

SMPTE RECOMMENDED PRACTICE

Digital Object Identifier (DOI) Name and Entertainment ID Registry (EIDR) Identifier Representations



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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 Part XIII of its Operations Manual.

SMPTE RP 2079 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.

Introduction

This section is entirely informative and does not form an integral part of this Engineering Document.

The digital object identifier (DOI) system specified in ISO/IEC 26324 provides an infrastructure for persistent unique identification of objects in the form of a DOI name. An Entertainment ID Registry (EIDR) Identifier is a particular kind of a DOI name used for global unique identification of movie and TV content. It is desirable to facilitate interchange of DOI names and EIDR Identifiers in MXF and other SMPTE engineering documents by unambiguously specifying their representation.

1 Scope

To facilitate interchange, this specification defines specific text and binary representations for digital object identifier (DOI) names and Entertainment ID Registry (EIDR) Identifiers. It also defines dictionary entries, e.g. types and elements, for use in MXF and other KLV-based applications.

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

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.

ISO/IEC 7064:2003 Information Technology — Security Techniques — Check Character Systems

ISO/IEC 26324:2012, Information and Documentation — Digital Object Identifier System

SMPTE ST 335:2012, Metadata Element Dictionary Structure

SMPTE ST 2003:2012, Types Dictionary Structure

Internet Engineering Task Force (IETF) (April 2006). RFC 4452, The "info" URI Scheme for Information Assets with Identifiers in Public Namespaces

Internet Engineering Task Force (IETF) (January 2008). RFC 5234, Augmented BNF for Syntax Specifications: ABNF

4 Canonical DOI Name

A Canonical DOI Name is defined as a DOI name string as specified in Section 4.1 of ISO/IEC 26324.

Example: 10.1000/123456 is a Canonical DOI Name with the DOI prefix 10.1000 and the DOI suffix 123456.

Note: A DOI name can be resolved at <http://www.dx.doi.org/>.

5 Canonical EIDR Identifier

A Canonical EIDR Identifier shall be a DOI name string as specified in ISO/IEC 26324, conforming to the EIDR_IDENTIFIER syntax specified below (using ABNF as specified in IETF RFC 5234):

```
EIDR_IDENTIFIER = EIDR_PREFIX "/" EIDR_SUFFIX
EIDR_PREFIX    = "10.5240"
EIDR_SUFFIX    = 5*5(4*4HEXDIG "-" ) CHECK

DIGIT          = %x30-39                      ; 0-9
HEXDIG         = DIGIT / "A" / "B" / "C" / "D" / "E" / "F"
ALPHA          = %x41-5A / %x61-7A             ; A-Z / a-z
CHECK          = DIGIT / ALPHA
```

CHECK shall be the Mod 37,36 check character as specified in ISO/IEC 7064, computed over the 20 hexadecimal digits HEXDIG of EIDR_SUFFIX.

EIDR Identifiers shall be case insensitive.

Example: 10.5240/5FD4-FEE1-22F5-583E-FECC-O and 10.5240/5fd4-FEE1-22F5-583E-fecc-o correspond to the same EIDR Identifier.

Note: The check character is computed over the DOI suffix alone: if the prefix is not 10.5240, the DOI name is not an EIDR Identifier.

6 Canonical DOI Name Type

The Canonical DOI Name Type registry entry, as defined in SMPTE ST 2003, shall be as specified in Table 1.

An instance of the Canonical DOI Name Type shall be a Canonical DOI Name as specified in Section 4.

Table 1 – DOI Name Type Definition

Name	Canonical DOI Name Type
Symbol	CanonicalDOINameType
Designator	Bytes 1-7: Types Byte 8: 0x01 Byte 9-10: RenamedCharacterTypes Byte 11: 0x07 Byte 12-16: 0x00
Definition	DOI name as specified in Section 4.1 of ISO/IEC 26324
Type Kind	Basic
Type Size	[variable]
Base Type	UTF16String
Type Qualifiers	[n/a]
Facets	[n/a]
Defining Document	SMPTE RP 2079
Context	Abstract

7 Canonical EIDR Identifier Type

The Canonical EIDR Identifier Type registry entry, as defined in SMPTE ST 2003, shall be as specified in Table 2.

An instance of the Canonical EIDR Identifier Type shall be a Canonical EIDR Identifier as specified in Section 5.

