Motion Imagery Standards Board **Recommended Practice** **Ancillary Text Metadata Sets**	**MISB RP 0808** **14 May 2009**

1 Scope

This Recommended Practice documents the basic SMPTE KLV metadata sets used to encode text data associated with a motion imagery data stream. This RP provides direction on the creation of KLV metadata to allow for the creation, dissemination, and display of supplemental text to enhance the exploitation of MISP compliant motion imagery data. The inclusion of descriptive text within a video clip will support new search capabilities, as well as providing valuable context information about video data.

2 References

[1] IEEE Std 1003.1, The Open Group Single UNIX Specification Version 3, 2004

[2] ISO/IEC 13818-1:2007 Information technology - Generic coding of moving pictures and associated audio information: Systems

[3] MISB Standard 0604, Time Stamping Compressed Motion Imagery, 31 October 2008

[4] MISB Standard 0102.5, Security Metadata Universal and Local Sets for Motion Imagery, 9 December 2008

[5] SMPTE 335M-2001, Metadata Dictionary Structure

[6] SMPTE 336M-2007, Data Encoding Protocol Using Key-Length-Value

[7] SMPTE RP210.11-2008, Metadata Dictionary

3 Introduction

Text keywords or descriptions are commonly used to describe a video sequence. Text may be generated in chat rooms, in mission narration, or later as part of the analytic exploitation process. If this text is stored within the clip as metadata, it can then be used for subsequent indexing, cataloging, and discovery of the video.

Text may be added to an ISO 13818-1 MPEG data stream via the use of a metadata stream. The Key-Length-Value (KLV) metadata encoding protocol [6] for representing data items and data groups independent of the application or data transport method will be used to encode text metadata. The text data shall be encoded within SMPTE 336M-2007 compliant Universal Sets or Local Sets.

The multiplexing of a metadata stream into an MPEG-2 Transport Stream is not detailed in this document. Private data streams shall be multiplexed in accordance with the relevant MISP-compliant practices in place for KLV data streams.

4 Ancillary Text Data Components

This section defines a metadata set consisting of mandatory and optional elements required to create KLV metadata containing ancillary text. A text data stream is encoded consistent with the following items:

4.1 Preliminaries

A text data stream shall be encoded in big endian byte order. It is assumed that text streams will be embedded in an existing video stream, which may already include other KLV encoded metadata.

4.2 Ancillary Text Universal Metadata Set

Each Ancillary Text Universal Metadata set will have the designator:

- Ancillary Text Universal Set (06 0E 2B 34 02 01 01 01 0E 01 03 05 01 00 00 00)

4.3 Ancillary Text Local Metadata Set

Local metadata sets provide a good balance of coding efficiency and flexibility. Use of an Ancillary Text Local Metadata Set is recommended as a preferential alternative to the use of an Ancillary Text Universal Metadata Set. Each Ancillary Text Local Metadata set will have the designator:

- Ancillary Text Local Set (06 0E 2B 34 02 03 01 01 0E 01 03 05 02 00 00 00)

4.4 Ancillary Text Mandatory Elements

Each ancillary text metadata set will include two mandatory elements:

- POSIX Microseconds (06 0E 2B 34 01 01 01 03 07 02 01 01 01 05 00 00)
- Ancillary Text Message Body (06 0E 2B 34 01 01 01 01 0E 01 01 04 04 00 00 00)

The **POSIX Microseconds** element identifies the time[1] in the video essence to which the message is associated. This element shall be the number of microseconds elapsed since midnight (00:00:00 UTC) on January 1, 1970, consistent with POSIX IEEE 1003.1. For example: the UTC date and time "Tuesday, December 9, 2008 18:31:41" would be encoded as the unsigned 64-bit integer 1228847501000000 (0x45DA15AC7BD40).

The **Ancillary Text Message Body** element contains the text of the message to be encoded. This element is free text, encoded with the ISO 7-Bit Coded Character Set[2].

4.5 Ancillary Text Optional Elements

Each ancillary text metadata set may include or omit the following elements:

- Author (06 0E 2B 34 01 01 01 01 0E 01 01 04 02 00 00 00)
- Chat Room Name (06 0E 2B 34 01 01 01 01 0E 01 01 04 01 00 00 00)
- Message Creation Time (06.0E.2B.34.01.01.01.01.0E.01.01.03.20.00.00.00)

[1] "Time in the video essence" means time encoded per MISB Standard 0604

The **Author** element identifies the sender of the message, for example by username. This element shall be encoded as ISO 7-Bit CCS text[2].

The **Chat Room Name** element identifies the name of the chat room, if any. This element shall be encoded as ISO 7-Bit CCS text[2].

The **Message Creation Time** element identifies the time at which the ancillary text message was created (e.g. if added to the stream during analysis subsequent to the initial recording). This element shall be encoded as UTC microseconds elapsed since midnight on January 1, 1970, consistent with POSIX IEEE 1003.1.

5 Ancillary Text Metadata

This section further defines the Ancillary Text Metadata elements described in Section 4.

