
GEOINT STANDARDS

in the
DoD IT Standards Registry (DISR)
v 08-2,0 (dated 14 July 2008)

Resource Document for the
Geospatial Intelligence Standards Working Group (GWG)
and the National System for Geospatial-Intelligence (NSG)
Community



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1. INTRODUCTION

Geospatial intelligence (GEOINT), as defined by reference 7.c, is the exploitation and analysis of imagery and geospatial information to describe, assess, and visually depict physical features and geographically referenced activities on the Earth. A GEOINT standard is a documented agreement containing technical specifications or other precise criteria to be used consistently as rules, guidelines, or definitions of characteristics to ensure that materials, products, processes, or services are fit for the analysis and visual representation of physical features and geographically referenced activities.

This document was prepared by the GWG Secretariat to serve as a quick reference source for GEOINT standards information contained in the Department of Defense (DoD) IT Standards Registry (DISR). The standards citations contained in this document were extracted from DISR baseline release 08-2.0 dated 14 July 2008. This document serves as a companion document to the standards listed in the GEOINT Standards in DISR Pocket Guide. In some cases, the citations contained in this document have been modified to reflect minor editorial corrections. The DISR baseline is updated three times a year, and the 08-2.0 baseline is expected to be the current through November 2008.

2. THE DOD IT STANDARDS REGISTRY (DISR)

The DoD Information Technology Standards Committee (ITSC), as stated by reference 7.a, is the governing group responsible for developing and promoting standards interoperability within the DoD. The ITSC is responsible for maintaining and populating the DISR. The DISRonline is a single, unifying DoD repository for approved Information Technology (IT) and National Security Systems (NSS) standards and a registry for approved DoD IT profiles and interface specifications.

The SIPRnet (<https://DISRonline.disa.smil.mil>) is used by system developers to develop the Technical Standards View (TV) required by CJCSI 6212.01C, 20 November 2003, which states "It is DoD policy that all IT and NSS and major modifications to existing IT and NSS will be compliant with the Clinger-Cohen Act, DoD interoperability regulations and policies, and the most current version of the DoD Information Technology Standards Registry (DISR)." The same DISR minus the TVs is available on the NIPRnet (<https://DISRonline.disa.mil>) along with supporting development tools such as the change request tool, working documents, and the development calendar.

The DISR is forward looking. The standards selection criteria focus on mandating only those standards that promote net-centricity and interoperability. It is not a catalog of all information technology standards used within today's DoD systems.

3. THE GEOSPATIAL INTELLIGENCE STANDARDS WORKING GROUP (GWG)

The GWG, as stated by reference 7.b, serves as a community-based forum to advocate for IT standardization activities related to GEOINT. In this capacity, the GWG supports the Director of the National Geospatial-Intelligence Agency (NGA) in carrying out GEOINT functional manager responsibilities for standards. The GWG performs two major roles: 1) as a Technical Working Group (TWG) of the ITSC, with all the responsibilities of an ITSC member and, 2) as a coordinating body for the GEOINT community to address all aspects of GEOINT standards.

The GWG TWG is responsible for vetting and recommending actions for updating the GEOINT standards in the DISR. As a TWG, the GWG has the responsibility to:

- Identify new GEOINT standards to propose for inclusion in the DISR
- Elevate emerging GEOINT standards to mandated status once the selection criteria contained in the DISR have been met
- Update an existing GEOINT standard to reflect its latest release
- Tag as sunset a GEOINT standard identified as being near the end of its lifecycle or for which a replacement is in progress or a trigger event identified. The tag requires both an event that must take place as well as an estimated date.
- Retire a GEOINT standard that is no longer essential to net-centric interoperability and is not necessary to enable interoperability of existing systems.
- Identify, develop, and maintain standards profiles that facilitate a net-centric environment.
- Provide a forum for the evaluation, acceptance, and status changes of GEOINT standards and standards profiles contained in the DISR.

For more information about the GWG, please visit the GWG website at www.gwg.nga.mil or contact the GWG Secretariat via email at NCGIS-mail@nga.mil.

4. SUMMARY OF DISR GEOINT STANDARDS

The table below provides total numbers for the GEOINT standards in the DISR v08-2.0:

GEOINT Standards in the DISR 08-2.0 By DISR Service Area	Mandated	Emerging	Information & Guidance	TOTAL
GEOINT: Geospatial	31	9	3	43
GEOINT: Motion Imagery	8	4	0	12
GEOINT: Still Imagery	13	1	4	18
TOTAL	52	14	7	73

5. DISR SERVICE AREA DESCRIPTIONS

DISR Service Area descriptions for the three service areas that comprise the standards relevant to GEOINT and the GWG are as follows:

GEOINT: Geospatial - Geospatial includes dictionaries, definitions, models, metadata, and formats to facilitate mapping, analysis, exploitation, portrayal, and exchange of geospatial data.

GEOINT: Motion Imagery - Motion Imagery includes the tasking, collection, posting, processing, storage, exploitation, discovery, retrieval, and exchange of motion imagery, associated metadata, audio and other related media types whether generated from electro-optical (EO), infrared (IR), or other motion imagery sensors.

GEOINT: Still Imagery - Still Imagery includes the tasking, collection, posting, processing, storage, exploitation, discovery, retrieval, and exchange of digital imagery and gridded data associated with geospatial intelligence. The standards in this service area address imagery and gridded data topics such as formatting, compression, support data, metadata, graphical and textual annotations, image quality, and imagery-derived data and products. Applicability includes

EO, IR, overhead non-imaging IR (ONIR), synthetic aperture radar (SAR) phase history data, SAR (complex and detected) imagery, multispectral imagery (MSI), hyperspectral imagery (HSI), ultraspectral imagery (USI), Polarimetric Imagery (PI), Interferometric Synthetic Aperture Radar (IFSAR), Light Detection and Ranging (LIDAR), raster maps and charts, and Ground Moving Target Indicator (GMTI).

6. STANDARDS STATUS DEFINITIONS

The GEOINT standards contained in this document have been assigned a standards status of either mandated, mandated sunset, or emerging in the DISR registry. GEOINT standards with a status of inactive/retired (standards that should not be used in a new or upgraded system) are not contained in this document but remain accessible from DISRonline. In addition, DISRonline contains non-registry Information/Guidance documents.

The DISR status definitions are as follows:

Mandated - standards provide interoperability and net-centric services across the DoD enterprise. They are the minimum set of essential standards for the acquisition of all DoD systems that produce, use, or exchange information and, when implemented, facilitate the flow of information in support of the warfighter. These standards are required for the management, development, and acquisition of new or improved systems throughout the DoD.

Mandated Sunset - A sunset tag within a mandated standard may identify a mandated standard with a pre-defined event and date when that standard should be moved to inactive/retired status. The sunset tag is identified on a standards profile (a Technical Standards View, or TV, by an X in the "sunset" column). A migration plan is required to explain how the system will move from that standard when it is retired.

Emerging - standards may be implemented, but shall not be used in lieu of a mandated standard. An emerging standard is expected to be elevated to mandatory status within three years. Use of an emerging standard in a TV-1 requires a waiver and a Technology Insertion Risk Assessment. In general, emerging standards should be placed in the TV-2.

Information/Guidance - IT related documents developed by a process outside the standards-development process, (i.e., DoD Directives, Instructions, handbooks, manuals, procedures, best practices, and other such policy documents) offer a means to further clarify standards and identify relevant policies and procedures. Such documents are not mandated for use for netcentric interoperability.

7. REFERENCES

- a. DoD Standard Operating Procedures for the Information Technology Steering Committee (ITSC), IT Subcommittee Chairs (ISCs), and Technical Working Groups (TWGs), 6 Feb 07
- b. Geospatial Intelligence Standards Working Group (GWG) Charter, 16 August 2007
- c. NGA, Geospatial Intelligence (GEOINT) Basic Doctrine, GEOINT Publication 1-0, June 2006

8. DISR CITATIONS FOR EACH STANDARD

The citations for each GEOINT standard contained in DISR 08-1.0 and listed in the GEOINT Standards in DISR 08-1.0 Pocket Guide follow.

About This Standard

Mandated

Standard Identifier **BPCGM01.00**

Title of Standard

BIIF Profile for Computer Graphics Metafile, Version 01.00, 30 June 2004

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/ Retired
2006-10-25	n/a	2006-10-25	2006-10-25	2006-10-25	n/a

Standards Body

[DoD](#)

[Broken Link?](#)

URL to Access or

<http://jitic.fhu.disa.mil> or

Acquire

<http://gwg.nga.mil/ntb/baseline/docs/bpcgm/index.html>

Working Group

Primary Owner

Geospatial Intelligence TWG (GWG)

Secondary Interest

Application / Messaging TWG

Service Area

GEOINT: Still Imagery

KIPs

No KIP Found

Standard Applicability

2006-10-25

This BPCGM01.00 profile defines a subset of CGM elements, sets limits for generation and interpretation behavior according to the rules for profile definition defined in ISO/IEC 8632. The BPCGM profile defines a version 1 CGM suitable for use in annotation of digital imagery such as that defined by BIIF ISO/IEC 12087-5: 1998. The Basic Image Interchange Format (BIIF) provides a file format that is suitable for the interchange, storage, and retrieval of map and imagery information. The file format consists of a file header and associated image(s), symbol(s), text and/or associated data in a way that is compatible between systems of different architectures and devices of differing capabilities and design. Symbols within a BIIF file may consist of ISO/IEC 8632-based Computer Graphics Metafiles (CGMs). The CGM provides a metafile format suitable for the storage and retrieval of symbolic information. The CGM format consists of a set of elements that can be used to describe graphical and textual symbols in a way that is compatible between systems of different architectures and devices of differing capabilities and design.

Standard Abstract

2006-10-25

Computer Graphics Metafile (CGM) is a graphics data interchange standard which defines a neutral computer interpretable representation of 2D graphical (pictorial) information in a manner that is independent from any particular application or system. The purpose of the standard is to facilitate the storage and retrieval of graphical information between applications, software systems, and/or devices. A CGM can contain: vector graphics, raster graphics, and text. This BPCGM01.00 profile defines a subset of CGM elements, sets limits for generation and interpretation behavior according to the rules for profile definition defined in ISO/IEC 8632. The CGM structure is explained fully in the ISO/IEC 8632 document. The BPCGM is functionally equivalent to, and replaces Mil-Std-2301A, Computer Graphics Metafile (CGM) Implementation Standard for National Imagery

Transmission Format Standard.

Profiling Questions

- GEOINT: Still Imagery**
- Does your system exchange graphically annotated still imagery, raster or gridded data with external systems?

Products Incorporating This Standard

Companies with commercially available implementations/products include: BAE Systems, Harris Corporation, ITT Industries, Leica Geosystems, PAR Government Systems, Paragon Imaging, PhotoTelesis, Raytheon, Recon Optical, Research Systems, Inc. (RSI), Sensor Systems, Inc., and Technology Services Corporation.

Relevant Information

This standard supersedes Mil-Std-2301A. The BPCGM is functionally equivalent to, and replaces Mil-Std-2301A, Computer Graphics Metafile (CGM) Implementation Standard for National Imagery Transmission Format Standard.

Implementation Guidance

See STDI-0005, Implementation Practices of the NITFS, available at: <http://www.gwg.nga.mil/ntb/baseline/docs/ipon/index.html> The STDI-0005 document is a compilation of common practices, conventions, and guidelines for implementing the National Imagery Transmission Format Standard (NITFS). The objective is to help promote common specification and application of the NITFS suite of standards by all fielded and developmental digital imagery-related systems. It describes common conventions for implementing the suite of NITFS standards that promote and sustain NITFS compliance and interoperability for the production, storage, cataloging, discovery, selection, exploitation, and dissemination of digital imagery, raster map, and other related raster products.

Standard Selection Criteria

Net-Centric Interoperability

The BIIF Profile for Computer Graphics Metafile (BPCGM) tailors the ISO/IEC 8632-1 and ISO/8632-3 Computer Graphics Metafile (CGM) standards for use with ISO/IEC 12087-5, Basic Image Interchange Format (BIIF). The BPCGM is used with the National Imagery Transmission Format (NITF) and the NATO Secondary Imagery Format (NSIF), both of which are implementation profiles of BIIF that are intended to promote interoperability for the exchange of imagery among military Command, Control, Communications, and Intelligence (C3I) systems. CGM is a graphics data interchange standard which defines a neutral computer interpretable representation of 2D graphical (pictorial) information which is independent from any particular application or system.

Technical Maturity

The standard is technically mature and stable, to include established conformance test criteria, tools, services and technical consultation for the implementation profile used by the NITFS. Existing commercial products conforming to this profile include, but not limited to: Paragon Imaging, Inc. Electronic Light Table Products (PocketELT ELT/4000 ELT/1500 Global Image Viewer ELT/5500 ELT/View Image Light Table (ILT) Plus and ELT/5500 Pro) BAE VITecELT ERDAS Imagine Sensor Systems, Inc. RemoteView Professional PhotoTelesis Image and Research Systems, Inc. The Environment for Visualizing Imagery (ENVI). The NITFS profile of this standard has been part of the NITFS suite of standards since 1994 and part of STANAG 4545, NATO Secondary Imagery Format (NSIF) since 1998. A follow on standard for use within NITFS/NSIF is not currently in consideration. A sunset status should not yet be added for this currently mandated (for use with NITFS/NSIF) standard implementation profile.

Public Availability

The BPCGM01.00 is freely available at no charge from the following URLs: ISO/IEC

International Register of Graphical Items
(http://jitic.fhu.disa.mil/nitf/graph_reg/welcome.html).
<http://gwg.nga.mil/ntb/baseline/docs/bpcgm/index.html>

Implementability

The BIIF Profile of CGM (ISO/IEC 8632) is widely implemented by a variety of systems (data production, dissemination, library/archive, exploitation work stations, etc.) supporting the NITFS and NSIF suite of standards. Sample data, sample software, technical consultation, and conformance testing services are available to government and commercial implementers of the standard by contacting the NITFS Test Facility operated by the Joint Interoperability Test Command (JITC) on behalf of the National Geospatial-Intelligence Agency (NGA). Contact information available at <http://jitic.fhu.disa.mil/nitf/nitf.htm>, 1-800-538-5482, x8-5458, and jitcn@disa.mil. A list of government and commercially developed conforming implementations of the NITFS suite of standards is available at <http://jitic.fhu.disa.mil/nitf/register.html>.

Authority

The ISO/IEC 8632 series of standards was developed by ISO/IEC Joint Technical Committee 1/SubCommittee 24, Computer Graphics and Image Processing. The process for maintaining and developing the standard is an internationally open process by members of national bodies and liaison organizations participating with ISO/IEC. The international documentation, BPCGM01.00, was developed jointly by the NTB and NATO standardization activities (STANAG 4545 Custodial Support Team), and placed on the Graphical Items Register through international ballot. The NTB has broad participation across the DoD/IC with open participation by commercial industry.

Standard Type Non-Military

Keywords for Search None

Standard Identifier CAT 2.0.1

Title of Standard

OpenGIS® Catalogue Service (CAT) Implementation Specification (2.0.1), 20 May 2005

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2007-02-27	n/a	2007-02-27	2007-02-27	2007-02-27	n/a

Standards Body

[OpenGIS](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.opengeospatial.org>

Working Group

Primary Owner

Geospatial Intelligence TWG (GWG)

Secondary Interest

Business

Service Area

GEOINT: Geospatial

KIPs

No KIP Found

Standard Applicability

2007-02-27

The OpenGIS® Catalogue Service Implementation Specification is applicable to the implementation of interfaces on electronic catalogues for Geospatial Intelligence information. There are no competing standards.

Standard Abstract

2007-02-27

This standard specifies the interfaces between clients and catalogue services, through the presentation of abstract and implementation-specific models. Catalogue services support the ability to publish and search collections of descriptive information (metadata) for data, services, and related information objects. Metadata in catalogues represent resource characteristics that can be queried and presented for evaluation and further processing by both humans and software. Catalogue services are required to support the discovery and binding to registered information resources within an information community. The standard specifies the interfaces, bindings, and a framework for defining application profiles required to publish and access digital catalogues of metadata for geospatial data, services, and related resource information. Metadata act as generalized properties that can be queried and returned through catalogue services for resource evaluation and, in many cases, invocation or retrieval of the referenced resource. Catalogue services support the use of one of several identified query languages to find and return results using well-known content models (metadata schemas) and encodings.

Profiling Questions

GEOINT: Geospatial

- Does your development involve publication of or access to an electronically accessible catalogue of geospatial intelligence data?

Products Incorporating This Standard

A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Relevant Information

This citation is authored by the GWG's Information Transfer and Services Architecture Focus Group.

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

The OpenGIS® Catalogue Service Implementation Specification (CAT) defines a common interface that enables diverse but conformant applications to perform discovery, browse and query operations against distributed and potentially heterogeneous catalog servers.

Technical Maturity

The Open Geospatial Consortium began to develop this specification in 1998. Version 1.0 was published in 1999 and version 2.0.1 was published in May 2005. There are 12 implementations of version 2.0.1 as of 1 December 2006. The list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Public Availability

The specification is freely available from the Open Geospatial Consortium at <http://www.opengeospatial.org>.

Implementability

Use of this standard is mandated for the NATO Bi-Strategic Command Automated Information System. A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Authority

The Open Geospatial Consortium is an international organization with members from industry, government and academia which uses an open process for developing and maintaining standards for geospatial information and services.

Standard Type Non-Military

Keywords for Search None

Standard Identifier CSM, v2.A

Title of Standard

Community Sensor Model (CSM) Version 2.A, 1 August 2007

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2007-11-06	n/a	2007-11-06	2007-11-06	2007-11-06	n/a

Standards Body

[DoD](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.csmwg.seicorp.com>

Working Group

Primary Owner

Geospatial Intelligence TWG (GWG)

Secondary Interest

No Secondary Interest

Service Area

GEOINT: Geospatial

KIPs

No KIP Found

Standard Applicability

2007-11-08

This standard is applicable to DoD Component/Intelligence Community sensor programs that are required to develop and/or revise a sensor model, to sensor model development programs and to geopositioning capability development programs. This standard does not compete with any other standard.

Standard Abstract

2007-11-08

CSM Version 2.A provides the government and industry with a single standard for use to create and maintain a standardized and cost effective program for developing, testing, and evaluating a collection of current and future sensor models. The standard supports development of sensor models supporting Sensor Exploitation Tools (SETs) and other application tools requiring a precise understanding of the image (data) and ground coordinate relationships. Resulting standardized CSMs are dynamically linked (or loaded) libraries that do not require re-compilation of the SET. These standardized models may be added or removed from the SET without impact on the SET or other models. This capability is used to accurately map a pixel (e.g., target location) on an image to a geo-referenced coordinate and provide rigorous error estimates. CSM Version 2.A, is the primary document and defines the technical/functional requirements for development of sensor models. It contains five appendixes which when combined with CSM Version 2.A form the CSM standard. Appendix C, the Application Programmers Interface (API) document, supplements the functional requirements set forth in the CSM Version 2.A and establishes the requirements placed on the sensor model elements to interface with applications that use the photogrammetric operations (math libraries) contained in the sensor model. Both documents collectively establish the requirements allocated to the sensor model. Other appendixes include a sensor definition document, hardware/software configuration information, sample statement of objectives and a test plan and procedures. These documents all augment the basic requirements documents above and allow a developer/user to build and test standard compliant sensor models.

Profiling Questions

GEOINT: Geospatial

- Are you developing an imaging [EO, SAR, LIDAR, FRAME, PUSHBROOM, WHISKBROOM] sensor model or does your software need to interface with a sensor model for derivation of geocoordinates?

Products Incorporating This Standard

NGA Mensuration Services Program and the DoD Common Geopositioning Services (CGS)

Relevant Information

Supersedes CSM which was emerging in DISR as Community Sensor Model (CSM) Version 2, January 18, 2005. This citation was authored by the GWG Community Sensor Model Working Group

Implementation Guidance

A consideration in the development, testing and verification of sensor models developed using the standard was to minimize changes to existing SETs and other application tools requiring a precise understanding of the image and ground coordinate relationships. Initially, SETs may require modifications to access the functionality of the standard compliant Community Sensor Models in a sensor independent manner. However, additional changes will not be required as more Community Sensor Models are produced and made available for integration and use by the SETs. The Community Sensor Model API is the standardized method for communicating between the Community Sensor Models and the SETs. The Community Sensor Model API document defines a library of functions that can be dynamically loaded by the SET.

Standard Selection Criteria

Net-Centric Interoperability

This standard significantly enhances Joint and/or combined Service/Agency information exchange and supports Joint and coalition activities.

Technical Maturity

This standard has been vetted through the Air Force and National Geospatial-Intelligence Agency (NGA) Sensor Model Program POCs. Additionally, numerous members of industry supporting either sensor model development or application tools that use sensor models have coordinated on the standard documentation.

Public Availability

The standard is not proprietary and is publicly available.

Implementability

The standard has been formally adopted and implemented by the Air Force, Navy and NGA. Twenty sensor models have been built by the DoD, tested, and are in full compliance with the standard. These sensor models are in use in over 1000 workstations worldwide.

Authority

CSM, version 2.0 was initially developed by the USAF in full coordination with NGA. Custodianship and configuration management was transferred to NGA as the designated GEOINT Functional Manager in 2006. Community review of version 2.0 prompted additional content worthy of versioning as 2.A. Currently it is maintained by and under configuration control of the GWG Community Sensor Model Working Group on behalf of the Director, National Center for Geospatial Intelligence Standards (NCGIS), NGA.

Standard Type Military

Keywords for Search None

Standard Identifier DFDD 2007-1

Title of Standard
DGIWG Feature Data Dictionary (DFDD) Version 2007-1

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2007-11-06	n/a	2007-11-06	2007-11-06	2007-11-06	n/a

Replaced [DGIWG FDD \(DFDD\)](#)

Standards Body [NGA](#) [Broken Link?](#)
URL to Access or Acquire <http://www.gwg.nga.mil>

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interests Modeling and Simulation TWG
 Warfighting

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2007-11-08

The DFDD is applicable to the storage, manipulation, interchange, and exploitation of geospatial intelligence data. It specifies a set of well-defined feature types and attributes that may be used to determine semantic content when designing a domain data model and its supporting data element dictionary.

Standard Abstract

2007-11-08

This NATO standard (DGIWG Feature Data Dictionary - DFDD) specifies geospatial information concepts used by member nations of the multi-national Digital Geographic Information Working Group (DGIWG) community. These concepts characterize aspects of real-world entities (or objects) and related properties, including those that are not necessarily visible or have a tangible physical form (e.g., airspace). The DFDD is a comprehensive dictionary and coding scheme for feature types, feature attributes (properties or characteristics associated with features), and attribute values (domain of feature attributes). A register-based web-enabled standardized dictionary is required to support encoding in order to maximize interoperability and to understand the production, exchange, distribution, and exploitation of digital geographic data. Registers of feature information (e.g., feature data dictionaries and feature catalogues) serve as sources of reference for similar registers established by other geospatial information communities as part of a system of cross-referencing. Multiple communities cooperate and participate within the DGIWG and the NGA to realize an International Standards-based system of interlinked registers sharing a common information model (ISO 19110 conformant), a common management model (ISO 19135 conformant), and a common technical realization (ISO 19126 conformant). The DGIWG supports a DFDD-related National Extensions Feature Data Dictionary (NE FDD) register allowing for individual nations to specify

"national" feature types and feature attributes for cases where such feature types and feature attributes are not yet formally agreed on for inclusion in the DFDD. National extensions may not be specified within the normative DFDD and may not support interoperability until proposed and approved and be subsequently incorporated into the normative DFDD.

Profiling Questions

GEOINT: Geospatial

- Does the application require access to definitions or descriptions of items of geospatial information?

Products Incorporating This Standard

NGA Mission Specific Data Levels 1-5

Relevant Information

Within the DISR the DGIWG FDD (DFDD) was moved from emerging status to mandated status on October 2005. Since that time many feature types and attributes have been added, primarily at US request. The intent of this action is to retire the DFDD 2005 mandated version and replace it with DFDD 2007-1 as mandated. The DFDD 2007-1 is backwards-compatible with the currently mandated DFDD 2005-2. This natural evolution will ensure that DISR users are aware of and have access to the enhanced DFDD during their system development and/or upgrade activities. Citation authored by the GWG Application Schemas for Feature Encoding Focus Group.

Implementation Guidance

The DFDD 2007-1 is backwards-compatible with the currently mandated DFDD 2005-2, therefore guidance applied in the use of DFDD 2005-2 continues to apply. For system-specific recommendations for integration and employment of the DFDD (e.g., within the C/JMTK or in concert with web-based services such as the Web Feature Service (WFS) - ISO 19142), contact the NGA / National Center for Geospatial Intelligence Standards (ncgis-mail@nga.mil). In particular, experienced assistance is available for the migration of existing FACC-based systems, capabilities, specifications, and formats to a DFDD-basis.

Standard Selection Criteria

Net-Centric Interoperability

The register-based and web-enabled DGIWG FDD is one of a family of standards developed by the multi-national Digital Geospatial Information Working Group (DGIWG) to support acquiring, processing, analyzing, accessing, presenting and transferring geospatial information in digital/electronic form between different users, systems and locations. This standard is designed to support net- and data-centric specification of items of geospatial information.

Technical Maturity

DGIWG FDD is the product of a fundamental review of the DGIWG FACC, a predecessor that was developed, maintained, and enhanced since 1989 on the basis of evolving information systems technology. DGIWG FACC is in active use within NGA, the National System for Geospatial-Intelligence (NSG), & military coalition members (both within & outside of NATO). The DGIWG FDD replaces the retired (July 2004) DGIWG FACC, & leverages applicable International Standards, NSG system-development lessons-learned, & maturation in the commercial marketplace. DGIWG FDD specifies a set of well-defined feature types and attributes that may be used to determine semantic content when designing a domain data model & its supporting data element dictionary. DGIWG FDD was first released August 2004. It is the basis for the Multinational Geospatial Co-production Program (MGCP), the NATO CoreGIS capability, the NSG Feature Data dictionary (NFDD) & Entity Catalog (NEC), and evolving NSG & NGA system developments.

Public Availability

The DGIWG FDD is published in several forms and is publicly available at an SSL-enabled open-access web site: <https://www.dgiwg.org/FAD/registers.jsp?register=DFDD>.

Implementability

The DGIWG FDD specifies geospatial information concepts used by member nations of the DGIWG community to characterize real-world entities (or objects) and related properties. Technology appropriate for implementing and using these geospatial information concepts is well established. In particular, the DGIWG FDD has been regularly used within a net-centric architecture based on Open Geospatial Consortium (OGC) open web services such as the Web Feature Server (WFS - ISO 19142) and in relational DBMS (including COTS GIS) environments.

Authority

This standard was developed and is maintained by the multi-national Digital Geospatial Information Working Group (DGIWG). The DGIWG FDD superseded the DGIWG FACC within the NSG in October 2005. DGIWG FACC is a component of NATO Standardization Agreement (STANAG) 7074 - Digital Geographic Information Exchange Standard (DIGEST). The DGIWG FACC is used by MIL-STD-2407(1) - Interface Standard for Vector Product Format (VPF) and several active MIL-PRF specifications, including: MIL-PRF-32118, MIL-PRF-89023(1), MIL-PRF-89033(1), MIL-PRF-89035A, MIL-PRF-89037A, MIL-PRF-89039(2), MIL-PRF-89040A(2), MIL-PRF-0089049, MIL-PRF-89049/10, MIL-PRF-89049/11, MIL-PRF-89049/12, and MIL-PRF-89049/14.

Standard Type Military

Keywords for Search None

Standard Identifier DGIWG FACC

Title of Standard
DGIWG Feature and Attribute Coding Catalogue

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2004-12-22	n/a	2004-12-22	2004-12-22	2006-06-27	n/a

Sunset Tag 2012-12-31
Sunset Event Legacy/heritage systems expect to be using FACC variant products for several years before new systems are acquired that can exchange GEOINT data developed using the FACC replacement suite of mandated standards, i.e., DGIWG Feature Data Dictionary (DFDD), NSG Feature Data Dictionary (NFDD), and NSG Entity Catalog (NEC).

Standards Body [NGA](#) [Broken Link?](#)
URL to Access or Acquire <http://www.dgiwg.org>

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interests Messaging Format/Symbology TWG
 Application / Messaging TWG
 Modeling and Simulation TWG
 DoD Intelligence
 Discovery TWG
 Warfighting

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2004-12-22

This standard is applicable to the storage, manipulation, interchange, and exploitation of geospatial intelligence data.

Standard Abstract

2004-12-22

This NATO Standard (DGIWG Feature and Attribute Coding Catalogue - FACC) specifies geospatial information concepts used by member nations of the multi-national Digital Geographic Information Working Group (DGIWG) community. These concepts characterize aspects of real-world entities (or objects) and related properties, including those that are not necessarily visible or have a tangible physical form (e.g., airspace). The DGIWG FACC is a comprehensive dictionary and coding scheme for feature types, feature attributes (properties or characteristics associated with features), and attribute values (domain of feature attributes). A standardized dictionary is required to support encoding in order to maximize interoperability and to understand the production, exchange, distribution, and exploitation of digital geographic data. The DGIWG FACC has not been developed to satisfy the requirements of any single application, product, or database. It is

intended to be independent from level of resolution (scale), representation, and portrayal. The appropriate selection of DGIWG FACC feature types and feature attributes are intended to be implemented as part of the overall solution for an application, by means of a database (supported by a data schema or model), a product, or dataset (defined according to a format specification and a data model). The DGIWG FACC allows for individual nations to define "national" feature types and feature attributes for cases where such feature types and feature attributes are not readily defined in the normative DGIWG FACC. National extensions are not specified within the normative DGIWG FACC, and may not support interoperability. National extensions may, if proposed and approved, be incorporated into future editions of the normative DGIWG FACC.

Profiling Questions

GEOINT: Geospatial

- Does the application require access to definitions or descriptions of items of geospatial information?

Products Incorporating This Standard

None

Relevant Information

None

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

DGIWG FACC is one of a family of standards developed by the multi-national Digital Geographic Information Working Group (DGIWG) to support acquiring, processing, analyzing, accessing, presenting and transferring geospatial information in digital/electronic form between different users, systems and locations. This standard is designed to support net- and data-centric specification of items of geospatial information.

Technical Maturity

DGIWG FACC has been developed, maintained, and enhanced since 1989 on the basis of evolving information systems technology. It is in active use within the NGA, the National System for Geospatial-Intelligence (NSG), and military coalition members (both within and outside of NATO).

Public Availability

The DGIWG FACC is published in several forms and is publicly available at an open-access web site hosted by the NGA.

Implementability

This standard specifies geospatial information concepts used by member nations of the DGIWG community to characterize real-world entities (or objects) and related properties. Technology appropriate for implementing and using these geospatial information concepts is well established.

Authority

DGIWG FACC is a component of NATO Standardization Agreement (STANAG) 7074 - Digital Geographic Information Exchange Standard (DIGEST). The DGIWG FACC is used by MIL-STD-2407(1) - Interface Standard for Vector Product Format (VPF) and numerous active MIL-PRF specifications, including: MIL-PRF-32118, MIL-PRF-89023(1), MIL-PRF-89033(1), MIL-PRF-89035A, MIL-PRF-89037A, MIL-PRF-89039(2), MIL-PRF-89040A(2),

MIL-PRF-0089049, MIL-PRF-89049/10, MIL-PRF-89049/11, MIL-PRF-89049/12, and MIL-PRF-89049/14.

Standard Type Military

Keywords for Search None

About This Standard

Mandated

Standard Identifier FIPS Pub 10-4, w/ CNs 1-12

Title of Standard

Countries, Dependencies, Areas of Special Sovereignty, and Their Principal Administrative Divisions, April 1995 as modified by Change Notice 1, 1 Dec 1998 through Change Notice 12, 11 Jun 2007

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/ Retired
2007-11-06	n/a	2007-11-06	2007-11-06	2007-11-06	n/a

Replaced [FIPS Pub 10-4:2002](#)

Standards Body [NIST](#)

[Broken Link?](#)

URL to Access or Acquire <http://www.itl.nist.gov/fipspubs>

Working Group

Primary Owner Application / Messaging TWG
Secondary Interest No Secondary Interest

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2007-11-08

FIPS PUB 10-4 provides a list of the basic geopolitical entities in the world, together with the principal administrative divisions that comprise each entity. For applications involving the interchange of geospatial information requiring the use of country codes, this standard is mandated. This data element and representation standard is made available for the interchange of information among Federal departments and independent agencies. It is intended for use in activities associated with the mission of the Department of State and national defense programs. It may also be used for Federal interchanges of information with the non-Federal sector including industry, State, local, and other Governments, and the public at large. This Standard is intended for applications involving the interchange of international data. Applications limited primarily to domestic data, i.e., concerning the United States and its outlying areas, should use FIPS PUB 5-2, Codes for the Identification of the States, the District of Columbia and the Outlying Areas of the United States, and Associated Areas. For applications involving interchange of international data that require the use of the country codes of the International Organization for Standardization, i.e., ISO 3166, FIPS PUB 104-1, American National Standard Codes for the Representation of Names of Countries, Dependencies, and Areas of Special Sovereignty for Information Interchange, is available. FIPS PUB 104-1 provides both two- and three-character alphabetic codes for each entity listed. Federal agencies that do not require FIPS PUB 104-1 for international data interchange, and that are not involved in national defense programs or with the mission of the U.S. Department of State, may adopt either FIPS PUB 10-4 or FIPS PUB 104-1.

Standard Abstract

2007-11-08

This Standard provides a list of the basic geopolitical entities in the world, together with the principal divisions that comprise each entity. Each basic geopolitical entity that was listed in FIPS PUB 10-3, Countries, Dependencies, and Areas of Special Sovereignty, as updated, is included; it is represented by the same two-character alphabetic, country code. Each principal administrative division is identified by a four-character code consisting of the two-character country code followed by a two-character administrative division code. This Standard supersedes FIPS 10-3 in its entirety. The names of the political entities are derived from official meeting records of the Foreign Names Committee of the US Board on Geographic Names (US BGN).

Profiling Questions

GEOINT: Geospatial

- Does your interchange of geospatial data require the use of country codes?

Products Incorporating This Standard

None

Relevant Information

None

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

This standard supports net-centric interoperability by providing a common definition for country code references.

Technical Maturity

This standard is stable and mature. It has been published since 1995. There are frequent updates (possibly annual), as countries change name or formulation.

Public Availability

FIPS Pub 10-4 is available for free download from the following link at NIST FIPS site: <http://www.itl.nist.gov/fipspubs/fip10-4.htm>. The change notices are available through the NGA web site at: http://earth-info.nga.mil/gns/html/fips_files.html.

Implementability

The standard is available and implementable. It is supported ubiquitously throughout the U.S. Implementations may also need to implement the ISO country code standard ISO 3166-1, and map code values between the two standards.

Authority

Maintenance authority for FIP 10 was transferred from the Department of State to the National Geospatial-Intelligence Agency (NGA) in 1997. NGA's goal is to update the standard with quarterly change notices deriving from results of quarterly US BGN Foreign Names Committee (FNC) meetings.

Standard Type Non-Military

Keywords for Search CISS, CTISS

Standard Identifier GML 3.1.1

Title of Standard
OpenGIS Geography Markup Language Encoding Specification, 7 February 2004

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2006-02-21	2006-02-21	2007-02-27	2007-02-27	2008-04-03	n/a

Replaced [GML 2.1.1](#)

Standards Body [OpenGIS](#) [Broken Link?](#)
URL to Access or Acquire <http://www.opengeospatial.org>

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest No Secondary Interest

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2006-02-21

This standard is applicable to the development of systems that have requirements to access or distribute geospatial data using the eXtensible Markup Language (XML). There are no competing standards.

Standard Abstract

2007-02-27

Version 3.1.1 of the Geography Markup Language (GML) is an XML encoding for the transport and storage of geographic information modeled according to the conceptual modeling framework used in the ISO 19100 series of International Standards including both the spatial and non-spatial properties of geographic features. The GML specification defines the XML Schema syntax, mechanisms, and conventions that: (1) provide an open, vendor-neutral framework for the description of geospatial application schemas for the transport and storage of geographic information in XML; (2) allow profiles that support proper subsets of GML framework descriptive capabilities; (3) support the description of geospatial application schemas for specialized domains and information communities; (4) enable the creation and maintenance of linked geographic application schemas and datasets; (5) support the storage and transport of application schemas and data sets; (6) increase the ability of organizations to share geographic application schemas and the information they describe.

2006-02-21

Version 3 of the Geography Markup Language (GML) is an XML encoding for the transport and storage of geographic information modeled according to the conceptual modeling framework used in the ISO 19100 series of International Standards including both the spatial and non-spatial properties of geographic features. The GML specification defines the XML Schema syntax, mechanisms, and conventions that: (1) provide an open, vendor-

neutral framework for the description of geospatial application schemas for the transport and storage of geographic information in XML; (2) allow profiles that support proper subsets of GML framework descriptive capabilities; (3) support the description of geospatial application schemas for specialized domains and information communities; (4) enable the creation and maintenance of linked geographic application schemas and datasets; (5) support the storage and transport of application schemas and data sets; (6) increase the ability of organizations to share geographic application schemas and the information they describe.

Profiling Questions

GEOINT: Geospatial

- Does your development require exchange of GEOINT data with other systems over a network?

Products Incorporating This Standard

A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Relevant Information

GML 3.1.1 is backward compatible with Geography Markup Language 2.1.1, which has been retired. This citation is authored by the GWG's Information Transfer and Services Architecture Focus Group.

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

The Geography Markup Language (GML) is an XML encoding for the transport of geographic information over the Web. It supports several geographic Web Service Specifications published by the Open Geospatial Consortium.

Technical Maturity

Development of GML began in 1999. Version 1.0 of the specification was published in May 2000, and Version 3.0 in January 2003. GML has been accepted by ISO/TC211 and will be published as ISO 19136. Version 3.1.1 is aligned with the current draft of ISO 19136. There are 22 implementations of GML 3.1.1 as of 30 November 2006. ISO 19136:2007, equivalent to OGC GML 3.2.1 (adopted 07 July 2007), was approved 23 August 2007.

Public Availability

The specification is freely available from the Open Geospatial Consortium at <http://www.opengeospatial.org>.

Implementability

A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Authority

The standard was developed and is maintained by the Open Geospatial Consortium. The Open Geospatial Consortium is an international organization with members from industry, government and academia which uses an open process for developing and maintaining standards for geospatial information and services. The Geography Markup Language specification will be published by the International Organization for Standardization (ISO) as ISO 19136.

