SMPTE ST 395:2014
Revision of
SMPTE 395M-2003

SMPTE STANDARD

Metadata Groups Register

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Approved
May 23, 2014

Foreword

SMPTE (the Society of Motion Picture and Television Engineers) is an internationally-recognized standards developing organization. Headquartered and incorporated in the United States of America, SMPTE has members in over 80 countries on six continents. SMPTE's Engineering Documents, including Standards, Recommended Practices, and Engineering Guidelines, are prepared by SMPTE's Technology Committees. Participation in these Committees is open to all with a bona fide interest in their work. SMPTE cooperates closely with other standards-developing organizations, including ISO, IEC and ITU.

SMPTE Engineering Documents are drafted in accordance with the rules given in its Standards Operations Manual.

SMPTE ST 395 was prepared by Technology Committee 30MR.

Intellectual Property

At the time of publication no notice had been received by SMPTE claiming patent rights essential to the implementation of this Engineering Document. However, attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. SMPTE shall not be held responsible for identifying any or all such patent rights.

1 Scope

The metadata groups register defined in this standard covers the use of metadata for all types of essence (picture, sound, data in their various forms). Applications of individual register entries will vary but, when used, shall conform to the definitions and formats in this metadata groups register standard.

The metadata groups register defines groups of metadata elements for the exchange of information in all kinds of groups (sets and packs) defined by SMPTE ST 336, Section 6.

This standard also defines the information elements that appear in XML encoded instances the metadata groups register.

2 Conformance Notation

Normative text is text that describes elements of the design that are indispensable or contains the conformance language keywords: "shall", "should", or "may". Informative text is text that is potentially helpful to the user, but not indispensable, and can be removed, changed, or added editorially without affecting interoperability. Informative text does not contain any conformance keywords.

All text in this document is, by default, normative, except: the Introduction, any section explicitly labeled as "Informative" or individual paragraphs that start with "Note:"

The keywords "shall" and "shall not" indicate requirements strictly to be followed in order to conform to the document and from which no deviation is permitted.

The keywords, "should" and "should not" indicate that, among several possibilities, one is recommended as particularly suitable, without mentioning or excluding others; or that a certain course of action is preferred but not necessarily required; or that (in the negative form) a certain possibility or course of action is deprecated but not prohibited.

The keywords "may" and "need not" indicate courses of action permissible within the limits of the document.

The keyword “reserved” indicates a provision that is not defined at this time, shall not be used, and may be defined in the future. The keyword “forbidden” indicates “reserved” and in addition indicates that the provision will never be defined in the future.

A conformant implementation according to this document is one that includes all mandatory provisions ("shall") and, if implemented, all recommended provisions ("should") as described. A conformant implementation need not implement optional provisions ("may") and need not implement them as described.

Unless otherwise specified, the order of precedence of the types of normative information in this document shall be as follows: Normative prose shall be the authoritative definition; Tables shall be next; followed by formal languages; then figures; and then any other language forms.

3 Normative References

Note: All references in this document to other SMPTE documents use the current numbering style (e.g. SMPTE ST 298:2009) although, during a transitional phase, the document as published (printed or PDF) may bear an older designation (such as SMPTE 298-2009). Documents with the same root number (e.g. 395) and publication year (e.g. 2009) are functionally identical.

The following standards contain provisions that, through reference in this text, constitute provisions of this recommended practice. At the time of publication, the editions indicated were valid. All standards are subject

to revision, and parties to agreements based on this recommended practice are encouraged to investigate the possibility of applying the most recent edition of the standards indicated below.

SMPTE ST 298-2009, Universal Labels for Unique Identification of Digital Data

SMPTE ST 336-2007, Data Encoding Protocol Using Key-Length-Value

SMPTE ST 2029:2009, Uniform Resource Names for SMPTE Resources

W3C Recommendation – Namespaces in XML, World Wide Web Consortium, 14-January-1999. http://www.w3.org/TR/REC-xml-names/

Uniform Resource Name Syntax – http://www.ietf.org/rfc/rfc2141.txt

A URN Namespace of Object Identifiers – http://www.ietf.org/rfc/rfc3061.txt

XML Schema Part 1: Structures Second Edition, W3C Recommendation 28 October 2004, http://www.w3.org/TR/2004/REC-xmlschema-1-20041028/

XML Schema Part 2: Datatypes Second Edition, W3C Recommendation 28 October 2004, http://www.w3.org/TR/2004/REC-xmlschema-2-20041028/

4 Metadata Groups Register Structure

4.1 Overview (Informative)

The metadata groups register structure provides flexibility in capturing metadata and exchanging it among applications through a standardized hierarchy of universal labels and through standardized symbol names for the metadata groups, organized to aid their management within a small but comprehensive number of classes. Metadata group classes are collections of metadata groups with common characteristics or attributes. Additional classes are provided for user-defined metadata.

The metadata groups register references individual items or elements of metadata groups using a two-part 16-byte Universal label that is numerical (and hence language independent) and unique. The first 8 bytes identify the second as an item designator in a specific version of a designated metadata dictionary, such as the one defined by SMPTE ST 335. This item designator is used to index the meaning or definition of the metadata element.