5.1 Ancillary Text Message Group

Registry	Description	Purpose
1	UL header and designator	(06 0E 2B 34 02 01 01 01 0E 01 03 05 01 00 00 00) Universal Set
2	Group designator	MISB Registry entry
3	Group name	Ancillary Text
4	Group description	A single text message or description.
5	Parent	Null
6	Allowed syntax	(1 item) 01 – Universal Set
7	Mandatory Contents	(2 items)
7.1	UL Key	(06 0E 2B 34 01 01 01 03 07 02 01 01 01 05 00 00) POSIX Microseconds
7.2	UL Key	(06 0E 2B 34 01 01 01 01 0E 01 01 04 04 00 00 00) Ancillary Text Message Body
8	Variable Contents	(1 items)
8.1	UL Key	(06 0E 2B 34 01 01 01 01 0E 01 01 04 02 00 00 00) Author
8.2	UL Key	(06 0E 2B 34 01 01 01 01 0E 01 01 04 01 00 00 00) Chat Room Name
8.3	UL Key	(06 0E 2B 34 01 01 01 01 0E 01 01 03 20 00 00 00) Message Creation Time

5.2 Ancillary Text Metadata Item Universal Labels, Names and Descriptions

16-byte Universal Label	Name	Description
06 0E 2B 34 01 01 01 01 0E 01 01 04 01 00 00 00	Chat Room Name	Text identifier for the chat room or server
06 0E 2B 34 02 01 01 01 0E 01 03 05 01 00 00 00	Ancillary Text Universal Data Set	KLV container for a text message
06 0E 2B 34 02 03 01 01 0E 01 03 05 02 00 00 00	Ancillary Text Local Data Set	Preferred KLV container for a text message
06 0E 2B 34 01 01 01 01 0E 01 01 04 02 00 00 00	Author	Text identifier for the author of a message
06 0E 2B 34 01 01 01 03 07 02 01 01 01 05 00 00	POSIX Microseconds	Time in the video essence[1] to which the message is associated
06 0E 2B 34 01 01 01 01 0E 01 01 04 04 00 00 00	Ancillary Text Message Body	Text of the message body
06 0E 2B 34 01 01 01 01 0E 01 01 03 20 00 00 00	Message Creation Time	Time which the message was created

5.3 Ancillary Text Metadata Item Formats, Ranges and Presence

Element Name	Type	Value Length (bytes)	Value Range	Presence / Frequency
Ancillary Text Universal Data Set	SMPTE 336M-2007	Variable	Contains: 1 Ancillary Text Message Body, 1 POSIX Microseconds, 0 or 1 Author element 0 or 1 Chat Room Name Element 0 or 1 Message Creation Time	Once per message (if not using the Local Data Set encoding)
Ancillary Text Local Data Set	SMPTE 336M-2007	Variable	Contains: 1 Ancillary Text Message Body, 1 POSIX Microseconds, 0 or 1 Author element 0 or 1 Chat Room Name element 0 or 1 Message Creation Time	Once per message (preferred encoding)
Author	ISO/IEC 646:1991; ISO 7-Bit Coded Character Set[2]	Variable	0x09 – 0x0D or 0x20 – 0x7E	Optional
Chat Room Name	ISO/IEC 646:1991; ISO 7-Bit Coded Character Set[2]	Variable	0x09 – 0x0D or 0x20 – 0x7E	Optional
POSIX Microseconds	POSIX 1003.1; uint64; UTC microseconds since UNIX Epoch	8	[0, 0xFFFFFFFFFFFFFFFF]	Required
Ancillary Text Message Body	ISO/IEC 646:1991; ISO 7-Bit Coded Character Set[2]	Variable	0x09 – 0x0D or 0x20 – 0x7E	Required
Message Creation Time	POSIX 1003.1; uint64; UTC microseconds since UNIX Epoch	8	[0, 0xFFFFFFFFFFFFFFFF]	Optional

[2] To promote interoperability, the value range of ISO 7-Bit CCS text is further constrained to exclude the use of non-printable characters such as nulls. Specifically, ASCII characters with codes 9 through 13 (tab through carriage return) and 32 through 126 (space through tilde) are allowed. Other ASCII characters are not allowed to be in the Author, Chat Room Name, or Ancillary Text Message Body elements.

5.4 Definition of Ancillary Text Local Data Set

Tag	Element Name	Equivalent Full Key
1	Author	(06 0E 2B 34 01 01 01 01 0E 01 01 04 02 00 00 00)
2	POSIX Microseconds	(06 0E 2B 34 01 01 01 03 07 02 01 01 01 05 00 00)
3	Ancillary Text Message Body	(06 0E 2B 34 01 01 01 01 0E 01 01 04 04 00 00 00)
4	Chat Room Name	(06 0E 2B 34 01 01 01 01 0E 01 01 04 01 00 00 00)
5	Message Creation Time	(06 0E 2B 34 01 01 01 01 0E 01 01 03 20 00 00 00)

6 Glossary

Term	Definition
CCS	Coded Character Set
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
KLV	Key Length Value
MIL-STD	Military Standard
MISB	Motion Imagery Standards Board
MISP	Motion Imagery Standards Profile
MPEG	Motion Picture Experts Group
NSG	National System for Geospatial Intelligence
PID	Packet Identifier
RP	Recommended Practice
SMPTE	Society of Motion Picture and Television Experts
UTC	Universal Coordinated Time