Standard Type Non-Military

Keywords for Search None

Standard Identifier ISO 19107:2003

Title of Standard
Geographic information - Spatial schema, 08 May 2003

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/ Retired
2005-05-04	n/a	2005-05-04	2005-05-04	2005-05-04	n/a

Standards Body [ISO](#) [Broken Link?](#)
URL to Access or Acquire <http://www.ansi.org>

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interests Messaging Format/Symbology TWG
Application / Messaging TWG
Modeling and Simulation TWG
DoD Intelligence
Discovery TWG
Warfighting

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2005-05-04

This standard is applicable to the storage, manipulation, interchange, and exploitation of geospatial intelligence data in vector form. It forms part of an overall conceptual model for geospatial data in vector form that will eventually replace MIL-STF-2407.

Standard Abstract

2005-05-04

This International Standard (ISO 19107:2003, Geographic information - Spatial schema) specifies conceptual schemas for describing the spatial characteristics of geographic features, and a set of spatial operations consistent with these schemas. It treats vector geometry and topology up to 3 dimensions. It defines standard spatial operations for use in access, query, management, processing, and data exchange of geographic information for spatial (geometric and topological) objects of up to 3 topological dimensions embedded in coordinate spaces of up to 3 axes.

Profiling Questions

- GEOINT: Geospatial**
- Does this application require the interchange, distribution, manipulation, or exploitation of geospatial intelligence data in vector form?

Products Incorporating This Standard

None

Relevant Information

None

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

This standard (in conjunction with other ISO TC211 standards) will form the basis for the interchange and distribution of future geospatial intelligence data in vector form.

Technical Maturity

This is a mature International Standard. ♦♦ Drafts of this standard were reviewed by experts from a number of nations, and the standard was approved by multiple national standards bodies, including the US (ANSI).

Public Availability

Copies of this standard are publically available, in either hardcopy (paper) or softcopy (PDF) form, from the International Standards Organization at a charge of 220 CHF (Swiss francs). Copies of this standard are also publicly available from ANSI (www.ansi.org) in PDF format. It is listed as ISO 19107:2003 for \$175, and as INCITS/ISO 19107 - 2003 for \$18.

Implementability

This standard defines a conceptual model. It is not necessarily directly implementable, but rather defines a basis from which profiles and application schemas can be derived to meet the requirements of specific application domains.

Authority

This is an International Standard, published by the International Standards Organization (ISO).

Standard Type

Non-Military

Keywords for Search

curve, edge, face, feature, geographic information, geometric object, geometry, geospatial, node, point, solid, spatial object, spatial schema, surface, topological object, topology, vector

Standard Identifier **ISO 19108:2002 w/ Cor 1:2006**

Title of Standard
Geographic information - Temporal schema, 12 September 2002, with Technical Corrigendum 1, 16 October 2006

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2008-04-03	n/a	2008-04-03	2008-04-03	2008-04-03	n/a

Replaced [ISO 19108:2002](#)

Standards Body [ISO](#) [Broken Link?](#)

URL to Access or Acquire <http://www.ansi.org>

Working Group

Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interests Business
Warfighting

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2008-03-27

This standard is applicable to the storage, manipulation, interchange, and exploitation of geospatial intelligence data. This standard is also applicable to other types of data that have a significant temporal representation component.

Standard Abstract

2008-03-27

This International Standard defines the standard concepts needed to describe the temporal characteristics of geographic information as they are abstracted from the real world. Temporal characteristics of geographic information include feature attributes, feature operations, feature associations, and metadata elements that take a value in the temporal domain. The standard also specifies a model for describing the temporal reference systems such as calendars and temporal coordinate systems.

Profiling Questions

GEOINT: Geospatial

- Does your application require information about times associated with spatial objects or does your application represent and/or manipulate time coordinates (events and/or intervals)?

Products Incorporating This Standard

Incorporated into a number of OGC standards and their implementations; see <http://www.opengeospatial.org/resource/products> for specific products.

Relevant Information

This citation authored by the GWG Application Schemas for Feature Encoding (ASFE) Focus

Group

Implementation Guidance

It is recommended that ISO 19136:2007 (GML 3.2.1) be used as the XML-based encoding of this standard.

Standard Selection Criteria

Net-Centric Interoperability

ISO 19108:2002/Cor1 :2006 is one of a suite of standards developed by ISO TC211 to support acquiring, processing, analyzing, accessing, presenting and transferring geospatial information in digital/electronic form between different users, systems and locations. This standard builds on the XML Schema standard to specify a robust temporal model and temporal calculus for reasoning about events and durations. The modeling elements specified in this standard have been implemented in XML as part of ISO 19136:2007 (Geography Markup Language).

Technical Maturity

ISO 19108:2002 was developed over a period of several years on the basis of existing geographic information systems technology. In May of 2001, 27 national standards bodies, including the American National Standards Institute (ANSI), approved the Draft International Standard, with no objections. It has been adopted by ANSI as an American National Standard. ISO 19108:2002/Cor1 :2006 includes minor corrections and updates. This standard is used in many Open Geospatial Consortium (OGC) standards (e.g., the Web Feature Service) that are widely implemented commercially.

Public Availability

ISO 19108:2002 has been adopted as an American National Standard and is available from <http://webstore.ansi.org/RecordDetail.aspx?sku=INCITS%2fISO+19108%3a2002> in PDF format for \$30 (the Corrigendum is free). This standard is also available for purchase from ISO at: http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=44883

Implementability

This standard defines a conceptual model, specified in the Unified Modeling Language (UML). It is not designed to be implemented directly; rather, it is expected that elements from the standard will be incorporated into application schemas, along with elements from conceptual models specified in other ISO/TC211 developed standards.

Authority

Published by the International Organization for Standardization (ISO) as an International Standard and adopted by the American National Standards Institute as an American National Standard.

Standard Type Non-Military

Keywords for Search None

Standard Identifier ISO 19109:2005

Title of Standard
Geographic information - Rules for application schema, June 23, 2005

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2006-06-27	n/a	2006-06-27	2006-06-27	2006-06-27	n/a

Standards Body [ISO](#) [Broken Link?](#)
URL to Access or Acquire <http://www.ansi.org>

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest No Secondary Interest

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2006-06-27

This standard is applicable to the storage, manipulation, interchange, and exploitation of geospatial intelligence data.

Standard Abstract

2006-06-27

This International Standard (ISO 19109:2005, Geographic information - Rules for application schema) defines rules for creating and documenting application schemas, including principles for the definition of features. The scope of this International Standard includes the following: conceptual modeling of features and their properties from a universe of discourse; definition of application schemas; use of the conceptual schema language for application schemas (Unified Modeling Language (UML) is the exemplar used in the standard); transition from the concepts in the conceptual model to the data types in the application schema; integration of standardized schemas from other ISO geographic information standards with the application schema. The following is outside the scope: choice of one particular conceptual schema language for application schemas; definition of any particular application schema; representation of feature types and their properties in a feature catalogue; representation of metadata; rules for mapping one application schema to another; implementation of the application schema in a computer environment; computer system and application software design; programming.

Profiling Questions

GEOINT: Geospatial • Does the application require access to and/or model/manipulate items of geospatial information?

Products Incorporating This Standard

None

Relevant Information

Supersedes ISO 19109

Implementation Guidance

None

Standard Selection Criteria**Net-Centric Interoperability**

ISO 19109 is one of a suite of standards developed by ISO TC211 to support acquiring, processing, analyzing, accessing, presenting and transferring geographic information in digital/electronic form between different users, systems and locations. This standard is designed to support net- and data-centric access to items of geospatial information.

Technical Maturity

ISO 19109 was developed over a period of several years on the basis of existing information systems technology. The Final Draft International Standard (FDIS) was completed in November 2003. The International Standard was published in June 2005.

Public Availability

ISO 19109 is available through the American National Standards Institute (ANSI) at <http://webstore.ansi.org/> in PDF format for \$146.00.

Implementability

This standard specifies rules for creating and documenting application schemas, including principles for the definition of geospatial features and their properties. Technology appropriate for implementing geospatial application schemas is well established.

Authority

This standard was published by the International Organization for Standardization (ISO) as an International Standard.

Standard Type Non-Military

Keywords for Search None

Standard Identifier **ISO 19110:2005**

Title of Standard
 Geographic information - Methodology for feature cataloguing, 11 February 2005

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2008-04-03	n/a	2008-04-03	2008-04-03	2008-04-03	n/a

Replaced [ISO 19110](#)

Standards Body [ISO](#) [Broken Link?](#)
URL to Access or Acquire <http://www.ansi.org>

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest Messaging Format/Symbology TWG

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2008-03-27

This standard is applicable to the storage, manipulation, interchange, and exploitation of geospatial intelligence data. By documenting standardized collections and presentations of feature type information (metadata) net-centric data sharing and interoperability is facilitated.

Standard Abstract

2008-03-27

This standard defines a methodology for cataloging feature types. Feature types are abstractions of real world phenomena (e.g., roads, rivers, waves, wrecks, and winds). This standard may be used as a basis for defining the universe of discourse being modeled in a particular application, or to standardize general aspects of real world features being modeled in more than one application. This standard specifies how the classification of feature types is organized into a feature catalogue and presented to the users of a set of geospatial data. This standard is applicable to creating catalogs of feature types in previously uncataloged domains and to revising existing feature catalogs to comply with standard practice.

Profiling Questions

- GEOINT: Geospatial**
- Does the application require access to definitions or descriptions of items of geospatial information?

Products Incorporating This Standard

This standard is supported and use by multiple International and National geospatial data production organizations including the International Hydrographic Organization, the International Civil Aviation Organization, the Digital Geospatial Information Working Group (DGIWG), the National Center for Geospatial Intelligence Standards (NCGIS), and the

Multinational Geospatial Coproduction activity.

Relevant Information

This citation authored by the GWG Application Schemas for Feature Encoding (ASFE) Focus Group.

Implementation Guidance

This standard complements other DISR standards and is the basis for documenting and disseminating the NSG Entity Catalog (NEC), a current Mandated DISR standard.

Standard Selection Criteria

Net-Centric Interoperability

ISO 19110:2005 is one of a suite of standards developed by ISO TC211 to support acquiring, processing, analyzing, accessing, presenting and transferring geospatial information in digital/electronic form between different users, systems and locations. This International Standard specifies how the classification of feature types is organized into a feature catalog and presented to the users of a set of geospatial data. This International Standard is applicable to creating catalogs of feature types in previously uncataloged domains and to revising existing feature catalogues to comply with standard practice. Standardized collections and presentations of feature type information (metadata) facilitate net-centric data sharing and interoperability.

Technical Maturity

ISO 19110:2005 was developed over a period of several years on the basis of existing geographic information systems technology. It has been adopted by ANSI as an American National Standard. It replaces the DISR citation of ISO 19110 as the mandated standard

Public Availability

ISO 19110:2005 has been adopted as an American National Standard and is available from <http://webstore.ansi.org/RecordDetail.aspx?sku=INCITS%2fISO+19110-2005> in PDF format for \$30. This standard is also available for purchase from ISO at: http://www.iso.org/iso/iso_catalogue/catalogue_tc/catalogue_detail.htm?csnumber=39965

Implementability

This standard defines a conceptual model, specified in the Unified Modeling Language (UML). It has been implemented by multiple National Bodies and Organizations, including implementation at the National Center for Geospatial Intelligence Standards (NCGIS) as their basis for documenting and disseminating the NSG Entity Catalog (NEC), a DISR mandated standard.

Authority

Published by the International Organization for Standardization (ISO) as an International Standard and adopted by the American National Standards Institute as an American National Standard.

Standard Type

Non-Military

Keywords for Search

None

Standard Identifier **ISO 19111:2003**

Title of Standard

Geographic information -- Spatial referencing by coordinates, 04 March 2003

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2007-02-27	n/a	2007-02-27	2007-02-27	2007-02-27	n/a

Standards Body

[ISO](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.ansi.org>

Working Group

Primary Owner

Geospatial Intelligence TWG (GWG)

Secondary Interest

DoD Intelligence

Service Area

GEOINT: Geospatial

KIPs

No KIP Found

Standard Applicability

2007-02-27

This standard is applicable to those who wish to establish a common requirement for describing coordinate reference systems (CRSs) including the datum giving the relation to the Earth and the coordinate system used.

Standard Abstract

2007-02-27

Any coordinate based usage of geographic information needs a unique definition of the underlying reference system. A standardized conceptual schema for coordinate based reference systems is necessary for geographic information to be shared between applications. The schema will be of value to developers of geographic information systems and other applications requiring data based upon coordinate reference systems. It will also aid users in specifying their requirements for data referenced by coordinates and will ensure that data producers use coordinate reference systems which are consistently defined. There are many well established systems in common use. This International Standard establishes a common requirement for describing coordinate reference systems (CRSs) including the datum giving the relation to the Earth and the coordinate system used. The standard stipulates that CRSs do not alter with time. Changes with time are catered for by specification of new CRSs which identify the epoch of their realisation. Hybrid coordinate reference systems (HCRSs) are included to cater for situations when the components of position come from different CRSs. A typical example consists of geodetic coordinates (for horizontal position) and heights related to sea level. The requirements for transformation of data with reference to different datums are given, as well as the requirements for conversion including map projection between different coordinate systems. The definitions of accuracy and precision of spatial reference by coordinates are given.

Profiling Questions

GEOINT: Geospatial

- Do you have a requirement to use any coordinate-based usage

of geographic information needs a unique definition of the underlying reference system?

Products Incorporating This Standard

The EPSG data base is an implementation of this standard: the International Association of Oil and Gas Producers has implemented an on-line database of geodetic codes and parameters that conforms to ISO 19111. It is available at www.epsg.org. OGC has an implementation specification for Coordinate Transformation Service that is loosely based on 19111 (see: <http://www.opengeospatial.org/standards/ct>), though 19111 is never explicitly mentioned in the 01-009 documents. Also, the coordinate reference system component of GML 3.1.1 is based on 19111 and there are conformant ζ GML 3.1.1 common CRSs profile: 05-095r1 ζ and ζ GML 3.1.1 CRS support profile: 05-094r1 ζ (see: <http://www.opengeospatial.org/standards/profile>) which specify encodings that may be logically be viewed as ζ implementations ζ of 19111". See also the OGC "registered products" page and search "CT": <http://www.opengeospatial.org/resource/products> "

Relevant Information

Citation authored by the GWG Metadata Focus Group.

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

This standards (in conjunction with other ISO TC 211 standards) will form the basis for the interchange and distribution of future geospatial intelligence data.

Technical Maturity

This is a mature International Standard. Drafts of this standard were reviewed by experts from a number of nations, and the standard was approved by multiple national standards bodies, including the USA (ANSI).

Public Availability

This standard is publicly available, in either hardcopy (paper) or softcopy (PDF) form, from the International Standards Organization and/or ANSI.

Implementability

NGA, OGC and the US Geological Survey use this standard

Authority

This is an International Standard, published by the ISO (International Organization for Standardization)

Standard Type Non-Military

Keywords for Search None

Standard Identifier ISO 19112:2003

Title of Standard
 Geographic information -- Spatial referencing by geographic identifiers, 21 October 2003

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/ Retired
2007-02-27	n/a	2007-02-27	2007-02-27	2007-02-27	n/a

Standards Body [ISO](#) [Broken Link?](#)
URL to Access or Acquire <http://www.ansi.org>

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest No Secondary Interest

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2007-02-27

This standard is applicable to the storage, manipulation, interchange, and exploitation of geospatial intelligence data. In particular it addresses the representation of gazetteer-based (e.g., place name and addressing) information.

Standard Abstract

2007-02-27

This standard specifies ways to define and describe systems of spatial references using geographic identifiers that are not based explicitly on coordinates but on a relationship with a location defined by a geographic feature or features. The relationship of the position to the feature may be: (a) containment, where the position is within the geographic feature, for example in a country; (b) based on local measurements, where the position is defined relative to a fixed point or points in the geographic feature or features, for example at a given distance along a street from a junction with another street; or (c) loosely related, where the position has a fuzzy relationship with the geographic feature or features, for example adjacent to a building or between two buildings. In particular this standard specifies the structure of gazetteers -- directories of geographic identifiers describing location instances in accordance with a spatial reference system.

Profiling Questions

- GEOINT: Geospatial**
- Does this application require the interchange, distribution, manipulation, or exploitation of geospatial intelligence data based on place names (e.g., as in a gazetteer) or does this application represent location by reference to a name, or to a position relative to a fixed point or geographic feature, or to a named spatial relationship to a geographic feature?

Products Incorporating This Standard

See OGC "registered products" page: <http://www.opengeospatial.org/resource/products> and search for "Gaz" to find a number of implementations of that draft. More specifically see: <http://www.opengeospatial.org/resource/products/byspec/?specid=26> OGC also lists implementation statistics at: <http://www.opengeospatial.org/resource/products/stats> where the following appears: Total Comp. Specification / Version Abrv / Version 14 0 Gazetteer (0.8) Gaz 0.8

Relevant Information

This citation is authored by the GWG's Applications Schema for Feature Encoding Focus Group.

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

This standard (in conjunction with other ISO TC211 standards) will form the basis for the interchange and distribution of future geospatial intelligence data.

Technical Maturity

This is a mature International Standard. Drafts of this standard were reviewed by experts from a number of nations, and the standard was approved by multiple national standards bodies, including the US (ANSI).

Public Availability

Copies of this standard are publically available, in either hardcopy (paper) or softcopy (PDF) form, from the International Standards Organization at a charge of 96 CHF (Swiss francs). Copies of this standard are also publicly available from ANSI (<http://www.ansi.org>) in PDF format. It is listed as ISO 19112:2003 for \$82, and as INCITS/ISO 19112-2003 for \$30.

Implementability

This standard defines a conceptual model. It is not necessarily directly implementable, but rather defines a basis from which profiles and application schemas can be derived to meet the requirements of specific application domains.

Authority

This is an International Standard, published by the ISO (International Organization for Standardization).

Standard Type Non-Military

Keywords for Search None

Standard Identifier **ISO 19115:2003 w/ ISO 19115 Cor. 1:2006**

Title of Standard

Geographic information -- Metadata, 8 May 2003, with Technical Corrigendum 1, 5 July 2006

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/ Retired
2007-02-27	n/a	2007-02-27	2007-02-27	2007-11-06	n/a

Replaced [ISO 19115:2003](#)

Standards Body [ISO](#) [Broken Link?](#)
URL to Access or Acquire <http://www.ansi.org>

Working Group

Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest Business

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2007-02-27

This International Standard is applicable to: the cataloguing of datasets, clearinghouse activities, and the full description of datasets; geographic datasets, dataset series, and individual geographic features and feature properties.

Standard Abstract

2007-11-08

This International Standard defines the schema required for describing geographic information and services. It provides information about the identification, the extent, the quality, the spatial and temporal schema, spatial reference, and distribution of digital geographic data. For systems implementing the Department of Defense Discovery Metadata Specification (DDMS), the ICISM Data Element Dictionary v2.0.3, and the Dublin Core Metadata element Set, reference the "National System for Geospatial Intelligence (NSG) Geospatial Core Metadata Profile, v1.0, August 2007" which establishes the necessary full set of metadata to satisfy geospatial needs.

2007-02-27

This International Standard defines the schema required for describing geographic information and services. It provides information about the identification, the extent, the quality, the spatial and temporal schema, spatial reference, and distribution of digital geographic data.

Profiling Questions

GEOINT: Geospatial

- Does your system require an International Standard that provides a clear procedure for the description of digital geographic datasets so that users will be able to determine whether the data in

a holding will be of use to them and how to access the data?

Products Incorporating This Standard

None

Relevant Information

This citation was authored by the GWG's Metadata Focus Group.

Implementation Guidance

ISO 19115 is among a suite of geospatial standards developed by ISO TC 211 widely used by the geospatial community. The objective is to promote a common suite of geospatial standards to assist the geospatial community in developing interoperable and harmonized functions. For systems implementing the Department of Defense Discovery Metadata Specification (DDMS), the ICISM Data Element Dictionary v2.0.3, and the Dublin Core Metadata element Set, the "National System for Geospatial Intelligence (NSG) Geospatial Core Metadata Profile, v1.0, August 2007" establishes the necessary full set of metadata to satisfy geospatial needs.

Standard Selection Criteria

Net-Centric Interoperability

ISO 19115:2003 - Geographic Information - Metadata along with ISO 19115 Metadata - Technical Corrigendum 1: 2006, (in conjunction with other ISO TC 211 standards) form the basis for the interchange and distribution of future geospatial intelligence data. The technical corrigendum is correcting errors that have been detected as ISO 19115 has been implemented.

Technical Maturity

This is a technically mature and stable International Standard. Drafts of this standard were reviewed by experts from a number of nations, and the standard was approved through a consensus activity by multiple national standards bodies, including the USA (ANSI). The base standard was published in 2003. Its technical corrigendum corrects errors that have been detected as ISO 19115 has been implemented.

Public Availability

This standard is publicly available, in either hardcopy (paper) or softcopy (PDF) form, from the International Standards Organization and/or ANSI. Use of this Standard with the Department of Defense Discovery Metadata Specification (DDMS), the ICISM Data Element Dictionary v2.0.3, and the Dublin Core Metadata element Set is documented in the "National System for Geospatial Intelligence (NSG) Geospatial Core Metadata Profile, v1.0, August 2007", which is freely available via the Geospatial Intelligence Standards Working Group web site at www.gwg.nga.mil.

Implementability

The standard is widely accepted and used by multiple Geospatial organizations and organizations such as the FGDC, ESRI, Intergraph, and OGC all of who have developed implementations of the standard.

Authority

This is an International Standard, published by the ISO (International Organization for Standardization).

Standard Type Non-Military

Keywords for Search None

Standard Identifier ISO 19119:2005

Title of Standard

Geographic information - Services, 10 February 2005

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/ Retired
2005-09-06	n/a	2005-09-06	2005-09-06	2005-09-06	n/a

Standards Body

[ISO](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.ansi.org>

Working Group

Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest No Secondary Interest

Service Area

GEOINT: Geospatial

KIPs

No KIP Found

Standard Applicability

2005-09-06

This standard is applicable to the development and implementation of specifications for geospatial information services from both platform-neutral and platform-specific perspectives

Standard Abstract

2005-09-06

This International Standard: - Identifies and defines architecture patterns for service interfaces used for geographic information and definition of the relationships to the Open Systems Environment model; - Provides a geographic services taxonomy and a list of example geographic services placed in the services taxonomy; - Prescribes how to create a platform-neutral service specification, and how to derive platform-specific service specifications that are conformant with this; - Provides guidelines for the selection and specification of geographic services from both platform-neutral and platform-specific perspectives.

Profiling Questions

GEOINT: Geospatial

- Does your system require geospatial information as a means to reference operational information?

Products Incorporating This Standard

The OpenGeospatial© Consortium has developed several implementation specifications for web based geospatial information services, including, for example, a Web Map Service and a Web Feature Service. These specifications and lists of commercial implementations are available from <http://www.opengeospatial.org>.

Relevant Information

None

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

ISO 19119 is one of a suite of standards developed by ISO TC211 to support acquiring, processing, analyzing, accessing, presenting and transferring geographic information in digital/electronic form between different users, systems and locations. This standard is designed to support web access to a variety of services distributed across multiple servers

Technical Maturity

ISO 19119 was developed over a period of several years on the basis of existing information systems technology. The standard was approved in October 2003 and published by ISO during Spring 2005. The OpenGeospatial Consortium has developed specifications for several services consistent with the architecture specified in ISO 19119, several of which have been implemented by multiple vendors

Public Availability

ISO 19119 has been published as an International Standard available from ISO, and adopted as an American National Standard available from <http://webstore.ansi.org/ansidocstore/default.asp> in PDF format

Implementability

This standard is not directly implementable. It provides guidance for the development of a consistent set of implementable specifications for specific services dealing with geospatial information

Authority

Published by the International Organization for Standardization (ISO) as an International Standard and adopted by the American National Standards Institute as an American National Standard

Standard Type Commercial

Keywords for Search Architecture, Geographic, Geospatial, Interface, Service

Standard Identifier ISO 19123:2005

Title of Standard
Geographic information - Schema for coverage geometry and functions, August 31, 2005

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2006-06-27	n/a	2006-06-27	2006-06-27	2006-06-27	n/a

Standards Body [ISO](#) [Broken Link?](#)
URL to Access or Acquire <http://www.ansi.org>

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interests Application / Messaging TWG
 Business
 Modeling and Simulation TWG
 Warfighting

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2006-06-27

This standard is applicable to the storage, manipulation, interchange, and exploitation of geospatial intelligence data.

Standard Abstract

2006-06-27

This International Standard defines a conceptual schema for the spatial characteristics of coverages. Coverages support mapping from a spatial, temporal, or spatiotemporal domain to feature attribute values where feature attribute types are common to all geographic positions within the domain. A coverage domain consists of a collection of direct positions in a coordinate space that may be defined in terms of up to three spatial dimensions as well as a temporal dimension. Examples of coverages include grids, triangulated irregular networks, point coverages, polygon coverages, and segmented curve coverages. This standard defines the relationship between the domain of a coverage and an associated attribute range. The standard specifies a set of interfaces to provide access to the information contained within coverages of several different types.

Profiling Questions

GEOINT: Geospatial • Does application involve overhead imagery, terrain characteristics?

Products Incorporating This Standard

None

Relevant Information

None

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

ISO 19123 is one of a suite of standards developed by ISO TC211 to support acquiring, processing, analyzing, accessing, presenting and transferring geographic information in digital/electronic form between different users, systems and locations. Most of the elements specified in the standard have been implemented in XML as part of the Geography Markup Language 3.0 developed by the Open Geospatial Consortium.

Technical Maturity

ISO 19123 was developed over a period of several years on the basis of existing geographic information systems technology. The standard was published as an International Standard in Spring 2005. The Open Geospatial Consortium Web Coverage Service Specification defines an interface for accessing coverages that conform to ISO 19123. ISO 19123 has been used as the basis for part of the Geographic Information Framework Data Content Standards currently being developed as an American National Standard.

Public Availability

ISO 19123 has been published as an International Standard, available from ISO. It has also been adopted as an American National Standard and will be available from <http://webstore.ansi.org/ansidocstore/default.asp> in PDF format.

Implementability

This standard defines a conceptual model, specified in the Unified Modeling Language. It is not designed to be implemented directly; rather, it is expected that elements from the standard will be incorporated into application schemas, along with elements from conceptual models specified in other ISO/TC211 developed standards.

Authority

Published by the International Organization for Standardization (ISO) as an International Standard and adopted by the American National Standards Institute as an American National Standard.

Standard Type Non-Military

Keywords for Search None

Standard Identifier ISO 19135:2005

Title of Standard
Geographic information - Procedures for item registration, October 14, 2005

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2006-06-27	n/a	2006-06-27	2006-06-27	2006-06-27	n/a

Standards Body [ISO](#) [Broken Link?](#)
URL to Access or Acquire <http://www.ansi.org>

Working Group

Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interests Messaging Format/Symbology TWG
Application / Messaging TWG
DoD Intelligence
Discovery TWG

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2006-06-27

This standard is applicable to the storage, manipulation, interchange, and exploitation of geospatial intelligence data.

Standard Abstract

2006-06-27

This International Standard specifies procedures to be followed in establishing, maintaining, and publishing registers of unique, unambiguous and permanent identifiers and meanings that are assigned to items of geographic information. In order to accomplish this purpose, the standard specifies elements of information that are necessary to provide identification and meaning to the registered items and to manage the registration of these items.

Profiling Questions

GEOINT: Geospatial

- Does the application require access to definitions or descriptions of items of geospatial information?

Products Incorporating This Standard

None

Relevant Information

Supersedes ISO 19135

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

ISO 19135 is one of a suite of standards developed by ISO TC211 to support acquiring, processing, analyzing, accessing, presenting and transferring geographic information in digital/electronic form between different users, systems and locations. This standard is designed to support web access to registered items of geographic information.

Technical Maturity

ISO 19135:2005 was developed over a period of several years on the basis of existing information systems technology. The International Standard was published in Fall 2005. ISO 19135 has been used as the basis for the National System for Geospatial-Intelligence (NSG) Feature Data Dictionary (NFDD), and is being used in the design of a number of other item registers that will be of interest to users of GEOINT.

Public Availability

ISO 19135 is available from ISO. It has also been adopted as an American National Standard and will be available from <http://webstore.ansi.org/ansidocstore/default.asp> in PDF format.

Implementability

This standard specifies content and management procedures for register of items of geographic information. Technology appropriate for implementing registers is well established.

Authority

Published by the International Organization for Standardization (ISO) as an International Standard and adopted by the American National Standards Institute as an American National Standard.

Standard Type Non-Military

Keywords for Search None

Standard Identifier

ISO/IEC 8632-1:1999 with Corrigenda 1:2006

Title of Standard

Information technology -- Computer graphics -- Metafile for the storage and transfer of picture description information -- Part 1: Functional specification, 16 December 1999, with Corrigenda ISO/IEC 8632-1:1999/Cor 1:2006, dated 24 March 2006

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2007-02-27	n/a	2007-02-27	2007-02-27	2007-02-27	n/a

Replaced

[ISO/IEC 8632-1:1999](#)

Standards Body

[ISO](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.ansi.org>

Working Group

Primary Owner

Geospatial Intelligence TWG (GWG)

Secondary Interests

Information Transfer TWG
Application / Messaging TWG

Service Area

GEOINT: Still Imagery

KIPs

No KIP Found

Standard Applicability

2007-02-27

The CGM provides a metafile format suitable for the storage and retrieval of symbolic information. The CGM format consists of a set of elements that can be used to describe graphical and textual symbols in a way that is compatible between systems of different architectures and devices of differing capabilities and design. ISO/IEC 8632 is used with the National Imagery Transmission Format (NITF) and the NATO Secondary Imagery Format (NSIF), both of which are implementation profiles of ISO/IEC 12087-5 (BIIF) that are intended to promote interoperability for the exchange of imagery among military Command, Control, Communications, and Intelligence (C3I) systems. The ISO/IEC 8632 series of standards, as used within the NITFS, provides the means for textual, graphical, and symbolic annotation of digital imagery and raster maps. Imagery analysts use it to graphically mark up digital imagery and maps with the visualization of their analytic results, for example, target folders.

Standard Abstract

2007-02-27

Computer Graphics Metafile (CGM) is a graphics data interchange standard which defines a neutral computer interpretable representation of 2D graphical (pictorial) information in a manner that is independent from any particular application or system. The purpose of the standard is to facilitate the storage and retrieval of graphical information between applications, software systems, and/or devices. A CGM can contain: vector graphics, raster graphics, and text. The CGM standard defines 4 upward compatible versions. Version 1 provides a basic drawing and picture interchange capability. The Version 1 metafile definition includes about 90 elements (i.e., individual function or entity). Version 1 metafiles are essentially the same as the 'old standard'. The Version 2 metafile definition contain

approximately 30 additional elements. (All Version 1 metafile elements are allowed in Version 2 metafiles). The most significant new capability of Version 2, is the graphical segment. A segment is a group of primitives that is saved once and named, and then may be used repeatedly in the metafile. Version 3 metafiles represent a major increase in graphical expressive power. Version 3 metafiles contain about 40 new elements above the Version 2 capabilities. Version 3 metafile functionality includes: the capability to represent compressed tiled images, define external symbol libraries, and greater control of drawing aspects for graphics arts, presentation graphics, and electronic publishing. Version 4 adds support for application structures. See the DISR citation for ISO/IEC 8632-3:1999 which addresses the binary encoding of CGM.

Profiling Questions

- GEOINT: Still Imagery**
- Does your system exchange graphically annotated still imagery, raster or gridded data with external systems?

Products Incorporating This Standard

Companies with commercially available implementations/products include: BAE Systems, Harris Corporation, ITT Industries, Leica Geosystems, PAR Government Systems, Paragon Imaging, PhotoTelesis, Raytheon, Recon Optical, Research Systems, Inc. (RSI), Sensor Systems, Inc., and Technology Services Corporation.

Relevant Information

For many years, Mil-Std-2301A, Computer Graphics Metafile (CGM) Implementation Standard for National Imagery Transmission Format Standard, served as an implementation profile of ISO/IEC 8632. The citation in the DISR for Mil-Std-2301A has since been replaced by BPCGM01.00, a functionally equivalent profile of CGM. This citation authored by the GWG NTB Focus Group

Implementation Guidance

ISO/IEC 8632 is among the suite of standards used by the NITFS. See STDI-0005, Implementation Practices of the NITFS, available at: <http://www.gwg.nga.mil/ntb/baseline/docs/ipon/index.html>. The STDI-0005 document is a compilation of common practices, conventions, and guidelines for implementing the National Imagery Transmission Format Standard (NITFS). The objective is to help promote common specification and application of the NITFS suite of standards by all fielded and developmental digital imagery-related systems. It describes common conventions for implementing the suite of NITFS standards that promote and sustain NITFS compliance and interoperability for the production, storage, cataloging, discovery, selection, exploitation, and dissemination of digital imagery, raster map, and other related raster products.

Standard Selection Criteria

Net-Centric Interoperability

ISO/IEC 8632, CGM, is a graphics data interchange standard which defines a neutral computer interpretable representation of 2D graphical (pictorial) information which is independent of any particular application or system. The ISO/IEC 8632 series of standards, as used within the NITFS, provides the means for textual, graphical, and symbolic annotation of digital imagery and raster maps. Imagery analysts use it to graphically mark up digital imagery and maps with the visualization of their analytic results, for example target folders. It often is used to provide visualization of the NITFS-embedded security markings and handling instructions. For example, every Digital Point Positioning Data Base (DPPDB) uses this standard to present security information, national stock numbers, visual boundaries for associating image data with positioning and quality support data, and similar uses.

Technical Maturity

The standard is technically mature and stable, to include established conformance test criteria, tools, services and technical consultation for the implementation profile used by the NITFS. Existing commercial products conforming to the NITFS profile of this standard

include, but not limited to: Paragon Imaging, Inc. Electronic Light Table Products (PocketELT ELT/4000 ELT/1500 Global Image Viewer ELT/5500 ELT/View Image Light Table (ILT) Plus and ELT/5500 Pro) BAE VITecELT ERDAS Imagine Sensor Systems, Inc. RemoteView Professional PhotoTelesis Image and Research Systems, Inc. The Environment for Visualizing Imagery (ENVI). The NITFS profile of this standard has been part of the NITFS suite of standards since 1994 and part of STANAG 4545, NATO Secondary Imagery Format (NSIF) since 1998. A follow on standard for use within NITFS/NSIF is not currently in consideration. A sunset status should not yet be added for this currently mandated (for use with NITFS/NSIF) standard.

Public Availability

The electronic version of this International Standard can be downloaded at no charge from the ISO/IEC Information Technology Task Force (ITTF) web site:
http://isotc.iso.org/livelink/livelink/fetch/2000/2489/Ittf_Home/PubliclyAvailableStandards.htm

Implementability

Typically, implementation profiles of ISO/IEC 8632 are established for specific functional applications of CGM. The BIIF profile of ISO/IEC 8632 is widely implemented by a variety of systems (data production, dissemination, library/archive, exploitation work stations, etc.) supporting the NITFS suite of standards. Sample data, sample software, technical consultation, and conformance testing services are available to government and commercial implementers of the standard by contacting the NITFS Test Facility operated by the Joint Interoperability Test Command (JITC) on behalf of the National-Geospatial-Intelligence Agency (NGA). Contact information available at <http://jitc.fhu.disa.mil/nitf/nitf.htm>, 1-800-538-5482, x8-5458, and jitcn@disa.mil. A list of government and commercially developed conforming implementations of the NITFS suite of standards is available at <http://jitc.fhu.disa.mil/nitf/register.htm>.

Authority

The ISO/IEC 8632 series of standards was developed by ISO/IEC Joint Technical Committee 1/SubCommittee 24, Computer Graphics and Image Processing. The process for maintaining and developing the standard is an internationally open process by members of national bodies and liaison organizations participating with ISO/IEC. The US NITFS Technical Board (NTB) and the NATO STANAG 4545 Custodial Support Team maintain liaison relationships with the ISO SubCommittee.

Standard Type Non-Military

Keywords for Search None

Some of the data formats may exactly match those of some computer systems. In such cases processing is reduced very much relative to the other standardized encodings. On most computer systems processing requirements for the Binary Encoding will be substantially lower than another encoding. In cases where a computer system's architecture does not match the standard formats used in the Binary Encoding, and where absolute minimization of processing requirements is critical, and where interchange among dissimilar systems does not matter, it may be more appropriate to use a private encoding, conforming to the rules specified in clause 7 of ISO/IEC 8632-1. See the DISR citation for ISO/IEC 8632-1:1999 which addresses the functionality enabled by CGM.

Profiling Questions

- GEOINT: Still Imagery**
- Does your system exchange graphically annotated still imagery, raster or gridded data with external systems?

Products Incorporating This Standard

Companies with commercially available implementations/products include: BAE Systems, Harris Corporation, ITT Industries, Leica Geosystems, PAR Government Systems, Paragon Imaging, PhotoTelesis, Raytheon, Recon Optical, Research Systems, Inc. (RSI), Sensor Systems, Inc., and Technology Services Corporation.

Relevant Information

For many years, Mil-Std-2301A, Computer Graphics Metafile (CGM) Implementation Standard for National Imagery Transmission Format Standard, served as an implementation profile of ISO/IEC 8632. The citation in the DISR for Mil-Std-2301A has since been replaced by BPCGM01.00, a functionally equivalent profile of CGM. This citation authored by the GWG's NTB Focus Group

Implementation Guidance

ISO/IEC 8632 is among the suite of standards used by the NITFS. See STDI-0005, Implementation Practices of the NITFS, available at: <http://www.gwg.nga.mil/ntb/baseline/docs/ipon/index.html> The STDI-0005 document is a compilation of common practices, conventions, and guidelines for implementing the National Imagery Transmission Format Standard (NITFS). The objective is to help promote common specification and application of the NITFS suite of standards by all fielded and developmental digital imagery-related systems. It describes common conventions for implementing the suite of NITFS standards that promote and sustain NITFS compliance and interoperability for the production, storage, cataloging, discovery, selection, exploitation, and dissemination of digital imagery, raster map, and other related raster products.

Standard Selection Criteria

Net-Centric Interoperability

ISO/IEC 8632, CGM, is a graphics data interchange standard which defines a neutral computer interpretable representation of 2D graphical (pictorial) information which is independent of any particular application or system. The ISO/IEC 8632 series of standards, as used within the NITFS, provides the means for textual, graphical, and symbolic annotation of digital imagery and raster maps. Imagery analysts use it to graphically mark up digital imagery and maps with the visualization of their analytic results, for example target folders. It often is used to provide visualization of the NITFS-embedded security markings and handling instructions. For example, every Digital Point Positioning Data Base (DPPDB) uses this standard to present security information, national stock numbers, visual boundaries for associating image data with positioning and quality support data, and similar uses.