The KLV coding of groups of metadata items is defined in SMPTE ST 336; different kinds of KLV group encodings include universal, global, and local sets, defined-length and variable-length packs.

The first 8 bytes of the 16-byte KLV group key are the universal label (UL) header (or designator) and are defined in clause 4.1 and tables 2 and 3 of SMPTE ST 336. The metadata groups register defined by this standard specifies the contents of bytes 6-8 of the metadata universal set UL header and designator (see Section 4.5.4):

- Byte 6 (registry designator);

  Note: In KLV encoding, this byte identifies the set or pack syntax used in a given instance of a metadata group. This may be universal or global set, several variants of local set (with different tag field width and length field width), fixed pack, and variable pack (with variants of length field width).

- Byte 7 (structure designator);
- Byte 8 (version number).

All allowable KLV encoding syntaxes for a given group are defined by the same entry in the metadata groups register (see Section 4.5.14).

Note: Universal and global and sets use a lossless form of KLV encoding of the ULs of each data item in the set and hence can losslessly map the data items to the appropriate dictionary. KLV sets do not require any specific ordering of the elements, and also allow some elements to be optional (i.e.; not present). KLV packs require that the elements are presented in a specific order, and all the elements must be present (although in a variable pack, some may have zero length).

4.2 Compatibility with Other Metadata Structures (Informative)

The metadata groups register structure is a framework that supports global interoperability by defining metadata tags in a way that enables the interchange of SMPTE metadata with metadata from different sources and originated by other bodies.

Many different cataloging conventions are used by communities who focus on a specific domain or subject or who have specific needs for archive and retrieval of multimedia data including, for example, intellectual rights. The metadata groups register is not intended to replace conventions already in use, for example, in textual naming or key words. Within the framework of the metadata groups register structure, different content creation communities, media indexing professionals, or metadata extractors and users can develop metadata conventions that meet their specific requirements.

4.3 Individual Classes of Metadata Groups

Metadata groups may contain metadata items from one or from many classes in the SMPTE ST 335 metadata dictionary. Mandatory and optional items in each group are listed in the groups register entries (see below).

Within the metadata groups register, metadata groups are organized into a hierarchical structure, where each is assigned to a metadata group class, as shown in the overview of figure 1, based upon the primary role of the group or the class of the primary metadata in the group or both. The list of metadata group classes defined by this standard consists of:

Class 1: Identification and location

Class 2: Administrative

Class 3: Interpretive

Class 6: Relational

Class 7: Spatio-temporal

Class 12: Compound

Class 13: Organizationally registered for public use

Class 14: Organizationally registered as private

Class 15: Experimental

This list mirrors the classes defined by SMPTE ST 335 and adds the compound class (class 12) to cover groups constructed from diverse metadata components.

The number of metadata classes may be extended in the future to a maximum of 127.

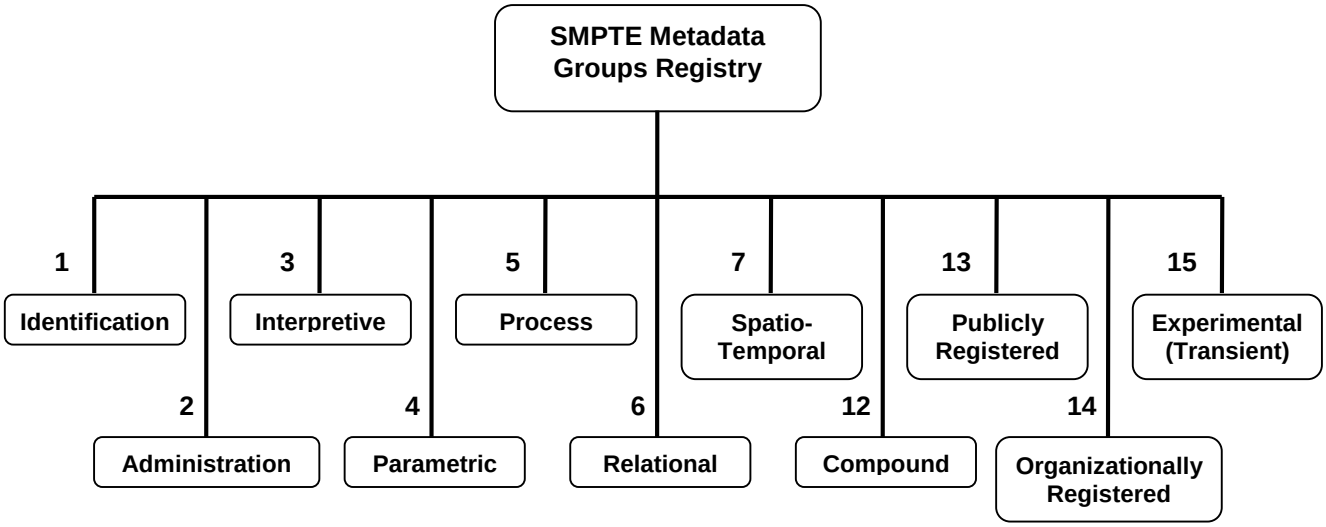

Figure 1 – Overview of groups register classes

4.3.1 Class 1: Identification and Location

Metadata Groups in this class shall primarily carry identifying information (IDs) that describes the essence of the overall bit stream or file. A critical part of Class 1 metadata is unambiguous identification of the essence using a single, recognized number or label such as the SMPTE Unique Material Identifier (SMPTE ST 330). Information in this Class shall include global and local identifiers as well as identifying information about the metadata elements themselves (so-called “meta-metadata”). Examples of sub-class titles in this Class are:

