by the channel, or a non-spatial attribute of the channel (e.g., language)		y
				channelNumber	Positive integer	A number assigned to a channel within the audio object, in order to map it to its attributes or its position within the audio sound stage. Apply a natural numbering scheme, based on the audio object. For example, when describing a 24-track tape, the first channel number would be one. In the case of digital file-based audio objects, the first channel number should be 0. Each channel number shall be unique.		y
				leftRightPosition		The leftRightPosition attribute is a decimal indicating the pan position within the audio sound stage that the enclosing stream should nominally occupy during audio playback within the left-right axis. For panning within a single left-right axis (such as in the case of stereo speakers), the position is specified by a linear displacement to the left or right. Positive values shall indicate a displacement to the right (where +100.0 is fully right); negative values shall indicate a displacement to the left (where -100.0 is fully left). A default value of 0.0 shall indicate that the audio is panned to the center. These numbers can be hard coded in for many formats.		y
				frontRearPosition		The frontRearPosition attribute is a decimal indicating the pan position within the audio sound stage that the enclosing stream should nominally occupy during audio playback within the front-back axis. Front-to-rear position shall be specified by linear displacement from the front (0.0) to the rear (200.0). A default value of 0.0 shall indicate that the audio is panned to the front. These numbers can be hard coded in for many formats.		y
		presentation			mono; stereo; joint stereo; quadrophonic; 5.1; 7.1; Other	Declares the overall soundstage to which the described audio object belongs.	Prefer calling this soundField, for consistency with data element in SourceMD.	n
		sampling						n
				rate	8 kHz; 11 kHz; 21.5 kHz; 22.050 kHz; 32 kHz; 44.096 kHz; 44.1 kHz; 48 kHz; 88.2 kHz; 96 kHz; 192 kHz; other	Sampling rate in kHz, for a single channel of audio.	SHOULD BE kHz (i.e. 8, 21.5, 32, 44.1, 48), not Hz	n
				bitsPerSample	8-bit; 10-bit; 16-bit; 20-bit; 24-bit; 32-bit; 48-bit; Other	Bit depth; number of bits per sample.	Term source is PBCore.	n
				wordSize		Number of bytes used to represent a single audio sample, which generally maps to bits per sample. Files with a bit depth of 24 will usually be expressed as a 3-byte word size; however some applications may store 24-bit audio in a 4-byte word.		y
note						Additional information or comments about the video or multimedia file.		y

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Sound								
timeCode		type			Simple timecode, SMPTE nondrop frame, SMPTE drop frame			n
duration					HH:MM:SS:SS/1000			n
fileFormat					RealMedia; WindowsMedia; WindowsMediaAudio; QuickTime; LiquidAudio; aac; aiff; ape; atrac; au; dss; flac; mp3; msv; ogg; ra; raw; vox; wav; wma; Other; Unknown	Audio file format or container type; do not confuse with codec.		y
CompressionScheme					Uncompressed; Unknown	Technical metadata is only required for master files. Uncompressed should be the default value.		
appSpecificData						Indicates the existence of embedded private application data within the described audio object, such as the APPL chunk of the AIFF specification.		y
	name					Name of the application that has deposited private data into the audio object as a data string.		y
	version					Version of the application that has deposited private data into the audio object as a data string.		y
audioDataEncoding					PCM; DSD; Other	Indicates the encoding scheme used; currently (2006) the majority of digital audio recordings will have a value of PCM.		y
byteOrder					little endian; big endian	Indicates the 'endianess' of the digital audio data		y
firstSampleOffset						The number of bytes immediately prior to the first byte of audio data; used to determine the location of the first valid sound byte in the file. Expressed as a long integer. If the audio object has no header data, firstSampleOffset shall have a value of 0.		y
audioDataBlockSize						Size of an audio data block, when a data blocking scheme was used in the creation of the audio object. Expressed in bytes. [For explanation of audio blocks see http://en.wikipedia.org/wiki/AES3 .]		y
firstValidByteOfBlock						Used only when non-audio data is also included within the audio data block. Use with lastValidByteOfBlock and audioBlockSize elements to describe a region of valid audio samples within the block. If firstValidByteOfBlock is present then the lastValidByteOfBlock and audioDataBlockSize elements shall be required. The firstValidByteOfBlock element shall give the local address within the block of the first byte of the first audio sample. The local address range shall be understood to range from byte 0 to byte audioDataBlockSize - 1.		y
lastValidByteOfBlock						Used only when non-audio data is also included within the audio data block. Use with firstValidByteOfBlock and audioBlockSize elements to describe a region of valid audio samples within the block. If lastValidByteOfBlock is present then the firstValidByteOfBlock and audioDataBlockSize elements shall be required. The lastValidByteOfBlock element shall give the local address within the block of the last byte of the last audio sample. The local address range shall be understood to range from byte 0 to byte audioDataBlockSize - 1.		y
bitRateReduction								y

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		codecNameVersion			Numeric identifier	Version of the compression algorithm used to process the audio data. Format as 1.0, 1.1, etc.		y
		creatingApplication				Codec creator application. [Moved under the specific (sound recordings) format to customize pulldowns by format.]		n
				name		Name of the software program that created the object; for audio and video, the codec creator application (the software application used to apply the codec, e.g., SoundForge)		n
				version	Numeric identifier	Format as 1.0, 1.1, etc. Version is required whenever creatingApplicationName is supplied; for audio and video, the codec creator application version		n
		codecQuality			lossy; code regenerating	Indication of whether the codec is lossy or lossless.		y
		dataRate				Number of kbps used in a compressed file, e.g., 64, 128, 256, etc.; AKA bit rate		y
		dataRateMode			fixed; variable	Indication of whether the audio data has been processed to achieve a fixed (constant) or variable bit rate.		y
sampling								n
	rate				8 kHz; 11 kHz; 21.5 kHz; 22.050 kHz; 32 kHz; 44.096 kHz; 44.1 kHz; 48 kHz; 88.2 kHz; 96 kHz; 192 kHz; other	Number of samples per second (Hz), for a single channel of audio.	SHOULD BE kHz (i.e. 8, 21.5, 32, 44.1, 48)	n
	bitsPerSample				8-bit; 10-bit; 16-bit; 20-bit; 24-bit; 32-bit; 48-bit; Other	Bit depth: number of bits per sample.	Term source is PBCore.	n
	wordSize					Number of bytes used to represent a single audio sample, which generally maps to bits per sample. Files with a bit depth of 24 will usually be expressed as a 3-byte word size; however some applications may store 24-bit audio in a 4-byte word.		y
fileFormat					AC3, DTS, MP3, MPEG-2, MPEG-4, AMR, ITU-T G.72x, Linear PCM, Windows Media Audio, ATRAC, ATRAC2, ATRAC3	File format or container type; do not confuse with codec.		
CompressionScheme					Uncompressed; Unknown	Technical metadata is only required for master files. Uncompressed should be the default value.		
channels								y
		numberOfChannels			Positive integer	The number of audio streams present in the described audio object.		n
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		presentation			mono; stereo; joint stereo; quadrophonic; 5.1; 7.1; Other	Declares the overall soundstage to which the described audio object belongs.	Prefer calling this soundField, for consistency with data element in SourceMD.	n
note						Additional information or comments about the audio file.		y