Technical Maturity

The standard is technically mature and stable, to include established conformance test criteria, tools, services and technical consultation for the implementation profile used by the NITFS. Existing commercial products conforming to the NITFS profile of this standard include, but not limited to: Paragon Imaging, Inc. Electronic Light Table Products

(PocketELT ELT/4000 ELT/1500 Global Image Viewer ELT/5500 ELT/View Image Light Table (ILT) Plus and ELT/5500 Pro) BAE VITecELT ERDAS Imagine Sensor Systems, Inc. RemoteView Professional PhotoTelesis Image and Research Systems, Inc. The Environment for Visualizing Imagery (ENVI). The NITFS profile of this standard has been part of the NITFS suite of standards since 1994 and part of STANAG 4545, NATO Secondary Imagery Format (NSIF) since 1998. A follow on standard for use within NITFS/NSIF is not currently in consideration. A sunset status should not yet be added for this currently mandated (for use with NITFS/NSIF) standard.

Public Availability

The electronic version of this International Standard can be downloaded at no charge from the ISO/IEC Information Technology Task Force (ITTF) web site:
http://isotc.iso.org/livelink/livelink/fetch/2000/2489/Ittf_Home/PubliclyAvailableStandards.htm

Implementability

Typically, implementation profiles of ISO/IEC 8632 are established for specific functional applications of CGM. The BIIF profile of ISO/IEC 8632 is widely implemented by a variety of systems (data production, dissemination, library/archive, exploitation work stations, etc.) supporting the NITFS suite of standards. Sample data, sample software, technical consultation, and conformance testing services are available to government and commercial implementers of the standard by contacting the NITFS Test Facility operated by the Joint Interoperability Test Command (JITC) on behalf of the National-Geospatial-Intelligence Agency (NGA). Contact information available at <http://jitc.fhu.disa.mil/nitf/nitf.htm>, 1-800-538-5482, x8-5458, and jitcn@disa.mil. A list of government and commercially developed conforming implementations of the NITFS suite of standards is available at <http://jitc.fhu.disa.mil/nitf/register.htm>.

Authority

The ISO/IEC 8632 series of standards was developed by ISO/IEC Joint Technical Committee 1/SubCommittee 24, Computer Graphics and Image Processing. The process for maintaining and developing the standard is an internationally open process by members of national bodies and liaison organizations participating with ISO/IEC. The US NITFS Technical Board (NTB) and the NATO STANAG 4545 Custodial Support Team maintain liaison relationships with the ISO SubCommittee.

Standard Type Non-Military

Keywords for Search None

Standard Identifier **ISO/IEC 12087-5:1998**

Title of Standard

Information technology - Computer graphics and image processing - Image Processing and Interchange (IPI) Functional specification - Part 5: Basic Image Interchange Format (BIIF), 1 December 1998, with Technical Corrigendum 1:2001

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2003-04-04	2003-04-04	2005-09-06	2005-09-06	2006-10-25	n/a

Replaced [ISO/IEC 12087-5](#)

Standards Body [ISO](#) [Broken Link?](#)
URL to Access or Acquire <http://www.ansi.org>

Working Group

Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest Application / Messaging TWG

Service Area GEOINT: Still Imagery

KIPs No KIP Found

Standard Applicability

2006-10-25

The Basic Image Interchange Format (BIIF) is a published international standard. It provides a commercial/international foundation for interoperability in the interchange of imagery and imagery-related data among applications. BIIF provides a data format container for image, symbol, and text, along with a mechanism for including image-related support data.

2005-09-06

The use/application of BIIF is specified by The National Imagery Transmission Format Standard (NITFS). NITFS is the DoD and Federal Intelligence Community suite of standards for the exchange, storage, and transmission of digital-imagery products and image-related products. Other image formats can be used internally within a single system; however, NITFS is the designated format for interchange between systems. NITFS provides the means for containing information about the image (e.g. sensor parameters, geospatial positioning, etc.), the image itself, image compression, overlay graphics, textual reports, elevation data, location grids, and a wide variety of additional imaging and raster map support data. NITFS supports the dissemination of digital imagery from overhead collection platforms. Guidance on applying the suite of standards composing NITFS can be found in NGA Document STDI-0005, Implementation Practices of the NITFS IPON, 29 January 2004. The NITFS allows for Tagged Record Extensions (TREs), which are a collection of data fields that provide space within the NITFS file structure for adding metadata-based functionality. Documented and controlled separately within the NITFS suite of standards, TREs extend NITF functionality with minimal impact on the underlying standard document. TREs may be incorporated into an NITF file while maintaining backward compatibility because the identifier and byte count mechanisms allow applications developed prior to the addition of newly defined data to skip over extension fields they are not designed to interpret. These TREs are described in NGA Document

STDI-0002, The Compendium of Controlled Extensions (CE) for the National Imagery Transmission Format (NITF). STANAG 4545, NATO Secondary Imagery Format (NSIF) documents the NATO agreement to use ISO/IEC BIIF. It is the NATO equivalent of NITF. NSIF Version 1.0 and NITF Version 2.1 have also been documented and internationally registered as a formal profile of BIIF (http://jitic.fhu.disa.mil/nitf/graph_reg/class_pages/BIIF_profile_class.html) The 'Open Skies Treaty' calls out use of a specific profile of BIIF as documented in ISO/IEC 12087-5, Annex E.3, Open Skies Digital Data Exchange Profile example (Informative) (see: <http://www.state.gov/t/ac/rls/fs/12691.htm>)

2003-10-03

The Basic Image Interchange Format (BIIF) is a published international standard. It provides a commercial/international foundation for interoperability in the interchange of imagery and imagery-related data among applications. BIIF provides a data format container for image, symbol, and text, along with a mechanism for including image-related support data.

Standard Abstract

2006-10-25

ISO/IEC 12087 Part 5, Basic Image Interchange Format (BIIF) is a standard developed to provide a foundation for interoperability in the interchange of imagery and imagery-related data among applications. This part of ISO/IEC 12087 provides a detailed description of the overall structure of the format, as well as specification of the valid data and format for all fields defined with BIIF. Annex C contains a model profile in tables to assist in profile development. As part of the 12087 family of image processing and interchange standards, BIIF conforms to the architectural and data object specifications of 12087-1, the Common Architecture for Imaging. BIIF supports a profiling scheme that is a combination of the approaches taken for 12087-2 (PIKS), 10918 (JPEG), 8632 (CGM), and 9973 (The Procedures for Registration of Graphical Items). It is intended that profiles of the BIIF will be established through the normal ISO registration processes. The scope and field of application of this part of ISO/IEC 12087 includes the capability to perpetuate a proven interchange capability in support of commercial and government imagery and other imagery technology domains. This part of ISO/IEC 12087 provides a data format container for image, symbol, and text, along with a mechanism for including image-related support data. This part of ISO/IEC 12087 satisfies the following requirements: - Provides a means whereby diverse applications can share imagery and associated information. - Allows an application to exchange comprehensive information to users with diverse needs or capabilities, allowing each user to select only those data items that correspond to their needs and capabilities. - Minimizes preprocessing and postprocessing of data. - Minimizes formatting overhead, particularly for those applications exchanging only a small amount of data and for bandwidth-limited systems. - Provides extensibility to accommodate future data, including objects

2005-09-06

ISO/IEC 12087 Part 5, Basic Image Interchange Format (BIIF) is a standard developed to provide a foundation for interoperability in the interchange of imagery and imagery-related data among applications. This part of ISO/IEC 12087 provides a detailed description of the overall structure of the format, as well as specification of the valid data and format for all fields defined with BIIF. Annex C contains a model profile in tables to assist in profile development. As part of the 12087 family of image processing and interchange standards, BIIF conforms to the architectural and data object specifications of 12087-1, the Common Architecture for Imaging. BIIF supports a profiling scheme that is a combination of the approaches taken for 12087-2 (PIKS), 10918 (JPEG), 8632 (CGM), and 9973 (The Procedures for Registration of Graphical Items). It is intended that profiles of the BIIF will be established through the normal ISO registration processes. The scope and field of application of this part of ISO/IEC 12087 includes the capability to perpetuate a proven interchange capability in support of commercial and government imagery and other imagery technology domains. This part of ISO/IEC 12087 provides a data format container for image, symbol, and text, along with a mechanism for including image-related support data. This part of ISO/IEC 12087 satisfies the following requirements: - Provides a means

whereby diverse applications can share imagery and associated information. - Allows an application to exchange comprehensive information to users with diverse needs or capabilities, allowing each user to select only those data items that correspond to their needs and capabilities. - Minimizes preprocessing and postprocessing of data. - Minimizes formatting overhead, particularly for those applications exchanging only a small amount of data and for bandwidth-limited systems. - Provides extensibility to accommodate future data, including objects

2003-04-04

BIIF provides a foundation for interoperability in the interchange of imagery and imagery-related data among applications. It provides a detailed description of the overall structure of the format, as well as specification of the valid data content and format for all fields defined within a BIIF file. It provides a data format container for raster, symbol, and text data, along with a mechanism for including image-related support data.

Profiling Questions

- GEOINT: Still Imagery**
- Does your system exchange Still Imagery data with external systems?

Products Incorporating This Standard

Companies with commercially available implementations/products include: BAE Systems, DigitalGlobe, Harris Corporation, ITT Industries, Leica Geosystems, Orblmage, PAR Government Systems, Paragon Imaging, PhotoTelesis, Raytheon, Recon Optical, Research Systems, Inc. (RSI), Sensor Systems, Inc., Space Imaging, and Technology Services Corporation.

Relevant Information

None

Implementation Guidance

Guidance for using/implementing this standard is available from the NITFS Technical Board (NTB) [<http://www.ismc.nga.mil/ntb/>]. In particular, STDI-0005, Implementation Practices for the NITFS (IPON) is available from the NTB web site.

Standard Selection Criteria

Net-Centric Interoperability

ISO/IEC 12087-5, BIIF, is the international standard upon which the National Imagery Transmission Format Standard (NITFS) is based. The NITFS is the common thread of interoperability for the formatting, imagery library storage and cataloging, dissemination, and exploitation of National Technical Means (NTM), Tactical Airborne, and Commercial imaging sources. NITF version 2.1, an implementation profile of BIIF, is the format upon which the Future Imagery Architecture (FIA) is based.

Technical Maturity

The NITF 2.1 profile of the ISO/IEC BIIF Standard has been implemented and fielded since the 1998. The standard supports use of the ISO/IEC 15444-1 standard for imagery compression, JPEG 2000. Commercial implementations of the standard are largely driven by marketability to the DOD and Intelligence community. Companies with commercially available implementations/products include: BAE Systems, DigitalGlobe, Harris Corporation, ITT Industries, Leica Geosystems, Orblmage, PAR Government Systems, Paragon Imaging, PhotoTelesis, Raytheon, Recon Optical, Research Systems, Inc. (RSI), Sensor Systems, Inc., Space Imaging, and Technology Services Corporation.

Public Availability

Available for download from the NITFS Technical Board (NTB) via the following URL: http://www.ismc.nga.mil/ntb/baseline/docs/biif_5/index.html Also available for purchase

from the ISO Store (online): <http://www.iso.org/iso/en/prods-services/ISOstore/store.html>

Implementability

Widely implemented within the DOD and Intelligence Community by National Technical Means (NTM), tactical airborne, commercial satellite imaging systems, imagery library and dissemination systems, and a variety of commercial exploitation workstations. A standards compliance and interoperability test program supports implementation of the capabilities specified within this standard. See entry on Technical Maturity for a partial list of commercial organizations that have developed implementations of this standard

Authority

ISO/IEC JTC 1/SC24, Computer Graphics and Image Processing, developed and maintains this standard. NITF2.1 is a military standard (Mil-Std-2500B) prepared by the National Geospatial-Intelligence Agency (NGA) as an implementation profile of International Standard 12087-5, BIFF. It is the US documentation equivalent of STANAG 4545, NATO Secondary Imagery Format (NSIF). The NITFS Technical Board (NTB) [<http://www.ismc.nga.mil/ntb/>] is the DOD/IC focal point for the open process of maintaining and future development for this standard at ISO/IEC.

Standard Type Military

Keywords for Search None

Standard Identifier **ISO/IEC 13818-1:2000**

Title of Standard

Information technology - Generic coding of moving pictures and associated audio information, Part 1: Systems, 2000 (also known as MPEG-2 Systems)

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2003-04-04	n/a	2003-04-04	2003-04-04	2006-02-21	n/a

Replaced [ISO/IEC 13818-1](#)

Standards Body [ISO](#) [Broken Link?](#)
URL to Access or Acquire <http://www.ansi.org>

Working Group

Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest Application / Messaging TWG

Service Area GEOINT: Motion Imagery

KIPs KIP Family: TRANSPORT - KIP: Global Broadcast System

Standard Applicability

2006-02-21

Application areas for MPEG-2 include: - Internet - DVD - Satellite video - airborne video - surveillance - reconnaissance - intelligence - targeting - Scientific and Industrial - Digital Cinema - Image archives and databases There are a number of standards competing with MPEG-2, but MPEG-2 is by far the most widely used. See <http://www.ismc.nima.mil/misb/>

2003-10-03

Video support services specifies the structure and data formats for the production, exchange, transmission, or use of digital video data. MPEG-2 Main Profile @ Main Level (MP@ML) 4:2:0 systems are fully backward compatible with the MPEG-1 standard. MPEG-2 MP@ML can be used with all video support systems (i.e., storage, broadcast, and network) at bit rates from 3 to 10 Mbps, where limited additional processing is anticipated, operating in either progressive- or interlaced-scan mode, optimally handling the resolution of the ITU-R 601 (International Telecommunication Union) recommendation (i.e., 720 x 480 pixels for the luminance signal and 360 x 480 pixels for the color space). This video support standard for compressed video is mandated.

Standard Abstract

2006-02-21

ISO/IEC 13818-1 defines the systems standards for the MPEG-2 video and audio coding system. It defines both transport streams or program streams. The transport stream is particularly important since it provides the basis for *Xon2*. *Xon2* is the name of the DoD activity to support the *seamless* rollout of advanced video compression technologies without disrupting current and future operations and systems. *X* defines existing or future video compression technologies and *on2* refers to the use of MPEG-2 transport streams and files. The DoD has already successfully deployed *2on2* payloads,

using standards compliant MPEG-2 compressed video elementary streams, audio elementary streams, and SMPTE KLV encoded metadata as MPEG-2 private data streams in support of unmanned aerial vehicle (UAV) operations. Building on this baseline 2on2 capability, Xon2 will provide a migration path to inject improved compressions technologies, which will yield improved image quality and / or reduced bandwidths. - Specifies decoding processes for multiple video and audio channels; - Specifies a code stream syntax at the system layer; - Specifies a file format.

2003-04-04

MPEG-2 is an open international standard currently in 9 parts. Part 1 addresses the combining of one or more elementary streams of video and audio as well as other data into single or multiple streams suitable for storage or transmission; each is optimized for a different set of applications. Part 2 builds on the video compression capabilities of the MPEG-1 standard to offer a wide range of coding tools, including pictures with a color resolution of 4:2:2 and a higher bitrate. Part 3 is a backward-compatible multichannel extension of the MPEG-1 Audio standard. Part 4 specifies how tests can be designed to verify whether bitstreams and decoders meet the requirements specified in parts 1, 2, and 3. Part 5, technically not a standard but a technical report, gives a full software implementation of the first three parts of the MPEG-1 standard. Part 6, Digital Storage Media Command and Control (DSM-CC) specifies a set of protocols which provides the control functions and operations specific to managing MPEG-1 and MPEG-2 bitstreams. Part 7 specifies a multichannel audio coding algorithm not constrained to be backward-compatible with MPEG-2 Audio. Part 8 was discontinued for lack of industry interest. Part 9 specifies the real-time interface (RTI) to transport stream decoders which may be used to adapt to all appropriate networks carrying transport streams. And, finally, Part 10 will address the conformance testing of DSM-CC.

Profiling Questions

GEOINT: Motion Imagery • Does your system use MPEG-2 Systems for standard and high-definition compression or does your system require support for compressed video?

Products Incorporating This Standard

Companies with commercially available implementations/products include: Adobe, Analog Devices, Avid, Aware, BAE, Intel, ITT Industries, HP, Kodak, Leitch, Matrox Imaging, Motorola, NEC, PAR Government Systems, Panasonic, Pinnacle, Quantel, Ricoh, Scientific Atlanta, Siemens, Sony, Snell & Wilcox, Telestream, Tales, Texas Instruments, Thomson, Yahoo, and many others. Non-native (plug-in) software is also available for Internet Explorer, Netscape and Windows Media 9 Series.

Relevant Information

None

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

MPEG-2 is still the most widely-used video compression today. DVDs, satellite delivered services such as DirecTV and DISH, cable delivered services and the new over-the-air digital broadcast services use MPEG-2. MPEG-2 decoders are provided with all computer systems that have DVD readers. The DoD has many systems that employ MPEG-2 and they will continue using MPEG-2 in the distant future. MPEG-2 promotes ease of streaming media within a net-centric environment.

Technical Maturity

The international standard MPEG-2, completed in 1995, is the most widely implemented

video technology standard in the history of ISO/IEC. DVDs, satellite delivered services such as DirecTV and DISH, cable delivered services and the new over-the-air digital broadcast services use MPEG-2. MPEG-2 decoders are provided with all computer systems that have DVD readers. MPEG-4, Part 10/ H.264 is the new standard, which will be used in many new systems. The MPEG-2 standard is so widely deployed that it will be many years before it will be significantly replaced.

Public Availability

Available for purchase from the ISO Store (online): <http://www.iso.org/iso/en/prods-services/ISOstore/store.html>

Implementability

MPEG-2 is used by almost all DOD and Intelligence organizations who have video requirements. DVDs, satellite delivered services such as DirecTV and DISH, cable delivered services and the new over-the-air digital broadcast services use MPEG-2. MPEG-2 decoders are provided with all computer systems that have DVD readers.

Authority

ISO/IEC JTC 1/SC 29, Coding of audio, picture, multimedia and hypermedia information, developed and maintains this standard. This standard has been adopted by the DoD/IC Motion Imagery Standards Board (MISB) since 1996 and the MISB is the DOD/IC focal point for the open process of maintaining and future development for this standard at ISO/IEC. [<http://www.ismc.nga.mil/misb/>]

Standard Type

Non-Military

Keywords for Search

IR, ISO/IEC 13818-1, J2K, JPEG, JPEG2000, NITF, NITFS, Video, compression, hyperspectral, interchange, motion imagery, multispectral, raster

Standard Identifier **ISO/IEC 13818-2:2000**

Title of Standard

Information technology - Generic coding of moving pictures and associated audio information, Part 2: Video, 2000 (also known as MPEG-2 Video)

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2003-04-04	n/a	2003-04-04	2003-04-04	2006-02-21	n/a

Replaced [ISO/IEC 13818-2](#)

Standards Body [ISO](#) [Broken Link?](#)
URL to Access or Acquire <http://www.ansi.org>

Working Group

Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest Application / Messaging TWG

Service Area GEOINT: Motion Imagery

KIPs No KIP Found

Standard Applicability

2006-02-21

The Motion Imagery (Video) standard specifies the structure and data formats for the production, exchange, transmission, or use of digital video data. MPEG-2 Main Profile @ Main Level (MP@ML) 4:2:0 systems are fully backward compatible with the MPEG-1 standard. MPEG-2 MP@ML can be used with all video support systems (i.e., storage, broadcast, and network) at bit rates from 3 to 10 Mbps, where limited additional processing is anticipated, operating in either progressive- or interlaced-scan mode, optimally handling the resolution of the ITU-R 601 (International Telecommunication Union) recommendation (i.e., 720 x 480 pixels for the luminance signal and 360 x 480 pixels for the color space). Application areas for MPEG-2 include: - Internet - DVD - Satellite video - airborne video - surveillance - reconnaissance - intelligence - targeting - Scientific and Industrial - Digital Cinema - Image archives and databases There are a number of standards competing with MPEG-2, but MPEG-2 is by far the most widely used. See <http://www.ismc.nima.mil/misb/>

2003-10-03

Video support services specifies the structure and data formats for the production, exchange, transmission, or use of digital video data. MPEG-2 Main Profile @ Main Level (MP@ML) 4:2:0 systems are fully backward compatible with the MPEG-1 standard. MPEG-2 MP@ML can be used with all video support systems (i.e., storage, broadcast, and network) at bit rates from 3 to 10 Mbps, where limited additional processing is anticipated, operating in either progressive- or interlaced-scan mode, optimally handling the resolution of the ITU-R 601 (International Telecommunication Union) recommendation (i.e., 720 x 480 pixels for the luminance signal and 360 x 480 pixels for the color space). This video support standard for compressed video is mandated.

Standard Abstract

2006-02-21

ISO/IEC 13818-2 defines the video standards for the MPEG-2 system. It allows the compression of the large video stream to an amount manageable over many communications systems. ISO/IEC 13818-2 - Specifies extended decoding processes for converting compressed image data to reconstructed image data; - Specifies an extended code stream syntax containing information for interpreting the compressed image data; - Provides guidance on extended encoding processes for converting source image data to compressed image data; - Provides guidance on how to implement these processes in practice.

2003-04-04

MPEG-2 is an open international standard currently in 9 parts. Part 1 addresses the combining of one or more elementary streams of video and audio as well as other data into single or multiple streams suitable for storage or transmission; each is optimized for a different set of applications. Part 2 builds on the video compression capabilities of the MPEG-1 standard to offer a wide range of coding tools, including pictures with a color resolution of 4:2:2 and a higher bitrate. Part 3 is a backward-compatible multichannel extension of the MPEG-1 Audio standard. Part 4 specifies how tests can be designed to verify whether bitstreams and decoders meet the requirements specified in parts 1, 2, and 3. Part 5, technically not a standard but a technical report, gives a full software implementation of the first three parts of the MPEG-1 standard. Part 6, Digital Storage Media Command and Control (DSM-CC) specifies a set of protocols which provides the control functions and operations specific to managing MPEG-1 and MPEG-2 bitstreams. Part 7 specifies a multichannel audio coding algorithm not constrained to be backward-compatible with MPEG-2 Audio. Part 8 was discontinued for lack of industry interest. Part 9 specifies the real-time interface (RTI) to transport stream decoders which may be used to adapt to all appropriate networks carrying transport streams. And, finally, Part 10 will address the conformance testing of DSM-CC.

Profiling Questions

GEOINT: Motion Imagery • Does your system require support for compressed video?

Products Incorporating This Standard

Companies with commercially available implementations/products include: Adobe, Analog Devices, Avid, Aware, BAE, Intel, ITT Industries, HP, Kodak, Leitch, Matrox Imaging, Motorola, NEC, PAR Government Systems, Panasonic, Pinnacle, Quantel, Ricoh, Scientific Atlanta, Siemens, Sony, Snell & Wilcox, Telestream, Tales, Texas Instruments, Thomson, Yahoo, and many others. Non-native (plug-in) software is also available for Internet Explorer, Netscape and Windows Media 9 Series.

Relevant Information

None

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

MPEG-2 is still the most widely-used video compression today. DVDs, satellite delivered services such as DirecTV and DISH, cable delivered services and the new over-the-air digital broadcast services use MPEG-2. MPEG-2 decoders are provided with all computer systems that have DVD readers. The DoD has many systems that employ MPEG-2 and they will continue using MPEG-2 in the distant future. MPEG-2 video compression has provided the reduction in data to allow motion imagery to be widely used in military and civilian applications.

Technical Maturity

The international standard MPEG-2, completed in 1995, is the most widely implemented

video technology standard in the history of ISO/IEC. DVDs, satellite delivered services such as DirecTV and DISH, cable delivered services and the new over-the-air digital broadcast services use MPEG-2. MPEG-2 decoders are provided with all computer systems that have DVD readers. MPEG-4, Part 10/ H.264 is the new standard, which will be used in many new systems. The MPEG-2 standard is so widely deployed that it will be many years before it will be significantly replaced.

Public Availability

Available for purchase from the ISO Store (online): <http://www.iso.org/iso/en/prods-services/ISOstore/store.html>

Implementability

MPEG-2 is used by almost all DOD and Intelligence organizations who have video requirements. DVDs, satellite delivered services such as DirecTV and DISH, cable delivered services and the new over-the-air digital broadcast services use MPEG-2. MPEG-2 decoders are provided with all computer systems that have DVD readers.

Authority

ISO/IEC JTC 1/SC 29, Coding of audio, picture, multimedia and hypermedia information, developed and maintains this standard. This standard has been adopted by the DoD/IC Motion Imagery Standards Board (MISB) since 1996 and the MISB is the DOD/IC focal point for the open process of maintaining and future development for this standard at ISO/IEC. [<http://www.ismc.nga.mil/misb/>]

Standard Type Non-Military

Keywords for Search IR, ISO/IEC 13818-2, J2K, JPEG, JPEG2000, NITF, NITFS, Video, compression, hyperspectral, interchange, motion imagery, multispectral, raster

practice.

2003-04-04

Used for compressed digital audio systems. MPEG-2 is an open international standard currently in 9 parts. Part 1 addresses the combining of one or more elementary streams of video and audio as well as other data into single or multiple streams suitable for storage or transmission; each is optimized for a different set of applications. Part 2 builds on the video compression capabilities of the MPEG-1 standard to offer a wide range of coding tools, including pictures with a color resolution of 4:2:2 and a higher bitrate. Part 3 is a backward-compatible multichannel extension of the MPEG-1 Audio standard. Part 4 specifies how tests can be designed to verify whether bitstreams and decoders meet the requirements specified in parts 1, 2, and 3. Part 5, technically not a standard but a technical report, gives a full software implementation of the first three parts of the MPEG-1 standard. Part 6, Digital Storage Media Command and Control (DSM-CC) specifies a set of protocols which provides the control functions and operations specific to managing MPEG-1 and MPEG-2 bitstreams. Part 7 specifies a multichannel audio coding algorithm not constrained to be backward-compatible with MPEG-2 Audio. Part 8 was discontinued for lack of industry interest. Part 9 specifies the real-time interface (RTI) to transport stream decoders which may be used to adapt to all appropriate networks carrying transport streams. And, finally, Part 10 will address the conformance testing of DSM-CC.

Profiling Questions

- Audio Data Interchange** • Does your system support Audio for Video Imagery Systems?
GEOINT: Motion Imagery • Does your system use MPEG-2 Systems for standard and high-definition compression or does your system require support for compressed video?

Products Incorporating This Standard

Companies with commercially available implementations/products include: Adobe, Analog Devices, Avid, Aware, BAE, Intel, ITT Industries, HP, Kodak, Leitch, Matrox Imaging, Motorola, NEC, PAR Government Systems, Panasonic, Pinnacle, Quantel, Ricoh, Scientific Atlanta, Siemens, Sony, Snell & Wilcox, Telestream, Tales, Texas Instruments, Thomson, Yahoo, and many others. Non-native (plug-in) software is also available for Internet Explorer, Netscape and Windows Media 9 Series.

Relevant Information

None

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

MPEG-2 is still the most widely-used video compression today. DVDs, satellite delivered services such as DirecTV and DISH, cable delivered services and the new over-the-air digital broadcast services use MPEG-2. MPEG-2 decoders are provided with all computer systems that have DVD readers. The DoD has many systems that employ MPEG-2 and they will continue using MPEG-2 in the distant future. MPEG-2 video and audio compression have provided the reduction in data to allow motion imagery to be widely used in military and civilian applications.

Technical Maturity

The international standard MPEG-2, completed in 1995, is the most widely implemented video technology standard in the history of ISO/IEC. DVDs, satellite delivered services such as DirecTV and DISH, cable delivered services and the new over-the-air digital broadcast services use MPEG-2. MPEG-2 decoders are provided with all computer systems that have DVD readers. The MPEG-2 audio compression standard is so widely

deployed that it will be many years before it will be significantly replaced.

Public Availability

Available for purchase from the ISO Store (online): <http://www.iso.org/iso/en/prods-services/ISOstore/store.html>

Implementability

MPEG-2 is used by almost all DOD and Intelligence organizations who have video requirements. DVDs, satellite delivered services such as DirecTV and DISH, cable delivered services and the new over-the-air digital broadcast services use MPEG-2. MPEG-2 audio decoders are provided with all computer systems that have DVD readers.

Authority

ISO/IEC JTC 1/SC 29, Coding of audio, picture, multimedia and hypermedia information, developed and maintains this standard. This standard has been adopted by the DoD/IC Motion Imagery Standards Board (MISB) since 1996 and the MISB is the DOD/IC focal point for the open process of maintaining and future development for this standard at ISO/IEC. [<http://www.ismc.nga.mil/misb/>]

Standard Type

Non-Military

Keywords for Search

Audio, IR, ISO/IEC 13818-3, J2K, JPEG, JPEG2000, NITF, NITFS, compression, hyperspectral, interchange, motion imagery, multispectral, music, raster, sound

Standard Identifier ISO/IEC 15444-1:2004 | ITU-T Rec. T.800

Title of Standard
Information Technology -- JPEG 2000 image coding system: Core coding system

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/ Retired
2005-09-06	n/a	2005-09-06	2005-09-06	2007-11-06	n/a

Standards Body [ISO](#) [Broken Link?](#)
URL to Access or Acquire <http://www.ansi.org>

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest No Secondary Interest

Service Area GEOINT: Still Imagery

KIPs KIP Family: TRANSPORT - KIP: Integrated Broadcast System
 KIP Family: TRANSPORT - KIP: IBS

Standard Applicability

2007-11-08

Application areas for JPEG 2000 include:- Internet - Digital Photography - Medical Imaging - Wireless imaging - Document imaging - Pre-Press - Remote sensing and GIS - Cultural Heritage - Scientific and Industrial - Digital Cinema - Image archives and databases - Surveillance - Printing and scanning - FacsimileSee <http://www.jpeg.org/apps/index.html> for more details on general applicability of JPEG 2000. For remote sensing and imaging applications, the use/application of JPEG 2000 is specified by The National Imagery Transmission Format Standard (NITFS) and related NATO standards documentation. NITFS is the DoD and Federal Intelligence Community suite of standards for the exchange, storage, and transmission of digital-imagery products and image-related products. Other image formats can be used internally within a single system; however, NITFS is the designated format for interchange between systems. NITFS provides the means for containing information about the image (e.g. sensor parameters, geospatial positioning, etc.), the image itself, image compression, overlay graphics, textual reports, elevation data, location grids, and a wide variety of additional imaging and raster map support data. NITFS supports the dissemination of digital imagery from overhead collection platforms. Guidance on applying the suite of standards composing NITFS can be found in NGA Document STDI-0005, Implementation Practices of the NITFS IPON, 29 January 2004. See <http://www.ismc.nima.mil/ntb/>.

2005-09-06

Application areas for JPEG 2000 include:- Internet - Digital Photography - Medical Imaging - Wireless imaging - Document imaging - Pre-Press - Remote sensing and GIS - Cultural Heritage - Scientific and Industrial - Digital Cinema - Image archives and databases - Surveillance - Printing and scanning - FacsimileSee <http://www.jpeg.org/apps/index.html> for more details on general applicability of JPEG 2000. For remote sensing and imaging applications, the use/application of JPEG 2000 is specified by The National Imagery Transmission Format Standard (NITFS) and related NATO standards documentation. NITFS is the DoD and Federal Intelligence Community suite of standards for the exchange, storage, and transmission of digital-imagery products and image-related

products. Other image formats can be used internally within a single system; however, NITFS is the designated format for interchange between systems. NITFS provides the means for containing information about the image (e.g. sensor parameters, geospatial positioning, etc.), the image itself, image compression, overlay graphics, textual reports, elevation data, location grids, and a wide variety of additional imaging and raster map support data. NITFS supports the dissemination of digital imagery from overhead collection platforms. Guidance on applying the suite of standards composing NITFS can be found in NGA Document STDI-0005, Implementation Practices of the NITFS IPON, 29 January 2004. See <http://www.ismc.nima.mil/ntb/>

Standard Abstract

2007-11-08

ISO/IEC 15444-1:2004 | ITU-T Rec. T.800 defines a set of lossless (bit-preserving) and lossy compression methods for coding bi-level, continuous-tone gray-scale, palletized color, or continuous-tone color digital still images. ISO/IEC 15444-1:2004 | ITU-T Rec. T.800- Specifies decoding processes for converting compressed image data to reconstructed image data; - Specifies a code stream syntax containing information for interpreting the compressed image data; - Specifies a file format; - Provides guidance on encoding processes for converting source image data to compressed image data; - Provides guidance on how to implement these processes in practice. Added 2007-08 For systems implementing the National Imagery Transmission Format Standard (NITFS) [or its NATO instantiation, the NATO Secondary Imagery Transmission Format (NSIF)], the ISO/IEC BIF Profile for JPEG 2000 (BPJ2K) establishes (profiles) the features and functional behavior that must be supported when using the JPEG 2000 image compression algorithms.

2005-09-06

ISO/IEC 15444-1:2004 | ITU-T Rec. T.800 defines a set of lossless (bit-preserving) and lossy compression methods for coding bi-level, continuous-tone gray-scale, palletized color, or continuous-tone color digital still images. ISO/IEC 15444-1:2004 | ITU-T Rec. T.800- Specifies decoding processes for converting compressed image data to reconstructed image data; - Specifies a code stream syntax containing information for interpreting the compressed image data; - Specifies a file format; - Provides guidance on encoding processes for converting source image data to compressed image data; - Provides guidance on how to implement these processes in practice.

Profiling Questions

- GEOINT: Still Imagery**
- Does your system exchange Still Imagery data with external systems?

Products Incorporating This Standard

Companies with commercially available implementations/products include: Adelante Technologies, Adobe, Alma Technologies, Amphion, Analog Devices, Aware, BAE, Corel, CSMaP, Digital Signal Processing Group, ER Mapper, Frontier Mapping, Intel, ITT Industries, Kakadu, Kodak, Leica Geosystems, LizardTech, Luna, LuraTech, MapInfo, MapQuest, Matrox Imaging, NEC, Nikon Instruments, PAR Government Systems, Paragon Imaging, PCI Geomatics, Picture Elements Inc., Power Image, Research Systems, Inc., Ricoh, Sensor Systems, Inc., Sony, TASC, Technology Services Corporation, Texas Instruments, WIS Technologies, Xerox, Yahoo, and many others. Non-native (plug-in) software is also available for Internet Explorer, Netscape and Windows Media 9 Series.

Relevant Information

Added 2007-08 The following are implementation profiles of ISO/IEC 15444-1:2004 | ITU-T Rec. T.800, JPEG 2000, Part 1: BIF Profile for JPEG 2000 (BPJ2K) [For use with NITFS and NSIF]. This citation authored by the GWG NITFS Technical Board (NTB).

Implementation Guidance

Added 2007-08 For systems implementing the National Imagery Transmission Format

Standard (NITFS) [or its NATO instantiation, the NATO Secondary Imagery Transmission Format (NSIF)], the ISO/IEC BIIF Profile for JPEG 2000 (BPJ2K) establishes (profiles) the features and functional behavior that must be supported when using the JPEG 2000 image compression algorithms.

Standard Selection Criteria

Net-Centric Interoperability

ISO/IEC 15444, Part 1, JPEG 2000, is the preferred imagery compression standard for use with the National Imagery Transmission Format Standard (NITFS). The NITFS is the common thread of interoperability for the formatting, imagery library storage and cataloging, dissemination, and exploitation of National Technical Means (NTM), Tactical Airborne, and Commercial imaging sources. The Future Imagery Architecture (FIA) uses JPEG 2000 in conjunction with NITF version 2.1. JPEG 2000 promotes ease of scalability and interactive image viewing and exploitation within a net-centric environment.

Technical Maturity

The earlier international standard for JPEG, completed in 1994, is the most widely implemented information technology standard in the history of ISO/IEC. This next generation standard, JPEG 2000, is a new image coding system that uses state-of-the-art compression techniques based on wavelet technology. Its architecture lends itself to a wide range of uses from portable digital cameras through to advanced pre-press, medical imaging, remote sensing, and other key sectors. It is in the process of being widely implemented. See 'Products Incorporating This Standard' for a partial list of commercial organizations that have developed implementations of this standard.

Public Availability

Available for purchase from the ISO Store (online), <http://www.iso.org/iso/en/prods-services/ISOstore/store.html>. Added 2007-08 It is also available for purchase from the ANSI eStandards Store, <http://webstore.ansi.org>. Use of this standard with the National Imagery Transmission Format Standard (NITFS) and the NATO Secondary Imagery Format (NSIF) is documented in the BIIF Profile for JPEG 2000 which is freely available via the ISO/IEC JTC 1/SC 24 International Register of Items, http://jtc.fhu.disa.mil/nitf/graph_reg/welcome.html.

Implementability

Initial implementations within the DOD and Intelligence Community by National Technical Means (NTM), tactical airborne, commercial satellite imaging systems, imagery library and dissemination systems, and a variety of commercial exploitation workstations is underway. A standards compliance and interoperability test program supports implementation of the capabilities specified within this standard. See entry on 'Technical Maturity/Products Incorporating this Standard' for a partial list of commercial organizations that have developed implementations of this standard.

Authority

ISO/IEC JTC 1/SC 29, Coding of audio, picture, multimedia and hypermedia information, developed and maintains this standard. The NITFS Technical Board (NTB) [<http://www.ismc.nga.mil/ntb/>] is the DOD/IC focal point for the open process of maintaining and future development for this standard at ISO/IEC.

Standard Type Non-Military

Keywords for Search None

Standard Identifier ISO/IEC 15444-9:2005

Title of Standard

Information technology -- JPEG 2000 image coding system: Interactivity tools, APIs and protocols, November 17, 2005

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2006-10-25	n/a	2006-10-25	2006-10-25	2006-10-25	n/a

Standards Body

[ISO](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.ansi.org>

Working Group

Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest Medical Technical Working Group (MTWG)

Service Area

GEOINT: Motion Imagery

KIPs

No KIP Found

Standard Applicability

2006-10-25

ISO/IEC 15444-9:2005 (JPIP) defines a protocol for the interactive delivery of JPEG 2000 compressed imagery and Motion JPEG 2000 compressed video (see ISO/IEC 15444-1, ISO/IEC 15444-2 and ISO/IEC 15444-3). It enables the scalable dissemination of large imagery over low-bandwidth communications links. It does this by providing a client/server framework for the interactive dissemination of portions of compressed imagery without the need to transmit an entire compressed image file. Oftentimes a mere 1-5% of a compressed image is transmitted in a typical JPIP session. Technologies that compete with JPIP are Google Earth which uses a proprietary compression and streaming protocol and Google Maps/Microsoft Virtual Earth. The Google Earth approach is very similar to that of JPEG 2000/JPIP, but it uses a proprietary compression and streaming protocol. The Google Earth/Microsoft Virtual Earth approaches use AJAX-based serving of small ortho-rectified image tiles and client-side tile mosaicing. The net effect of these technologies is to allow the interactive roam and zoom of large image datasets over the Web. There are two basic techniques employed but only JPEG 2000/JPIP is an open standard.