- Globally unique identifiers
- ISO identifiers
- Object identifiers
- Device identifiers
- Unique IPR identifiers
- Local locators
- Titles

4.3.2 Class 2: Administration

Metadata groups in this class shall primarily carry administrative or business data that describes information about the essence or metadata that is relevant to its application. Information on authorized use, restrictions on use, and encryption are in this metadata class. Cost information and information needed to protect intellectual property or to protect ownership shall also be contained in Class 2. Examples of sub-class titles in this class are:

- Supplier
- Rights
- Financial information
- Security
- Publication outlet
- Participating parties
- Broadcast and repeat statistics

4.3.3 Class 3: Interpretive

Metadata groups in this class shall primarily carry information which is normally considered either a subjective or a human-generated description of the essence or a computational result from machine examination of the essence. Interpretive information shall consist of, but not be limited to, textual terms (e.g.; keywords, narrative summary, titles, genre categories, scripts, etc.), or computational metrics (e.g.; color histograms, texture maps, object shapes, facial features, etc.). Information in Class 3 shall be principally used for indexing, cataloging, administering, searching, and retrieving the content of essence. Examples of sub-class titles in this class are:

- Fundamental (such as ISO language code, length, and time systems)
- Descriptive (human-assigned)
- Categorization
- Assessments
- Descriptors (machine-assigned or computed)

4.3.4 Class 4: Parametric

Metadata groups in this class shall primarily carry information that describes the technical characteristics of the camera, sensor, or system that originates the essence or metadata. Information about the technical characteristics of the essence or metadata is also provided, including, but not limited to, its creation parameters and the configuration of the originating system. Examples of sub-class titles in this class are:

- Video essence encoding characteristics
- Audio essence encoding characteristics
- Data essence encoding characteristics
- Metadata encoding characteristics
- Audio test parameters
- Film pulldown characteristics
- Fundamental sequencing and scanning
- MPEG coding characteristics
- Time code characteristics

4.3.5 Class 5: Process

Metadata groups in this class shall primarily carry information that describes how the essence was processed or otherwise changed or enhanced after its origination. This class shall include, but not be limited to, many of the parameters in an edit decision list. Additional information in Class 5 shall be an audit trail (heritage) of all changes to the original content over time. Also included shall be a record of compression/decompression steps and any changes in storage media or format. Examples of sub-class titles in this class are:

- Process indicators
- Manipulation
- Downstream processing history
- Enhancement or modification
- Audio processor settings (device-specific)
- Editing information

4.3.6 Class 6: Relational

Metadata groups in this class shall primarily carry information that describes relationships between objects in the content or between any combination of essence, objects and metadata. Examples of sub-class titles in this class are:

- Generic relationships
- Relatives
- Essence-to-essence relationship
- Metadata-to-essence relationship
- Metadata-to-metadata relationship
- Object-to-object relationship
- Metadata-to-object relationship
- Related production material
- Numerical sequence
- Relationship structures

4.3.7 Class 7: Spatio-temporal

Metadata groups in this class shall primarily carry information about aspects of the content or the originating camera, sensor, or system relating to time, place, or space. Geo-spatial information in Class 7 shall be any information that defines the positions or places (either absolute or relative) of objects, scenes, individuals, or any other component of the essence. Temporal elements such as dates, time codes, synchronization marks, temporal keywords, and motion (vector) parameters shall also be part of Class 7 metadata. Examples of sub-class titles in this class are:

- Position and space vectors
- Absolute position

- Image positional information
- Rate and direction of positional change
- Abstract locations
- Angular specifications
- Distance measurements
- Operational date and time information
- Absolute date and time
- Relative durations
- Rights date and time
- Setting date and time (characterized time period)
- Delay
- Latency

4.3.8 Class 12: Compound

Metadata groups in this class shall carry individual elements of metadata drawn from more than one metadata dictionary classes, or elements which are themselves metadata groups, or a combination.

4.3.9 Class 13: Organizationally registered for public use

Metadata groups in this class shall be defined and registered by a specific user organization or individual and are therefore reserved and managed separately from the other classes (1-7 and 12) of metadata groups. The definition may allow or require these groups to carry standard metadata from classes 1-7, or publicly registered metadata (Class 13), or a combination.

Information about publicly registered metadata groups shall appear in the appropriate sections of the published metadata groups register. Class 13 metadata groups shall be managed by the SMPTE Registration Authority and their approval shall be consistent with Annex B.2.