Table 2 – EIDR Identifier Type Definition

Name	Canonical EIDR Identifier Type
Symbol	CanonicalEIDRIdentifierType
Designator	Bytes 1-7: Types Byte 8: 0x01 Bytes 9-10: RenamedCharacterTypes Byte 11: 0x08 Byte 12-16: 0x00
Definition	Canonical EIDR Identifier
Type Kind	Basic
Type Size	[variable]
Base Type	CanonicalDOINameType
Type Qualifiers	[n/a]
Facets	[n/a]
Defining Document	SMPTE RP 2079
Context	Abstract

8 Canonical DOI Name Element

The Canonical DOI Name element registry entry, as defined in SMPTE ST 335, shall be as specified in Table 3.

Table 3 – DOI Name Element Definition

Name	Canonical DOI Name
Symbol	CanonicalDOIName
Designator	Bytes 1-7: Elements Byte 8: 0x0E Bytes 9-11: InternationalStandardIdentifiers Byte 12: 0x0C
Definition	Identifier of type CanonicalDOINameType
Type	CanonicalDOINameType
Defining Document	SMPTE RP 2079
Context Scope	Abstract

Note: This element is distinct from the DOI element (urn:smpte:ul:06.0E.2B.34.01.01.01.01.01.15.01.00.00.00.00), which does not specify a specific representation of the DOI Name or a data type.

9 Canonical EIDR IdentifierElement

The Canonical EIDR Identifier element registry entry, as defined in SMPTE ST 335, shall be as specified in Table 4.

Table 4 – EIDR Identifier Element Definition

Name	Canonical EIDR Identifier
Symbol	CanonicalEIDRIdentifier
Designator	Bytes 1-7: Elements Byte 8: 0x0E Bytes 9-11: InternationalStandardIdentifiers Byte 12: 0x0D
Definition	Identifier of type CanonicalEIDRIdentifierType
Type	CanonicalEIDRIdentifierType
Defining Document	SMPTE RP 2079
Context	Abstract

10 URI Representation of Canonical DOI Name and Canonical EIDR Identifier

Note: ISO/IEC 26324 specifies multiple possible URI representations for Canonical DOI Names.

To facilitate interchange, the URI representation of a Canonical DOI Name or a Canonical EIDR Identifier should conform to IETF RFC 4452 using the `doi` namespace.

Example: The URI representation of the Canonical EIDR Identifier 10.5240/5FD4-FEE1-22F5-583E-FECC-O is `info:doi:10.5240/5FD4-FEE1-22F5-583E-FECC-O` according to IETF RFC 4452.

11 Binary Representations of Canonical EIDR Identifier

11.1 Full Binary Representation

The full binary representation of a Canonical EIDR Identifier shall be a 152-bit binary word ordered most significant byte first, and shall consist of the concatenation of the following:

- a 64-bit word equal to 0x31302e353234302f (US-ASCII encoding of the string "10.5240/");
- 20 4-bit nibbles, each equal to the value of a single hexadecimal digit `HEXDIG` of `EIDR_SUFFIX`, starting from the leftmost one; and
- an 8-bit word containing the ASCII-encoded value of either the lowercase or uppercase representation of the `CHECK` character.

Example: The full binary representation of the Canonical EIDR Identifier 10.5240/5FD4-FEE1-22F5-583E-FECC-O is 0x31302E353234302F5FD4FEE122F5583EFECC4F

11.2 Compact Binary Representation

The compact binary representation of a Canonical EIDR Identifier shall be a 96-bit binary word ordered most significant byte first, and consist of the concatenation of the following:

- a 16-bit word equal to 0x1478 (5240 in decimal); and
- 20 4-bit nibbles, each equal to the value of a single hexadecimal digit `HEXDIG` of `EIDR_SUFFIX`, starting from the leftmost one.

Note: When generating a Canonical EIDR Identifier from a compact EIDR Identifier, the `CHECK` character will need to be computed.

Example: The compact binary representation of the Canonical EIDR Identifier `10.5240/5FD4-FEE1-22F5-583E-FECC-O` is `0x14785FD4FEE122F5583EFECC`

Annex A Bibliography (Informative)

Entertainment Identifier Registry (30 January 2012). EIDR: ID Format Ver. 1.02
(http://eidr.org/documents/EIDR_ID_Format_v1.02_Jan2012.pdf)