Standard Abstract

2006-10-25

ISO/IEC 15444-9:2005 defines, in an extensible manner, syntaxes and methods for the remote interrogation and optional modification of JPEG 2000 codestreams and files in accordance with their definition in the following parts of ISO/IEC 15444: ISO/IEC 15444-1 and its definition of a JPEG 2000 codestream and JP2 file format; and the JPEG 2000 family of file formats as defined in further parts of ISO/IEC 15444. In ISO/IEC 15444-9:2005, the defined syntaxes and methods are referred to as the JPEG 2000 Interactive Protocol, "JPIP", and interactive applications using JPIP are referred to as "JPIP systems".

Profiling Questions

GEOINT: Motion Imagery • Is there a requirement to interactively disseminate large imagery (either still, motion or both) in a bandwidth constrained environment? Note, "large" and "bandwidth-constrained" are relative metrics. What is relevant is how fast does imagery move within?

Products Incorporating This Standard

Kakadu, ITT-VIS RAIS/RAIV/MAIV

Relevant Information

To promote consistent and interoperable application of this standard, those planning to implement this standard are requested to contact the Geospatial Intelligence Standards Working Group (GWG) to coordinate selection (or development) of common implementation profiles for this standard.

Implementation Guidance

Implementers will be expected to conform to the compliance standards developed by ISO. Additional guidelines and profiles that will be developed by NGA must also be followed.

Standard Selection Criteria

Net-Centric Interoperability

The JPEG 2000 Interactive Protocol (JPIP) defined in Part 9 of the ISO/IEC 15444 series of JPEG 2000 standards is focused on delivering net-centric interactive access to very large holdings of compressed imagery (still and motion) in a scalable fashion across both high and low-speed networks. It also provides the means to manage and associate imagery-related metadata with the interactive delivery of the imagery. Efforts are currently underway within the Open Geospatial Consortium (OGC) to incorporate ISO/IEC 15444-9:2005 (JPIP) and define its use and interaction within Web Coverage Service (WCS), Web Map Service (WMS), and Web Feature Service (WFS) Web services. This is being performed under the Open Web Services Testbed 4 (OWS-4) effort. The goal is to define how a JPIP server may be exposed as a web service that applications can find and interact with.

Technical Maturity

The standard, developed by the ISO/IEC JTC 1/SC 29 between 2001 - 2004, was ratified in 2005. Currently, it has been adopted by the DICOM committee for transmission of JPEG 2000 Medical images. Commercial products are currently available from University of South Wales (Kakadu), ITT-VIS (RAIS/RAIV/MAIV), and Aware Inc. While the standard provides the means to associate metadata with the interactive delivery of imagery, it leaves the specifics regarding the metadata and its management to be defined by the implementing community.

Public Availability

ISO standards can be purchased from the ISO (www.iso.org) or ANSI (webstore.ansi.org)

Implementability

Currently the Air Force is using the standard to deploy interactive, net-centric delivery of imagery holdings. DICOM (the US Medical Standards Organization has adopted this standard) and several products support this standard. Currently the following commercial organization support this standard. Pegasus Imaging Corporation (<http://www.jpg.com/>) LuraTech (<http://www.luratech.com/>) Yakoa (<http://www.yakoa.com/>) Aware Inc. (<http://www.aware.com/products/compression/JPEG2000.html>) Kakadu software (<http://www.kakadusoftware.com/>) Morgon (<http://www.morgan-multimedia.com/JPEG2000/>) ITT (<http://www.ittvis.com/ias/index.asp?>) Open Source

software versions are available in the following locations <http://j2000.org/> and <http://www.openjpeg.org/> Information and Free Committee Drafts of the standard from the standard committee (ISO/IEC/JTC-1/SC 29/WG 1) www.jpeg.org

Authority

This is an international standard that was developed and is maintained by ISO/IEC/JTC-1/SC 29/WG 1. INCITS L3.2 is the United States representative to this ISO committee. This ISO committee meets three times a year to maintain and develop standards associated with image coding. This process is open to all interested nations, companies and organizations. Attendance of the SC 29/WG 1 meetings requires attendance of the appropriate national bodies meetings (e.g. INCITS L3.2 for a US company or organization). NGA, DoD and other Government agencies were part of this committee when the standard was being developed.

Standard Type Non-Military

Keywords for Search None

Standard Identifier ISO/TS 19138:2006

Title of Standard
 Geographic information -- Data quality measures, 22 November 2006

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/ Retired
2007-02-27	n/a	2007-02-27	2007-02-27	2007-02-27	n/a

Standards Body [ISO](#) [Broken Link?](#)
URL to Access or Acquire <http://www.ansi.org>

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest DoD Intelligence

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2007-02-27

This International Technical Specification is applicable for implementing the data quality measures required when evaluating the quality of geographic datasets and assessing their fitness for their intended purpose, additionally it and allows for the reporting of quality evaluation results. This standard along with ISO 19113 Quality Principals:2002 and ISO/TS 19114:2002 Quality evaluation procedures provides for the Quality assessment and reporting for Geospatial datasets.

Standard Abstract

2007-02-27

This Technical Specification defines a set of measures for the data quality sub-elements identified in ISO 19113: 2002 Geographic information - Quality principles. A registry of data quality measures will be established, to include for each measure, a name, possibly alternative names, the referring data quality subelement, an identifier, a definition and a description, and if required parameters. The measures will be applicable when evaluating the quality of geographic datasets and assessing their fitness for their intended purpose. Multiple measures will be defined for each data quality sub-element, and the choice of which to use will depend on the type of the data and its intended purpose.

Profiling Questions

GEOINT: Geospatial

- Is a registry of data quality measures being established, to include for each measure, a name, possibly alternative names, the referring data quality sub-element, an identifier, a definition and a description, and if required, parameters?

Products Incorporating This Standard

This is a new standard and Implementation Profiles are being developed by FGDC, ESRI, Intergraph, and OGC all of who are developing implementations of the standard.

Relevant Information

This citation was authored by the GWG Metadata Focus Group.

Implementation Guidance

ISO/TS 19138 is among a suite of geospatial standards developed by ISO TC 211 widely used by the geospatial community. The objective is to promote a common suite of geospatial standards to assist the geospatial community in developing interoperable and harmonized functions.

Standard Selection Criteria

Net-Centric Interoperability

This Technical Specification (in conjunction with other ISO TC 211 standards) will form the basis for the interchange and distribution of future geospatial intelligence data. Specifically ISO 19113 and ISO 19114 which are complimentary standards and ISO 19115: 2003 Metadata with Corrigendum provide the essential elements for implementing quality measures.

Technical Maturity

This is a mature International Technical Specification. Drafts of this standard were reviewed by experts from a number of nations, and the standard was approved by multiple national standards bodies, including the USA (ANSI). Additionally Implementation Profiles are being developed by the OGC, FGDC, and ESRI.

Public Availability

This Technical Specification is publicly available, in either hardcopy (paper) or softcopy (PDF) form, from the International Standards Organization and/or ANSI.

Implementability

The Technical Specification is widely accepted and used by multiple Geospatial organizations and organizations such as the FGDC, ESRI, Intergraph, and OGC all of who are developing implementations of the standard.

Authority

This is an International Standard, published by the ISO (International Organization for Standardization).

Standard Type Non-Military

Keywords for Search None

Standard Identifier ISO/TS 19139:2007

Title of Standard
 Geographic information -- Metadata -- XML schema implementation, 17 April 2007

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/ Retired
2007-11-06	n/a	2007-11-06	2007-11-06	2007-11-06	n/a

Standards Body [ISO](#) [Broken Link?](#)
URL to Access or Acquire <http://www.ansi.org>

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest No Secondary Interest

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2007-11-08

ISO/TS 19139 is applicable to provide a common XML specification for describing, validating and exchanging geographic metadata. It is intended to promote interoperability, and exploit ISO 19115's advantages in a concrete implementation specification.

Standard Abstract

2007-11-08

This part of the ISO 191XX Family of Standards provides a spatial metadata XML (spatial metadata eXtensible Mark-up Language (smXML)) encoding, an XML schema implementation derived from ISO 19115, Geographic information Metadata. The metadata includes information about the identification, constraint, extent, quality, spatial and temporal reference, distribution, lineage, and maintenance of the digital geographic dataset. ISO/TS 19139 is designed to provide a common XML specification for describing, validating and exchanging geographic metadata. The Standard is intended to promote interoperability, and exploit ISO 19115's advantages in a concrete implementation specification. The implementation specification details the following: The XML schemas will be derived directly from the harmonized ISO 191XX UML master model to ensure one common schema. The transformation of the ISO 19115 and related ISO/TC 211 abstract UML models into XML schema. For informative purposes, scripts for performing the transformation are referenced. This process follows the guidelines defined by ISO 19106. Provides dataset implementation and extension examples. Provides an abstract conformance test suite. Although this specification is directly intended to describe geographic metadata for datasets, the nature of the XML schema allows the schemas defined here to be applied to datasets, aggregations of datasets, geographic features, feature attributes, feature types, and feature attribute types, etc. While the specifics of non-dataset usage of the XML schemas defined here are outside the scope of this specification, these XML schemas are designed to support these types of implementations.

Profiling Questions

GEOINT: Geospatial

- Are you using the ISO 19115 Geographic Information Metadata Standard or does your system require an International Standard that provides a clear procedure for the description of digital geographic datasets so that users will be able to determine whether the data in a holding will be of use to them and how to access the data or do you need a common XML specification for describing, validating and exchanging geospatial metadata?

Products Incorporating This Standard

ISO/TS 19139 has been incorporated in the National System for Geospatial Intelligence (NSG) Geospatial Core Metadata Profile, v1.0, August 2007, which has been adopted by the NGA and others through programs such as GeoScout, the Air Force Distributed Common Ground System (AF-DCGS), Analytical Spatial Data Initiative (ASDI), Multinational Geospatial Co-Production Group Technical Group (MGCP), and Geospatial Knowledge Base-Feature (GKB-F).

Relevant Information

In addition to 19139, the following are profiled in the "National System for Geospatial Intelligence (NSG) Geospatial Core Metadata Profile for Discovery and Retrieval, v1.0, August 2007" the Department of Defense Discovery Metadata Specification (DDMS), the ICISM Data Element Dictionary v2.0.3, and the Dublin Core Metadata element Set. This citation was authored by the GWG Metadata Focus Group.

Implementation Guidance

ISO/TS 19139 is among a suite of geospatial standards developed by ISO TC 211 widely used by the geospatial community. The objective is to promote a common suite of geospatial standards to assist the geospatial community in developing interoperable and harmonized functions. This part of the ISO 191XX Family of Standards provides a spatial metadata XML (spatial metadata eXtensible Mark-up Language (smXML)) encoding, an XML schema implementation derived from ISO 19115, Geographic information -- Metadata. The metadata includes information about the identification, constraint, extent, quality, spatial and temporal reference, distribution, lineage, and maintenance of the digital geographic dataset. ISO/TS 19139 is designed to provide a common XML specification for describing, validating and exchanging geographic metadata. It is intended to promote interoperability, and exploit ISO 19115's advantages in a concrete implementation specification. The implementation specification details the following: The XML schemas will be derived directly from the harmonized ISO 191XX UML model to ensure one common schema. The transformation of the ISO 19115 and related ISO/TC 211 abstract UML models into XML schema. For informative purposes, scripts for performing the transformation are referenced. This process follows the guidelines defined by ISO 19118 Geographic information - Encoding. Provides dataset implementation and extension examples. Provides an abstract conformance test suite. Although this specification is directly intended to describe geographic metadata for datasets, the nature of the XML schema allows the schemas defined here to be applied to datasets, aggregations of datasets, geographic features, feature attributes, feature types, and feature attribute types, etc. While the specifics of non-dataset usage of the XML schemas defined here are outside the scope of this specification, these XML schemas are designed to support these types of implementations. In addition, 19139 is profiled with the Department of Defense Discovery Metadata Specification (DDMS), the ICISM Data Element Dictionary v2.0.3, and the Dublin Core Metadata element Set, in the "National System for Geospatial Intelligence (NSG) Geospatial Core Metadata Profile, v1.0, August 2007" which establishes the necessary full set of metadata to satisfy geospatial needs.

Standard Selection Criteria

Net-Centric Interoperability

This standard (in conjunction with other ISO TC 211 standards) will form the basis for the interchange and distribution of future geospatial intelligence data. It is to be used specifically with ISO 19115.

Technical Maturity

This is a mature International Standard. Drafts of this standard were reviewed by experts from a number of nations, and the standard was approved by multiple national standards bodies, including the USA (ANSI). Examples of military systems that use this standard are identified in the Products Incorporating this Standard section.

Public Availability

This standard is publicly available and may be purchased in either hardcopy (paper) or softcopy (PDF) form from the International Organization for Standardization (<http://www.iso.org>) or ANSI (<http://www.ansi.org>).

Implementability

This standard has been adopted by the Open Geospatial Consortium (OGC) under an agreement with ISO TC 211.

Authority

ISO TC 211 - Geographic Information <http://www.isotc211.org/> <http://www.iso.org/>
<http://www.ansi.org/>

Standard Type Non-Military

Keywords for Search None

Standard Identifier ITU-R TF460-6

Title of Standard
Standard-frequency and time-signal emissions 02/02

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2008-04-03	n/a	2008-04-03	2008-04-03	2008-04-03	n/a

Standards Body [ITU](#) [Broken Link?](#)
URL to Access or Acquire <http://www.itu.int>

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest No Secondary Interest

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2008-03-27

Coordinated Universal Time (UTC), traceable to the UTC U.S. Naval Observatory (USNO) and maintained by the USNO, shall be used for time-of-day information exchanged among DoD systems. Time-of-day information is exchanged for numerous purposes including time-stamping events, determining ordering, and synchronizing clocks. Traceability to UTC USNO may be achieved by various means depending on system-specific accuracy requirements. These means may range from a direct reference via a GPS time code receiver to a manual interface involving an operator, wristwatch, and telephone-based time service. It is important to note that ISO 8601 (DISR mandated) specifies a character string format for expressing date and time. It does specify that UTC shall be used but does not specify what UTC is. It cites ITU 460-5 as the normative reference that specifies UTC. In other words, there is a mandated standard that references a retired one. ITU 460-5 should not have been retired without inclusion of ITU 460-6. This CR is to rectify that oversight.

Standard Abstract

2008-03-27

Recommends that all standard-frequency and time-signal emissions conform as closely as possible to Coordinated Universal Time (UTC) (see Annex I); that the time signals should not deviate from UTC by more than one millisecond; that the standard frequencies should not deviate by more than 1 part in 10, and that the time signals emitted from each transmitting station should bear a known relation to the phase of the carrier; 2. that standard-frequency and time-signal emissions, and other time-signal emissions intended for scientific applications (with the possible exception of those dedicated to special systems) should contain information on the difference between UT1 and UTC (see Annexes I and II); 3. that this document be transmitted by the Director, CCIR, to all administrations Members of the ITU, to IMO, ICAO, the CGPM, the BIPM, the IERS, the International Union of Geodesy and Geophysics (IUGG), the International Union of Radio Science (URSI) and the International Astronomical Union (IAU); 4. that the standard-frequency and time-signal emissions should conform to RECOMMENDS 1 and 2 above as from 1 January 1975.

Profiling Questions

GEOINT: Geospatial • Does your system require precision time?

Products Incorporating This Standard

DoD Systems

Relevant Information

None

Implementation Guidance

DoDD 4650.05, USNO

Standard Selection Criteria

Net-Centric Interoperability

Coordinated Universal Time (UTC), traceable to the UTC U.S. Naval Observatory (USNO) and maintained by the USNO, shall be used for time-of-day information exchanged among DoD systems. Time-of-day information is exchanged for numerous purposes including time-stamping events, determining ordering, and synchronizing clocks. Traceability to UTC USNO may be achieved by various means depending on system-specific accuracy requirements. These means may range from a direct reference via a GPS time code receiver to a manual interface involving an operator, wristwatch, and telephone-based time service. The UTC definition contained in this standard, traceable to UTC USNO, needs to be mandated.

Technical Maturity

This standard has been used in the realization of UTC since it was first implemented in 1972. It has undergone six revisions in an ongoing process by the ITU to improve the standard. The latest revision was ratified in 2002 and has been in use in DoD systems since that time.

Public Availability

See ITU web site

Implementability

This standard is supported by the USNO, which is chartered to maintain Precision Time and Time Interval Standards (PTTI) for DoD. The standard has been used in the realization of UTC since it was first implemented in 1972 and is in use in a wide range of DoD programs, systems, and operations.

Authority

DoDD 4650.05 (August 2007) states, "The Secretary of the Navy shall direct the U.S. Naval Observatory to: (4.13.1) Develop and maintain the standards for Precise Time and Time Interval (PTTI) services and the celestial reference frame for the DoD Components (4.13.2) Provide representatives to PNT committees and working groups, as required (4.13.3) Serve as the DoD PTTI Manager." In support this directive the Navy has supported development of the key PTTI standard ITU-R TF.460-6 Standard-frequency and time-signal emissions, 2002.

Standard Type Non-Military

Keywords for Search None

Standard Identifier ITU-T H.264

Title of Standard
Advanced Video Coding for Generic Audio Visual Services, 2005

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2006-06-27	n/a	2006-06-27	2006-06-27	2006-06-27	n/a

Replaced [ITU-T H.248](#)

Standards Body [ITU](#) [Broken Link?](#)
URL to Access or Acquire <http://www.itu.int>

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest Collaboration TWG

Service Areas GEOINT: Motion Imagery
Video Teleconferencing

KIPs No KIP Found

Standard Applicability

2006-06-27

For IP-based, broadcast-quality video at rates of less than 1 Mbps, the ISO/IEC MPEG and the ITU-T Video Coding Expert Group (VCEG) have joined efforts in the development of the emerging H.26L standard which was initiated by the ITU-T committee. The new standard is designated as ITU-T H.264 and MPEG-4 Part 10 and can be used at all bit rates to achieve higher quality at lower data rates.

Standard Abstract

2006-06-27

This Recommendation /International Standard was developed in response to the growing need for higher compression of moving pictures for various applications such as motion imagery, digital storage media, television broadcasting, internet streaming, and communication. It is also designed to enable the use of the coded video representation in a flexible manner for a wide variety of network environments. The use of this Recommendation | International Standard allows motion imagery to be manipulated as a form of computer data and to be stored on various storage media, transmitted and received over existing and future networks and distributed on existing and future broadcasting channels.

Profiling Questions

- GEOINT: Motion Imagery** • Do your motion imagery terminals operate on IP-based broadcast-quality video at rates of less than 1 Mbps or do you need the best quality motion imagery at the lowest bandwidth?
- Video Teleconferencing** • Do your VTC terminals operate on IP-based broadcast-quality video at rates of less than 1 Mbps?

Products Incorporating This Standard

None

Relevant Information

Supersedes: ITU-T H.264, Advanced Video Coding, July 2002

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

This forward-looking standard can be used on the internet as a component of web services. It can operate over IP based networks as well as other networks. The standard further promotes interoperability because it is platform-independent. One of the tenets of net-centricity is TPPU (Task, Post, Process, Use), because existing video standards produced video at a much higher data rate (or size), many video feeds (like Predator UAV) had to be significantly processed before being sent to the warfighter because of the limited bandwidth of tactical communications. The better compression afforded by H.264 should make practical to stream live UAV video to a much greater variety of tactical users as well as to transmit higher resolution motion imagery to image analyst.

Technical Maturity

The standard is mature and stable for motion imagery applications, and commercial products exist. Major vendors support this standard.

Public Availability

The ITU specification is publicly available for a fee from the ITU. The website is www.itu.int.

Implementability

This standard is widely commercially implemented as a video compression standard for low to high bit rate communication. The major codec vendors have implemented this standard.

Authority

This international standard was developed and is maintained jointly by the ITU and ISO through an open process.

Standard Type Non-Military

Keywords for Search None

Standard Identifier ITU-T T.81

Title of Standard

Digital Compression and Coding of Continuous-tone Still Images - Requirements and Guidelines, September 1992

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2002-07-17	n/a	2002-07-17	2002-07-17	2007-06-27	n/a

Standards Body

[ITU](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.itu.int>

Working Group

**Primary Owner
Secondary Interests**

Collaboration TWG
Information Transfer TWG
Application / Messaging TWG
Geospatial Intelligence TWG (GWG)

Service Areas

GEOINT: Still Imagery
Video Teleconferencing

KIPs

No KIP Found

Standard Applicability

2007-06-27

For VTU/MCU multimedia, applications implementing the features of audiographic conferencing, facsimile, still image transfer, annotation, pointing, whiteboard, file transfer, audio visual control, and application sharing, operating at data rates of 9.6 to 1,920 kbit/s, or operating over local area networks (LANs), this standard is mandated. For systems implementing the National Imagery Transmission Format Standard (NITFS) [or its NATO instantiation, the NATO Secondary Imagery Transmission Format (NSIF)], Mil-Std-188-198A establishes (profiles) the features and functional behavior that must be supported when using the JPEG image compression algorithms. This implementation profile addresses lossy and lossless compression for both eight- and 12-bit gray-scale imagery, 24-bit color imagery, eight- and 12-bit spectral imagery, radar-derived imagery, and similar applications.

2003-10-03

For VTU/MCU multimedia, applications implementing the features of audiographic conferencing, facsimile, still image transfer, annotation, pointing, whiteboard, file transfer, audio visual control, and application sharing, operating at data rates of 9.6 to 1,920 kbit/s, or operating over local area networks (LANs), this standard is mandated.

Standard Abstract

2007-06-27

CCITT Rec. T.81 | ISO/IEC 10918-1 or ITU-T Rec. T.84 | ISO/IEC 10918-3, commonly known as JPEG. This CCITT Recommendation | International Standard is applicable to continuous-tone, grayscale or colour digital still image data. It is applicable to a wide range of applications which require use of compressed images. It is not applicable to bi-level image data. This Specification specifies processes for converting source image data to

compressed image data; specifies processes for converting compressed image data to reconstructed image data; gives guidance on how to implement these processes in practice; specifies coded representations for compressed image data. NOTE: This Specification does not specify a complete coded image representation. Such representations may include certain parameters, such as aspect ratio, component sample registration, and colour space designation, which are application-dependent.

2002-07-17

CCITT Rec. T.81 | ISO/IEC 10918-1 or ITU-T Rec. T.84 | ISO/IEC 10918-3, commonly known as JPEG. This CCITT Recommendation | International Standard is applicable to continuous-tone ⊥ grayscale or colour ⊥ digital still image data. It is applicable to a wide range of applications which require use of compressed images. It is not applicable to bi-level image data. This Specification ⊥ specifies processes for converting source image data to compressed image data; ⊥ specifies processes for converting compressed image data to reconstructed image data; ⊥ gives guidance on how to implement these processes in practice; ⊥ specifies coded representations for compressed image data. NOTE ⊥ This Specification does not specify a complete coded image representation. Such representations may include certain parameters, such as aspect ratio, component sample registration, and colour space designation, which are application-dependent.

Profiling Questions

GEOINT: Still Imagery

- Does your system exchange Still Imagery data with external systems?

Video Teleconferencing

- Do your Video Teleconferencing Units and Multipoint Control Units operate over packet-based tcp/ip networks?

Products Incorporating This Standard

None

Relevant Information

ITU-T T.81 is also published as ISO/IEC 10918-1. JFIF. An implementation profile widely used in the commercial market place and on the world-wide-web is the JPEG File Interchange Format (JFIF), MIME Type image/jpeg. JFIF is a minimal file format which enables JPEG bitstreams to be exchanged between a wide variety of platforms and applications. This minimal format does not include any of the advanced features found in the NITFS or TIIF JPEG profiles or any application specific file format. The only purpose of this simplified format is to allow the simple exchange of monochrome and color JPEG compressed images (pixels only) using the lossy JPEG algorithm. See DISR citation for JPEG.

Implementation Guidance

The following documents provide detailed implementation guidance for implementing ITU-T T.81 for use with the National Imagery Transmission Standard (NITFS) and/or STANAG 4545, NATO Secondary Imagery Transmission Format (NSIF). MIL-STD-188-198A, Joint Photographic Experts Group (JPEG) Image Compression For The National Imagery Transmission Format Standard. NGA Document, N-0106, Bandwidth Compression Standards and Guidelines NGA Document, STDI-0005, Implementation Practices of the NITFS (IPON)

Standard Selection Criteria

Net-Centric Interoperability

This standard can be used on the internet as a component of web services. It can operate over IP-based networks as well as other networks. The standard further promotes interoperability because it is platform-independent.

Technical Maturity

The standard is mature and stable, and commercial products exist. Major VTC manufacturers support this standard. The world-wide deployment of the baseline capabilities of this standard (commonly known as JPEG image compression), makes it one

of the most widely implemented IT standards in history.

Public Availability

The ITU specification is publicly available for a fee at:
<http://www.itu.int/publications/default.aspx>.

Implementability

This standard is widely implemented in the marketplace and is widely used by DoD. Major VTC manufacturers implement this standard. It is also widely implemented by imagery sensor-related systems (government and commercial) supporting the National Imagery Transmission Format Standard (NITFS) and the NATO Secondary Imagery Format (NSIF).

Authority

This international standard was developed and is maintained by the ITU through an open process.

Standard Type Non-Military

Keywords for Search None

Standard Identifier Joint METOC Broker Language (JMBL)

Title of Standard

Joint METOC Broker Language (JMBL) v. 3.31, July 2007.

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2008-04-03	n/a	2008-04-03	2008-04-03	2008-04-03	n/a

Standards

[Other](#)

[Broken Link?](#)

Body

URL to Access https://disronline.disa.mil/a/DISR/content/Standards_Documentation.jsp

or Acquire

Working Group

Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest Application / Messaging TWG

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2008-03-27

The standard is used by military applications for Web services access to METOC data from the Naval Oceanographic Office, Fleet Numerical Meteorology and Oceanography Center and Air Force Weather Agency. It is not required for coalition or backward compatibility with legacy systems.

Standard Abstract

2008-03-27

JMBL is the result of work begun in 1995 under then-current DoDo directives to define data structuring rules and standards that would improve interoperability and facilitate data exchange. Initial work was by the Joint METOC Data Standardization Working Group. That group was later renamed to its current designation, the Joint METOC Data Management Working Group (DMWG), and is under the guidance of the Joint METOC Board (formally known as the Joint METOC Interoperability Board). This group was tasked to develop a common understanding of the METOC terminology and data attribution. Supporting this goal, the Navy, Air Force, Army, and Marine Corps participated in collaborative sessions to develop the Joint METOC Conceptual Data Model (JMCDM). JMCDM is a conceptual data model of all METOC phenomena, including definitions, sizes, ranges, and other metadata of each item. Once complete, the conceptual model was segmented into like data elements and thirteen physical database segment models were created to aid in storage by subject type. This enabled each service and its underlying components to implement or map their existing legacy databases into these physical database models. JMBL was subsequently developed to provide a standard, XML-based standard interface in order to avoid the need for multiple point-to-point interfaces. In general, all of the Joint METOC (JM) databases are dynamically populated with perishable environmental data that can be ingested, updated, and deleted on a regular and real-time basis. Numerous METOC service providers at geographically and organizationally disparate locations are involved in the collection, storage, and dissemination of METOC data. External interfaces, external systems, and local applications provide METOC data to multiple databases that collectively form the

Virtual Joint METOC database (VJMDB). The management of the data flow into and out of these databases is performed by numerous data storage systems and data management applications in disjoint locations and environments. Access to portions of the VJMDB and these operations is implemented according to discretionary access mechanisms and portable distributed METOC Application Program Interfaces (APIs). Due to the multiple data storage systems employed across the VJMDB, accessing the APIs directly without JMBL would require the users to establish specific point-to-point interfaces with the various METOC providers. JMBL uses unified schema and Community of Interest (COI) semantics to promote interoperability between METOC data consumers and producers. JMBL is implemented in Extensible Markup Language (XML) and consists of five schema, which represent the baseline as approved by the Joint METOC Data Standards Working Group (DSWG). The primary schema are the `jmbRequest.xsd` and `jmbResponse.xsd`. These schema import three secondary schemas: `jmbTypes.xsd`, `jmbAttributes.xsd`, and `jmbElements.xsd`. The primary schema comprise a small set of parent elements and references to the secondary schemas. There is also an optional subscription schema framework that addresses recurring requests and responses. The subscription schema consists of the primary schema, `subscription.xsd`, and three secondary schemas, `subElements.xsd`, `jmbSub.xsd` and `subAtts.xsd`. Two additional XML documents accompany the JMBL schema to enumerate/define the METOC parameters that can be requested by a user: `parameters.xml` and `compoundParameters.xml`.

Profiling Questions

GEOINT: Geospatial

- Does your system collect, storage and disseminate METOC data between METOC data providers and user applications?

Products Incorporating This Standard

NA

Relevant Information

For basic information, see <http://www.cffc.navy.mil/metoc/> (available to general public). More detailed implementation guidance can be obtained from <https://www.cnmoc.navy.mil/> or <https://weather.afwa.af.mil/jmbSupport/docs/JMBLSupport.html>.

Implementation Guidance

There are no known restrictions. There are no known compatibility issues or conflicts with other standards in the current DISR baseline.

Standard Selection Criteria

Net-Centric Interoperability

JMBL provides users with a standard, Web services interface to meteorological and oceanographic (METOC) data from major production centers in DoD. This standard was defined and advanced by the Joint METOC Board as the definitive means of distributing and accessing METOC data via Web services. JMBL specifies a standard language for the exchange of information between METOC data providers and user applications. JMBL uses unified schema and Community of Interest (COI) semantics to promote interoperability between METOC data consumers and producers. Because of its basis in the DISR mandated eXtensible Markup Language (XML), style sheets can be applied to the returned data to support interoperability with legacy system interfaces.

Technical Maturity

This standard was developed by the Joint METOC Board with major participation from Navy, Air Force, Army and Marine Corps. It has been used for approximately four years. It has been implemented as a Web services interface by the Naval Oceanographic Office, Fleet Numerical Meteorology and Oceanography Center and Air Force Weather Agency. Commercial XML utilities can be used to form JMBL requests and parse the JMBL responses.

Public Availability

<https://metadata.dod.mil/mdr/details.htm>

Implementability

JMBL is in use at the Naval Oceanographic Office, Fleet Numerical Meteorology and Oceanography Center and Air Force Weather Agency to provide a Web services interface to METOC data. It is in use by numerous DoD programs as the means for Web services access to METOC data. These programs include NITES-2R, VNE-NCS, GAPS, AFCCS, CDFS II, GTWAPS, WDAC, JWIS, JAAWIN, CDAS, DCGS-A, GCCS-13, and IMETS. It is under review for use by EUROCONTROL, NOAA, and FAA.

Authority

It has been developed and is maintained by the Joint METOC Board, Data Management Working Group. There is an open process for maintaining and developing this standard. This process consists of periodic face-to-face meetings and bi-weekly telephone conferences at which change requests are adjudicated. There is an open process for submitting change requests for evaluation. Additional information is provided under "abstract".

Standard Type Non-Military

Keywords for Search None

Standard Identifier MIL-STD-188-198A(4)

Title of Standard

Joint Photographic Experts Group (JPEG) Image Compression for the National Imagery Transmission Format Standard, 15 December 1993 with Notice 1, 12 October 1994; Notice 2, 14 March 1997; Notice 3, 1 March 2001; and Notice 4, 31 March 2004

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2007-06-27	n/a	2007-06-27	2007-06-27	2007-06-27	n/a

Standards Body

[DoD](#)

[Broken Link?](#)

URL to Access or Acquire

<http://assist.daps.dla.mil/quicksearch>

Working Group

Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest Collaboration TWG

Service Area

GEOINT: Still Imagery

KIPs

No KIP Found

Standard Applicability

2007-06-27

When used by systems required to comply with the National Imagery Transmission Format Standard (NITFS) and/or the NATO Secondary Imagery Transmission Format (NSIF), STANAG 4545, MIL-STD-188-198A establishes (profiles) the features and functional behavior for imagery data compressed using the JPEG image compression algorithm. This implementation profile addresses lossy and lossless compression for both eight- and 12-bit gray-scale imagery, 24-bit color imagery, eight- and 12-bit spectral imagery, radar-derived imagery, and similar applications.

Standard Abstract

2007-06-27

MIL-STD-188-198A establishes the requirements to be met by systems complying with NITFS when image data are compressed using the JPEG image compression algorithm as described in ITU-T T.81, Digital Compression and Coding of Continuous-tone Still Images. It provides technical detail of the NITFS compression algorithm designated by the code C3 in the Image Compression field of the National Imagery Transmission Format (NITF) file image subheader, JPEG, for both eight- and 12-bit gray scale imagery, 24-bit color imagery, eight- and 12-bit spectral imagery, radar-derived imagery, and similar applications. It also provides the required default quantization tables for use in imagery dissemination systems complying with NITFS.

Profiling Questions

GEOINT: Still Imagery • Does your system exchange Still Imagery data with external systems?

Products Incorporating This Standard

Companies with commercially available implementations/products include: BAE Systems,

DigitalGlobe, GeoEye, Research Systems, Inc. (RSI), Eastman Kodak, ERDAS Inc., Technology Services Corporation (TSC), Harris Corporation, ITT, Paragon Imaging, PCI Geomatics, PhotoTelesis, Recon Optical, & Sensor Systems.

Relevant Information

ITU-T T.81 is also published as ISO/IEC 10918-1. An implementation profile widely used in the commercial market place and on the world-wide-web is the JPEG File Interchange Format (JFIF), MIME Type image/jpeg. JFIF is a minimal file format which enables JPEG bitstreams to be exchanged between a wide variety of platforms and applications. This minimal format does not include any of the advanced features found in the NITFS JPEG profile or any application specific file format. The only purpose of this simplified format is to allow the simple exchange of monochrome and color JPEG compressed images (pixels only) using the lossy JPEG algorithm.

Implementation Guidance

See STDI-0005, Implementation Practices of the NITFS, available at: <http://www.gwg.nga.mil/ntb/baseline/docs/ipon/index.html>. The STDI-0005 document is a compilation of common practices, conventions, and guidelines for implementing the National Imagery Transmission Format Standard (NITFS). The objective is to help promote common specification and application of the NITFS suite of standards by all fielded and developmental digital imagery-related systems. It describes common conventions for implementing the suite of NITFS standards that promote and sustain NITFS compliance and interoperability for the production, storage, cataloging, discovery, selection, exploitation, and dissemination of digital imagery, raster map, and other related raster products.

Standard Selection Criteria

Net-Centric Interoperability

This standard is part of the National Imagery Transmission Format Standard (NITFS) suite of standards. NITFS is the common thread of interoperability for the formatting, imagery library storage and cataloging, dissemination, and exploitation of National Technical Means (NTM), Tactical Airborne, and Commercial imaging sources.

Technical Maturity

The NITFS application of JPEG has been implemented and fielded since the mid 1990's. While NITFS has also adopted the ISO/IEC 15444-1 JPEG 2000 standard for imagery compression, use of ITU-T T.81 JPEG will continue indefinitely. Commercial implementations of the standard are largely driven by marketability to the DoD and IC. Companies with commercially available implementations/products include: BAE Systems, DigitalGlobe, GeoEye, Research Systems, Inc. (RSI), Eastman Kodak, ERDAS Inc., Technology Services Corporation (TSC), Harris Corporation, ITT, Paragon Imaging, PCI Geomatics, PhotoTelesis, Recon Optical, & Sensor Systems.

Public Availability

Freely downloadable via the following URLs:
<http://www.gwg.nga.mil/ntb/baseline/docs/2500c/index.html> and
<http://assist.daps.dla.mil/quicksearch/>.

Implementability

This military standard is widely implemented within the DoD and the Intelligence Community by National Technical Means (NTM), tactical airborne, commercial satellite imaging systems, imagery library and dissemination systems, and a variety of commercial exploitation workstations. A standards compliance and interoperability program supports implementation of the capabilities specified within this standard.

Authority

NITF JPEG is a military standard prepared by the National Geospatial-Intelligence Agency (NGA) as an implementation profile of international standard, ITU-T T.81, Information Technology - Digital Compression and Coding of Continuous-Tone Still Images, Part 1. The standard is also cited by STANAG 4545, NATO Secondary Imagery Format (NSIF). The Geospatial Intelligence Standards Working Group (GWG) and its NITFS Technical Board (NTB) provide an open process for maintaining and developing this standard.

Standard Type Military

Keywords for Search None

Standard Identifier MIL-STD-188-199(1)

Title of Standard

Vector Quantization Decompression for the National Imagery Transmission Format Standard, 27 June 1994 with Notice 1, 27 June 1996

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
1999-11-15	n/a	1999-11-15	1999-11-15	2008-07-14	n/a

Standards Body

DoD

[Broken Link?](#)

URL to Access or Acquire

<http://assist.daps.dla.mil/quicksearch>

Working Group

Primary Owner

Geospatial Intelligence TWG (GWG)

Secondary Interest

No Secondary Interest

Service Area

GEOINT: Still Imagery

KIPs

No KIP Found

Standard Applicability

2008-07-17

The National Imagery Transmission Format Standard (NITFS) is a DoD and Federal Intelligence Community suite of standards for the exchange, storage, and transmission of digital-imagery products and image-related products. Other image formats can be used internally within a single system; however, NITFS is the default format for interchange between systems. NITFS provides a package containing information about the image, the image itself, and optional overlay graphics. The standard provides a ?package? containing an image(s), subimages, symbols, labels, and text as well as other information related to the image(s). NITFS supports the dissemination of secondary digital imagery from overhead collection platforms. Guidance on applying the suite of standards composing NITFS can be found in MIL-HDBK-1300A, National Imagery Transmission Format Standard (NITFS), 12 October 1994. The NITFS allows for Support Data Extensions (SDEs), which are a collection of data fields that provide space within the NITFS file structure for adding functionality. Documented and controlled separately from the NITFS suite of standards, SDEs extend NITF functionality with minimal impact on the underlying standard document. SDEs may be incorporated into an NITF file while maintaining backward compatibility because the identifier and byte count mechanisms allow applications developed prior to the addition of newly defined data to skip over extension fields they are not designed to interpret. These SDEs are described in the Compendium of Controlled Extensions (CE). This standard is mandated for imagery product dissemination.