4.3.10 Class 14: Organizationally registered as private

Metadata groups in this class shall be defined and registered by a specific user organization or individual and are therefore reserved and managed separately from the other Classes (1-7 and 12) of metadata groups. The definition may allow or require these groups to carry standard metadata from classes 1-7, or publicly registered metadata (Class 13), or organizationally registered metadata (Class 14), or a combination.

Information about organizationally registered metadata shall not be made public but the metadata tags shall be publicly identified in the metadata dictionary contents and shall be reserved for use by the registered organization. Class 14 metadata shall be managed by the SMPTE Registration Authority and its approval shall be consistent with Annex B.3.

Note: If a device or application is required to parse instances of Class 14 metadata, it will require a definition that is supplied by the owning organization rather than attempting to use any version of the SMPTE register defined by this document.

4.3.11 Class 15: Experimental

Metadata groups in this class shall carry information whose definition and use does not need to conform to the definitions in the metadata dictionary. Class 15 metadata is intended for use in multimedia research or other limited access, experimental environments where experimentation with new metadata elements and applications does not depend on strict conformance to approved standards and which remain within a test or laboratory environment.

4.4 Universal labels for metadata groups

The metadata groups register shall define the format of the 8-byte group designator (the second 8 bytes of the 16-byte UL) as shown in Table 1. “Organization” is used below to mean the organization, company, institution, or person requesting the assignment of a metadata universal set designator.

Table 1 – Group designator format

Byte	Description	Contents (see note below)
9	Base groups (classes)	0x00 – Not used 0x01 – Identifier and locator group 0x02 – Administrative group 0x03– Interpretive group 0x04 – Parametric group 0x05 – Process and processing group 0x06 – Relational group 0x07 – Spatio-temporal group 0x0C – Compound group (contains properties from different base classes) 0x0D – Organizationally registered for public use group (Annex B.2. approval) 0x0E – Organizationally registered for private use group (Annex B.3. approval) 0x0F – Experimental use group (transient validity) 0x10-0xFF – Reserved
When byte 9 is anything other than 0x0D or 0X0E:		
10-16	Group ID	Assigned by SMPTE-RA, BER OID-encoded
When byte 9 is 0x0D or 0X0E:		
10	Organization major ID	Sequentially assigned by SMPTE-RA
11	Organization minor ID (Class within the organization)	Assigned by the organization, registered by SMPTE-RA
12	Organization version ID	0x01 – Default 0x02-0x7F – Assigned by the organization as required
13-16	Organization group ID	0x00-0xFF – Assigned and defined by the organization.

Note: Contents of bytes 9-12 require approval following the provisions of Annex B unless otherwise stated.

The metadata groups register shall contain one entry for each registered group.

The entry shall apply only to those values of the register designator (UL byte 6) which are specified within the entry. Each group designator may be used for universal, global, or local sets, and for fixed and variable packs as specified. The same group designator may not be used with different register designators to identify different groups.

4.5 Metadata groups register entry structure and format

Each metadata group or metadata group class/subclass shall be described by a number of fields, which are classified as normative, informative, queried, stated, or calculated.

The fields that apply to leaves or nodes are indicated in the following subsections. In the metadata element dictionary, nodes describe classes/subclasses and leaves describe metadata elements.

Normative fields of the metadata element dictionary are those that are required for the description of a metadata element or class/subclass. They may be omitted only if they are not applicable. The only normative fields that may not be applicable to all metadata elements are the defining document and unit of measure.

Informative fields provide additional information that is intended to help users of the metadata element dictionary. In the case of a conflict of interpretation, normative fields take precedence over informative fields.

Queried fields are derived by using an identifier (universal label) to look up information contained in the normative fields of another register. The source register, rather than the metadata element dictionary, shall be considered the normative reference for these fields.

Stated fields contain values that were stated by the originator of the item and were used to derive the normative fields. Derivation may be manual (i.e., by the document editor) or calculated by formula. In some cases, derived normative fields belong to a different register, such as the Types Register.

Calculated fields are non-normative fields that are derived from other fields. Note that this definition excludes derived normative fields. In the case of conflict between a calculated field and a normative field, the normative field takes precedence.

The following sections list the specific normative and informative fields. Descriptions of the stated, calculated, queried, and administrative fields are also given. The order in which the fields are presented may not reflect the order in which they appear in the register.

