Motion Imagery Standards Board **Recommended Practice** **Motion Imagery Identifier (MIID)**	**MISB RP 0608** **10 August 2006**

1. Scope

This Recommended Practice (RP) defines the format and encoding of the Motion Imagery Identifier (MIID) required by segments of the National System for Geospatial-Intelligence (NSG). The RP also defines the Motion Imagery Stream Identifier (MI_Stream_ID) used to uniquely identify streams of motion imagery from their source and to be included in the MIID.

2. Introduction

Segments within the NSG require globally unique identification of motion imagery files for automated processes – such as when searching archives for standing queries. These and other applications of NSG segments will benefit from being able to uniquely identify clips of motion imagery using the MIID and to uniquely identify the source motion imagery stream from which they were extracted.

For still NITF images the Tactical Image Identifier (TII or Tactical Image ID) contains embedded human-readable values that assist analysts when visually reviewing many returns from a database query retrieval. The MIID has been developed to contain both globally unique information and human-readable information so it may serve much the same function for motion imagery clips as the NITF TII for still imagery.

The individual components within the MIID and the usage of the MIID and Motion Imagery Stream ID are defined in this RP and consist of information derived from metadata already in a digital motion imagery stream or computed using a specified algorithm. An Appendix explains how to compute the globally unique Motion Imagery Stream ID.

3. References

3.1. ISO 8601:2000 Data elements and interchange formats -- Information interchange -- Representation of dates and times, International Standards Organization, 2000.

3.2. SMPTE 336M-2001, Data Encoding Protocol Using Key-Length-Value

3.3. MISB EG 0602, MISB Metadata Registry and Processes (in coordination)

3.4. SMPTE 330M-2005, Unique Material Identifier (UMID)

3.5. Implementation Practices of the National Imagery Transmission Format Standard (IPON), Appendix J -- Tactical Image Identifier (TII) Specification,

National Geospatial-Intelligence Agency (NGA), Coordination Draft Version 0.3A, 14 Jan 2005

3.6. "Discovery and Retrieval Interface Data Model" (D&R IDM)

4. MIID Encoding

4.1. Internal Components Within the MIID

Table 1 contains summary definitions and formats for internal components within the MIID.

4.1.1. **Acquisition Date and Time** – This element is the date and time (Z) of the first frame of the motion imagery clip or file in ISO 8601 YYYYMMDDhhmmss format to the nearest second. The value is obtained from the time code in the motion imagery stream.

4.1.2. **Motion Imagery Stream ID** – This element is 16-byte, Global Unique Identifier (GUID) that identifies the source video stream. Methods for calculating this identifier are in Appendix A.

4.1.3. **Motion Imagery Location** – This element is the approximate geospatial location for the clip derived from metadata for the center of the first frame of the video segment. Format is latitude and longitude (DDFFFHDDDFFH) with a total value length of 12 bytes. The value must be computed from the frame center latitude and longitude metadata in the motion imagery stream or file and, although unlikely, it may not fall exactly within the ground footprint of the video due to rounding up. NOTE: This is a low-precision entry for human readability of the geospatial location context. Higher precision geolocation information must be obtained from the latitude and longitude metadata in the video stream or file.

4.1.4. **Production Date and Time** – This element is the date and time (Z) that the clip of motion imagery was extracted from the source stream, segment, or file in ISO 8601 YYYYMMDDhhmmss format to the nearest second. This may be the same as the Acquisition Date and Time if the clip is produced directly by the source sensor.

4.1.5. **Platform Type** – This element is the general type of platform hosting the source motion imagery. The value is in a free-text format and is obtained from metadata in the motion imagery stream. NOTE: JITC will maintain a list of queriable values for platform. The values will be included in the D&R IDM. New platform names should be submitted to JITC (TBD) for approval.

4.1.6. **Sensor Type** – This element is the general type of sensor producing the motion imagery. The value is in a free-text format and is obtained from metadata in the motion imagery stream. NOTE: JITC will maintain a list of queriable values for sensors. The values will be included in the D&R IDM. New sensor names should be submitted to JITC (TBD) for approval.

4.2. MIID Employment

The 80-byte MIID consists of the six elements in the sequence shown in Table 1. When any optional element is not known it shall be filled with zeros to indicate that the value is not known and to preserve the layout of the 80-byte field. The MIID is a required metadata element in MISB-compliant motion imagery clips as a stand-alone metadata element. The 80-byte MIID metadata element has been assigned a KLV metadata key of [TBD] in the MISB Metadata Registry.

Some applications may be limited in their use of the full 80 bytes in the MIID. These applications may use internal representations of the MIID that are different in length but shall not use the term “MIID” for that representation.

5. Implementation of the Motion Imagery Stream ID (MI_STREAM_ID) and the MIID

The Motion Imagery Stream ID is the mechanism for providing a globally unique identifier for digital motion imagery streams, and are associated with the MIID. Since the only requirement for the 16-byte MI_STREAM_ID is that its value be globally unique there are a number of different ways to compute it. Annex A explains possible ways that the 16-byte unique value of the MI_STREAM_ID may be computed. The MI_STREAM_ID metadata element has been assigned a KLV metadata key of [TBD] in the MISB Metadata Registry.

5.1. Streaming Digital Motion Imagery

The MI_STREAM_ID is a Global Unique Identifier (GUID) and shall be computed and inserted as a KLV element either alone or as part of a defined KLV metadata grouping into all digital motion imagery streams as close to the originating sensor as possible. Ideally, the value should be inserted by the sensor prior to any other metadata encoding or insertion. Until such time as sensors independently embed globally unique MI_STREAM_ID values the following should be observed.