2003-10-03

The National Imagery Transmission Format Standard (NITFS) is a DoD and Federal Intelligence Community suite of standards for the exchange, storage, and transmission of digital-imagery products and image-related products. Other image formats can be used internally within a single system; however, NITFS is the default format for interchange between systems. NITFS provides a package containing information about the image, the image itself, and optional overlay graphics. The standard provides a ?package? containing an image(s), subimages, symbols, labels, and text as well as other information related to the image(s). NITFS supports the dissemination of secondary digital imagery from

overhead collection platforms. Guidance on applying the suite of standards composing NITFS can be found in MIL-HDBK-1300A, National Imagery Transmission Format Standard (NITFS), 12 October 1994. The NITFS allows for Support Data Extensions (SDEs), which are a collection of data fields that provide space within the NITFS file structure for adding functionality. Documented and controlled separately from the NITFS suite of standards, SDEs extend NITF functionality with minimal impact on the underlying standard document. SDEs may be incorporated into an NITF file while maintaining backward compatibility because the identifier and byte count mechanisms allow applications developed prior to the addition of newly defined data to skip over extension fields they are not designed to interpret. These SDEs are described in the Compendium of Controlled Extensions (CE). This standard is mandated for imagery product dissemination.

Standard Abstract

1999-11-15

This standard establishes the requirements to be met by NITFS compliant systems when image data are decompressed using the VQ compression algorithm. This allows NITFS-compliant systems to accept and decompress data that are compressed using a VQ compression scheme. This standard describes the VQ compression in the general requirements section, but does not fully describe the steps for compression. The steps involved in decompressing images compressed with VQ are fully described by this standard. This standard provides technical detail of the NITFS VQ decompression algorithm, designated by the code C4 or M4 in the image compression field of the image subheader in a NITF file. This standard is applicable to the IC and the DOD. It is mandatory for all Secondary Imagery Dissemination Systems (SIDS) in accordance with the memorandum by the Assistant Secretary of Defense for Command, Control, Communications, and Intelligence ASD(C3I) Subject: National Imagery Transmission Format Standard (NITFS), 12 August 1991. This directive shall be implemented in accordance with the MIL-STD-2500, JIEO Circular 9008 and MIL-HDBK-1300. New digital imagery equipment and systems, those undergoing major modification, or those capable of rehabilitation shall conform to this standard.

Profiling Questions

- GEOINT: Still Imagery**
- Does your system exchange Still Imagery data with external systems?

Products Incorporating This Standard

Controlled Image Base (CIB), Compressed Arc Digitized Raster Graphic (CADRG), Digital Point Positioning Data Base (DPPDB)

Relevant Information

This citation authored by the GWG NTB Focus Group.

Implementation Guidance

There are a number of imagery compression standards used in conjunction with the National Imagery Transmission Format Standard (NITFS). Vector Quantization (VQ) imagery compression is only used by NGA in the production of CIB, CADRG and DPPDB product lines. MIL-STD-188-199(1) only addresses the decompression aspect of VQ-compressed imagery. The standard is only applicable to systems with the need to read and use CIB, CADRG, and DPPDB products.

Standard Selection Criteria

Net-Centric Interoperability

MIL-STD-188-199, Vector Quantization (VQ) Decompression is used to decompress all the Controlled Image Base (CIB) and Compressed ARC Digitized Raster Graphics (CADRG) digital raster map holdings provided by the NGA. The Digital Point Positioning Data Base (DPPDB) includes selected CADRG maps as map graphic indexes into the database. Data holdings that implement this standard are widely used through out the DOD/IC for mission

planning, theater battle management, terrain analysis, digital moving maps, precision targeting, and weapon engagement.

Technical Maturity

The standard is technically mature and stable, to include established conformance test criteria, tools, services and technical consultation for the implementation profile used by the NITFS. This standard, based on ISO/IEC 12087-5, Basic Image Interchange Format (BIIF), has been part of the NITFS suite of standards since 1994 and part of STANAG 4545, NATO Secondary Imagery Format since 1998. A follow on standard under consideration is ISO/IEC 15444, JPEG 2000; investigations are only in the early stages. The sunset condition is the replacement or inactivation and removal of DPPDB, CIB and CADRG data holdings from NGA data distribution services and consequent use of these data holdings within the DOD/IC. Examples of commercial products conforming to the NITFS profile of this standard are listed in the Products Incorporating this Standard section.

Public Availability

MIL-STD-188-199(1), which profiles the implementation and use of ISO/IEC 12087-5 (BIIF) within the NITFS/NSIF, is available for download at no charge on the DOD's ASSIST database (<http://assist.daps.dla.mil/online/start/>). Both MIL-STD-188-199(1) and ISO/IEC 12087-5 (ISO/IEC authorized NTB version) are available for download at no charge on the NITFS Technical Board (NTB) Public Document Area (<http://www.gwg.nga.mil/ntb/>).

Implementability

Used in Digital Point Positioning Data Base (DPPDB), Controlled Image Base (CIB) and Compressed ARC Digitized Raster Graphic(CADRG) provided by NGA and is widely implemented by a variety of systems (data production, dissemination, library/archive, exploitation work stations,) supporting the NITFS suite of standards. It is also used by non-NITF capable Raster Product Format (RPF) implementations such as Falcon View. Sample data, sample software, technical consultation, and conformance testing services are available to government and commercial implementers of the standard by contacting the NITFS Test Facility operated by the (JITC) on behalf of NGA. Contact information available at <http://jtc.fhu.disa.mil/nitf/nitf.html>, 1-800-538-5482, x8-5458, and jitcn@disa.mil. A list of government and commercially developed conforming implementations of the NITFS can be found at http://jtc.fhu.disa.mil/nitf/off_reg.html"

Authority

The ISO/IEC 12087-5 standard, which MIL-STD-188-199(1) profiles, was developed by ISO/IEC Joint Technical Committee 1/SubCommittee 24, Computer Graphics and Image Processing. The process for maintaining and developing the standard is an internationally open process by members of national bodies and liaison organizations participating with ISO/IEC. The US implementation profile of the international standard, MIL-STD-188-199(1), was developed, and is maintained, by the NITFS Technical Board (NTB). The NTB has broad participation across the DOD/IC with open participation by commercial industry. The VQ standard is also called out for use within STANAG 4545, NATO Secondary Imagery Format (NSIF).

Standard Type Military

Keywords for Search NITF, RPF, VQ, compression, format, imagery, transmission

Standard Identifier MIL-STD-2401

Title of Standard
DoD World Geodetic System 84 (WGS84), 11 January 1994

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
1996-08-22	n/a	1996-08-22	1996-08-22	2008-04-03	n/a

Standards Body [DoD](#) [Broken Link?](#)
URL to Access or Acquire <http://assist.daps.dla.mil/quicksearch>

Working Group

Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interests Information Transfer TWG
 Messaging Format/Symbology TWG
 Discovery TWG

Service Area GEOINT: Geospatial

KIPs KIP Family: TRANSPORT - KIP: GPS Space Segments to Ground Segment Interface
 KIP Family: TRANSPORT - KIP: Global Positioning System

Standard Applicability

2008-03-27

Geospatial services are also referred to as mapping, charting, and geodesy (MC&G) services. World Geodetic System (WGS 84), a Conventional Terrestrial Reference System (CTRS), is mandated for representation of a reference frame, reference ellipsoid, fundamental constants, and an Earth Gravitational Model with related geoid. Included in the Reference System are parameters for transferring to/from other geodetic datums. The National Imagery and Mapping Agency (NIMA) Technical Report (TR) 8350.2, DoD World Geodetic 1984, Its Definition and Relationships with Local Geodetic Systems, Third Edition, 4 July 1997, with Amendment 1, 3 January 2000, defines the technical content of WGS 84. WGS 84 will be used for all joint operations and is recommended for use in multinational and unilateral operations after coordination with allied commands. This standard is mandated.

2003-10-03

Geospatial services are also referred to as mapping, charting, and geodesy (MC&G) services. World Geodetic System (WGS 84), a Conventional Terrestrial Reference System (CTRS), is mandated for representation of a reference frame, reference ellipsoid, fundamental constants, and an Earth Gravitational Model with related geoid. Included in the Reference System are parameters for transferring to/from other geodetic datums. The National Imagery and Mapping Agency (NIMA) Technical Report (TR) 8350.2, DoD World Geodetic 1984, Its Definition and Relationships with Local Geodetic Systems, Third Edition, 4 July 1997, with Amendment 1, 3 January 2000, defines the technical content of WGS 84. WGS 84 will be used for all joint operations and is recommended for use in multinational and unilateral operations after coordination with allied commands. This standard is mandated.

Standard Abstract

1996-08-22

DoD's standard global reference system developed by the DMA. WGS-84 is employed by the NAVSTAR Global Positioning System (GPS) and modern weapons and systems. Latitude and longitude data shall use WGS-84. This standard specifies the requirements for use of World Geodetic System 1984 (WGS 84), the defining and derived parameters for WGS 84, and methods for transforming between WGS 84 and other geodetic systems. This standard applies to all DoD systems and products which require use of a World Geodetic System. A world geodetic system is a consistent global coordinate system which allows an unambiguous representation of positional information. Navigation solutions from the NAVSTAR Global Positioning System (GPS) and the Navy Navigation Satellite System (NNSS) are referred to this system. A WGS 84 ellipsoid provides a reference surface upon which coordinates are calculated and is particularly applicable to inertial systems. A WGS 84 Earth Gravitational Model (EGM) provides necessary force models for accurate global operation of strategic weapons, navigation, and satellite systems. Many MC and G products produced by other agencies and governments (and DMA products not yet placed on WGS 84) are not referred to the WGS 84. Parameters to transform these products to WGS 84 are part of this standard.

Profiling Questions

GEOINT: Geospatial

- Does your data represent reference frame, reference ellipsoid, fundamental constants, or Earth Gravitational Model with related geoid?

Products Incorporating This Standard

None

Relevant Information

2401 refs NIMA TR 8350.2 for tech content. WGS-84 is employed by the NAVSTAR Global Positioning System (GPS) and modern weapons and systems. Latitude and longitude data shall use WGS-84 in accordance with CJCSI 3900.01, and standard coordinate data elements as discussed in Section 4

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

This standard is the basis for geolocation services and is paramount to success of net centric operations. Coalition, Joint and/or Combined Service/Agency operations require the geolocation services built upon the WGS-84 standard.

Technical Maturity

This is a very mature standard that was published in 1994. NGA Technical Report 8350.2, DoD World Geodetic 1984, Its Definition and Relationships with Local Geodetic Systems, Third Edition, 4 July 1997, with Amendment 1, 1 January 2000, defines the technical content of WGS 84. It is the foundation for employing Global Positioning System derived coordination information used in all military operations.

Public Availability

<http://assist.daps.dla.mil/quicksearch>

Implementability

This standard is embedded in all DoD systems that require earth geolocation information.

Authority

NGA, as the functional manager for GEOINT standards for the National System for Geospatial-Intelligence (NSG), developed and maintains this standard.

Standard Type Military

Keywords for Search None

Standard Identifier MIL-STD-2407(1)

Title of Standard

Interface Standard for Vector Product Format (VPF), 28 June 1996, with Notice of Change, Notice 1, 26 October 1999

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2003-04-04	n/a	2003-04-04	2003-04-04	2008-04-03	n/a

Replaced [MIL-STD-2407](#)

Standards Body [DoD](#) [Broken Link?](#)
URL to Access or Acquire <http://assist.daps.dla.mil/quicksearch>

Working Group

Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interests Information Transfer TWG
 Application / Messaging TWG

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2008-03-27

Geospatial services are also referred to as mapping, charting, and geodesy (MC&G) services. Vector Product Format (VPF) defines a common format, structure, and organization for data objects in large geographic databases based on a georelational data model and intended for direct use. Existing geospatial products that implement VPF include: Vector Map (VMap) Levels 0-2, Urban Vector Map (UVMMap), Digital Nautical Chart (DNC), Vector Product Interim Terrain Data (VITD), Digital Topographic Data (DTOP), World Vector Shoreline Plus (WVSPLUS). Tactical Ocean Data (TOD) Levels 0-4, and Vector Vertical Obstruction Data (VVOD). For these vector-based products, this standard is mandated.

2003-10-03

Geospatial services are also referred to as mapping, charting, and geodesy (MC&G) services. Vector Product Format (VPF) defines a common format, structure, and organization for data objects in large geographic databases based on a georelational data model and intended for direct use. Existing geospatial products that implement VPF include: Vector Map (VMap) Levels 0-2, Urban Vector Map (UVMMap), Digital Nautical Chart (DNC), VPF Interim Terrain Data (VITD), Digital Topographic Data (DTOP), and World Vector Shoreline Plus (WVSPLUS). For vector-based products, this standard is mandated.

Standard Abstract

2003-04-04

The vector product format (VPF) is a standard format, structure, and organization for large geographic databases that are based on a georelational data model and are intended for direct use. VPF is designed to be compatible with a wide variety of applications and

products. VPF allows application software to read data directly from computer-readable media without prior conversion to an intermediate form. VPF uses tables and indexes that permit direct access by spatial location and thematic content and is designed to be used with any digital geographic data in vector format that can be represented using nodes, edges, and faces. VPF defines the format of data objects, and the georelational data model provides a data organization within which software can manipulate the VPF data objects.

Profiling Questions

GEOINT: Geospatial

- Is any of your geospatial data in geographic databases intended for direct use?

Products Incorporating This Standard

Commercial Joint Mapping Toolkit (C/JMTK) ; ESRI-based ESRI Arc-Info Intergraph VPF Production System, GeoMedia Cartographer and GeoMedia VPF DataServer ERDAS Imagine

Relevant Information

DoD format for NGA's vector-based products used by geographic information system (GIS) and other DoD systems. VPF standard products include Vector Map (VMap) Levels 0-2, Urban Vector Map (UVMaP), Digital Nautical Chart (DNC), Vector Product Interim Terrain Data (VITD), Digital Topographic Data (DTOP), World Vector Shoreline Plus (WVSPLUS). Tactical Ocean Data (TOD) Levels 0-4, and Vector Vertical Obstruction Data (VVOD). Geospatial Symbols for Digital Display (GeoSym), MIL-PRF-89045A is available for use to symbolize NGA VPF products. This citation was prepared in November 2007 by the GWG ASFE Focus Group (Gleason).

Implementation Guidance

MIL-STD-2407 is the US profile for the Digital Geospatial Information Exchange Standard (DIGEST), STANAG 7074.

Standard Selection Criteria

Net-Centric Interoperability

This standard defines a digital geospatial data exchange format for a family of products produced by National Geospatial-Intelligence Agency, and provided to users via the NGA Gateway, which is NGA's primary outlet for geospatial intelligence information via web services. System developers need the VPF Standard to develop applications that use and display NGA VPF data in Service/Command/Agency systems.

Technical Maturity

The VPF Standard is technically mature, and stable. Edition 2 was published in 1996 and Change Notice 1 was published in 1999. No further change notices are planned. Many commercial Geographic Information Systems (GIS) have import functions that allow users to import VPF data into their applications. These include ESRI ARC Info, Intergraph VPF Production System and GeoMedia Cartographer, and ERDAS Imagine. The standard has been in use since 1992, when the Defense Mapping Agency introduced its first VPF product, the Digital Chart of the World (DCW). VPF will probably be replaced by a version of Geographic Mark-Up Language (GML) in the future, but current versions of GML do not support all of the functionality in the current VPF standard for topology.

Public Availability

The MIL-STD-2407 is a published DOD standard, available from the DOD Single Stock Point for Standards and Specifications (DODSSP) ASSIST at <http://assist.daps.dla.mil/quicksearch/>. There is no user charge to get documents from the DODSSP.

Implementability

The US Army and US Navy are the primary users of the VPF Standard, but all services use the VPF products. The Digital Nautical Chart (DNC), which is based on VPF is being used for surface navigation by the Navy, and direct read of VPF is mandated by OPNAVINST 9420.2, Implementation of ECDIS-N Certification Process. Numerous US Army systems use Vector Product Format data for situational awareness display and GIS applications. All services use Vector Vertical Obstruction Data (VVOD) and VVOD is implemented in Falconview used by mission planning systems. Commercial Joint Mapping Toolkit (C/JMTK) has the ability to ingest and display VPF data. Commercial vendors who have implemented import of VPF include ESRI, Intergraph, ERDAS Imagine.

Authority

MIL-STD-2407 is a DOD standard, prepared by the National Geospatial-Intelligence Agency, under the authority of the Defense Standardization Program (DSP). The standard is maintained using DSP policies and procedures.

Standard Type Military

Keywords for Search None

Standard Identifier MIL-STD-2411(2)

Title of Standard

Raster Product Format, 6 October 1994; with Notice of Change, Notice 1, 17 January 1995, and Notice of Change, Notice 2, 16 August 2001

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2003-04-04	n/a	2003-04-04	2003-04-04	2008-07-14	n/a

Replaced [MIL-STD-2411\(1\)](#)

Standards Body [DoD](#)

[Broken Link?](#)

URL to Access or Acquire <http://assist.daps.dla.mil/quicksearch>

Working Group

Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interests Information Transfer TWG
 Application / Messaging TWG

Service Area GEOINT: Geospatial

KIPs KIP Family: TRANSPORT - KIP: Integrated Broadcast System
 KIP Family: TRANSPORT - KIP: IBS

Standard Applicability

2008-07-17

Geospatial services are also referred to as mapping, charting, and geodesy (MC&G) services. Raster Product Format (RPF) defines a common format for the interchange of raster-formatted digital geospatial data among DoD components. Existing geospatial products that implement RPF include Compressed ARC Digitized Raster Graphics (CADRG), Controlled Image Base (CIB), and Digital Point Positioning Data Base (DPPDB). For raster-based products, this standard is mandated.

2003-10-03

Geospatial services are also referred to as mapping, charting, and geodesy (MC&G) services. Raster Product Format (RPF) defines a common format for the interchange of raster-formatted digital geospatial data among DoD components. Existing geospatial products that implement RPF include Compressed ARC Digitized Raster Graphics (CADRG), Controlled Image Base (CIB), and Digital Point Positioning Data Base (DPPDB). For raster-based products, this standard is mandated.

Standard Abstract

2008-07-17

The Raster Product Format (RPF) is a standard data structure for geospatial databases composed of rectangular arrays of pixel values (e.g. in digitized maps or images) in compressed or uncompressed form. RPF is intended to enable application software to use the data in RPF format on computer-readable interchange media directly without further manipulations or transformation. Each product category that represents a single instantiation of RPF, or a family of instantiations of RPF, shall be described in a separate product specification that makes appropriate reference to this RPF standard and its

companion standard, MIL-STD-2411-1, which defines registered data values to be used with RPF files. MIL-STD-2411-2 (NOTE 1), Integration Of Raster Product Format Files Into The National Imagery Transmission Format, describes how RPF data (e.g. for CIB and CADRG) are formatted using Mil-Std-2500, The National Imagery Transmission Format Standard (NITF).

2003-04-04

The Raster Product Format (RPF) is a standard data structure for geospatial databases composed of rectangular arrays of pixel values (e.g. in digitized maps or images) in compressed or uncompressed form. RPF is intended to enable application software to use the data in RPF format on computer-readable interchange media directly without further manipulations or transformation. Each product category that represents a single instantiation of RPF, or a family of instantiations of RPF, shall be described in a separate product specification that makes appropriate reference to this RPF standard and its companion standard, MIL-STD-2411-1, which defines registered data values to be used with RPF files.

Profiling Questions

GEOINT: Geospatial • Is any of your geospatial data raster-formatted?

Products Incorporating This Standard

Controlled Image Base (CIB), Compressed ARC Digitized Raster Graphic (CADRG), Digital Point Positioning Data Base (DPPDB)

Relevant Information

This DoD Military Standard is used by the National Geospatial-Intelligence Agency (NGA) to produce, and outsource production of CIB, CADRG, and DPPDB data. Administrative Notice 3, 31 March 2004, has been added to the DoD's ASSIST database. It informs users of the change in name of the preparing activity from the Defense and Mapping Agency (DMA) to the National Geospatial-Intelligence Agency (NGA). This citation authored by the GWG NTB Focus Group.

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

MIL-STD-2411(2) Raster Product Format specifies a format and metadata requirements for all the Controlled Image Base (CIB) and Compressed ARC Digitized Raster Graphics (CADRG) digital raster map holdings provided by the NGA. The Digital Point Positioning Data Base (DPPDB) includes selected CADRG maps as map graphic indexes into the database. Data holdings that implement this standard are widely used throughout the DoD/IC for mission planning, theater battle management, terrain analysis, digital moving maps, precision targeting, and weapon engagement.

Technical Maturity

MIL-STD-2411(2) has been in use since 1994. The standard is technically mature and stable, to include established conformance test criteria, test tools, test services and technical consultation for the implementation. The sunset condition for this standard is the replacement or inactivation and removal of DPPDB, CIB and CADRG data holdings for NGA data distribution services and consequent use of these data holdings within the DoD/IC.

Public Availability

MIL-STD-2411(2) is available for download at no charge on the DoDs ASSIST database <http://assist.daps.dla.mil/quicksearch>.

Implementability

The standard has been implemented in the Commercial Joint Mapping Toolkit and by several vendors of commercial-off-the-shelf software.

Authority

MIL-STD-2411(2) is an approved military standard.

Standard Type Military

Keywords for Search CADRG, CIB, DPPDB, Graphics, MIL-STD-2411(1), NITF, NITFS, RPF maps, Raster Product, data, image

2006-10-25

This standard describes the NITFS file format, called the National Imagery Transmission Format (NITF). The document establishes NITF requirements, provides a detailed description of the NITF file structure, and specifies the valid data content and format for the fields defined within a NITF file. The appendix addresses NITF implementation issues. NITF version 2.1 is the US documentation equivalent of STANAG 4545, NATO Secondary Imagery Format (NSIF), version 1.0. The NATO Air Forces Armaments Group (NAFAG), Joint Intelligence, Surveillance and Reconnaissance Capabilities Working Group (JISRCWG) sponsors a Custodial Support Team (CST) for STANAG 4545; the CST and the NITFS Technical Board (NTB) closely coordinate standardization activities related to Mil-Std-2500B and STANAG 4545. These standards are both profiles of ISO/IEC 12087-5, Basic Image Interchange Format (BIIF).

Profiling Questions

- GEOINT: Still Imagery**
- Does your system exchange Still Imagery data with external systems?

Products Incorporating This Standard

Companies with commercially available implementations/products include: BAE Systems, DigitalGlobe, GeoEye, Research Systems, Inc. (RSI), Eastman Kodak, ERDAS Inc., Technology Services Corporation (TSC), Harris Corporation, ITT, Paragon Imaging, PCI Geomatics, PhotoTelesis, Recon Optical, & Sensor Systems.

Relevant Information

None

Implementation Guidance

See STDI-0005, Implementation Practices of the NITFS, available at: <http://www.gwg.nga.mil/ntb/baseline/docs/ipon/index.html> The STDI-0005 document is a compilation of common practices, conventions, and guidelines for implementing the National Imagery Transmission Format Standard (NITFS). The objective is to help promote common specification and application of the NITFS suite of standards by all fielded and developmental digital imagery-related systems. It describes common conventions for implementing the suite of NITFS standards that promote and sustain NITFS compliance and interoperability for the production, storage, cataloging, discovery, selection, exploitation, and dissemination of digital imagery, raster map, and other related raster products.

Standard Selection Criteria

Net-Centric Interoperability

The NITF Standard (NITFS) is the common thread of interoperability for the formatting, imagery library storage and cataloging, dissemination, and exploitation of National Technical Means (NTM), Tactical Airborne, and Commercial imaging sources. NITF2.1 is the format upon which the Future Imagery Architecture (FIA) is based. Adoption of ISO/IEC 15444, JPEG 2000 for imagery compression within NITFS postures the standard to support interactive net-centric access to extremely large holdings of imagery coverage in a timely and efficient manner.

Technical Maturity

NITF has been implemented & fielded since the early 90's. It's content evolved over the years to embrace new technology in support of emerging operational requirements. NITF has adopted the ISO/IEC 15444-1 standard for imagery compression, JPEG 2000. Commercial implementations of the standard are largely driven by marketability to the DoD and IC. Companies with commercially available implementations/products include: BAE Systems, DigitalGlobe, GeoEye, Research Systems, Inc. (RSI), Eastman Kodak, ERDAS Inc., Technology Services Corporation (TSC), Harris Corporation, ITT, Paragon Imaging, PCI Geomatics, PhotoTelesis, Recon Optical, & Sensor Systems.

Public Availability

Freely downloadable via the following URLs:
<http://www.gwg.nga.mil/ntb/baseline/docs/2500c/index.html>
<http://assist.daps.dla.mil/quicksearch/>

Implementability

Widely implemented within the DoD and Intelligence Community by National Technical Means (NTM), tactical airborne, commercial satellite imaging systems, imagery library and dissemination systems, and a variety of commercial exploitation workstations. A standards compliance and interoperability program supports implementation of the capabilities specified within this standard.

Authority

NITF2.1 is a military standard prepared by the National Geospatial-Intelligence Agency (NGA) as an implementation profile of International Standard 12087-5, Basic Image Interchange Format (BIIF). It is the US documentation equivalent of STANAG 4545, NATO Secondary Imagery Format (NSIF). The Geospatial Intelligence Standards Working Group (GWG) and its NITFS Technical Board (NTB) provide an open process for maintaining and developing this standard.

Standard Type Military

Keywords for Search None

Standard Identifier MISB RECOMMENDED PRACTICE 0301.2, version 1.2

Title of Standard
MISB Profile for Aerial Surveillance and Photogrammetry Applications (ASPA), version 1.2, 12 September 2007

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2008-04-03	n/a	2008-04-03	2008-04-03	2008-04-03	n/a

Replaced [MISB RECOMMENDED PRACTICE 0106, v 1.0](#)

Standards Body [MISB](#) [Broken Link?](#)
URL to Access or Acquire [http://gwg.nga.mil/misb/ \(requires password\)](http://gwg.nga.mil/misb/)

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest No Secondary Interest

Service Area GEOINT: Motion Imagery

KIPs No KIP Found

Standard Applicability

2008-03-27

Application areas for the ASPA profile include: - Interchange of digital video and metadata such as sensor to ground stations; ground station to exploitation; and exploitation to archive - Television and movie post production systems - Non-linear digital editing systems - Media archive systems - Media dissemination systems Exchange of finished product(s), multi-media reports, and products Reporting systems - Exploitation systems Interoperability exchange for Common Operational Picture (COP) display systems.

Standard Abstract

2008-03-27

The Aerial Surveillance and Photogrammetry Application (ASPA) profile defines a subset of the AAF/MXF specification to directly support NITF, Motion Imagery Standards Profile (MISP)-compliant video (MPEG-2 TS with KLV metadata in the Private Data Stream), JPEG, and HTML for DOD/IC applications. ASPA development was sponsored by NGA's Motion Imagery Standards Board (MISB) to make available a powerful multimedia-multimedia file format. The ASPA profile defines a specific metadata object model for populating metadata from the above file types and makes it available to archive systems and exploitation systems. In effect, ASPA wraps component essence types with the AAF/MXF metadata object model. During 2004, ASPA was provided to AIN 3.0 (BAE) to add AAF support to IPL and NGL imagery archive systems. Documentation and the reference implementation, known as ASPA Browser version 2.5, are available on the protected side of the MISB web site. The ASPA Browser is an application available for Windows, Solaris, and Linux platforms that can read and create AAF and MXF files. ASPA is a referenced interchange format for NATO coalition operations using digital Motion Imagery and metadata via Edition 2 of STANAG 4609.

Profiling Questions

GEOINT: Motion Imagery • Does your system exchange motion imagery data with external systems or does your system task, collect, produce, process, catalog, store, read, exploit, or disseminate digital motion imagery?

Products Incorporating This Standard

BAE Systems - ASPA support to IPL and NGL archive systems. Boeing-Autometric - ASPA support to CMIL archive system Lockheed Martin - included the reference implementation ASPA Browser in IEC workstations PAR Government Systems - added ASPA software in GeoView ELT application. SAIC - added ASPA software as part of MITools MIRReporter application.

Relevant Information

This citation authored by the GWG Motion Imagery Standards Board (MISB)

Implementation Guidance

Guidance for using/implementing this standard is available from the Motion Imagery Standards Board (MISB) [<http://www.gwg.nga.mil/misb/>].

Standard Selection Criteria

Net-Centric Interoperability

Aerial Surveillance and Photogrammetry Application(ASPA)-enabled applications provide the ability to exchange files between fusion/reporting, archive, and geospatial exploitation systems. ASPA is ideally suited for source, production, exploitation and dissemination processes (entire TPED process). The ASPA profile allows the building of a fully-networked motion imagery system.

Technical Maturity

The basic Aerial Surveillance and Photogrammetry Application (ASPA) Profile has been in existence since 2001. ASPA version 1.2 is a profile, which can be used with either the Material Exchange Format (MXF- SMPTE 377M) or the Advanced Authoring Format (AAF). These standards have been in existence for a number of years and the profile is a technically mature standard. BAE, Boeing-Autometric, Lockheed-Martin, PAR Government Systems, and SAIC have developed ASPA enabled products. Several companies are involved with MXF- and AAF-ASPA. See the MISB web site for information about standards development activities, companies participating in this development, and organizations that use their products.

Public Availability

ASPA Profile: <http://gwg.nga.mil/misb/> (requires password)

Implementability

BAE Systems - ASPA support to IPL and NGL archive systems Boeing-Autometric - ASPA support to CMIL archive system Lockheed Martin - ASPA Browser in IEC workstations PAR Government Systems - ASPA software in GeoView ELT application. SAIC - ASPA software as part of MITools MIRReporter application.

Authority

The Motion Imagery Standards Board, a DoD and Intelligence Community standards organization, maintains the Aerial Surveillance and Photogrammetry Applications profile. Edition 2 of NATO STANAG 4609 on Digital Motion Imagery uses the ASPA Profile. The Society of Motion Picture and Television Engineers (SMPTE), an international standards organization, maintains the MXF File Format Specification used by NATO.

Standard Type Military

Keywords for Search None

Standard Identifier **MISP v4.3**

Title of Standard

Motion Imagery Standards Profile, MISP Version 4.3, 13 September 2007

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2008-04-03	n/a	2008-04-03	2008-04-03	2008-04-03	n/a

Replaced [MISP v3.2](#)

Standards Body [MISB](#) [Broken Link?](#)
URL to Access or Acquire <http://gwg.nga.mil/misb/>

Working Group

Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest No Secondary Interest

Service Area GEOINT: Motion Imagery

KIPs No KIP Found

Standard Applicability

2008-03-27

The MISP should be used by the DoD and Intelligence Communities to create, process, manipulate, exploit, store, archive, and disseminate Motion Imagery (full motion video) both for real-time and other end-user wide area product distribution, in support to imaging applications including (but not limited to) Intelligence, Surveillance, and Reconnaissance (ISR), and Exploitation. It applies to all motion imagery-based systems except for video teleconference and video telemedicine. The MISP applicability includes: - Interchange of digital video and metadata such as sensor to ground stations; ground station to exploitation; and exploitation to archive - Television and movie post production systems - Non-linear digital editing systems - Media archive systems - Media dissemination systems Exchange of finished product(s) multi-media reports and products Reporting systems - Exploitation systems Interoperability exchange for Common Operational Picture (COP) display systems.

Standard Abstract

2008-03-27

The Motion Imagery Standards Profile (MISP), formerly known as the Video Imagery Standards Profile (VISP), is a profile of international and Government standards to promote interoperability between full motion video systems of the Department of Defense/Intelligence Community/National System for Geospatial Intelligence (DoD/IC/NSG). The Motion Imagery Standards Board (MISB), formerly known as the Video Working Group (VWG), is the due-process standards body, which produces the MISP. This DoD/IC/NSG Motion Imagery Standards Profile is a direct expression of the MISB mission and serves as the master baseline standards document prepared and managed by the MISB.

Profiling Questions

GEOINT: Motion Imagery • Does your system deal with motion imagery, full motion video or just simply video or does your imaging sensors/ systems generate sequential or continuous streaming images at rates of 1 frame per second or greater, within a common field of regard?

Products Incorporating This Standard

Many companies including BAE, Boeing-Autometric, Delta Information Systems, General Automics, L3, Lockheed-Martin, Media Solutions, PAR Government Systems, and SAIC have developed products based on the MISP. See the Motion Imagery Standards Board (MISB) web site for information about products using the MISP.

Relevant Information

This citation authored by the GWG Motion Imagery Standards Board

Implementation Guidance

Guidance for using/implementing this standard is available from the Motion Imagery Standards Board (MISB) [<http://www.gwg.nga.mil/misb/>]

Standard Selection Criteria

Net-Centric Interoperability

The Motion Imagery Standards Profile (MISP) is a profile of motion imagery standards that provides the ability to exchange files between fusion/reporting, archive, and geospatial exploitation systems and to stream motion imagery in a netcentric environment. The MISP is ideally suited for source, production, exploitation and dissemination processes (entire TPED process).

Technical Maturity

The MISP and its predecessors have been established and utilized for ten years. The MISP, version 4.3 is a technically mature standard and changed very little from version 4.2. MISP 4.3 will form the foundation for Edition 3 of STANAG 4609 on digital motion imagery. Many companies including BAE, Boeing-Autometric, Lockheed-Martin, Media Solutions, PAR Government Systems, and SAIC have developed products based on the MISP. See the Motion Imagery Standards Board (MISB) web site for information about standards development activities, companies participating in this development, and organizations that use their products.

Public Availability

<http://gwg.nga.mil/misb/>

Implementability

The US Air Force, Army, Navy, Marines, the Intelligence organizations, and many NATO nations use the MISP and its NATO equivalent STANAG 4609. Many companies including BAE, Boeing-Autometric, Lockheed-Martin, Media Solutions, PAR Government Systems, and SAIC have developed products based on the MISP. See the Motion Imagery Standards Board (MISB) web site for information about standards development activities, companies participating in this development, and organizations that use their products.

Authority

The Motion Imagery Standards Board, a military standards organization, developed and maintains the MISP. NATO STANAG 4609 on Digital Motion Imagery is based on the MISP. The Motion Imagery Standards board is open to all who are involved in motion imagery including government and commercial organizations, individuals, and academia.

Standard Type Military

Keywords for Search None

Profiling Questions

GEOINT: Geospatial

- Does the application acquire, process, analyze, access, present and/or transfer geospatial information in digital/electronic form or does the application participate in the NSG or does the application use, display and/or communicate information about geospatial concepts (e.g. definitions or descriptions of items of geospatial information)?

Products Incorporating This Standard

NGA Mission Specific Data (MSD) Levels 1-5 Data Content Specifications (DCS) NGA Geospatial-Intelligence Knowledge Base (GKB)

Relevant Information

The NEC is the successor to and replaces both the legacy NIMA Profile (including US National Extensions) of the DGIWG Feature and Attribute Coding Catalogue (FACC) and the emerging NSG Feature Catalog (NFC). It conforms to ISO 19110 Methodology for Feature Cataloging and its information schema. The NEC is designed to support net- and data-centric specification and use of items of geospatial information, including the acquisition, processing, analysis, access, presentation and transfer of geospatial information in digital/electronic form between different users, systems and locations. The NEC specifies a common semantic model for all NSG participants and is a critical component in achieving NSG objective capabilities; failure to ensure that DISR users are aware of and have access to the NEC during their system development and/or upgrade activities will significantly impair the development and operation of the NSG. NOTE: The ISO 19100-series of standards defines the term feature as an abstraction of real world phenomena. The NEC scope of the term feature is that a feature may have many alternative representations (e.g., as an image, a multi-dimensional grid of values, or a set of one or more vector shapes). In some technology communities a feature is understood to be only a vector shape representation (of a real world phenomena); which is often the practice in the commercial Geographic Information Systems (GIS) community. The NEC avoids this potential misunderstanding of the scope for its use in DoD/IC system acquisition. The NSG Entity Catalog (NEC) is a renaming of the NSG Feature Catalog (NFC), without changing either scope or intent. Citation authored by the GWG Application Schemas for Feature Encoding Focus Group.

Implementation Guidance

The NEC supersedes the legacy NIMA Profile of FACC and meets the same functional and content requirement; guidance applied in the use of the NIMA Profile of FACC may apply here as well. For system-specific recommendations for integration and employment of the NEC (e.g., within the C/JMTK or in concert with web-based services such as the Web Feature Service (WFS), ISO 19142), contact the NGA / National Center for Geospatial Intelligence Standards (ncgis-mail@nga.mil). In particular, experienced assistance is available for the migration of existing systems, capabilities, specifications, and formats that are based on the NIMA Profile of FACC to a NEC-basis.

Standard Selection Criteria

Net-Centric Interoperability

Net/data-centricity necessitates diverse environments, perspectives, & requirements integrated thru a common logical data model. The NEC asserts unambiguous shared semantic for GEOINT across the NSG & provides sufficient flexibility for customization & extension to meet customer system needs. It determines semantic content by specifying an NSG-wide data model w/ the NSG Feature Data Dictionary (NFDD) serving as its supporting data element dictionary. It specifies the semantics of the feature information concepts used, their geometries, attributes, data types, associations, metadata & mgmt info. It draws upon recognized content standards, specs & profiles from the military (DGIWG, NATO/MGID, MIDB, JMCDM) & civilian sectors (IHO, ICAO/Eurocontrol, WMO). Traceability is established from concepts back to appropriate authoritative concept sources to ensure data integrity when geospatial data is exchanged between NSG & external

systems. The NEC & NFDD together answer: What do we mean?

Technical Maturity

The NEC was released in 2005 (then provisionally named the NSG Feature Catalog) and has been subsequently enhanced on the basis of evolving information systems technology. The NEC is in active use within NGA and the National System for Geospatial Intelligence (NSG) and its component systems. The NEC is the successor to and replaces both the legacy NIMA Profile (including US National Extensions) of the DGIWG Feature and Attribute Coding Catalog (FACC) and the emerging NSG Feature Catalog (NFC). The NEC conforms to ISO 19110 Methodology for Feature Cataloging and its information schema, using feature and attribute concepts specified by the NSG Feature Data Dictionary (NFDD). The NEC leverages and integrates geospatial information modeling practices from multiple community models (e.g., MGCP, AIXM, MIDB, S-57, AML, and others) whose data are used and exchanged by NSG component systems.

Public Availability

The NEC is published in several forms and is available as a free download at: http://www.gwg.nga.mil/stds_regs.html, <http://org.nga.ic.gov/ncgis/registries.html>, and <https://gesportal.dod.mil/sites/GWGCOI/default.aspx>.