Table 2 – Classification of fields used in the metadata groups register

Field	Definition	Classification	Scope	Required?	Type
Register	4.5.1	Calculated	Nodes, leaves	Derived	Text
Level	4.5.2	Calculated	Nodes, leaves	Derived	Integer number
Node or leaf	4.5.3	Normative	Nodes, leaves	Derived	Text
UL header and designator	4.5.4	Stated	Nodes, leaves	Required for derivation of normative universal label	7 bytes (UL bytes 1-7)
Register version at introduction	4.5.5	Stated	Nodes, leaves	Required for derivation of normative universal label	1 byte (UL byte 8)
Group designator	4.5.6	Stated	Nodes, leaves	Required for derivation of normative universal label	8 bytes (UL bytes 9-16)
Universal label	4.5.7	Normative	Nodes, leaves	Required	URN representing the UL
Symbol	4.5.8	Normative	Nodes, leaves	Required	XML element name
Namespace name	4.5.9	Normative	Nodes, leaves	Required for top-level class 13 and 14 nodes	URI
Name	4.5.10	Normative	Nodes, leaves	Required	Text
Definition	4.5.11	Normative	Nodes, leaves	Required	Text
Parent Group	4.5.12	Normative	Leaves	Required	UL
Concrete	4.5.13	Normative	Leaves	Required	true or false
Allowed KLV syntax	4.5.14	Normative	Leaves	Required	Batch of bytes
Contents		Normative	Leaves	Optional	Vector of records
Contents item	4.5.16	Normative	Contents record	Optional	16 bytes (UL value from register defined by SMPTE ST 335)
Contents local tag	4.5.17	Normative	Contents record	Optional	4 bytes
Contents limit length	4.5.18	Normative	Contents record	Optional	4 bytes
Unique Identifier	4.5.19	Normative	Contents record	Optional	true or false

Contents optional	4.5.20	Normative	Contents record	Optional	true or false
Contents ignorable	4.5.21	Normative	Contents record	Optional	true or false
Contents distinguished	4.5.22	Normative	Contents record	Optional	true or false
Contents value	4.5.23	Normative	Contents record	Optional	Matches the type of the Contents Item
Defining document	4.5.24	Normative	Leaves	Optional	Text
Applications	4.5.25	Informative	Nodes, leaves	Optional	Text
Notes	4.5.26	Informative	Nodes, leaves	Optional	Text
isDeprecated	4.5.27	Normative	Nodes, leaves	Required	true or false

4.5.1 Register

This field identifies the register to which an item belongs, for example, “Elements”, “Groups”, “Types”, or “Labels”. It is derived from bytes 5 and 6 of the universal label as defined in SMPTE ST 336 and shown in Table 1. For the register defined by this standard, this field always has the value “Groups”.

4.5.2 Level

This indicates the level of an item in the class hierarchy of the metadata groups register. It is calculated from the position of the last active byte of the item designator.

4.5.3 Node or Leaf

This field defines whether the item is a node or a leaf as defined in Section XXX.

4.5.4 UL header and designator

This entry records the first 7 bytes of the SMPTE Universal label: 0x06.0e.2b.34.02.7f.01. It identifies the syntax and version control for the metadata group.

- Byte 5 shall always be 0x02 (groups)
- Byte 6 shall always be 0x7f

  Note: In KLV encodings of the group, this value shall be substituted by one of the allowed KLV syntax bytes (see Section 4.5.14) to create the UL designator of the actual KLV key.

- Byte 7 increments from 01

4.5.5 Register version at introduction

This entry records the version number of the register which first recorded the registration of the group designator, and is equal to byte 8 of the SMPTE UL.

4.5.6 Group designator

This has eight fields represent the eight octets or bytes of the group designator. These uniquely identify the specific metadata group in the register.

4.5.7 Universal Label

This normative field shall be derived from the value of the universal label as defined by Section 4.3.5 and represented in a normative text format that has been approved for use in SMPTE registers. This provides a consistent textual format for representing the underlying UL.

The normative text format of the universal label is the internationally recognized Uniform Resource Name (URN) notation. SMPTE ST 2029 defines the urn:smpte:ul representation of a SMPTE ST 298 UL, which shall be used for this value.

4.5.8 Symbol

Each item may be uniquely identified using its assigned symbol. A symbol is a name that conforms to computer language syntax restrictions, and it is intended for use in computer languages such as the Extensible Markup Language (XML). To enable the use of symbols in a wide range of computer languages, a symbol shall be a string composed only of the characters A-Z, a-z, 0-9, and _, and it shall begin with an alpha character (A-Z, a-z) or an underscore (_).

Symbols are defined for both nodes and leaves. For classes 1-7 and 12 metadata, the symbol assigned to a node or leaf shall be unique within the XML namespace identified by the Uniform Resource Identifier (URI) http://www.smpte-ra.org/reg/395/<revision>, where <revision> shall be a string denoting the year of publication of this structure standard as 4-decimal digits, and optionally appended with 2-month decimal digits in the range 01-12.

Note: This implies that class 1-7 and 12 symbols are unique within the metadata groups register.

The namespaces for class 13 and 14 metadata shall be identified according to Section 4.5.9.

4.5.9 Namespace name

The Namespace Name defines the scope over which symbols, which are defined in Section 4.5.8, are unique. For classes 1-7 and 12 the Namespace Name shall be defined according to Section XXX. For Classes 13 and 14, a Namespace Name shall be specified by the registrant for the top-level node and may be specified for any sub-node.