In the case of muti-sensor systems each sensor output must have its own MI_STREAM_ID inserted into the individual digital streams. Until individual sensors have this capability the values may be computed by the multi-sensor system or the host platform and inserted into individual streams.

Ground-based processing or relay systems that manage motion imagery streams from sensors must check incoming streams for the presence of a digital MI_STREAM_ID. When they receive a digital motion imagery stream that does not contain values for each sensor stream they must compute and insert MI_STREAM_ID values prior to forwarding them into a dissemination system. If the systems also automatically create clips from the stream(s) they must compute the MIID for clips as noted below.

When archive systems receive feeds of digital motion imagery they must check for the presence of a MI_STREAM_ID. When they receive a digital motion imagery stream through the digital dissemination network that does not contain values for each sensor stream they must compute and insert values prior to archiving the streams. If the

systems also automatically create clips from the stream(s) they must compute the MIID for clips as noted below.

5.2. Motion Imagery ID (MIID)

Systems that receive digital motion imagery streams or files with embedded values for MI_STREAM_ID GUID must use the same value when creating values for MIID in clips or files. The MI_STREAM_ID is the primary method for making the MIID globally unique and is also the method for tracing clips back to an original stream or file.

Table 1 – 80-Byte Motion Imagery ID (MIID) Format

CHAR (Bytes)	MIID Subfield Name	MIID Subfield Symbol	MIID Subfield Description	Format / Value Range
14	Acquisition Date and Time	ACQUSITION_DATE_TIME	Date and time (Z) of the first frame of the motion imagery clip or file.	Required YYYYMMDDhhmmss Zulu time zone (ISO 8601 format)
16	Motion Imagery Stream ID	MI_STREAM_ID	16-byte Global Unique Identifier (GUID) that uniquely identifies the source video stream	Required (See Annex A)
12	Motion Imagery Location	MI_LOCATION	Geospatial location of the center of the first frame of the video segment. This field will be updated if a 'secondary' clip is generated by the user.	Optional DDFFFHDDDFFH Latitude - DDFFFH where H = (N or S); Longitude - DDDFFH Where H = (E or W); DD = degrees FFF = decimal fractions of degrees Default 000000000000
14	Production Date and Time	PRODUCTION_DATE_TIME	Date and time (Z) that the segment of motion imagery was extracted from the source stream, segment, or file. May be the same as the Acquisition Date and Time if the segment is produced directly by the source sensor. This field will be updated if a 'secondary' clip is generated by the user.	Required YYYYMMDDhhmmss Zulu time zone (ISO 8601 format)
12	Platform Type	PLATFORM_TYPE	General type of platform hosting the source motion imagery	Optional Default 000000000000
12	Sensor Type	SENSOR_TYPE	General type of sensor producing the motion imagery	Optional Default 000000000000

ANNEX A – Algorithms for GUID Calculation (Informative)

The Global Unique Identifier (GUID) calculation is based on the Internet Engineering Task Force (IETF) RFC-1321 MD5 algorithm posted by the IETF web site (http://www.apps.ietf.org/rfc/rfc1321.html). This document on the MD5 algorithm includes a platform-independent source code implementation and other information resource references.

The algorithm takes as input a message of arbitrary length and produces as output a 128-bit "fingerprint" or "message digest" of the input. It is conjectured that it is computationally infeasible to produce two messages having the same message digest, or to produce any message having a given pre-specified target message digest. The algorithm was originally intended for digital signature applications, where a large file must be "compressed" in a secure manner before being encrypted with a private (secret) key under a public-key cryptosystem such as RSA. Other applications such as GUID generation have implemented the RFC-1321 MD5 algorithm.

Most development systems can generate GUIDs using various Software Development Kit (SDK) function calls and utilities for various platforms. As a result, software developers usually will not have to write their own implementation. Check your SDK documentation for exact syntax. As an example, for the Windows platform, COM function CoCreateGuid() implements the MD5 algorithm to generate Class IDs (CLSIDs) and interface identifiers. Microsoft Visual Studio and Platform SDK include the utilities:

- UUIDgen.exe: Command line utility relies on Win32 functions.
- GUIDgen.exe: Console utility generates Implement_OLECreate(..), Define_GUID(..), static construct GUID, and registry format values.

ANNEX B – Population of the NITF Tactical Image Identifier (TII) From the MIID (Informative)

MIID Subfield Name	MIID Subfield Characters	MIID Format Conversion Required	TII Default Value (Ref 3.5)	TII Subfield Name (Ref 3.5)	TII Subfield Characters (Ref 3.5)
Acquisition Date and Time	16	Convert from numerical ISO 8601 format to alphanumerical DDMMMYY format: DD is the numerical day of the month, MMM is a three letter abbreviation of the month, e.g. JAN, FEB,…DEC (all uppercase), YY is the least significant 2 digits of the year	→	ACQUSITION_DATE	7
		Note 1	9Z	PROGRAM CODE	2
		Note 1	00	SORTIE NO	2
		Note 1– default 00000	→	SCNUM	5
		Note 1	ZX	PRODUCER_CODE	2
		Note 1– default 000000	→	PRODUCT_NO	6
		Note 1	ZZ	PROJECT_CODE	2
		Note 1	000	REPLAY	3
		Note 1	000	PRODUCER_SN	3
		Note 2	Eight -character (hex) frame extraction date/time (GMT represented in hexadecimal as elapsed time in seconds since midnight January 1, 1970.)	PRODUCTION_DATIM	8 (hex)

Note 1 – This value is not part of the MIID but if it is present in metadata in the motion imagery stream or clip this information should be inserted into the TII.

Note 2 – The NITF TII PRODUCTION_DATIM is the date and time that the still frame was extracted from the motion imagery clip.