Implementability

The NEC specifies the geospatial information concepts (and their relationships) used by the NSG community to characterize real-world entities (or objects) and related properties. Technology appropriate for implementing and using these geospatial information concepts is well established. In particular, the NEC has been used within a net-centric architecture based on Open Geospatial Consortium (OGC) open web services such as the Web Feature Server (WFS, ISO 19142) as well as in relational DBMS (including COTS GIS) environments.

Authority

The NEC is managed by the NGA NCGIS and the Geospatial Intelligence Standards Working Group (GWG), using an ISO 19110-conformant information schema. The NEC is established as an online registry in conformance with ISO 19135 to support rapidly evolving DOD/IC requirements. The NEC is in active use within NGA and the National System for Geospatial Intelligence (NSG) and its component systems. The NEC specifies the common shared semantic content of the NSG.

Standard Type Non-Military

Keywords for Search None

Standard Identifier **NFDD v1.8**

Title of Standard

National System for Geospatial-Intelligence (NSG) Feature Data Dictionary (NFDD), Version 1.8, May 2007

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2007-11-06	n/a	2007-11-06	2007-11-06	2007-11-06	n/a

Standards Body

[NGA](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.nga.mil/standards>

Working Group

Primary Owner

Geospatial Intelligence TWG (GWG)

Secondary Interests

Modeling and Simulation TWG

Warfighting

Service Area

GEOINT: Geospatial

KIPs

No KIP Found

Standard Applicability

2007-11-08

The NFDD is applicable to the storage, manipulation, interchange, and exploitation of geospatial intelligence data. Systems participating within the NSG must utilize the NFDD in order to ensure consistent NSG-wide geospatial data semantics, support net-centric geospatial services, and achieve geospatial data interoperability.

Standard Abstract

2007-11-08

The NSG Feature Data Dictionary (NFDD) specifies the semantic content of the NSG through profiling, integrating, and extending concepts from multiple authoritative community-specific feature data dictionaries (DGIWG DFDD, AIXM, MIDB, IHO S-57, NATO AML, and others). These concepts characterize aspects of real-world entities (or objects) and related properties, including those that are not necessarily visible or have a tangible physical form (e.g. Airspace). The NFDD is a comprehensive dictionary and coding scheme for feature types, feature attributes (properties or characteristics associated with features), and attribute values (domain of feature attributes). A standardized dictionary is required to support encoding in order to maximize interoperability and to understand the production, exchange, distribution, and exploitation of digital geographic data. It is intended to be independent from level of resolution (scale), representation, and portrayal. The appropriate selection of NFDD feature types and feature attributes are intended to be implemented as part of the overall solution for an application, by means of a database (supported by a data schema or model), or in a product or dataset (defined according to a format specification and a data model). The NFDD allows for individuals to define feature types and feature attributes for cases where such feature types and feature attributes are not readily defined in external feature dictionaries such as the DGWIG FDD. It is managed by the NGA NCGIS and GWG using a responsive maintenance model in accordance with ISO 19135 to support rapidly evolving DOD/IC requirements.

Profiling Questions

GEOINT: Geospatial

- Does the application acquire, process, analyze, access, present and/or transfer geospatial information in digital/electronic form or does the application participate in the NSG or does the application use, display and/or communicate information about geospatial concepts (e.g. definitions or descriptions of items of geospatial information)?

Products Incorporating This Standard

NGA Mission Specific Data (MSD) Levels 1-5 Data Content Specifications (DCS) NGA Geospatial-Intelligence Knowledge Base (GKB)

Relevant Information

The NFDD draws geospatial concepts from multiple community dictionaries (e.g., the DFDD, AIXM, MIDB, S-57, AML, and others) to specify an integrated feature data dictionary tailored to the requirements of the US DoD/IC and includes unique geospatial concepts not found elsewhere. The NFDD is in active use within the NSG community, including NGA. It profiles and extends the DISR-mandated international DGIWG FDD to address NSG-unique requirements and capabilities. The NFDD serves as the sole vehicle to permit access to the profiled content of the DFDD and other authoritative dictionaries, as well as to DoD/IC extensions. The DGIWG FACC used in legacy DoD/IC systems was retired by the DGIWG (July 2004) and is not maintained; neither are the US National Extensions to the DGIWG FACC that are used in legacy data products (and which previously were maintained within the FACC register). The DFDD and NFDD replace these legacy standards/capabilities. In October 2005, the DFDD moved from emerging to mandated; it is time for the NFDD to similarly move from emerging to mandated. This natural evolution will ensure that DISR users are aware of and have access to the NFDD during their system development and/or upgrade activities. Citation authored by the GWG Application Schemas for Feature Encoding Focus Group.

Implementation Guidance

The NFDD v1.8 is compatible with the currently mandated DFDD 2005-2, and guidance applied in the use of DFDD 2005-2 may apply here as well. For system-specific recommendations for integration and employment of the NFDD (e.g., within the C/JMTK or in concert with web-based services such as the Web Feature Service (WFS) ,ISO 19142), contact the NGA / National Center for Geospatial Intelligence Standards (ncgis-mail@nga.mil). In particular, experienced assistance is available for the migration of existing systems, capabilities, specifications, and formats that are based on other geospatial data dictionaries to a NFDD-basis.

Standard Selection Criteria

Net-Centric Interoperability

The register-based and web-enabled NFDD is one of a family of standards developed by NGA to support acquiring, processing, analyzing, accessing, presenting and transferring geospatial information in digital/electronic form between different users, systems and locations. The NFDD is designed to support net- and data-centric specification of items of geospatial information, drawing geospatial concepts from multiple community dictionaries (e.g. Digital Geospatial Information Working Group Feature Data Dictionary (DFDD), Aeronautical Information Exchange Model (AIXM), Modernized Integrated Database (MIDB), IHO S-57, NATO Additional Military Layers (AML), and others) to specify an integrated feature data dictionary tailored to the requirements of the US DoD/IC.

Technical Maturity

The NFDD was released in 2005 and has been subsequently enhanced on the basis of evolving information systems technology and standards. The NFDD is in active use within NGA and the National System for Geospatial Intelligence (NSG) and its component systems. The NFDD profiles and extends the (DISR-mandated) DGIWG FDD to address

NSG-unique requirements and capabilities. The NFDD specifies the set of well-defined feature types and attributes that establish the geospatial semantic content of the NSG Entity Catalog (which is the logical data model for the NSG).

Public Availability

The NFDD is published in several forms and is available as a free download at: http://www.gwg.nga.mil/stds_regs.html, <http://org.nga.ic.gov/ncgis/registries.html>, and <https://gesportal.dod.mil/sites/GWGCOI/default.aspx>.

Implementability

The NFDD specifies geospatial information concepts used within the NSG community to characterize real-world entities (or objects) and related properties. Technology appropriate for implementing and using these geospatial information concepts is well established. In particular, the NFDD has been used within a net-centric architecture based on Open Geospatial Consortium (OGC) open web services such as the Web Feature Server (WFS - ISO 19142) as well as in relational DBMS (including COTS GIS) environments.

Authority

The NFDD is managed by the NGA NCGIS and the Geospatial Intelligence Standards Working Group (GWG), using ISO 19135 as a maintenance model to support rapidly evolving DOD/IC requirements. It is in active use within the NSG. It profiles and extends the DISR-mandated international DGIWG FDD to address NSG-unique requirements and capabilities. It specifies the semantic content of the NSG Entity Catalog, the logical data model for the NSG.

Standard Type Non-Military

Keywords for Search None

Standard Identifier OpenGIS Filter 1.1

Title of Standard
 OpenGIS® Filter Encoding Implementation Specification, Version 1.1.0, 3 May 2005

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2007-06-27	n/a	2007-06-27	2007-06-27	2007-06-27	n/a

Standards Body [OpenGIS](#) [Broken Link?](#)
URL to Access or Acquire <http://www.opengeospatial.org>

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest No Secondary Interest

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2007-06-27

This standard is applicable to the development of systems that use the interfaces specified by the OpenGIS® Web Feature Service Implementation Specification.

Standard Abstract

2007-06-27

A filter expression is a construct used to constrain the property values of an object type for the purpose of identifying a subset of object instances to be operated upon in some manner. This specification describes an XML encoding of the OGC Common Catalog Query Language (CQL) as a system neutral representation of a query predicate. Using the numerous XML tools available today, such an XML representation can be easily validated, parsed and then transformed into whatever target language is required to retrieve or modify object instances stored in some a persistent object store. For example, an XML encoded filter could be transformed into a WHERE clause for a SQL SELECT statement to fetch data stored in a SQL-based relational database. Similarly, an XML encoded filter expression could be transformed into an XPath or XPointer expression for fetching data from XML documents. A large class of OpenGIS; web based service requires the ability to express filter expressions in XML. The filter encoding described in this document is a common component that can be used by a number of OGC web services. Any service that requires the ability to query objects from a web-accessible repository can make use of the XML filter encoding described in this document. For example, a web feature service may use the XML filter encoding in a GetFeature operation to define query constraints. Other services based of the web feature service, such as Gazetteer or the Web Registry Service, could also make use of this filter encoding.

Profiling Questions

- GEOINT: Geospatial**
- Does your system require access to geospatial feature information using an implementation of the OGC Web Feature Service specification or does your system require an ability to

select objects from a net accessible data base?

Products Incorporating This Standard

A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Relevant Information

This citation was authored by the GWG Information Transfer and Services Architecture Working Group.

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

The OpenGIS® Filter Encoding Implementation Specification is used with the OpenGIS® Web Feature Service Implementation Specification to identify a subset of features to be operated upon in some manner. The WFS is one of a suite of specifications developed by OGC to define interfaces for web access to geographic information services.

Technical Maturity

The OpenGeospatial Consortium began development of the Filter Encoding Implementation Specification in 2001. Version 1.1 was published in May 2005 as an Adopted Specification and has 8 implementations as of 05 March 2007. A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Public Availability

The specification is freely available from the Open Geospatial Consortium at <http://www.opengeospatial.org/standards/filter>.

Implementability

A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Authority

The OpenGeospatial Consortium is an international organization with members from industry, government and academia which uses an open process for developing and maintaining standards for geospatial information and services. The Web Feature Service Specification has been accepted by the International Organization for Standardization (ISO) Technical Committee 211 to be published as ISO 19143.

Standard Type Non-Military

Keywords for Search None

Standard Identifier SLD 1.0

Title of Standard

OpenGIS® Styled Layer Descriptor (SLD) Implementation Specification, 19 August 2002

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2006-02-21	n/a	2006-02-21	2006-02-21	2006-02-21	n/a

Standards Body

[OpenGIS](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.opengeospatial.org>

Working Group

Primary Owner

Geospatial Intelligence TWG (GWG)

Secondary Interest

No Secondary Interest

Service Area

GEOINT: Geospatial

KIPs

No KIP Found

Standard Applicability

2006-02-21

The standard may be used for the development of any system intended to provide net access to GEOINT data to be displayed as a map or spatially reference image, and for systems that need to access and display such data. It should be used in either case if there is a requirement for user-specified map symbology. There are no competing standards.

Standard Abstract

2006-02-21

This specification addresses the need for geospatial consumers (either humans or machines) to control the visual portrayal of the data with which they work. The OpenGIS® Web Map Service (WMS) Implementation Specification supports the ability for an information provider to specify very basic styling options by advertising a preset collection of visual portrayals for each available data set. However, while a WMS can provide the user with a choice of style options, the WMS can only tell the user the name of each style. It cannot tell the user what the portrayal will look like on the map. More importantly, the user has no way of defining styling rules. This specification defines a styling language for both purposes that the client and server can both understand.

Profiling Questions

GEOINT: Geospatial

- Does your development involve a client that needs to access and display maps or spatially registered images or does your development involve a server that provides access to geospatial information or spatially registered images?

Products Incorporating This Standard

A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Relevant Information

GWG requests this standard be tagged mandated sunset. Trigger event will be the mandating of the next version of SLD. There are 21 implementations of this specification

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

The Styled Layer Descriptor is an encoding for extending the OpenGIS® Web Map Service (WMS) Implementation Specification to allow user-defined symbolization of feature data. WMS specifies client and server interfaces for producing maps of spatially referenced data dynamically from geographic information, where "map" is defined as a digital image file suitable for display on a computer screen.

Technical Maturity

This specification was published by the OpenGeospatial Consortium in August 2002. As of 30 September 2005, there are 21 implementations of the specification.

Public Availability

The specification is freely available from the Open Geospatial Consortium at <http://opengeospatial.org>

Implementability

A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Authority

The OpenGeospatial Consortium is an international organization with members from industry, government and academia which uses an open process for developing and maintaining standards for geospatial information and services.

Standard Type Non-Military

Keywords for Search image display, map

Standard Identifier SMPTE 377M:2004

Title of Standard
Material Exchange Format (MXF) File Format Specification

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/ Retired
2006-02-21	2006-02-21	2007-06-27	2007-06-27	2007-06-27	n/a

Standards Body [SMPTE](#) [Broken Link?](#)
URL to Access or Acquire <http://www.smpte.org>

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest No Secondary Interest

Service Area GEOINT: Motion Imagery

KIPs No KIP Found

Standard Applicability

2007-06-27

Application areas for MXF include: -interchange of digital video and metadata such as sensor to ground stations; ground station to exploitation; and exploitation to archive - television and movie post production systems -non-linear digital editing systems -media archive systems -media dissemination systems Exchange of finished product(s) multi-media reports and products Multi-INT fusion/reporting systems -exploitation systems interoperability exchange for Common Operational Picture (COP) display systems.

2006-02-21

Application areas for MXF include: - television and movie post production systems - non-linear digital editing systems - media archive systems - media dissemination systems - multi-INT fusion/reporting systems - exploitation systems

Standard Abstract

2007-06-27

Material Exchange Format (MXF) is a referenced interchange format for NATO coalition operations using digital Motion Imagery and metadata via Edition 2 of STANAG 4609. MXF is a wholly contained subset of the Advanced Authoring Format (AAF) data model, and is a simple interchange format, primarily to facilitate the transfer of finished content, whole programs, or completed sections between servers and for streaming operations. MXF also helps with the migration of playout operations and simpler production systems into standard networked environments. While the MXF and AAF are complementary, there are significant differences. AAF may carry references to outside material held in other places, to be used in an edit whereas MXF is always complete and self-contained; not requiring any access to outside material. In addition, AAF includes basic video transition processing whereas MXF, carrying completed program material, does not. The header metadata area of the MXF file is where much of the benefit of MXF comes. It is the area where metadata is added and the timing and synchronization parameters of the file are defined. Synchronization and description of the essence is controlled by 3 packages: Material, File and Source. The Material Package represents the output timeline of the file. The actual

essence is described by the File Package. The derivation of that essence (previous edit decision lists, descriptions of original film stock etc.) are contained within the Source Package. MXF metadata also contains information about the file structure, body contents, key words or titles, subtitles, reference number, editing notes, location, time, date, and version number, etc. Implementers of MXF should use the ASPA-AAF Profile standard to structure the data in accordance with the ASPA standard.

2006-02-21

Material Exchange Format (MXF) is derived from the Advanced Authoring Format (AAF) data model, and is a simple interchange format, primarily to facilitate the transfer of finished content, whole programs, or completed sections between servers and to tape streamers. MXF also helps with the migration of playout operations and simpler production systems into standard networked environments. While the MXF and AAF are complementary, there are significant differences. AAF may carry references to outside material held in other places, to be used in an edit whereas MXF is always complete and self-contained; not requiring any access to outside material. In addition, AAF includes basic video transition processing whereas MXF, carrying completed program material, does not. The header metadata area of the MXF file is where much of the benefit of MXF comes. It is the area where metadata is added and the timing and synchronization parameters of the file are defined. Synchronization and description of the essence is controlled by 3 packages: Material, File and Source. The Material Package represents the output timeline of the file. The actual essence is described by the File Package. The derivation of that essence (previous edit decision lists, descriptions of original film stock etc.) are contained within the Source Package. MXF metadata also contains information about the file structure, body contents, key words or titles, subtitles, reference number, editing notes, location, time, date, and version number, etc.

Profiling Questions

GEOINT: Motion Imagery • Does your system exchange motion imagery data with external systems or does your system task, collect, produce, process, catalog, store, read, exploit, or disseminate digital motion imagery?

Products Incorporating This Standard

Companies that manufacture MXF-enabled tools include Avid, EVS, Quantel, Leitch, MOG Solutions, Omneon, Panasonic, Pinnacle, SGI, Snell & Wilcox, Sony, and Thomson.

Relevant Information

None

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

MXF-enabled applications provide the ability to exchange files between media archive and dissemination systems. MXF is ideally suited for source, production, exploitation and dissemination processes (entire TPED process).

Technical Maturity

MXF is an established standard maintained by the Society of Motion Picture and Television Engineers (SMPTE) since 2004. See SMPTE's web site for information on the complete set of official documents. MXF is gaining support in the commercial market place with software tools to read, write, edit, disseminate, and archive MXF files. Companies that manufacture MXF-enabled tools include Avid, EVS, Quantel, Leitch, MOG Solutions, Omneon, Panasonic, Pinnacle, SGI, Snell & Wilcox, Sony, and Thomson.

Public Availability

http://www.smpte.org/smpte_store/ (requires purchase)

Implementability

Any DoD or IC organization using products from companies listed above may be using the MXF standard in their software products, and the MXF Standard is also being implemented in hardware (e.g. cameras) as an output format.

Authority

Edition 2 of NATO STANAG 4609 on Digital Motion Imagery uses SMPTE-standardized MXF. Ratified by 6 NATO countries & in promulgated stage for use in ops. The Society of Motion Picture & Television Engineers, maintains MXF File Format Spec. 16 SMPTE official docs describe the std including: -SMPTE 377M-2004 Television Material Exchange Format (MXF) File Format Specification -SMPTE 378M-2004 Television Material Exchange Format (MXF) Operational Pattern 1a (Single Item, Single Package) -SMPTE 379M-2004 Television Material Exchange Format (MXF) MXF Generic Container - SMPTE 380M-2004 Television Material Exchange Format (MXF) Descriptive Metadata Scheme-1 (Standard, Dynamic) -SMPTE 381M Television Material Exchange Format (MXF) Mapping MPEG Streams into MXF Generic Container (Dynamic) SMPTE 383M-2004 Television Material Exchange Format (MXF) Mapping DV-DIF Data to MXF Generic Container SMPTE, in conjunction w/ Pro-MPEG, & AAF Association, have open processes to maintain & develop MXF.

Standard Type Non-Military

Keywords for Search None

Standard Identifier STANAG 4559, EDITION 2

Title of Standard

NATO Standard ISR Library Interface (NSILI), Edition 2, dated 15 June 2007

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/ Retired
2008-07-14	n/a	2008-07-14	2008-07-14	2008-07-14	n/a

Standards Body

[NATO](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.nato.int/docu/standard.htm>

Working Group

Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest No Secondary Interest

Service Area

GEOINT: Still Imagery

KIPs

No KIP Found

Standard Applicability

2008-07-17

STANAG 4559, the NATO Standard ISR Library Interface (NSILI), is used in Coalition and NATO Distributed Common Ground System structures as the discovery and retrieval (D&R) mechanism to query and provide ISR data including imagery, GMTI, Motion Imagery and general ISR data that can be discovered in a network (usually closed) of ISR product libraries. STANAG 4559 Clients, developed by participating nations utilizing common and standard data elements to query available IPLs, establish standing requests for new instances of data in an area of interest. Interfaces to the US DCGS Integrated Backbone (DIB) provide a link to accessing exposed data / data sources to coalition and friendly forces in closed networks. The NATO International Security Assistance Force (ISAF) commands have identified STANAG 4559 compliant capabilities for use in the battlefield.

Standard Abstract

2008-07-17

STANAG 4559 NSILI is aimed at providing interoperable exchange of NATO Intelligence, Surveillance and Reconnaissance (ISR) products among NATO accessible C4I Library Systems. The STANAG 4559 is the standard interface for querying and accessing heterogeneous product libraries maintained by various nations and revealed to partner nations. This standard specifies a common software interface to be implemented and exist for all NATO ISR interoperable library systems. The interface provides electronic search and retrieval capabilities for distributed users to find products from distributed libraries in support of, but not limited to, rapid mission planning and operation, strategic analysis, and intelligent battlefield preparation. Product Libraries and the NSIL Interface are envisioned by NATO as a key technology utilized within existing Request for Information (RFI) procedures. The overall goal is for the users, who may be intelligence analysts, imagery analysts, cartographers, mission planners, simulations and operational users from NATO countries, to have timely access to distributed ISR information if Host Nation operational

restrictions and security policies permit this access. Originally designed for discovery of still image files (STANAG 4545 NSIF), the 4559 STANAG is being expanded in capability to discover any type of ISR data revealed in an ISR Library. STANAG 4559 is part of the NATO ISR Interoperability Architecture (NIIA) defined in NATO publication AEDP-2 and provides access to data in the following formats: STANAG 4545 NSIF; STANAG 4607 GMTI; STANAG 4609 Motion Imagery; STANAG 7023 Primary Imagery; STANAG 4633 NATO Common ELINT Reporting Format; MIL-STD 2500; ISO/IEC 12087-5 NSIF Profile of BIIF.

Profiling Questions

GEOINT: Still Imagery

- Does the sys discvr ISR data from a product library or does the ISR library sys support client & server structures, standing queries, info release protection, or web discovery and retrieval of data in STANAG 4545, 4607,4609,4633,7023 NITF, NSIF, JPEG, TIFF?

Products Incorporating This Standard

Norwegian NORCCIS and MTOC, UK Watchkeeper, UK TREF, UK MEC, UK MIDAS; NC3A CSD, German SAR-Lupe, German IIES, German Tornado, French SAIM, US DCGS-X

Relevant Information

Allied Engineering Documentation Publication Number 5 (AEDP-5) and the STANAG 4559 NATO Standard ISR Library Interface (NSILI) Implementation Guide provide guidance for the implementation and testing of STANAG 4559. The STANAG, the AEDP-5 and other supporting documentation is provided at <http://www.nato.int/docu/standard.htm> This citation authored by the GWG NTB Focus Group. This STANAG represents current practice. Forward looking activities are addressing XML interchanges and coordination with US and NATO forums for net-centric discovery.

Implementation Guidance

A) The JCG-ISR recognizes the current limitations for a trusted technology that supports the management of release and handling instructions encoded on data. NSILI implementations therefore presume the limitation of a closed or controlled network to participating ISR libraries that contain fully releasable data, until such time as a solution technology can be applied. B) Discovery is dependent upon the robustness of metadata search engines and the existence of metadata encoded in data files; NSILI, for this reason, minimizes the discovery core data set. Profiles will be established for particular formats of data (4607: GMTI, 4609: Motion Imagery, 4633: ELINT Reports, 4676: ISR Tracks), but the baseline Core Data Model is based on STANAG 4545: NSIF and is mandated for compliance and backwards interoperability. C) Compatible exchange with the DCGS Integrated Backbone (DIB) has been developed and tested; however, there is no standard for the DIB. D) Alignment of STANAG 4559: NSILI with the USIGS Geospatial and Imagery Access Services Specification - Version 3.5.1, USIGS Common Object Specification- Version 1.5.1a, UIP Specification Change Summary, and Discovery & Retrieval Interface Data Model (Rev. M) - 30.09.2007, all NGA documents, are supported, but not controlled by, the STANAG 4559 Custodial Support Team and the US Interface Control Working Group (ICWG) and NSG Interface Control Working Group (NICWG).

Standard Selection Criteria

Net-Centric Interoperability

STANAG 4559, the NATO Standard ISR (Intelligence, Surveillance and Reconnaissance) Library Interface (NSILI), specifies the network interface for accessing ISR product libraries when operating in the coalition environment. ISR product libraries supporting NATO operations have the capability to provide imagery, GEOINT, imagery products, metadata and other imagery-derived information in near real time. NSILI provides definition of this interface and describes product interchange on networked systems. NSILI is part of the NATO ISR Interoperability Architecture (NIIA) defined in NATO publication AEDP-2 and provides library access to data in the following formats: STANAG 4545 NSIF; STANAG 4607 GMTI; STANAG 4609 Motion Imagery; STANAG 7023 Primary Imagery; STANAG 4633 NATO Common ELINT Reporting Format; MIL-STD 2500; and ISO/IEC 12087-5

NSIF Profile of BIIF. Edition 2 is based upon CORBA, a future edition (2009) will address other network ORB technologies (e.g. IIOP, SOAP, etc.).

Technical Maturity

STANAG 4559 is a NATO Standardization Agreement based on the US Imagery and Geospatial System (USIGS) Geospatial and Imagery Access Services (GIAS) Specification. NSILI provides an application for international users with a connection to US DCGS service stations. The standard utilizes CORBA as a data controlling mechanism, considered reliable for closed networks. NATO is deploying the NSILI Coalition Shared Data Server (CSD) in the ISAF mission in 2008. Viability of the STANAG has been demonstrated in the Multi-Sensor Aerospace-Ground Joint Intelligence, Surveillance, Reconnaissance (ISR) Interoperability Coalition (MAJIIC) virtual environments and the Exercise Empire Challenge live fly environment. The STANAG has tested well in both environments, and has been improved in the testing process. NATO Nations systems include: Norwegian NORCCIS and MTOC; UK Watchkeeper, TREF, MEC and MIDAS; NC3A CSD; German SAR-Lupe, IIES and Tornado; French SAIM; and the US DCGS-X.

Public Availability

STANAG 4559 is available in the public domain from the NATO Standardization Agency at URL <http://www.nato.int/docu/standard.htm>. It is freely available along with supporting documents for implementation guidance.

Implementability

Within the US DoD, STANAG 4559 has been implemented in DCGS during Exercise Empire Challenge 2007 and NATO Trial Quest 2007. It is a subset of the GIAS interface implemented in the US Imagery Product Library (IPL). The Library Interface serves as a discovery and retrieval mechanisms for the NATO Nations and Australia. STANAG implementation in the US serves to support interoperability, especially with NATO ISAF forces, where the NC3A has deployed the Coalition Shared Dataserver (CSD) version of STANAG 4559 implementation. Implementations exist in the following nations and agencies: MAJIIC, NC3A, Germany, France, Great Britain, Italy, Norway, US test systems, and AGS3. Canada has NSILI clients or servers in development. Commercial interests in the UK, Italy, and Germany are the primary developers for the national defense structures. These include General Dynamics UK, QinetiQ, Thales, Datamat(Italy), Fraunhofer-IITB (Germany).

Authority

This standard was developed for the NATO Air Forces Armaments Group (NAFAG) within the Air Group 4 for Intelligence, Surveillance and Reconnaissance. The STANAG is currently maintained within the same ISR data management concern under the Joint Capability Group-ISR, one of several Capability Groups under NAFAG. The STANAG 4559 Custodial Support Team (CST) is the technical maintenance body and supports testing of the STANAG through MAJIIC and other exercise venues. The CST also maintains a STANAG 4559 conformance test suite hosted by the NATO Command, Communications, and Consultation Agency (NC3A). Configuration management of the STANAG and supporting documents is governed by the Configuration Management Process defined in Volume 2 of the Allied Engineering Documentation Publication Number 2 (AEDP-2) for the NATO Intelligence, Surveillance and Reconnaissance Interoperability Architecture (NIIA) and in AEDP-5, the Implementation Guide for STANAG 4559.

Standard Type

Military

Keywords for Search

4545, 4607, 4609, 4633, AGI, CSD, Coalition Shared Data, D&R, DCGS, DIB, Discovery, ELINT, FMV, GMTI, ISR, MAJIIC, MI, Motion Imagery, NATO, NCERF, NIIA, NITF, NSIF, NSIL, NSILI, Retrieval, STANAG

About This Standard

Mandated

Standard Identifier STANAG 4607, Ed 2

Title of Standard

NATO Ground Moving Target Indicator Format (GMTIF), Ed 2, 2 August 2007

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2008-04-03	n/a	2008-04-03	2008-04-03	2008-04-03	n/a

Replaced [STANAG 4607, Edition 1](#)

Standards Body [NATO](#)

[Broken Link?](#)

URL to Access or Acquire <http://www.nato.int/docu/standard.htm>

Working Group

Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest No Secondary Interest

Service Area GEOINT: Still Imagery

KIPs No KIP Found

Standard Applicability

2008-03-27

STANAG 4607, the NATO Ground Moving Target Indicator Format (GMTIF), is capable of supporting the GMTI dissemination needs of the US and NATO member nations, and is to be used in conjunction with other standards for the dissemination of complementary data. The STANAG describes a data format that provides a means for the transmission of Ground Moving Target Indicator (GMTI) detection data, for requesting surveillance service from the sensor, and for receiving acknowledgment that the requested surveillance will or will not be performed. It would be used to disseminate GMTI data from airborne, spaceborne, or ground-based radar sensor systems to ground stations, exploitation systems, or to other sensor systems, either in its native binary format, embedded in other ISR STANAGs, or in an XML version of the binary format. There are no competing standards. The GMTIF is a binary, message-oriented format that may be sent as a stand-alone format or be embedded in a frame-oriented format, such as the NATO Secondary Imagery Format (NSIF, STANAG 4545) or the National Imagery Transmission Format (NITF, MIL-STD-2500) for the dissemination of secondary imagery, or in a message-oriented format such as the NATO Primary Imagery Format (STANAG 7023) for the dissemination of primary imagery. Additionally, STANAG 4607 is part of the NATO ISR Interoperability Architecture (NIIA). Edition 2 of the STANAG is backward compatible with Edition 1.

Standard Abstract

2008-03-27

The STANAG 4607 GMTI Format (GMTIF) standard defines the data content and format for the products of ground moving target indicator radar systems. It also provides the mechanism to relay tasking requests back to the sensor system. The format is scalable to

allow all types of radar systems to use the format and to tailor the data flow to the capabilities of the sensor and the available communications channels. Smaller systems can use the basic capabilities of the format to transmit only moving target reports. Larger, more capable systems can use the same format for the moving target reports, and can also provide high range resolution data and other products of extended processing of the radar returns. The format is also designed to be encapsulated in either STANAG 4545 or STANAG 7023 data files, allowing users with multiple data types to use the GMTI format for the GMTI data, and the other STANAGs for imagery, graphics, and/or text data, all within a common data stream. The STANAG 4607 GMTIF is a U.S./NATO data format that provides a means for the transmission of GMTI detection data from airborne and spaceborne sensor platforms. It also provides a format for requesting surveillance service from the sensor and for receiving acknowledgment that the requested surveillance will or will not be performed. This format is capable of supporting the GMTI dissemination needs of the US and NATO member nations, and can be used in conjunction with other standards for the dissemination of complementary data. The GMTIF, developed by the NATO Joint Intelligence, Surveillance, and Reconnaissance (ISR) Capability Group (JISRCG, formerly Air Group 4 for ISR), is a binary, message-oriented format for the dissemination of GMTI data. It may be sent as a stand-alone format or it may be embedded in a frame oriented format, such as the NATO Secondary Imagery Format (NSIF, STANAG 4545) or the National Imagery Transmission Format (NITF, MIL-STD-2500) for the dissemination of secondary imagery, or in a message-oriented format such as the NATO Primary Imagery Format (STANAG 7023) for the dissemination of primary imagery. STANAG 4607 is part of the NATO ISR Interoperability Architecture (NIIA).

Profiling Questions

- GEOINT: Still Imagery**
- C4ISR domain: Does your system transmit GMTI from airborne/spaceborne sensor platforms?

Products Incorporating This Standard

Within the US DoD, systems incorporating STANAG 4607 include the Distributed Common Ground System (DCGS), the Moving Target Indicator Exploitation System, (MTIX), the Littoral Surveillance Reconnaissance System (LSRS), and Global Hawk. Contractors implementing STANAG 4607 include Northrop Grumman and Raytheon. Foreign systems incorporating STANAG 4607 include Coyote (CAN), HORIZON (FRA), IIES (DEU), KES (NOR) and SGW (ESP).

Relevant Information

Allied Engineering Documentation Publication Number 7 (AEDP-7), the STANAG 4607 NATO Ground Moving Target Indicator Format (GMTIF) Implementation Guide, provides guidance for the implementation and testing of STANAG 4607. This citation authored by the GWG NITFS Technical Board (NTB).

Implementation Guidance

STANAG 4607 JAS (Edition 2) - NATO Ground Moving Target Indicator (GMTI) Format provides a common standard format to enable the exchange of GMTI data and GMTI metadata between primary GMTI producers and GMTI users as well as among GMTI users. It is capable of operating in a Web services environment either stand-alone in its native binary format, embedded within other NATO standards, or in an Extensible Markup Language (XML) version of the binary version. It can be used by any system for the dissemination of Ground Moving Target Indicator (GMTI) data. It was derived from an earlier document, the Common GMTI (CGMTI) Data Format, which in turn was based on several diverse standards for the dissemination of GMTI data. There are no current competing standards.

Standard Selection Criteria

Net-Centric Interoperability

STANAG 4607, the NATO Ground Moving Target Indicator Format (GMTIF), Ed 2, 2 August 2007, provides error corrections, clarification of text, and additional data fields, and is backwards compatible with Edition 1, 11 March 2005. The STANAG describes a data

format that provides a means for the transmission of Ground Moving Target Indicator (GMTI) detection data, for requesting surveillance service from sensor, and for receiving acknowledgment that the requested surveillance will or will not be performed. It is used to disseminate GMTI data from airborne, spaceborne, or ground-based radar sensor systems to ground stations, exploitation systems, or to other sensor systems, either in its native binary format, embedded in other ISR STANAGs, or in an XML version of the binary format. The XML version of STANAG provides users with ability to access GMTI data through Web services.

Technical Maturity

STANAG 4607 is a military standard which is applicable to US and international users with a need to disseminate Ground Moving Target Indicator (GMTI) data or to request GMTI service. It is currently being implemented in several US DoD systems, including DCGS, MTIX, Global Hawk, and LSRS, and by several contractors, including Northrop Grumman and Raytheon.

Public Availability

STANAG 4607, Ed 2, is available in the public domain from the NATO Standardization Agency at URL <http://www.nato.int/docu/standard.htm>. It is free of charge.

Implementability

Within the US DoD, several programs have mandated the use of STANAG 4607 and are implementing STANAG 4607 in their systems. These programs include the Distributed Common Ground System (DCGS), the Moving Target Indicator Exploitation system (MTIX), the Littoral Surveillance Reconnaissance System (LSRS), and Global Hawk. Contractors implementing STANAG 4607 include Northrop Grumman and Raytheon. In addition, several foreign systems are implementing STANAG 4607, including Coyote (CAN), HORIZON (FRA), IIES (DEU), KES (NOR) and SGW (ESP).

Authority

The STANAG 4607 NATO Ground Moving Target Indicator (GMTI) Format is an international military standard. It was developed by the STANAG 4607 Technical Support Team (TST) under the cognizance of the NATO Joint Intelligence, Surveillance, and Reconnaissance (ISR) Capability Group (JISRCG, formerly Air Group 4 for ISR), one of several Air Groups under the NATO Air Force Armaments Group (NAFAG). The STANAG 4607 Custodial Support Team (CST) is responsible for the maintenance and testing of this standard, as governed by the Configuration Management Process defined in Volume 2 of Allied Engineering Documentation Publication Number 2 (AEDP-2) for the NATO Intelligence, Surveillance, Reconnaissance (ISR) Interoperability Architecture (NIIA), and in AEDP-7, the Implementation Guide for STANAG 4607.

Standard Type Military

Keywords for Search None

Standard Identifier **STDI-0002 v3**

Title of Standard

The Compendium of Controlled Extensions (CE) for the National Imagery Transmission Format (NITF), v3, 1 August 2007

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2008-04-03	n/a	2008-04-03	2008-04-03	2008-04-03	n/a

Replaced [NITF Extensions 2.1](#)

Standards Body [NGA](#) [Broken Link?](#)

URL to Access or Acquire <http://www.gwg.nga.mil/ntb/baseline/docs/stdi00021/index.new.html>

Working Group

Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest No Secondary Interest

Service Area GEOINT: Still Imagery

KIPs No KIP Found

Standard Applicability

2008-03-27

The National Imagery Transmission Format Standard (NITFS) is a DoD and Federal Intelligence Community suite of standards for the exchange, storage, and transmission of digital-imagery products and image-related products. Other image formats can be used internally within a single system; however, NITFS is the default format for interchange between systems. NITFS provides a "package" containing an image(s), symbols, labels, and text as well as other information related to the image(s). NITFS supports the dissemination of digital imagery from overhead collection platforms. Guidance on applying the suite of standards composing NITFS can be found in STDI-0005, Implementation Practices of the NITFS. The NITFS allows for Tagged Record Extensions (TREs), which are a collection of data fields that provide space within the NITF file structure for adding functionality. Documented and controlled separately from the NITFS suite of standards, TREs extend NITF functionality with minimal impact on the underlying standard document. TREs may be incorporated into an NITF file while maintaining backward compatibility because the identifier and byte count mechanisms allow applications developed prior to the addition of newly defined data to skip over extension fields they are not designed to interpret. These TREs are described in the Compendium of Controlled Extensions (CE). This standard is mandated for imagery product dissemination.

Standard Abstract

2008-03-27

The NITF Standard (NITFS), to include its Controlled [Tagged Record] Extensions, is the common thread of interoperability for the formatting, storage, cataloging, discovery, retrieval, dissemination, and exploitation of National Technical Means (NTM), Tactical Airborne, and Commercial imaging sources. The NITFS allows for Tagged Record Extensions (TREs), sometimes known as Support Data Extensions (SDEs), which are a

collection of data fields that provide space within the NITFS file structure for adding parameters and metadata to enhance NITFS functionality (e.g. discovery and retrieval in a net-centric environment). This Controlled Extension (CE) compendium provides the approved, configuration managed (controlled) Tagged Record Extensions (TREs) specifications to be used with the National Imagery Transmission Format (NITF) version 2.0 (NITF2.0) and version 2.1 (NITF2.1). TRE implementation compliance requirements are defined in NGA document, N0105, NITFS Standards Compliance and Interoperability Test and Evaluation Program Plan.

Profiling Questions

- GEOINT: Still Imagery**
- Does your system exchange Still Imagery data with external systems?

Products Incorporating This Standard

BAE Systems, DigitalGlobe, General Dynamics, GeoEye, Harris Corporation, ITT, Leica Geosystems, OverWatch, PAR, PCI Geomatics, PhotoTelesis, Raytheon, and Technology Services Corporation (TSC).

Relevant Information

In some instances, STDI-0002 simply provides an overview, synopsis and external reference to TREs specified in other configuration managed documentation. This citation authored by the GWG NITFS Technical Board (NTB).

