

for Television — Material Exchange Format (MXF) — System Scheme 1 for the MXF Generic Container



Page 1 of 7 pages

1 Scope

This standard specifies the data format for the System Item of the MXF Generic Container (GC) that is called System Scheme 1. This data format is a superset of the System Item defined in SMPTE 385M (Mapping SDTI-CP Essence and Metadata into the MXF Generic Container) and provides a more generic and flexible data structure that can provide system elements for flexible GC wrappings including clip-based wrapping. This document defines the rules that System Elements in the System Item shall follow in order to be classified as a System Scheme 1 System Element.

The MXF Generic Container is the native Essence Container of the Material Exchange Format (MXF) File Body. The MXF Generic Container is defined for the interchange of streamable audio-visual material.

This document defines the data structure at the signal interfaces of networks or storage media. This document does not define internal storage formats for MXF compliant devices.

2 Normative References

The following standards contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent edition of the standards indicated below.

SMPTE 336M-2001, Television — Data Coding Protocol using Key-Length-Value

SMPTE 377M-2004, Television — Material Exchange Format (MXF) — File Format Specification

SMPTE 379M-2004, Television — Material Exchange Format (MXF) — MXF Generic Container

SMPTE RP 210, Metadata Dictionary Registry of Metadata Element Descriptions

3 Glossary of Acronyms, Terms and Data Types

The general glossary of acronyms, terms and data types used in the MXF specification is given in SMPTE 377M and is supplemented in SMPTE 379M. These are not repeated here to avoid any divergence of meaning.

4 Introduction

The MXF Generic Container is defined in SMPTE 379M. This standard specifies a generic System Item structure that can be used to carry metadata that describes the essence elements in the Content Package. It also describes methods of wrapping the essence and metadata elements as either “Frame Wrapping” or “Clip

Wrapping". The System Item comprises a number of System Elements. Each of these System Elements contains metadata that is intimately related to essence within the same Content Package. The System Elements are not intended to carry metadata that is to be described in the MXF Header Metadata by a Track, SourceClip or Segment. Neither is it intended to carry metadata that should be carried in a non-Essence Data Partition.

This standard defines a generic scheme for the GC System Item that allows System Elements to be added as required by an application. SMPTE 405M defines metadata elements and individual data items that are compatible with this GC System Scheme 1. SMPTE 389M defines a System Reverse Play Element which is compatible with this GC System Scheme 1.

SMPTE 385M defines how the System Item that is defined in SMPTE 326M (SDTI Content Package Format) can be mapped in a MXF GC System Item. SMPTE 326M is constrained to frame-based wrapping and thus the System Item mapping defined by SMPTE 385M is also limited for frame-based wrapping.

This standard defines a compatible superset of the System Item defined in SMPTE 385M in that it provides a System Item that can be used with all known Generic Container wrappings including clip-wrapping. Figure 1 illustrates the use of the System Item in a Content Package.

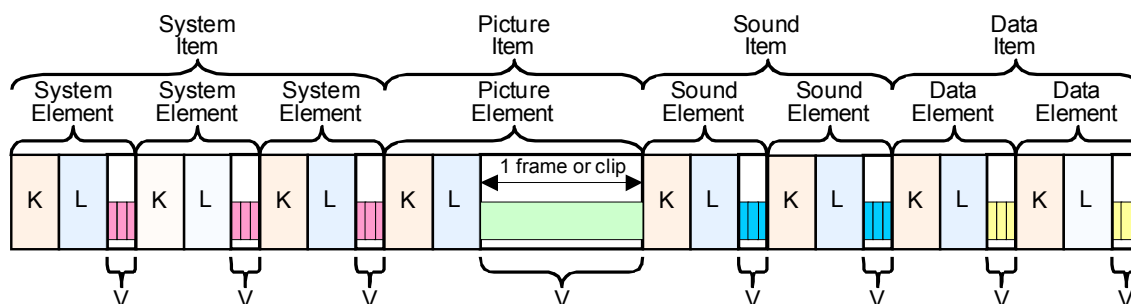


Figure 1 – Illustration of a GC System Item in a Content Package

In clip wrapping, one or more contiguous essence frames may be wrapped within a single GC Essence Element in a GC Essence Item. Any GC System Element must be capable of carrying any stream metadata that is associated with an Essence Element in a Content Package. Some stream metadata is present on a "per frame basis" and this needs to be mapped into a GC System Element as a vector of values corresponding to the vector of frames within a GC Essence Element.

Because the System Scheme defined in this standard provides compatibility with SMPTE 385M, any elements that can be used in SMPTE 385M can also be used in the System Item defined in this standard. However, this System Scheme cannot generally be used where compatibility with SMPTE 326M is required.

The System Item defined in SMPTE 379M comprises a contiguous sequence of up to 127 KLV coded System Elements as illustrated in Figure 2. As in SMPTE 379M, for each Content Package, every System Element comprises metadata or control data that is intimately related to the Essence Elements within the same Content Package.

As in SMPTE 379M, each System Element may be coded as a Fixed-length Pack, a Variable-length Pack or a Local Set according to SMPTE 336M.

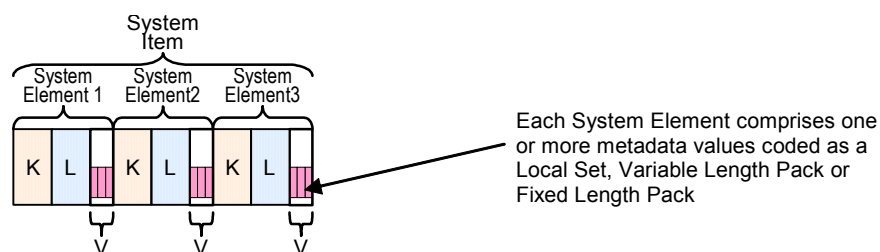


Figure 2 – Example of a GC System Item as a Sequence of Metadata Elements

5 GC System Scheme-1 Definitions

GC System Scheme 1 shall comprise the following System Element types as defined in Table 1.

Table 1 – Specification of the Elements in the GC System Scheme 1

Element Identifier	Element Name	Element Description
01h	First Element	A System Element coded as a local set that contains metadata pertaining to the Content Package as a whole and is the first element in the System Item
02h	Subsequent Element	A System Element coded as a local set that contains metadata pertaining to the Content Package as a whole and is not the first element in the System Item
03h	Picture Item Descriptor	A System Element coded as a local set that contains metadata pertaining to any Picture Element in the Picture Item of the Content Package
04h	Sound Item Descriptor	A System Element coded as a local set that contains metadata pertaining to any Sound Element in the Sound Item of the Content Package
05h	Data Item Descriptor	A System Element coded as a local set that contains metadata pertaining to any Data Element in the Data Item of the Content Package
06h	Control Data Set	A System Element coded as a local set that contains control data pertaining to the Content Package
07h	Compound Item Descriptor	A set that contains metadata pertaining to any essence element in the Compound Item of the Content Package
08h – 0Fh	Reserved	Reserved
10h – 7Fh	Pack coded System Elements	A System Element coded as a SMPTE 336M compliant pack