Organizations that have defined metadata in Classes 13 and 14 are free to choose any valid Namespace Name (URI) for the symbols identifying this metadata in accordance with the XML-Namespace recommendation; this is subject to the restriction that this Namespace Name shall not correspond to the XML namespace used for Class 1-7 and 12 symbols. The Namespace Name (URI) shall be specified as a normative field of the Class 13 or 14 node to which this namespace applies. All subnodes shall belong to this namespace, unless another namespace has been specified. Therefore, if no Namespace Name (URI) for a node is given, it shall be inherited from the ancestor node.

4.5.10 Name

This entry is the English language name for the element represented numerically by the group designator.

4.5.11 Definition

This entry is the detailed and unambiguous US-English language definition of what is represented by the group designator. It provides narrative description of the group, its contents, and its application.

4.5.12 Parent Group

This entry specifies the UL of the parent group from which this group inherits all mandatory items and all optional items, if any. If there is no parent group, this entry shall be empty.

Note: Another term for the parent group is superclass.

The allowed syntax of the parent group is not inherited.

4.5.13 Concrete

This entry identifies if a group is concrete (can be instantiated) or if it is an abstract superclass that serves as the base type for other group definitions within the register.

The value shall be false for abstract superclasses and true for all other groups.

4.5.14 Allowed KLV syntax

This entry lists those values of byte 6 of the UL (universal, global, local set, fixed and variable pack KLV coding syntax) which are valid for this group designator.

4.5.15 Contents

This vector of records contains the complete and ordered list of all mandatory and optional elements of the group, not including those inherited from any base class.

4.5.15.1 Ordering of encodings of Contents instances

When groups are encoded in an Unordered Syntax (a syntax in which the order of encoding is not significant), encoders may serialize items in any order, and decoders shall accept properties in any order. One such encoding syntax is SMPTE ST 336 Sets.

When groups are encoded in an Ordered Syntax (a syntax in which the order of encoding is significant), encoders shall serialize items in the order specified by the Defining Document, and decoders need not accept properties in any different order. One such encoding syntax is SMPTE ST 336 Packs.

The Defining Document may specify an explicit order, or it may specify a set of rules that determine the order, or it may recommend the use of the Default Order as defined in this section.

The Default Order shall be determined by the following rules:

1. The contents of the parent groups shall precede the contents defined for this group.
2. Rule 1 shall apply recursively to parents of the parent group.
3. The order of the contents defined for this group shall equal the order in the vector of records.

If the Defining Document does not specify an order, encoders for an Ordered Syntax shall serialize items according to the Default Order.

In KLV pack syntax, the encoding order of the items shall equal the Default Order.

4.5.16 Item

This entry identifies an element of the group. Its value is the identifier of the item in the SMPTE metadata element dictionary defined by SMPTE ST 335.

4.5.17 Local tag

This entry specifies the default local tag for local set syntax KLV encoding. The value of this entry is truncated to the tag width for the particular syntax.

The local tag shall be used in all applications that do not provide a mechanism to assign and transmit local tags to KLV encoded group properties.

4.5.18 Limit length

This entry specifies the element length which shall be used in defined length pack syntax.

4.5.19 Unique Identifier

This entry identifies if the element of the group serves as the unique identifier for instances of the element within a multiple. If the element serves as the unique identifier, the value shall be true. It shall be false otherwise.

4.5.20 Optional

This entry identifies if the element of the group is optional or required. If the element is required to be present in instances of the group, the value shall be false. It shall be true otherwise.

4.5.21 Ignorable

This entry identifies if the element of the group is ignorable by a decoder. If a decoder may choose to ignore instances of this element, the value shall be true. It shall be false otherwise.

This entry is provided to differentiate between elements that are completely optional, and elements that are intended to affect decoder behavior if present.

Note: For example, SMPTE ST 377-1 Table 3 defines both Optional and Decoder Required elements

4.5.22 Distinguished

This entry identifies if the element of the group has a Distinguished Value. The semantic of a Distinguished value is that when this value is contained in an instance, decoders shall behave as if the value were absent. If the group has a Distinguished Value, this entry shall be true, and the Distinguished value shall be specified below. It shall be false otherwise.

4.5.23 Value

This entry specifies a Distinguished Value or a Default Value for the entry. If the Distinguished flag above is true, decoders shall treat this value as a Distinguished Value. Otherwise, Decoders shall treat this value as a Default Value.

4.5.24 Defining document

In cases where the group designator is comprehensively defined in another standard or other document, this entry references that standard or the authoritative source of the information.

The defining document shall be normative and therefore publicly available. The only exception shall be for metadata groups in class 14 (organizationally registered as private) for which the document may or may not be identified.

4.5.25 Applications

This field is an informative listing of some known applications that use a particular data element.

4.5.26 Notes

This field can be used to provide additional information that may assist in the interpretation and correct application of the data element or a class/subclass of data elements. This information cannot be deduced from the other normative and informative fields.

4.5.27 Deprecated

This normative field is an indication to system designers that the element should no longer be used.

The field shall contain a boolean value that is true for elements that have been classified as deprecated according to the processes described in Annex B.1.3 or Annex B.2.3. All other entries shall carry the value

false. Where a node is flagged as deprecated no new nodes or leaves shall be allocated under that node. Leaves under a deprecated node may be flagged as deprecated or left usable.