Implementation Guidance

Since STDI-0002 is a compendium of TRE specifications, system specifications, statements of work, and similar acquisition and design documentation should cite the specific portions of the compendium applicable to the functional and behavioral objectives for the implementing system. See STDI-0005, Implementation Practices of the NITFS, available at: <http://www.gwg.nga.mil/ntb/baseline/docs/ipon/index.html>. The STDI-0005 document is a compilation of common practices, conventions, and guidelines for implementing the National Imagery Transmission Format Standard (NITFS). The objective is to help promote common specification and application of the NITFS suite of standards by all fielded and developmental digital imagery-related systems. It describes common conventions for implementing the suite of NITFS standards that promote and sustain NITFS compliance and interoperability for the production, storage, cataloging, discovery, selection, exploitation, and dissemination of digital imagery, raster map, and other related raster products. STDI-0002 version 3.0 supercedes NITF Extensions 2.1.

Standard Selection Criteria

Net-Centric Interoperability

This standard (STDI-0002) is part of the National Imagery Transmission Format Standard (NITFS) suite of standards. NITFS is the common thread of interoperability for the formatting, imagery library storage and cataloging, dissemination, and exploitation of National Technical Means (NTM), Tactical Airborne, and Commercial imaging sources. The NITFS allows for Tagged Record Extensions (TREs), sometimes known as Support Data Extensions (SDEs), which are a collection of data fields that provide space within the NITFS file structure for adding parameters and metadata to enhance NITFS functionality (e.g. discovery and retrieval in a net-centric environment).

Technical Maturity

The NITF Standard has been implemented and fielded since the early 1990's. The content of the standard has evolved over the years to embrace new technology in support of emerging operational requirements. For example, NITFS has recently added the use of the ISO/IEC 15444-1 standard for imagery compression, JPEG 2000, that includes a new Controlled Extension, J2KLRA, for definition of compression quality layers. Commercial implementations of the standard are largely driven by marketability to the DOD and Intelligence community.

Public Availability

Freely downloadable via the following URL:
<http://www.gwg.nga.mil/ntb/baseline/docs/stdi00021/index.new.html>

Implementability

Widely implemented within the DOD and Intelligence Community by National Technical Means (NTM), tactical airborne, commercial satellite imaging systems, imagery library and dissemination systems, and a variety of commercial exploitation workstations. A standards compliance and interoperability program supports implementation of the capabilities specified within the compendium. Companies with commercially available implementations/products include: BAE Systems, DigitalGlobe, General Dynamics, GeoEye, Harris Corporation, ITT, Leica Geosystems, OverWatch, PAR, PCI Geomatics, PhotoTelesis, Raytheon, and Technology Services Corporation (TSC).

Authority

STDI-0002 is an essential part of the NITFS suite of standardization documents. NITF is a military standard prepared by the National Geospatial-Intelligence Agency (NGA) as an implementation profile of Tagged Record Extensions (TREs) as specified in International Standard 12087-5, Basic Image Interchange Format (BIIF). Portions of STDI-0002 are also used/cited by STANAG 4545, NATO Secondary Imagery Format (NSIF). The Geospatial Intelligence Standards Working Group (GWG) and its NITFS Technical Board (NTB) provide an open process for maintaining and developing this standardization document.

Standard Type Military

Keywords for Search None

Standard Identifier **STDI-0006, 20 December 2006**

Title of Standard

National Imagery Transmission Format (NITF) Version 2.1 Commercial Dataset Requirements Document (NCDRD), 20 December 2006

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2008-04-03	n/a	2008-04-03	2008-04-03	2008-04-03	n/a

Replaced [STDI-0006](#)

Standards Body [NGA](#) [Broken Link?](#)
URL to Access or Acquire <http://www.gwg.nga.mil/ntb/baseline/docs/stdi0006/index.html>

Working Group

Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest No Secondary Interest

Service Area GEOINT: Still Imagery

KIPs No KIP Found

Standard Applicability

2008-03-27

This document applies to all Commercial Data Providers (CDPs) providing commercial imagery to the United States Government (USG) to include National Geospatial-Intelligence Agency (NGA) entities. This document applies to USG elements that desire to process the NGA-acquired, CDP-provided commercial imagery. Implementation details of these standardized requirements for the CDPs can be found in the appropriate CDP National Imagery Transmission Format (NITF) Version 2.1 specification. Implementation details of these standardized requirements for the United States Government (USG) user community will be promulgated in NGA Configuration Control Board (NCCB) approved changes to appropriate requirements and specification documents.

Standard Abstract

2008-03-27

This document provides the requirements for standardized commercial imagery datasets provided by Commercial Data Providers (CDPs) in National Imagery Transmission Format (NITF) Version 2.1 to elements of the National Geospatial-Intelligence Agency (NGA) for dissemination to worldwide customers and follow-on applications. These datasets will then be utilized as source material for a variety of analyses and derived products.

Profiling Questions

GEOINT: Still Imagery • Does your system use or exchange Commercial Still Imagery data with external systems?

Products Incorporating This Standard

Companies with commercially available implementations/products include DigitalGlobe and

GeoEye.

Relevant Information

This citation authored by the GWG NITFS Technical Board (NTB).

Implementation Guidance

See STDI-0005, Implementation Practices of the NITFS, available at: <http://www.gwg.nga.mil/ntb/baseline/docs/ipon/index.html> The STDI -0005 document is a compilation of common practices, conventions, and guidelines for implementing the National Imagery Transmission Format Standard (NITFS). The objective is to help promote common specification and application of the NITFS suite of standards by all fielded and developmental digital imagery -related systems. It describes common conventions for implementing the suite of NITFS standards that promote and sustain NITFS compliance and interoperability for the production, storage, cataloging, discovery, selection, exploitation, and dissemination of digital imagery, raster map, and other related raster products

Standard Selection Criteria

Net-Centric Interoperability

The NITF Standard (NITFS) is the common thread of interoperability for the formatting, imagery library storage and cataloging, dissemination, and exploitation of National Technical Means (NTM), Tactical Airborne, and Commercial imaging sources. STDI-0006, The National Imagery Transmission Format (NITF) Version 2.1 Commercial Dataset Requirements Document (NCDRD) is an Implementation Profile (IP) providing standardized requirements for imagery production and exchange from Commercial Data Providers (CDPs) of over-head imagery in NITF format, to include JPEG 2000 image compression.

Technical Maturity

NITF has been implemented & fielded since the early 1990's. Its content evolved over the years to embrace new technology in support of emerging operational requirements. NITF has adopted the ISO/IEC 15444-1 standard for imagery compression, JPEG 2000. Commercial implementations of the standard are largely driven by marketability to the DoD and IC. The National Imagery Transmission Format (NITF) Version 2.1 Commercial Dataset Requirements Document (NCDRD) is an emerging standardized Implementation Profile (IP) addressing Commercial Data Providers (CDP's) imagery production and exchange requirements for their forthcoming constellation of satellite imaging capabilities.

Public Availability

<http://www.gwg.nga.mil/ntb/baseline/docs/stdi0006/>

Implementability

NITFS is widely implemented within the DOD and Intelligence Community by National Technical Means (NTM), tactical airborne, commercial satellite imaging systems, imagery library and dissemination systems, and a variety of commercial exploitation workstations. A standards compliance and interoperability program supports implementation of the capabilities specified within this standard. STDI-0006, The National Imagery Transmission Format (NITF) Version 2.1 Commercial Dataset Requirements Document (NCDRD) is being implemented by DigitalGlobe and GeoEye in preparation for the NextView era of commercial satellite imagery. Imagery libraries, dissemination and exploitation systems are preparing to receive and act on NextView era imagery data.

Authority

This document is under the configuration control of the NGA Configuration Control Board (NCCB) in coordination with the NGA Standards Board (NSG). The Geospatial Intelligence Standards Working Group (GWG) and its NITFS Technical Board (NTB) provide the

standardization venue for community coordination of this standard. The office of primary responsibility for preparation and maintenance of this document is the NGA/AED.

Standard Type Military

Keywords for Search None

Standard Identifier **WCS 1.0**

Title of Standard

OpenGIS® Web Coverage Service (WCS) Implementation Specification

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2006-02-21	2006-02-21	2008-04-03	2008-04-03	2008-04-03	n/a

Standards Body

[OpenGIS](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.opengeospatial.org>

Working Group

Primary Owner

Geospatial Intelligence TWG (GWG)

Secondary Interest

No Secondary Interest

Service Area

GEOINT: Geospatial

KIPs

No KIP Found

Standard Applicability

2006-02-21

The WCS specification should be used for the development of any system that is intended to provide access to, or to access, coverage data such as remotely sensed images, raster maps, or digital terrain models. There are no competing standards.

Standard Abstract

2008-03-27

A WCS provides access to potentially detailed and rich sets of geospatial information, in forms that are useful for client-side rendering, multi-valued coverages, and input into scientific models and other clients. The WCS provides available data together with their detailed descriptions; allows complex queries against these data; and returns data with its original semantics (instead of pictures) which can be interpreted, extrapolated, etc. -- and not just portrayed. The WCS returns representations of space-varying phenomena that relate a spatiotemporal domain to a (possibly multidimensional) range of properties. This version of WCS supports only grid coverages. Examples include remotely-sensed images, raster maps, digital terrain models. The WCS provides three operations: GetCapabilities, GetCoverage, and DescribeCoverage. The GetCapabilities operation returns an XML document describing the service and brief descriptions of the data collections from which clients may request coverages. The DescribeCoverage operation lets clients request a full description of one or more coverages served by a particular WCS server. The server responds with an XML document that fully describes the identified coverages. The GetCoverage operation returns a coverage (that is, values or properties of a set of geographic locations), bundled in a well-known coverage format.

2007-06-27

A WCS provides access to potentially detailed and rich sets of geospatial information, in forms that are useful for client-side rendering, multi-valued coverages, and input into scientific models and other clients. The WCS provides available data together with their detailed descriptions; allows complex queries against these data; and returns data with its original semantics (instead of pictures) which can be interpreted, extrapolated, etc. -- and

not just portrayed. The WCS returns representations of space-varying phenomena that relate a spatiotemporal domain to a (possibly multidimensional) range of properties. This version of WCS supports only grid coverages. Examples include remotely-sensed images, raster maps, digital terrain models. The WCS provides three operations: GetCapabilities, GetCoverage, and DescribeCoverage. The GetCapabilities operation returns an XML document describing the service and brief descriptions of the data collections from which clients may request coverages. The DescribeCoverage operation lets clients request a full description of one or more coverages served by a particular WCS server. The server responds with an XML document that fully describes the identified coverages. The GetCoverage operation returns a coverage (that is, values or properties of a set of geographic locations), bundled in a well-known coverage format.

2006-02-21

A WCS provides access to potentially detailed and rich sets of geospatial information, in forms that are useful for client-side rendering, multi-valued coverages, and input into scientific models and other clients. The WCS provides available data together with their detailed descriptions; allows complex queries against these data; and returns data with its original semantics (instead of pictures) which can be interpreted, extrapolated, etc. -- and not just portrayed. The WCS returns representations of space-varying phenomena that relate a spatiotemporal domain to a (possibly multidimensional) range of properties. This version of WCS supports only grid coverages. Examples include remotely-sensed images, raster maps, digital terrain models. The WCS provides three operations: GetCapabilities, GetCoverage, and DescribeCoverage. The GetCapabilities operation returns an XML document describing the service and brief descriptions of the data collections from which clients may request coverages. The DescribeCoverage operation lets clients request a full description of one or more coverages served by a particular WCS server. The server responds with an XML document that fully describes the identified coverages. The GetCoverage operation returns a coverage (that is, values or properties of a set of geographic locations), bundled in a well-known coverage format.

Profiling Questions

GEOINT: Geospatial

- Does your development involve a client that needs to access data that relates position in a spatiotemporal domain to a (possibly multidimensional) range of properties or does your development involve a server that provides access to such data?

Products Incorporating This Standard

A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Relevant Information

This citation authored by the GWG Information Transfer and Services Architecture (ITSA) Focus Group.

Implementation Guidance

The OpenGeospatial Consortium voted in January 2007 to approve version 1.1 of this Web Coverage Service Implementation Specification. That version will replace this version 1.0 as soon as adequate commercial implementations are readily available.

Standard Selection Criteria

Net-Centric Interoperability

The Web Coverage Service (WCS) supports electronic interchange of geospatial data as "coverages" that is, digital geospatial information representing space-varying phenomena. A WCS serves to describe, request, and deliver multi-dimensional coverage data over the World Wide Web.

Technical Maturity

Version 1.0 of the specification was published by the OpenGeospatial Consortium in

October 2003. As of 29 November 2007, there are 21 implementations (4 officially compliant) of this specification.

Public Availability

The specification is freely available from the Open Geospatial Consortium at <http://opengeospatial.org>

Implementability

A list of registered implementations can be accessed at <http://www.opengeospatial.org>
<http://www.opengeospatial.org>.

Authority

The OpenGeospatial Consortium is an international organization with members from industry, government and academia which uses an open process for developing and maintaining standards for geospatial information and services.

Standard Type Non-Military

Keywords for Search None

Standard Identifier WFS 1.1

Title of Standard
OpenGIS® Web Feature Service (WFS) Implementation Specification

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2006-02-21	2006-02-21	2007-06-27	2007-06-27	2007-06-27	n/a

Standards Body [OpenGIS](#) [Broken Link?](#)
URL to Access or Acquire <http://www.opengeospatial.org>

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interests Business
Modeling and Simulation TWG
Warfighting

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2006-02-21

This standard is applicable to the development of systems that have requirements to access or distribute geospatial feature data over a network.

Standard Abstract

2006-02-21

A Web Feature Service (WFS) request consists of a description of query or data transformation operations that are to be applied to one or more features. The request is generated on the client and is posted to a web feature server using HTTP. The web feature server then reads the request and returns a set of results that conforms to the OpenGIS Geography Markup Language Implementation Specification.

Profiling Questions

GEOINT: Geospatial • Does the system that you are developing have requirements to access or distribute geospatial feature data over a network?

Products Incorporating This Standard

A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Relevant Information

A companion specification, the OpenGIS® Filter Encoding Implementation Specification 1.1, allows the client to specify subsets of the geospatial features made available by a WFS server. This citation was authored by the GWG Information Transfer and Services Architecture Working Group.

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

WFS is one of a suite of specifications developed by OGC to define interfaces for web access to geographic information services. This specification defines interfaces for describing data manipulation operations on geographic features using HTTP as the distributed computing platform. Data manipulation operations include the ability to: 1. Create a new feature instance; 2. Delete a feature instance; 3. Update a feature instance; and 4. Get or Query features based on spatial and non-spatial constraints. These interfaces allow a client to retrieve geospatial data encoded in Geography Markup Language (GML) from multiple Web Feature Servers.

Technical Maturity

WFS was developed over a period of several years by a group of vendors belonging to the OpenGeospatialConsortium. The development process required prototype implementations. The specification was approved and published in 2002. Version 1.1 was approved and published in May 2005. There are 15 implementations of WFS 1.1 as of 5 March 2007.

Public Availability

The specification is freely available from the Open Geospatial Consortium at <http://www.opengeospatial.org/>.

Implementability

Use of this standard is mandated for the NATO Bi-Strategic Command Automated Information System. A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Authority

The OpenGeospatial Consortium is an international organization with members from industry, government and academia which uses an open process for developing and maintaining standards for geospatial information and services. The Web Feature Service Specification has been accepted by the International Organization for Standardization (ISO) Technical Committee 211 to be published as ISO 19142.

Standard Type Non-Military

Keywords for Search None

information or spatially registered images?

Products Incorporating This Standard

A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Relevant Information

This citation is authored by the GWG's Information Transfer and Services Architecture Focus Group

Implementation Guidance

This is a companion specification to the OGC Web Map Service Interface Implementation Specification and cannot be implemented separately.

Standard Selection Criteria

Net-Centric Interoperability

This document is a companion specification to the OGC Web Map Service Interface Implementation Specification. WMS specifies both client and server interfaces for producing maps of spatially referenced data dynamically from geographic information, where "map" is defined as a digital image file suitable for display on a computer screen. The Web Map Context specification states how a specific grouping of one or more maps from one or more map servers can be described in a portable, platform-independent format for storage in a repository or for transmission between clients. This specification defines an encoding for the Context using eXtensible Markup Language [XML 1.0].

Technical Maturity

The Open Geospatial Consortium began work on this specification in 2000. Version 1.0 of the specification was published in June 2003, and Version 1.1 in January 2005. Version 1.1 was published in January 2005. There are 6 implementations of version 1.1.

Public Availability

The specification is freely available from the Open Geospatial Consortium at <http://opengeospatial.org>.

Implementability

A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Authority

The Open Geospatial Consortium is an international organization with members from industry, government and academia which uses an open process for developing and maintaining standards for geospatial information and services.

Standard Type Non-Military

Keywords for Search None

Standard Identifier **WMS 1.1.1**

Title of Standard

OpenGIS® Web Map Service (WMS) Implementation Specification, 2 August 2004

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2006-02-21	n/a	2006-02-21	2006-02-21	2006-02-21	n/a

Standards Body

[OpenGIS](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.opengeospatial.org>

Working Group

Primary Owner

Geospatial Intelligence TWG (GWG)

Secondary Interest

No Secondary Interest

Service Area

GEOINT: Geospatial

KIPs

No KIP Found

Standard Applicability

2006-02-21

The standard should be used for the development of any system intended to provide net access to GEOINT data to be displayed as a map or spatially referenced image, and for systems that need to access and display such data. There are no competing standards.

Standard Abstract

2006-02-21

This Standard provides two operations (GetCapabilities and GetMap) that support the creation and display of registered and superimposed map-like views of information that comes simultaneously from multiple sources that are both remote and heterogeneous. An optional third operation (GetFeatureInfo) provides access to information about features in a map display.

Profiling Questions

GEOINT: Geospatial

- Does your development involve a client that needs to access and display maps or spatially registered images or does your development involve a server that provides access to geospatial information or spatially registered images?

Products Incorporating This Standard

A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Relevant Information

This specification will be superseded by the OpenGIS WEB Map Service Implementation Specification (WMS) 1.3, which was published in August 2004, but has not been widely implemented as of 30 September 2005. When this standard is used alone, symbology used in the display is determined by the data provider. A companion specification, the OpenGIS® Styled Layer Descriptor Implementation Specification allows the user on the client side to

specify symbology. GWG requests this standard be tagged mandated sunset. Trigger event will be the mandating of v 1.3 or a later version. There were 120 implementations of version 1.1.1 as of 30 September 2005.

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

WMS specifies both client and server interfaces for producing maps of spatially referenced data dynamically from geographic information, where "map" is defined as a digital image file suitable for display on a computer screen. The pixels of the display are registered to an external coordinate referen system such as WGS84. The specification provides capability to build a single map from data gathered from multiple servers. The source data may consist of images or feature data. WMS-produced maps are generally rendered in a pictorial format such as PNG, GIF or JPEG, or as vector-based graphical elements in SVG or WebCGM formats.

Technical Maturity

Version 1.0 of this specification was published by the OpenGeospatial Consortium in 1999. Version 1.1 was published in 2001. There are 117 implementations of this specification as of 30 September 2005.

Public Availability

The specification is freely available from the Open Geospatial Consortium at <http://opengeospatial.org>

Implementability

This specification is being implemented as part of the NGA Geoscout initiative. Use of this standard is mandated for the NATO Bi-Strategic Command Automated Information System. A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Authority

The OpenGeospatial Consortium is an international organization with members from industry, government and academia which uses an open process for developing an maintaining standards for geospatial information and services. The Web Map Service Specification has been adopted by the International Organization for Standardization (ISO) as ISO 19128

Standard Type Non-Military

Keywords for Search image access, image display, map access, map display

Standard Identifier **Advanced Authoring Format Version 1.1**

Title of Standard
AAF Object Specification

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/ Retired
2006-02-21	2006-02-21	n/a	2006-02-21	2007-06-27	n/a

Standards Body [AMW](#) [Broken Link?](#)
URL to Access or Acquire <http://www.aafassociation.org>

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest No Secondary Interest

Service Area GEOINT: Motion Imagery

KIPs No KIP Found

Standard Applicability

2007-06-27

Application areas for AAF include: media libraries, exploitation systems, television and movie post production systems, non-linear digital editing systems, media archive systems, media dissemination systems.

2006-02-21

Application areas for AAF include: - television and movie post production systems - non-linear digital editing systems - media archive systems - media dissemination systems

Standard Abstract

2007-06-27

The Advanced Authoring Format (AAF) is a professional file interchange format designed for the multimedia, post production, and authoring environment. AAF solves the problem of multi-vendor, cross-platform interoperability for computer-based digital production. AAF does a number of things. 1) it allows complex relationships to be described in terms of an object model, 2) it facilitates the interchange of metadata and/or program content, 3) it provides a way to track the history of a piece of program content from its source elements through final production, 4) it makes it possible to render content downstream (with appropriate equipment), 5) it provides a convenient way to "wrap" all elements of a project together for archiving. By preserving comprehensive source referencing, and abstracting the creative decisions that are made, AAF improves multimedia production workflow and simplifies project management. The AAF standard consists of the following components: - The AAF Object Specification, which defines the way AAF stores metadata and essence - The AAF API Specification, which defines how software engineers can write applications - The AAF Reference Implementation, which implements both these specifications in a completely cross-platform manner - The AAF Software Development Kit (SDK), which includes developer utilities and validation test suites - The AAF Example software which demonstrates how to use the AAF SDK to produce AAF files - The AAF sample files created by working AAF implementations with the accelerating progress of digital technologies, an open interchange standard is essential to enable the digital production

facilities of the future. The lack of integration of multi-vendor products has proven to be a significant obstacle to the rapid acceptance of computer based digital tools for professional production. AAF represents a broad industry initiative to remove those obstacles.

2006-02-21

The Advanced Authoring Format (AAF) is a professional file interchange format designed for the multimedia, post production, and authoring environment. AAF solves the problem of multi-vendor, cross-platform interoperability for computer-based digital production. AAF does a number of things. 1) it allows complex relationships to be described in terms of an object model, 2) it facilitates the interchange of metadata and/or program content, 3) it provides a way to track the history of a piece of program content from its source elements through final production, 4) it makes it possible to render content downstream (with appropriate equipment), 5) it provides a convenient way to "wrap" all elements of a project together for archiving. By preserving comprehensive source referencing, and abstracting the creative decisions that are made, AAF improves multimedia production workflow and simplifies project management. The AAF standard consists of the following components: - The AAF Object Specification, which defines the way AAF stores metadata and essence - The AAF API Specification, which defines how software engineers can write applications - The AAF Reference Implementation, which implements both these specifications in a completely cross-platform manner - The AAF Software Development Kit (SDK), which includes developer utilities and validation test suites - The AAF Example software which demonstrates how to use the AAF SDK to produce AAF files - The AAF sample files created by working AAF implementations With the accelerating progress of digital technologies, an open interchange standard is essential to enable the digital production facilities of the future. The lack of integration of multi-vendor products has proven to be a significant obstacle to the rapid acceptance of computer based digital tools for professional production. AAF represents a broad industry initiative to remove those obstacles.

Profiling Questions

GEOINT: Motion Imagery • Does your system exchange motion imagery data with external systems or does your system task, collect, produce, process, catalog, store, read, exploit, or disseminate digital motion imagery?

Products Incorporating This Standard

Companies with available implementations/products include: Adobe Systems, Inc., Apple, Ascent Media, Autodesk, Avid, BAE Systems, Blue Order, DiskStream, Inc., Konan Technology, Microsoft, Metaglobe, Inc., National Geospatial-Intelligence Agency, OmniBus Systems, Panasonic, Perspective Media Group, Pinnacle, Quantel, Siemens Business Services, Snell & Wilcox, Sony, Syntheic Aperture, Thomson Grass Valley

Relevant Information

Companies and organizations developing AAF-enabled applications are encouraged to join the AAF Association. Participation provides a unique opportunity to influence working practices of the future that will have a fundamental impact on the markets for their products. Additionally, member benefits include access to AAF sample files, tutorials, example codes and UML. Members also are allowed to participate in Awareness Events and receive priority listing in the Developer Resource Directory. The AAF Association has four classes of membership Principal, General, Associate and Developer. Principal Members: - Enjoy all the benefits of General Membership - Are eligible for election to the Board of Directors General Members: - May appoint voting representatives to each of the AAF Association committees - May propose new extensions and additions to the AAF Specifications - Receive electronic copies of all AAF specifications and publications - Receive support for the AAF specification and associated Software Development Kit Associate Members: - May appoint non-voting representatives to each of the AAF Association committees - Receive electronic copies of all AAF specifications and publications - Receive support for the AAF specification and associated Software Development Kit Developer Members (with five or fewer employees): - May appoint voting representatives to each of the AAF Association committees - May propose new extensions and additions to the AAF Specifications - Receive electronic copies of all AAF specifications and publications - Receive support for the AAF specification and associated Software Development Kit Note that in addition to the four classes of membership listed above, the AAF

Association may also establish liaison relationships with other associations and standards bodies on a no-cost basis.

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

AAF-enabled applications provide the ability to exchange files between libraries, exploitation system, media archive, and media dissemination systems/ process.

Technical Maturity

AAF is an established standard and has strong support in the commercial marketplace. Avid, Apple, Snell & Wilcox, Metaglobe, Sony, and others sell AAF-enabled products and are involved with the AAF Association, an industry-driven, international organization. Go to the association's web site for information about standards development activities, companies participating in this development, and organizations that use their products.

Public Availability

AAF Specification: <http://www.aafassociation.org> (available free).

Implementability

Any DoD or IC organization using products from companies listed above may be using the AAF standard

Authority

The Advanced Authoring Format Association maintains the AAF Object Specification. The AAF Association Inc. is a broadly based, international, commercial trade association created to promote the development and adoption of AAF technology. The Association's mission is to be the forum where users and manufacturers develop open interchange solutions that solve real-world business problems and create new business opportunities for content creation, production, post-production and rich media authoring. The Association hosts developer conferences to educate programmers on the AAF SDK, awareness events to educate the industry on AAF capabilities.

Standard Type Non-Military

Keywords for Search None

Standard Identifier AIXM v4.5

Title of Standard
 Aeronautical Information Exchange Model, Version 4.5, September 2005

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/ Retired
2006-10-25	2006-10-25	n/a	2006-10-25	2008-04-03	n/a

Standards Body [Other](#) [Broken Link?](#)
URL to Access or Acquire <http://www.faa.gov>

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interests IA / Security (including Biometrics)
 Aviation TWG

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2008-03-27

This standard is applicable to the development of systems that have requirements to share aeronautical data. AIXM 4.5 provides the mechanism to exchange information applicable to aerodromes (airports), heliports, routes, navigation aids, fixes, instrument approach procedures, instrument departures, standard terminal arrival routes, organizations, units, services, obstacles and airspace. AIXM 4.5 does not compete with any other standards. AIXM 4.5 does not complete with any other standards.

2006-10-25

This standard is applicable to the development of systems that have requirements to exchange aeronautical data. AIXM 4.5 provided the mechanism to exchange information applicable to aerodromes (airports), heliports, routes, navigation aids, fixes, instrument approach procedures, instrument departures, standard terminal arrival routes, organizations, units, services, obstacles and airspace. AIXM 4.5 does not complete with any other standards.

Standard Abstract

2008-03-27

Aeronautical Information Exchange Model (AIXM) 4.5 is the XML standard exchange format based off the Aeronautical Information Conceptual Model (AICM) containing hundreds of entities, data types, and relationships used to represent aeronautical data based on ICAO (International Civil Aviation Organization) and industry standards requirements for international aeronautical data, recommended practices, and data concepts from published aeronautical information products. AIXM and AICM were originally developed by EUROCONTROL to aid in standardizing data exchange and aeronautical products within the European States.

2006-10-25

The Aeronautical Information Exchange Model (AIXM) 4.5 is the XML standard exchange

format that is based on the Aeronautical Information Conceptual Model (AICM). AIXM contains hundreds of entities, data types, and relationships used to represent aeronautical data based on International Civil Aviation Organization (ICAO) and industry standards requirements for international aeronautical data, recommended practices, and data concepts from published aeronautical products. AICM and AIXM were originally developed by EUROCONTROL to aid in standardizing data exchange and aeronautical products within the European States.

Profiling Questions

GEOINT: Geospatial

- Do you require a system-to-system exchange of aeronautical data or do you need a data model for representing aeronautical data or are you working with aeronautical data such as airports, runways, routes, airspace, navigation aids and/or procedures?

Products Incorporating This Standard

None

Relevant Information

This citation authored by the GWG Application Schemas for Feature Encoding (ASFE) Focus Group.

Implementation Guidance

AICM/AIXM 4.5 should be used in association with any standard or specification for a service that requires the ability to encode aeronautical information

Standard Selection Criteria

Net-Centric Interoperability

AIXM 4.5 is a standard for a XML based system-to-system data exchange. AIXM provides a standardized approach to deliver information to any commercial off the shelf computer system, and can be used with web services. AICM is a entity-relationship model of aeronautical data for which AIXM is based.

Technical Maturity

The Aeronautical Information Conceptual Model (AICM) was first developed in 1996 by EUROCONTROL. In 1999, the AIXM XML exchange model for the AICM was developed. The current version of AIXM is 4.5, released September 2005. EUROCONTROL, among various nations are using AIXM v4.5 for updates to their respected Aeronautical Information Publications (AIP) including the European Aeronautical Information System (AIS) Database (EAD). AIXM 5.0 is currently in development for a proposed release date of January 2008. AIXM 5.0 will be a completely reformatted content, and will not be backward compatible with previous versions of AIXM

Public Availability

AICM/AIXM are freely available to the public, and may be obtained at www.aixm.aero or the US Federal Aviation Administration (www.faa.gov/aixm) or EUROCONTROL (www.Eurocontrol.int)

Implementability

The European Organization for Safety of Navigation (EUROCONTROL) has been successfully using AIXM as an exchange standard between it's member states to update the European AIS Database (EAD) for many years. Canada and partner NavCanada currently use AIXM to exchange their aeronautical data and update their Aeronautical Information Publications. The National Geospatial-Intelligence Agency (NGA) aeronautical division has transitional efforts underway to modernize the source workflow process and product line. The AIXM standard is anticipated to be a large component driving that

transformation.

Authority

AIXM 4.5 is managed by an international change control board currently hosted by EUROCONTROL.

Standard Type Non-Military

Keywords for Search None

Standard Identifier ISO 19136:2007

Title of Standard
 Geographic information -- Geography Markup Language, 2007-08-23

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/ Retired
2008-04-03	2008-04-03	n/a	2008-04-03	2008-04-03	n/a

Standards Body [ISO](#) [Broken Link?](#)
URL to Access or Acquire <http://www.ansi.org>

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest No Secondary Interest

Service Area GEOINT: Geospatial

KIPs No KIP Found

Standard Applicability

2008-03-27

This standard is applicable to the development of systems that have requirements to access or distribute geospatial data using the eXtensible Markup Language (XML).

Standard Abstract

2008-03-27

ISO 19136:2007 is an XML encoding for the transport and storage of geographic information modeled according to the conceptual modeling framework used in the ISO 19100 series of International Standards including both the spatial and non-spatial properties of geographic features. The standard defines the XML Schema syntax, mechanisms, and conventions that: (1) provide an open, vendor-neutral framework for the description of geospatial application schemas for the transport and storage of geographic information in XML; (2) allow profiles that support proper subsets of framework descriptive capabilities; (3) support the description of geospatial application schemas for specialized domains and information communities; (4) enable the creation and maintenance of linked geographic application schemas and datasets; (5) support the storage and transport of application schemas and data sets; (6) increase the ability of organizations to share geographic application schemas and the information they describe.

Profiling Questions

GEOINT: Geospatial

- Does your system require access to geospatial feature information using an implementation of the OGC Web Feature Service specification or does your system require an ability to select objects from a net accessible data base?

Products Incorporating This Standard

A list of registered implementations of OpenGIS® Geography Markup Language Encoding Specification can be accessed at <http://www.opengeospatial.org>.

Relevant Information

Submitted by the GWG Information Transfer Service Architecture (ITSA) FG

Implementation Guidance

None. GML 3.1.1 is presently mandated in the DISR and will be retired when ISO 19136:2007 is mandated. There are no known competing standards.

Standard Selection Criteria

Net-Centric Interoperability

19136:2207 is an XML encoding for the transport of geographic information over the Web. It supports several geographic Web Service Specifications published by the Open Geospatial Consortium.

Technical Maturity

Development of a geographic markup language (GML) began in 1999 by the Open Geospatial Consortium (OGC). The OGC Version 1.0 was published by OGC in May 2000, and Version 3.0 in January 2003. GML 3 was approved by ISO/TC211 in April, 2006 and published in 2007 as ISO 19136:2007. The published version was adopted by OGC as GML 3.2.1.

Public Availability

19136:2007 is available for charge at <http://webstore.ansi.org/ansidocstore/default.asp>. The OpenGIS® Geography Markup Language Encoding Specification 3.2.1 is available free of charge at <http://opengeospatial.org>

Implementability

Use of Geography Markup Language is specified by the DoD and IC Universal Core Data Schema. A list of commercial implementations can be obtained from <http://www.opengeospatial.org/resource/products>.

Authority

Open Geospatial Consortium (OGC) and International Standards Organization Technical Committee 211

Standard Type Non-Military

Keywords for Search None

About This Standard

Emerging

Standard Identifier ISO/IEC 15444-2:2004

Title of Standard

Information technology -- JPEG 2000 image coding system: Extensions

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2005-09-06	2005-09-06	n/a	2005-09-06	2008-07-14	n/a

Standards Body
URL to Access or
Acquire

[ISO](http://www.iso.org)
<http://www.ansi.org>

[Broken Link?](#)

Working Group

Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest No Secondary Interest

Service Area

GEOINT: Still Imagery

KIPs

No KIP Found

Standard Applicability

2005-09-06

JPEG 2000 provides a new means of image representation containing a rich set of features, all supported within the same compressed bit stream. Part I of JPEG 2000 contains mandatory features. Part II of JPEG 2000 is a published International Standard (IS) that contains optional features beyond those in Part I including:- More flexible forms of wavelet decomposition and coefficient quantization,- Advanced region-of-interest capability,- Expanded file format (.jpx) based on .jp2 but supporting multiple compositing layers, animation, extended color spaces, - Increased capability for multi-spectral/hyper-spectral compression, - A rich metadata set for photographic imagery (based on the DIG25 specification),- Low complexity implementation, and - Trellis quantized compression. Only those features that are needed for specific applications need be implemented. To assist interoperability, mechanisms are provided at both the code stream and the JPX file format level for signaling the use of extensions. Since use/application of this standard is emerging, those considering use/application of this standard should make contact with the NITFS Technical Board (NTB) [<http://www.ismc.nga.mil/ntb/>].

Standard Abstract

2005-09-06

ISO/IEC 15444-2:2004 defines a set of lossless (bit-preserving) and lossy compression methods for coding continuous-tone, bi-level, gray-scale, color digital still images, or multi-component images. ISO/IEC 15444-2:2004: - Specifies extended decoding processes for converting compressed image data to reconstructed image data; - Specifies an extended code stream syntax containing information for interpreting the compressed image data; - Specifies an extended file format; - Specifies a container to store image metadata; - Defines a standard set of image metadata; - Provides guidance on extended encoding processes for converting source image data to compressed image data; - Provides guidance on how to implement these processes in practice

Profiling Questions

GEOINT: Still Imagery

- Does your system have specialty image compression requirements not addressed by the JPEG 2000 Part 1 standard?

Products Incorporating This Standard

The known implementers of selected features from Part 2 include the Kakadu product and software from Aware and Liritech.

Relevant Information

This standard reviewed by the GWG's NITFS Technical Board (NTB)

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

JPEG 2000 is designed to promote ease of access to imagery, to include extremely large imagery data sets, in a manner that promotes scalability and interactive image viewing and exploitation within a net-centric environment. ISO/IEC 15444, Part 2 provides extensions to ISO/IEC 15444, Part 1, JPEG 2000, which is the preferred imagery compression standard for use with the National Imagery Transmission Format Standard (NITFS). The NITFS is the common thread of interoperability for the formatting, imagery library storage and cataloging, dissemination, and exploitation of National Technical Means (NTM), Tactical Airborne, and Commercial imaging sources. At this time (Jun2005), JPEG 2000 Part 2 is considered an emerging standard designed to meet special needs not supported in Part 1; however, specific application of Part 2 within the National System for Geospatial Intelligence (NSG) has not yet been identified.

Technical Maturity

Development and publication of this standard is complete. Part 2 of the JPEG 2000 standard will likely never have strong support in the commercial marketplace since the marketplace focus for JPEG 2000 is on Part 1. Part 2 was developed to address the special needs of the scientific and military remote sensing industry that are not addressed in Part 1.

Public Availability

Available for purchase from the ISO Store (online): <http://www.iso.org/iso/en/prods-services/ISOstore/store.html>

Implementability

As of June 2005, there is no known use of this standard within the Intelligence Community (IC); however, representatives from the IC provided capability needs and solutions during the development of this international standard in anticipation of using the standard to meet future operational requirements. Application of this standard is emerging in anticipation of future operational requirements that cannot be met with Part 1 of the standard.

Authority

ISO/IEC JTC 1/SC 29, Coding of audio, picture, multimedia and hypermedia information, developed and maintains this standard. The NITFS Technical Board (NTB) [<http://www.ismc.nga.mil/ntb/>] is the DOD/IC focal point for the open process of maintaining and future development for this standard at ISO/IEC.

Standard Type Non-Military

Keywords for Search None

Standard Identifier MISB Engineering Guideline 0601.1

Title of Standard
MISB EG 0601.1, UAS Datalink Local Metadata Set, 9 October 2007

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2008-04-03	2008-04-03	n/a	2008-04-03	2008-04-03	n/a

Standards Body [MISB](#) [Broken Link?](#)
URL to Access or Acquire [http://gwg.nga.mil/misb/ \(requires password\)](http://gwg.nga.mil/misb/)

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest No Secondary Interest

Service Area GEOINT: Motion Imagery

KIPs No KIP Found

Standard Applicability

2008-03-27

This MISB Engineering Guideline (EG) details the Unmanned Air System (UAS) Datalink Local Data Set (LDS) for UAS platforms. The UAS Datalink LDS is an extensible SMPTE (Society of Motion Picture Television Engineers) Key-Length-Value (KLV) Local Metadata Set designed for transmission through a wireless communications link (Datalink). This EG provides direction on the creation of a standard Local Data Set for a reliable, bandwidth-efficient exchange of metadata among digital motion imagery systems on UAV platforms. This EG also provides a mapping to Predator Exploitation Support Data found in MISB EG 0104, used in existing higher-bandwidth metadata systems.