Note: Deprecation can be used in situations where it has been determined that the entry is erroneous or could cause compatibility problems, so great care is required to avoid them. However some situations can require use of an element after it has been deprecated, such as reading from a large archive

5 Groups Register Maintenance

The principles for maintenance and administration of the labels register are defined in the following clauses:

5.1 Register Version Information

The following information shall be provided by the SMPTE Registration Authority with each update to the labels register:

Standard name: Groups Register

Category designator: One-byte unsigned integer that indicates that the groups register is defined by this structure document. The category designator shall have a value of 02h.

Version number: One-byte unsigned integer in the range of 1 to 127

Effective date: Date of publication of any updates to the register on the web site of the SMPTE Registration Authority (www.smpte-ra.org) as provided by the SMPTE Administrative Practices.

Register Administrator: SMPTE Registration Authority

Contact information: Text provided on the SMPTE Registration Authority's website, www.smpte-ra.org

Users of the labels register should check the SMPTE-RA web site regularly for updates to the register.

5.2 Register Management and Compatibility Requirements

To ensure reliable and correct interpretation of legacy material in the future, changes to the labels register shall be carried out in accordance with the registration procedures defined in Annex B. Annex B specifies the provisions and corresponding requirements for additions, deletions, deprecations, and changes to items in Classes 1-7 and 12 (Annex B.1), Class 13 (Annex B.2), and Class 14 (Annex B.3).

The addition process shall be carried out and documented in accordance with Annex B by the SMPTE Registration Authority. It shall occur on request from the appropriate SMPTE technology committee and shall be administered in accordance with Annex B. The version number of the register shall be incremented each and every time an addition (or group of additions) is approved since this is critical to ensuring the operational compatibility of metadata decoders. The incrementing of the version number shall not prevent use of unaffected universal labels, structure, or contents by a decoder that conforms to the prior version.

Note: It is inevitable, given the above addition process, that eventually the register will become cluttered with legacy entries to the point where the responsible SMPTE technology committee determines it has reached the limit of its usefulness. At this stage, or when other changes to the register contents, to an existing approved register structure, or to relationships between labels and other metadata that prevent backward compatibility are necessary, a new structure standard and the associated register will be created. These will be made readily accessible online by the SMPTE Registration Authority to allow upgrades to decoders. The superseded standard will then undergo no further revision unless essential under the SMPTE five-year rule.

5.3 Register Availability

The latest version of the groups register shall be made available on the SMPTE Registration Authority website, www.smpte-ra.org, in a defined electronic publishing format with an accompanying document specification.

Note: A minimum of the two immediate previous versions are maintained in a clearly indicated archive.

Annex A Glossary of Terms (Normative)

A.1
Attribute
A characteristic of a group or an item in the group contents.

A.2
Class
The broad category that forms the first level of hierarchy for all registered groups.

A.3
Context
The circumstance, purpose, and perspective under which something is defined or used.

A.4
Designator
A sub-identifier within a universal label.

A.5
Identifier
A sequence of numbers or characters, capable of uniquely identifying that with which it is associated, within a specified context.

A.6
Item (Register)
An object in a register that instantiates a defined set of attributes. An item in the groups register is a description of a group, a class or subclass of groups.

A.7
Item Designator (SMPTE ST 336)
The last 8 bytes of the universal label, which uniquely identify a particular item within the context of the UL designator.

A.8
Groups Register
The register, as defined by this standard, of approved groups and the attributes of their contents.

A.9
Leaf
An entry in the register that defines a group.

A.10
Level Number
The last non-zero value of a UL of a node or leaf. Which value in a UL is the level number depends on the level of the entry, i.e. how many entries are above it in the hierarchy.

A.11
Metadata Element
A data element defined by the metadata element dictionary.

A.12
Node
An entry in the register that is used to provide a hierarchical structure for leaves. A node may have any number of nodes and leaves under it that are logically grouped by the node. All entries under a node share the non-zero bytes of the node's UL.

A.13
Registry
An information system for registering metadata (e.g. metadata elements, types, labels, groups).

A.14
Register
The information store or database maintained by a registry.

A.15
Registration Authority
An organization responsible for maintaining a register.

A.16
Top-Level Node
A node in class 13 or 14 under which an individual or organization other than SMPTE controls the entries.

A.17
Universal Label
Specifically a SMPTE-administered universal label, which is 16 bytes. The syntax of the universal labels used in the data element dictionary is defined in SMPTE ST 336, which describes the mechanism by which the UL is used as a key that explicitly identifies a predefined value or group of values.

A.18
UL Designator (SMPTE ST 336)
A sequence of sub-identifiers (bytes 3-8 of a 16-byte universal label) designating the ISO/ITU organization, register category, register, register structure, and version number.

A.19
Value
An instance of information.

Annex B Registration Criteria (Normative)

This annex defines the specific registration criteria for entries in each of the defined labels classes.

B.1 Criteria for Modifications to Entries in Classes 1-7 and 12

Classes 1 to 7 and 12 of the register shall be administered by the Metadata and Registers Committee, 30MR or another body as appointed by the Standards Committee from time-to-time. All changes shall only take place after successful completion of a ballot of the administering body.

Changes may be instigated by the administering body, or by any organization or individual that is a member of SMPTE upon providing the following information:

1) Contact information for the organization, individual, or committee requesting the change;

2) Details of the requested change of the registered label along with a justification for the change;

3) Details of any supporting document that may require the change of the registered label.

B.1.1 Additions to Entries in Classes 1-7 and 12

Additions to the register in classes 1 to 7 and 12 shall be subject to review for adequacy of information, including technical description, non-conflict with existing engineering documents, and compliance with the requirements in this section. Class 1 to 7 and 12 additions shall not require a supporting SMPTE engineering document.

B.1.2 Changes to Entries in Classes 1-7 and 12

During the ballot process for a change of an entry whose class is in the range 1 to 7 and 12, negative votes based upon procedural issues, including adequacy of technical description, shall be accepted.

B.1.3 Deprecation of Entries in Classes 1-7 and 12

Any request for flagging of a registered label as deprecated shall result in the posting of an appropriate public notice describing the proposed deprecation.

B.1.4 Deletion of Entries in Classes 1-7 and 12

Entries in classes 1 to 7 and 12 shall not be deleted.

B.2 Criteria for Modifications to Entries in Class 13

Class 13 of the register shall be administered by the Metadata and Registers Committee, 30MR or another body as appointed by the Standards Committee from time-to-time.

Nodes in class 13 may be allocated to a specified organization which becomes responsible for instigating changes under that node. A node shall be allocated after successful completion of a consensus vote of the administering body. The allocated node shall be regarded as the top-level node for that organization within the class 13 register.

All changes in class 13 entries are at the discretion of the appropriate organization. All changes shall be reviewed for adequacy of information and compliance with the provisions of this document.

Changes may be instigated upon submitting the following information to the administering body:

1) Contact information for the organization, individual, or committee requesting the change;

2) Details of the requested change of the registered label along with a justification for the change;

3) Details of any supporting document that may require the change of the registered label.

The administering body shall check that all required information has been supplied and include the modifications in the next published version of the register.

B.2.1 Additions to Entries in Class 13

Additions to the register in class 13 shall be subject to review for adequacy of information; this shall be limited only to compliance with the requirements in this section. Class 13 additions shall not require a supporting SMPTE engineering document.

B.2.2 Changes to Entries in Class 13

Changes to class 13 entries shall be subject to review for adequacy of information this shall be limited only to compliance with the requirements in this section.

B.2.3 Deprecation of Entries in Class 13

Any request for flagging of a registered label as deprecated should result in the posting of an appropriate public notice describing the proposed deprecation.

B.2.4 Deletion of Entries in Classes 13

Entries in Class 13 shall not be deleted.

B.3 Criteria for Modifications to Entries in Class 14

Class 14 of the register shall be administered by the Metadata and Registers Committee, 30MR or another body as appointed by the Standards Committee from time-to-time.

Nodes in Class 14 may be allocated to a specified organization which becomes responsible for all entries under that node. A node shall be allocated after successful completion of an administrative vote of the administering body. The allocated node shall be regarded as the top-level node for that organization within the Class 14 register.

A request for a Class 14 node shall include the following information:

1) Contact information for the organization, individual, or committee requesting the node;

2) Statement of intention to apply the registered labels node, and intended date of first use.

Note: A fee might apply for the registration of a class 14 node.

Changes to the register in Class 14 shall not be subject to review.

Annex C Organization of References (Informative)

No single standard can contain all of the information needed to describe and encode metadata. Hence, a layered approach is used to convey the information so the user can select the applicable standard(s) for the level of implementation needed. The SMPTE normative standards for metadata include:

- This standard for the groups register structure (SMPTE ST 395) and the groups register itself;
- The standard for the metadata element dictionary structure (SMPTE ST 335) and the metadata element dictionary itself;
- The standard for the types register structure (SMPTE ST 2003) and the types register itself;
- The standard for the SMPTE labels structure (SMPTE ST 400) and the labels register itself;
- The standard for key-length-value (KLV) data encoding (SMPTE ST 336).

Annex D Bibliography (Informative)

SMPTE ST 335:2012, Metadata Element Dictionary Structure

SMPTE ST 377-1:2011, Material Exchange Format (MFX) — File Format Specification

Amendment 1:2012 to SMPTE ST 377-1:2011

Amendment 2:2012 to SMPTE ST 377-1:2011

SMPTE ST 2003:2012, Types Dictionary Structure

SMPTE EG 2074:2013, SMPTE Metadata Naming Guidelines

Extensible Markup Language (XML) 1.0 (Fifth Edition), W3C Recommendation, 26th November 2008, http://www.w3.org/TR/2008/REC-xml-20081126/

ISO/IEC 11179-1, Information Technology — Metadata Registries (MDR) — Part 1: Framework, Second edition, 2004-09-15

Merriam Webster's Collegiate Dictionary, 11th Edition, July 2003, Merriam-Webster