Standard Abstract

2008-03-27

This EG provides direction on the creation of a standard Local Data Set for a reliable, bandwidth-efficient exchange of metadata among digital motion imagery systems on UAV platforms. The UAS Local Data Set metadata is intended to be produced locally within a UAS airborne platform and included in an MPEG2 Transport Stream (or equivalent transport mechanism). The MPEG2 Transport Stream (or equivalent) also contains compressed motion imagery from sensors such as an Electro-Optical / Infrared (EO/IR) video capture device. Synchronization between the metadata and the appropriate video packet is also required for ensuring the validity of the metadata. The MPEG2 Transport Stream (or equivalent) embedded with UAS LDS metadata is then transmitted over a medium bandwidth (e.g. 1 to 5Mb/s) wireless Datalink and then disseminated. The scope of this document is to provide a framework for an extensible bandwidth-efficient Local Data Set which enhances sensor captured imagery with relevant metadata. This EG also provides a mapping between UAS Datalink Local Data Set items, ESD items, and Universal Data Set (UDS) items defined in the latest SMPTE KLV dictionary (RP-210) as well as in the MISB-managed Department of Defense (DoD) keyspace.

Profiling Questions

GEOINT: Motion Imagery • Does your system need to send metadata with full motion video from a UAV or carry user metadata with the FMV end to end through a system or does your system exchange motion imagery and metadata in a datalink with other systems?

Products Incorporating This Standard

General Atomics, Delta Information Systems, and others

Relevant Information

This citation authored by the GWG Motion Imagery Standards Board

Implementation Guidance

Guidance for using/implementing this standard is available from the Motion Imagery Standards Board (MISB) [<http://www.gwg.nga.mil/misb/>].

Standard Selection Criteria

Net-Centric Interoperability

The DoD/ IC Motion Imagery Standards Board adopted Engineering Guideline (EG) 0601 in January 2006 for operation in Unmanned Aerial Systems (UAS). It is expected that EG 0601 will be utilized in streaming and file applications using web services. This bandwidth-efficient metadata system is ideally suited for source, production, exploitation and dissemination processes (entire TPED process).

Technical Maturity

EG 0601 is relatively mature given that it was standardized in January 2006 by the MISB, demonstrated in that year, and adopted by NATO organizations.

Public Availability

<http://gwg.nga.mil/misb/> (requires password)

Implementability

General Atomics and Delta Information Systems built prototypes and demonstrated systems utilizing EG0601 in early 2006. It has since been adopted in the DoD UAS Joint Interoperability Profile. It has been adopted by NATO STANAG 4586 on UAS and will be in Edition 3 of STANAG 4609 on digital motion imagery.

Authority

The Motion Imagery Standards Board, a DoD and Intelligence Community standards organization, maintains EG 0601. Edition 3 of NATO STANAG 4609 on Digital Motion Imagery will utilize EG 0601 and STANAG 4586 on UAS will point to EG0601. The Motion Imagery Standards board has an open process for maintaining and developing this standard.

Standard Type Military

Keywords for Search None

Standard Identifier MISB Recommended Practice 0705.1, version 1.0

Title of Standard
LVSD Compression Profile, version 1.0, November 29, 2007.

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2008-04-03	2008-04-03	n/a	2008-04-03	2008-04-03	n/a

Standards Body [MISB](#) [Broken Link?](#)
URL to Access or Acquire [http://gwg.nga.mil/misb/ \(password required\).](http://gwg.nga.mil/misb/)

Working Group
Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interest No Secondary Interest

Service Area GEOINT: Motion Imagery

KIPs No KIP Found

Standard Applicability

2008-03-27

This standard is applicable to the compression of Wide Area Persistent Surveillance imagery. It is intended for still imagery or frame-based video compression of large frame imagery using JPEG 2000. Several current programs can leverage this standard. The standard is also available/applicable to DoD/IC programs that NITF 2.1 as an image format. Competing standards would include other JPEG 2000 profiles defined within the BIFF profile of JPEG 2000 along with the compression profile found within STANAG 7023.

Standard Abstract

2008-03-27

LVSD (Large Volume Streaming Data) is a new NATO designation for sensors that collect large arrays of image samples. These arrays may be comprised of 10 Mpixel per image frame upwards to 1 Gpixel per frame and possibly larger. LVSD systems are typically operated in a persistent mode. Imagery is collected from the camera(s) at rates from one frame-per-second (1fps) and faster. Collections may last several hours which leads to a large volume of data being collected. JPEG 2000 has been selected as a method to compress LVSD data because it provides multi-resolution and region-of-interest compression. The LPJE (LVSD Preferred JPEG 2000 Encoding) profile supports the performance requirements of LVSD systems. LPJE is a superset of the currently defined JPEG 2000 profiles; NPJE (NSIF Preferred JPEG 2000 Encoding) and EPJE (Exploitation Preferred JPEG 2000 Encoding) contained within the BIFF Profile of JPEG 2000 (BPJ2K01.00). The LPJE profile offers a wider range of compression options than either the NPJE or EPJE profiles. It serves as an encoding profile for both hardware-based and software-based compression systems. LPJE compliant systems will be able to interpret NPJE and EPJE compliant data in addition to their own. LPJE is intended for the compression of literal imagery and frame-based compressed motion imagery, within the confines of STANAG 4609. It is available as an optional profile for use within NSIF/NITF as well.

Profiling Questions

GEOINT: Motion Imagery • Does your system need to compress LVSD, WALF or WAS/WAPS imageries or use JPEG 2000 profiles?

Products Incorporating This Standard

The following companies produce implementations compliant with the standard: ITT Industries IAS/A2 software as well as ENVI ZOOM PAR Government Systems GeoView 3.0 UNSW, Australia Kakadu Software, used in several JPEG 2000 DoD/IC implementations Aware Inc. JPEG2000 SDK

Relevant Information

This citation authored by the GWG Motion Imagery Standards Board (MISB)

Implementation Guidance

Guidance for using/implementing this standard is available from the Motion Imagery Standards Board (MISB) [<http://www.gwg.nga.mil/misb/>].

Standard Selection Criteria

Net-Centric Interoperability

JPEG 2000 has been adopted as the image compression algorithm for use within the NSG. The BIIF profile of JPEG 2000 contains the two currently defined profiles of JPEG 2000 used within the NSG. These profiles however, do not meet the operational needs of currently deployed Wide Area Persistent Sensors. An additional profile, suitable for these systems is defined that will enable data interchange and provide vendors a standard to develop software and hardware systems against.

Technical Maturity

JPEG 2000 and the current BIIF profile of JPEG 2000 are technically mature and widely implemented. They have been adopted by NATO and the U.S. DoD/IC communities. The proposed amendment to the BIIF profile adds a new JPEG 2000 compression profile that is supported by several commercial software implementations, including those from ITT Industries, Aware Inc. and University of New South Wales, Australia. We anticipate that a future version of the base BIIF profile of JPEG 2000 will be created that incorporates the proposed amendment as well as several other compression profiles currently under development. This will result in a new version of the base BIIF profile of JPEG 2000 and the proposed amendment will become obsolete. The earliest that the new BIIF profile of JPEG 2000 document can be created and ratified is perhaps Q2 of 2009. For this reason, we seek to add the amendment into the DISR until the new version of the BIIF profile of JPEG 2000 is finalized.

Public Availability

The standard may be found at <http://gwg.nga.mil/misb/> (password required). The document name is RP0705.

Implementability

The following companies produce implementations compliant with the standard: ITT Industries IAS/A2 software as well as ENVI ZOOM PAR Government Systems GeoView 3.0 UNSW, Australia Kakadu Software, used in several JPEG 2000 DoD/IC implementations Aware Inc. JPEG2000 SDK

Authority

The Motion Imagery Standards Board developed the profile and will maintain it. The MISB has also accepted responsibility for generating the new version of the BIIF profile of JPEG 2000 and will lead it through the ISO ratification process. The proposed amendment has been briefed to NATO and the NITF Technical Board for technical feedback.

Standard Type Military

Keywords for Search None

Standard Identifier MISB RP 0701.0 Common Metadata System:Structure

Title of Standard

MISB Recommended Practice 0701.0, Common Metadata System: Structure, 6 August 2007

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/ Retired
2008-04-03	2008-04-03	n/a	2008-04-03	2008-04-03	n/a

Standards Body

[MISB](#)

[Broken Link?](#)

URL to Access or Acquire

[http://gwg.nga.mil/misb/ \(requires password\)](http://gwg.nga.mil/misb/)

Working Group

Primary Owner

Geospatial Intelligence TWG (GWG)

Secondary Interest

No Secondary Interest

Service Area

GEOINT: Motion Imagery

KIPs

No KIP Found

Standard Applicability

2008-03-27

Application areas for CMS include: -- interchange of digital video and metadata such as sensor to ground stations; ground station to exploitation; and exploitation to archive -- television and movie post production systems -- non-linear digital editing systems -- media archive systems -- media dissemination systems exchange of finished product(s) multi-media reports and products reporting systems -exploitation systems interoperability exchange for Common Operational Picture (COP) display systems.

Standard Abstract

2008-03-27

The Common Metadata System is a flexible, byte-efficient system for attaching temporally accurate platform and sensor metadata to a motion imagery essence stream. It is a flexible, general KLV metadata standard for all classes of platform and motion imagery sensors. The MISB will maintain configuration managed implementation profiles as they are developed and these are expected to replace both MISB EG 104 (Predator UAV Basic Universal Data Set) and MISB EG 0601 (UAS Datalink Local Data Set) over time.

Profiling Questions

GEOINT: Motion Imagery • Does your system need to make multiple motion imagery sensors on arbitrary platforms interoperable or need accurate timing information on the sensor and platform related metadata associated with my MI streams?

Products Incorporating This Standard

General Dynamics Lockheed Martin SAIC Insitu -- ScanEagle White Sands Missile Range

Relevant Information

Citation authored by the GWG Motion Imagery Standards Board (MISB).

Implementation Guidance

Guidance for using/implementing this standard is available from the Motion Imagery Standards Board (MISB) [<http://www.gwg.nga.mil/misb/>]

Standard Selection Criteria

Net-Centric Interoperability

The Common Metadata System (CMS) provides a flexible, byte-efficient method for combining metadata with Motion Imagery (MI) essence streams. In particular, CMS emphasizes the accurate temporal attribution of platform and sensor ancillary data and supports implementation profiles that meet the needs of bandwidth-disadvantaged users.

Technical Maturity

The first CMS standard, which defines the structure of future CMS content documents (MISB RP 0701) has been finalized. The first implementation profile will be finalized in April, 2008. CMS makes use of the Society of Motion Picture and Television Engineers (SMPTE) KLV metadata standard, SMPTE 336M, SMPTE 335M, and SMPTE EG 37-2001. It is anticipated that CMS will eventually replace older MI metadata standards in NATO STANAG 4609 and the JUAS Joint Interoperability Profile.

Public Availability

<http://gwg.nga.mil/misb/> (requires password)

Implementability

General Dynamics Lockheed Martin SAIC -- Integrator for Constant Hawk and Angel Fire Insitu -- ScanEagle White Sands Missile Range

Authority

The Motion Imagery Standards Board, a military standards organization, maintains the Common Metadata System, including EG 0701 and all follow-on implementation profiles. The Society of Motion Picture and Television Engineers (SMPTE), an international standards organization, maintains some of the metadata keys used in CMS.

Standard Type Non-Military

Keywords for Search None

Standard Identifier **NAS v1.8**

Title of Standard

National System for Geospatial-Intelligence (NSG) Application Schema (NAS), Version 1.8, May 2007

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2007-11-06	2007-11-06	n/a	2007-11-06	2007-11-06	n/a

Standards Body

[NGA](#)

[Broken Link?](#)

URL to Access or Acquire

http://www.gwg.nga.mil/stds_regs.html;
<http://org.nga.ic.gov/ngis/registries.html>;
<https://gesportal.dod.mil/sites/GWGCOI/default.aspx> (e-mail) ncgis-mail@nga.mil

Working Group

Primary Owner Geospatial Intelligence TWG (GWG)
Secondary Interests Modeling and Simulation TWG
 Warfighting

Service Area

GEOINT: Geospatial

KIPs

No KIP Found

Standard Applicability

2007-11-08

The NAS is applicable to the storage, manipulation, interchange, and exploitation of geospatial intelligence data. Systems participating within the NSG must utilize the NAS in order to ensure consistent NSG-wide geospatial data semantics, compatible no-loss syntactic encodings, support net-centric geospatial services, and achieve geospatial data interoperability.

Standard Abstract

2007-11-08

The NSG Application Schema (NAS) specifies the Platform Independent Model (in accordance with the Object Management Group (OMG) Model-Driven Architecture (MDA)) that determines the syntactic structure used across the NSG to represent the geospatial semantics specified by the NSG Entity Catalog (NEC) and NSG Feature Data Dictionary (NFDD). The NAS integrates conceptual schemas from ISO 19100-series standards for entity modeling, such as those for features, events, names and coverages (e.g., grids, rasters, and TINs). The NAS specifies a single clear, complete, and internally-consistent NSG geospatial data schema that may be used to derive system-specific implementation schemas in a rigorous manner. Conformance to the NAS ensures that data integrity is preserved when geospatial data is exchanged between different system implementations within the NSG. The NAS also ensures that the structure of NSG-specific data sets correlate well with the structure of other types of data on the Global Information Grid (GIG), and that NSG-specific applications can leverage GIG Enterprise Services (GES) such as those based on the DoD Discovery Metadata Specification (DDMS).

Profiling Questions

GEOINT: Geospatial

- Does the application acquire, process, analyze, access, present and/or transfer geospatial information in digital/electronic form or does the application participate in the NSG or does the application use, display and/or communicate information about geospatial concepts (e.g. definitions or descriptions of items of geospatial information)?

Products Incorporating This Standard

NGA Mission Specific Data (MSD) Data Content Specifications (DCS) NGA Geospatial-Intelligence Knowledge Base (GKB)

Relevant Information

The NAS is the successor to and will replace a number of legacy formats including the (DISR-mandated) Vector Product Format (VPF). The NAS is a Platform Independent Model in accordance with the Object Management Group (OMG) Model-Driven Architecture (MDA: <http://doc.omg.org/omg/03-06-01>) framework; it determines the syntactic structure used across the NSG to represent the geospatial semantics specified by the (DISR-emerging) NSG Entity Catalog (NEC) and (DISR-mandated) NSG Feature Data Dictionary (NFDD). The NAS conforms to ISO 19109:2005 Rules for Application Schema as well as conceptual schemas specified by other ISO 19100-series standards. The NAS is designed to support net- and data-centric specification and use of items of geospatial information, including the acquisition, processing, analysis, access, presentation and transfer of geospatial information in digital/electronic form between different users, systems and locations. The NAS specifies a common syntactic model for all NSG participants and is a critical component in achieving NSG objective capabilities; failure to ensure that DISR users are aware of and have access to the NAS during their system development and/or upgrade activities will significantly impair the development and operation of the NSG. Citation authored by the GWG Application Schemas for Feature Encoding Focus Group.

Implementation Guidance

The NAS will supersede the legacy Vector Product Specification (VPF) and meets the same functional and content requirement; guidance applied in the use of the Vector Product Specification (VPF) may apply here as well. For system-specific recommendations for integration and employment of the NAS (e.g., within the C/JMTK or in concert with web-based services such as the Web Feature Service (WFS) - ISO 19142), contact the NGA / National Center for Geospatial Intelligence Standards (ncgis-mail@nga.mil). In particular, experienced assistance is available for the migration of existing systems, capabilities, specifications, and formats that are based on the NIMA Profile of FACC and legacy MIL-STD/MIL-PRF data product specifications and their related encodings to a NAS-basis.

Standard Selection Criteria**Net-Centric Interoperability**

NAS is an unambiguous shared semantic & syntactic structure for GEOINT across the NSG specifying a common Platform Independent Model for the structure to represent semantics specified by NEC & NFDD. It integrates conceptual schemas from the ISO 191XX-series for entity modeling: features, events, names & coverages (grids, rasters, & TINs). It specifies a single clear, complete, & internally-consistent NSG geospatial data schema to derive system-specific implementation schemas to ensure data integrity is preserved when geospatial data is exchanged between different system implementations within the NSG. It ensures the structure of NSG-specific data sets correlate with structures of other types of data on the Global Information Grid (GIG), & that NSG-specific applications leverage GIG Enterprise Services like those based on the DoD Discovery Metadata Specification. NEC & NFDD together answer the information exchange question What do we mean? NAS answers How do we say it?

Technical Maturity

The NSG AS is being developed, maintained, and enhanced on the basis of evolving information systems technology. It is entering active use within NGA and the National

System for Geospatial Intelligence (NSG) and its component systems. The NAS will replace a number of legacy formats including the (DISR-mandated) Vector Product Format (VPF). The NAS is specified using the Unified Modeling Language (UML) - ISO/IEC 19501, conforms to the General Feature Model specified in ISO 19109:2005, and specifies encodings conforming to ISO 19136 (Geography Markup Language). The NAS draws on the semantic content specified in the NSG Feature Data Dictionary (NFDD) and the domain data model specified in the NSG Entity Catalog (NEC).

Public Availability

The NEC is published in several forms and is available for free download at: http://www.gwg.nga.mil/stds_regs.html, <http://org.nga.ic.gov/ncgis/registries.html>, and <https://gesportal.dod.mil/sites/GWGCOI/default.aspx>. It can be requested by e-mail through ncgis-mail@nga.mil.

Implementability

The NAS specifies in a platform-independent manner the syntactic structure of geospatial information concepts (and their relationships) used by the NSG community to characterize real-world entities (or objects) and related properties. It follows tenants established by the Object Management Group (OMG) Model-Driven Architecture (MDA) (<http://doc.omg.org/omg/03-06-01>). The NAS is specified using the Unified Modeling Language (UML) - ISO/IEC 19501 - and is used within a number of COTS Computer-aided Software Engineering (CASE) tools. The GML-based NAS encoding is being used within a net-centric architecture based on Open Geospatial Consortium (OGC) open web services such as the Web Feature Server (WFS) - ISO 19142); other NAS encodings are used in relational DBMS (including COTS GIS) environments and, after suitable transformations, to specify Shapefile®-based data exchange formats.

Authority

The NAS is managed by the NGA NCGIS and the Geospatial Intelligence Standards Working Group (GWG), using ISO 19100-series conformant schema. NAS is established as an online registry in conformance with ISO 19135 to support rapidly evolving DOD/IC requirements. The NAS is entering active use within NGA and the National System for Geospatial Intelligence (NSG) and its component systems.

Standard Type Non-Military

Keywords for Search None

Standard Identifier **NGCMP v1.0**

Title of Standard

National System for Geospatial Intelligence (NSG) Geospatial Core Metadata Profile, Version 1.0, August 2007

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2007-11-06	2007-11-06	n/a	2007-11-06	2007-11-06	n/a

Standards Body

[NGA](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.gwg.nga.mil>

Working Group

Primary Owner

Geospatial Intelligence TWG (GWG)

Secondary Interest

No Secondary Interest

Service Area

GEOINT: Geospatial

KIPs

No KIP Found

Standard Applicability

2007-11-08

This Metadata Profile is applicable to systems interacting with the National System for Geospatial Intelligence. The ISO Standards, Department of Defense Metadata Specification, and the Intelligence Metadata Guidance documents are applicable to provide common Geospatial Metadata and XML specification for describing, validating and exchanging geographic metadata. This Metadata Profile is intended to promote interoperability within the Geospatial Community of Interest. The importance of metadata is that it enables discovery of information and many other resources and is a key enabler of data and system interoperability. Metadata is first data about data that describes the content and the appropriate use of a data resource. Second, metadata has been expanded to enable finding other resources such as geospatial systems, standards and other specific information. In the current movement to an increasingly net-centric world, the speed, agility and interoperability required cannot be met without metadata. Metadata is becoming even more critical as the volumes of archived data and imagery, and other geospatial resources continue to grow at rapid rates. One example is the airborne community's imagery libraries with its volume of data. Human search efforts could not possibly access and evaluate all this volume of data to come even close to the operational time constraints. Without metadata many of the searches would have to be conducted with Google-like tools with much effort spent trying to determine if the data or other resource meets the specific need. Without metadata, a consumer could not search and retrieve the data that contains the characteristics and content necessary to support a required mission. Metadata instills data accountability and limits data liability. This is especially true for the National System for Geospatial-Intelligence (NSG) in the use of geospatial intelligence (GEOINT) data. Providing metadata according to the applicable standards, including harmonization between the required metadata standards, further increases the metadata work. It is critical that the work and development of metadata and metadata standards for NGA and GEOINT data and other informational resources be funded in the current move to an increasingly net-centric environment to provide the critical high level of customer support required of NGA.

Standard Abstract

2007-11-08

The purpose of this Metadata Profile is to establish and define a systematic approach to managing, organizing, and disseminating standards to the development population. This profile also establishes and maintains agreement between the customer and the project team on changing standards. Various metadata profiling and harmonization efforts are being undertaken across the NSG community, among them the influence of current ISO standards development work to support NSG geospatial metadata requirements. To achieve this, metadata is developed at several different levels, and the GWG Metadata Focus Group (MFG) has developed recommended core metadata sets for each of these levels for use in the NSG community.

Profiling Questions

GEOINT: Geospatial

- Do you need a common XML specification for describing, validating and exchanging geospatial metadata or are your geospatial metadata requirements driven by Department of Defense Discovery Metadata Specification, and Intelligence Community Metadata requirements and appropriate ISO standards or does your system require standards that provide a clear procedure for the description of digital geographic datasets so that users will be able to determine whether the data in a holding will be of use to them and how to access the data?

Products Incorporating This Standard

The NSG Geospatial Metadata Profile which has been adopted by the NGA and others through programs such as GeoScout, the Air Force Distributed Common Ground System (AF-DCGS), Analytical Spatial Data Initiative (ASDi), Multinational Geospatial Co-Production Group Technical Group (MGCP), and Geospatial Knowledge Base-Feature (GKB-F)

Relevant Information

Citation authored by the GWG Metadata Focus Group

Implementation Guidance

This Profile is among a suite of geospatial profile standards developed by the GWG Metadata Focus Group and widely used by the geospatial community. ISO/TS 19139 has been incorporated in the NSG Geospatial Metadata Profile which has been adopted by the NGA and others through programs such as GeoScout, the Air Force Distributed Common Ground System (AF-DCGS), Analytical Spatial Data Initiative (ASDi), Multinational Geospatial Co-Production Group Technical Group (MGCP), and Geospatial Knowledge Base-Feature (GKB-F). The objective is to promote a common suite of geospatial standards to assist the geospatial community in developing interoperable and harmonized functions.

Standard Selection Criteria

Net-Centric Interoperability

This Standards Profile (in conjunction with other ISO TC 211 standards) will form the basis for the interchange, implementation and distribution of future geospatial intelligence data. This Profile is to be used specifically with ISO 19115 - Metadata and ISO/TS 19139 - Metadata - XML schema Implementation. This profile addresses the Minimum Core Geospatial Metadata for the Discovery and Retrieval of National System for Geospatial Intelligence (NSG) Geospatial Metadata Types. The Profile also incorporates the Dublin Core Metadata Element Set, the Department of Defense Discovery Metadata Specification (DDMS), and Intelligence Community Metadata standards (Intelligence Information Sharing Standard for Resource Metadata Element Set, Intelligence Information Sharing Standard for Information Security, and Intelligence Information Sharing Standard Application Profile).

Technical Maturity

This NSG Geospatial Core Metadata Profile is based on mature International Standards, specifically ISO 19115 - Metadata and ISO/TS 19139 - Metadata - XML schema Implementation, the Dublin Core Metadata Element Set, the DoD DDMS, and Intelligence Community Metadata requirements. Drafts of this Geospatial Metadata Profile have been reviewed by the wide Geospatial community and approved by all major organizations affiliated with the Geospatial Intelligence Standards Working Group (GWG).

Public Availability

This Metadata profile is publicly available, free of charge, in either hardcopy (paper) or softcopy (PDF) form, from the Geospatial Intelligence Standards Working Group (GWG), <http://www.gwg.nga.mil>.

Implementability

This Metadata Profile has been adopted by the NGA and others through programs such as GeoScout, the Air Force Distributed Common Ground System (AF-DCGS), Analytical Spatial Data Initiative (ASDi), Multinational Geospatial Co-Production Group Technical Group (MGCP), and Geospatial Knowledge Base-Feature (GKB-F) under an agreement with the Metadata Focus Group, operating under the GWG.

Authority

The Metadata Focus Group (MFG) of the Geospatial Intelligence Standards Working Group (GWG), under the authority of the National Geospatial-Intelligence Agency (NGA).

Standard Type Non-Military

Keywords for Search None

Standard Identifier **OpenGIS GeoXACML 1.0**

Title of Standard

OpenGIS Geospatial eXtensible Access Control Markup Language (GeoXACML), Version 1.0, February 2008

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2008-07-14	2008-07-14	n/a	2008-07-14	2008-07-14	n/a

Standards Body

[OpenGIS](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.opengeospatial.org/>

Working Group

Primary Owner

Geospatial Intelligence TWG (GWG)

Secondary Interest

DoD Intelligence

Service Area

GEOINT: Geospatial

KIPs

No KIP Found

Standard Applicability

2008-07-17

This standard is applicable to the development of systems that require access control to geospatial information over the world wide web. GeoXACML can be used to establish an Access Control Mechanism to protect the access to OpenGIS Web Services (OWS).

Standard Abstract

2008-07-17

The Geospatial eXtensible Access Control Markup Language (GeoXACML) defines an extension to the XACML Policy Language that supports the declaration and enforcement of access restrictions on geographic information. GeoXACML is a geospatial extension to the OASIS standard eXtensible Access Control Markup Language (XACML) Version 2.0 . As an extension to OASIS eXtensible Access Control Markup Language (XACML), GeoXACML provides support for spatial data types and spatial authorization decision functions. Those data types and functions can be used to define additional spatial constraints for XACML based policies. GeoXACML includes a model for a rule based access control system that incorporates stereotype definitions of a Policy Enforcement Point (PEP), Policy Decision Point (PDP), Policy Administration Point (PAP) and Policy Information Point (PIP) as well as their relations to each other in the context of an access control system.

Profiling Questions

GEOINT: Geospatial

- Does your system require managed rule-based, policy language, access control to geospatial information and services within your service oriented architecture in an interoperable way across jurisdictions?

Products Incorporating This Standard

A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Relevant Information

This citation authored by the GWG Information Transfer & Services Architecture (ITSA) Focus Group.

Implementation Guidance

There are no known competing standards.

Standard Selection Criteria

Net-Centric Interoperability

GeoXACML provides an extension to the XACML Policy Language that supports the declaration and enforcement of access restrictions on geographic information over the world wide web.

Technical Maturity

The OpenGeospatial Consortium began development of the Geospatial eXtensible Access Control Markup Language Implementation Specification in January 2007. GeoXACML Version 1.0 was published in 2008.

Public Availability

The specification is freely available from the Open Geospatial Consortium at <http://www.opengeospatial.org/standards/geoxacml>.

Implementability

A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Authority

The OpenGeospatial Consortium is an international organization with members from industry, government and academia which uses an open process for developing and maintaining standards for geospatial information and services.

Standard Type

Non-Military

Keywords for Search

OGC, Open Geospatial Consortium, access control, geographic, geographic information, geospatial, geospatial intelligence, policy language, rule based

Standard Identifier OpenGIS SOS 1.0

Title of Standard

OpenGIS Sensor Observation Service Implementation Specification, Version 1.0, 26 October 2007

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2008-07-14	2008-07-14	n/a	2008-07-14	2008-07-14	n/a

Standards Body

[OpenGIS](#)

[Broken Link?](#)

URL to Access or Acquire

<http://opengeospatial.org>

Working Group

Primary Owner

Geospatial Intelligence TWG (GWG)

Secondary Interest

No Secondary Interest

Service Area

GEOINT: Geospatial

KIPs

No KIP Found

Standard Applicability

2008-07-17

This standard should be used for the development of any system that requires web service interface for requesting, filtering, and retrieving observations and sensor system information.

Standard Abstract

2008-07-17

Sensor Observation Service (SOS) Standard provides web service interface for requesting, filtering, and retrieving observations and sensor system information. This is the intermediary between a client and an observation repository or near real-time sensor channel. A Sensor Observation Service provides an API for managing deployed sensors and retrieving sensor data and specifically observation data. Whether from in-situ sensors (e.g., water monitoring) or dynamic sensors (e.g., satellite imaging), measurements made from sensor systems contribute most of the geospatial data by volume used in geospatial systems today.

Profiling Questions

GEOINT: Geospatial

- Does your system require a web service interface for requesting, filtering, and retrieving observations and sensor system information?

Products Incorporating This Standard

A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Relevant Information

Citation authored by the GWG Information Transfer and Services Architecture (ITSA) Focus Group.

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

Sensor Observation Service (SOS) Standard supports requirements for a web service interface for requesting, filtering, and retrieving observations and sensor system information.

Technical Maturity

The OpenGeospatial Consortium began development of the Sensor Observation Service Implementation Specification in 2005. Sensor Observation Service Version 1.0 was published in 2007.

Public Availability

The specification is freely available from the Open Geospatial Consortium at <http://opengeospatial.org>.

Implementability

A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Authority

Open Geospatial Consortium

Standard Type

Non-Military

Keywords for Search

OGC, Open Geospatial Consortium, geographic information, geospatial, geospatial intelligence., observation, planning, sensor web enablement, sensors

Standard Identifier **SPS 1.0**

Title of Standard

OpenGIS Sensor Planning Service Implementation Specification, 2007-08-02

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2008-04-03	2008-04-03	n/a	2008-04-03	2008-04-03	n/a

Standards Body

[OpenGIS](#)

[Broken Link?](#)

URL to Access or Acquire

<http://opengeospatial.org>

Working Group

Primary Owner

Geospatial Intelligence TWG (GWG)

Secondary Interest

IPv6 TWG

Service Area

GEOINT: Geospatial

KIPs

No KIP Found

Standard Applicability

2008-03-27

This standard should be used for the development of any system that requires the ability to task any form of sensor or model.

Standard Abstract

2008-03-27

Sensor Planning Service (SPS) defines an interface to task any form of sensor or model. SPS enables a client to determine collection feasibility for a desired set of collection requests for one or more mobile sensors/platforms, or a client may submit collection requests directly to these sensors/platforms. Using SPS, sensors can be reprogrammed or calibrated, sensor missions can be started or changed, simulation models executed and controlled. The feasibility of a tasking request can be checked and alternatives may be provided. SPS implementations cover a wide range of application scenarios. SPS is currently used to control assets such as simple web cams as well as satellite missions.

Profiling Questions

GEOINT: Geospatial

- Does your system require a web service interface for requesting, filtering, and retrieving observations and sensor system information?

Products Incorporating This Standard

A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Relevant Information

This citation authored by the GWG Information Transfer and Services Architecture (ITSA) Focus Group.

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

Sensor Planning Service (SPS) supports an interface to task any form of sensor or model. SPS enables a client to determine collection feasibility for a desired set of collection requests for one or more mobile sensors/platforms, or a client may submit collection requests directly to these sensors/platforms.

Technical Maturity

The OpenGeospatial Consortium began development of the Sensor Observation Service Implementation Specification in 2005. Sensor Planning Service Version 1.0 was published in May 2007 (SPS was demonstrated as part of the OGC Web Service -4.).

Public Availability

The specification is freely available from the Open Geospatial Consortium at <http://opengeospatial.org>

Implementability

A list of registered implementations can be accessed at <http://www.opengeospatial.org>

Authority

Open Geospatial Consortium

Standard Type Non-Military

Keywords for Search None

Standard Identifier **WMS 1.3**

Title of Standard

OpenGIS® Web Map Service (WMS) Implementation Specification

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2006-02-21	2006-02-21	n/a	2006-02-21	2007-06-27	n/a

Standards Body

[OpenGIS](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.opengeospatial.org>

Working Group

Primary Owner

Geospatial Intelligence TWG (GWG)

Secondary Interest

No Secondary Interest

Service Area

GEOINT: Geospatial

KIPs

No KIP Found

Standard Applicability

2006-02-21

The standard should be used for the development of any system intended to provide net access to GEOINT data to be displayed as a map or spatially referenced image, and for systems that need to access and display such data. There are no competing standards.

Standard Abstract

2006-02-21

This Standard provides two operations (GetCapabilities and GetMap) that support of the creation and display of registered and superimposed map-like views of information that comes simultaneously from multiple sources that are both remote and heterogeneous. An optional third operations (GetFeatureInfo) provides access to information about displayed map features.

Profiling Questions

GEOINT: Geospatial

- Does your development involve a client that needs to access and display maps or spatially registered images or does your development involve a server that provides access to geospatial information or spatially registered images?

Products Incorporating This Standard

A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Relevant Information

When this standard is used alone, symbology used in the display is determined by the data provider. A companion specification, the OpenGIS® Styled Layer Descriptor Implementation Specification allows the user on the client side to specify symbology.

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

WMS specifies both client and server interfaces for producing maps of spatially referenced data dynamically from geographic information, where "map" is defined as a digital image file suitable for display on a computer screen. The pixels of the display are registered to an external coordinate referen system such as WGS84. The specification provides capability to build a single map from data gathered from multiple servers. The source data may consist of images or feature data. WMS-produced maps are generally rendered in a pictorial format such as PNG, GIF or JPEG, or as vector-based graphical elements in SVG or WebCGM formats.

Technical Maturity

Version 1.0 of the specification was published by the OpenGeospatial Consortium in 1999. Version 1.3, published in August 2004, has been accepted as an ISO standard and was published as ISO 19128 in 2005. There are 7 implementations of this specification as of 30 September 2005.

Public Availability

The specification is freely available from the Open Geospatial Consortium at <http://opengeospatial.org>

Implementability

Use of this standard is mandated for the NATO Bi-Strategic Command Automated Information System. A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Authority

The OpenGeospatial Consortium is an international organization with members from industry, government and academia which uses an open process for developing an maintaining standards for geospatial information and services. The Web Map Service Specification has been adopted by the International Organization for Standardization (ISO) as ISO 19128

Standard Type Not Found

Keywords for Search image access, image display, map access, map display

Standard Identifier WPS 1.0

Title of Standard

OpenGIS® Web Processing Service, 2007-06-08

Standards History

Introduced to Registry	Date Emerging	Date Mandated	Last Status Update	Last Status Review	Inactive/Retired
2008-04-03	2008-04-03	n/a	2008-04-03	2008-04-03	n/a

Standards Body

[OpenGIS](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.opengeospatial.org/>

Working Group

Primary Owner

Geospatial Intelligence TWG (GWG)

Secondary Interest

No Secondary Interest

Service Area

GEOINT: Geospatial

KIPs

No KIP Found

Standard Applicability

2008-03-27

When a system requires client access across a network to pre-programmed calculations and/or computation models that operate on spatially referenced data over the world wide web.

Standard Abstract

2008-03-27

WPS provides client access across a network to pre-programmed calculations and/or computation models that operate on spatially referenced data. WPS defines a standardized interface that facilitates the publishing of geospatial processes, and the discovery of and binding to those processes by clients. Processes include any algorithm, calculation or model that operates on spatially referenced data. Publishing means making available machine-readable binding information as well as human-readable metadata that allows service discovery and use. The calculation can be extremely simple or highly complex, with any number of data inputs and outputs.

Profiling Questions

GEOINT: Geospatial

- Does your system require client access across a network to pre-programmed calculations and/or computation models that operate on spatially referenced data over the world wide web?

Products Incorporating This Standard

A list of registered implementations can be accessed at <http://www.opengeospatial.org>.

Relevant Information

This citation authored by the GWG Information Transfer and Services Architecture (ITSA) Focus Group.

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

WPS supports client access across a network to pre-programmed calculations and/or computation models that operate on spatially referenced data over the world wide web. WPS defines a standardized interface that facilitates the publishing of geospatial processes, and the discovery of and binding to those processes by clients.

Technical Maturity

The OpenGeospatial Consortium began development of the Web Processing Service Implementation Specification in 2005. Version 1.0 was approved for publication in August 2007. A list of registered implementations can be accessed at <http://www.opengeospatial.org>

Public Availability

The specification is freely available from the Open Geospatial Consortium at <http://opengeospatial.org>

Implementability

A list of registered implementations can be accessed at <http://www.opengeospatial.org>

Authority

The OpenGeospatial Consortium is an international organization with members from industry, government and academia which uses an open process for developing and maintaining standards for geospatial information and services.

Standard Type Non-Military

Keywords for Search None

Standard Identifier

BPJ2K01.00

Title of Standard

BIIF Profile for JPEG 2000, Version 01.00, 30 July 2004

Standards History

Date Active	Date Inactive
2007-11-06	n/a

Standards Body

[ISO](#)

[Broken Link?](#)

URL to Access or Acquire

http://ismc.nga.mil/ntb/baseline/docs/bpj2k01/ISOJ2K_profile.pdf

Standard Applicability

2007-11-08

For remote sensing and imaging applications, the use/application of JPEG 2000 is specified by The National Imagery Transmission Format Standard (NITFS) and related NATO standards documentation. NITFS is the DoD and Federal Intelligence Community suite of standards for the exchange, storage, and transmission of digital-imagery products and image-related products. Other image formats can be used internally within a single system; however, NITFS is the designated format for interchange between systems. NITFS provides the means for containing information about the image (e.g. sensor parameters, geospatial positioning, etc.), the image itself, image compression, overlay graphics, textual reports, elevation data, location grids, and a wide variety of additional imaging and raster map support data. NITFS supports the dissemination of digital imagery from overhead collection platforms. Guidance on applying the suite of standards composing NITFS can be found in NGA Document STDI-0005, Implementation Practices of the NITFS IPON. See <http://www.gwg.nga.mil/ntb/>.

Standard Abstract

2007-11-08

JPEG 2000 [ISO/IEC 15444-1:2004 | ITU-T Rec. T.800] defines a set of lossless (bit-preserving) and lossy compression methods for coding bi-level, continuous-tone gray-scale, palletized color, or continuous-tone color digital still images. ISO/IEC 15444-1:2004 | ITU-T Rec. T.800 - Specifies decoding processes for converting compressed image data to reconstructed image data; - Specifies a code stream syntax containing information for interpreting the compressed image data; - Specifies a file format; - Provides guidance on encoding processes for converting source image data to compressed image data; - Provides guidance on how to implement these processes in practice. This BPJ2K01.00 profile defines the application of JPEG 2000 within NITFS, setting limits for generation and interpretation behavior according to the rules for profile definition defined in ISO/IEC 15444-1|ITU T.800. The JPEG 2000 structure is explained fully in the ISO/IEC/ITU standard profiled in this document.

Products Incorporating This Standard

Companies with commercially available implementations/products include: BAE Systems, DigitalGlobe, GeoEye, Harris Corporation, ITT Industries, Leica Geosystems, OverWatch, PAR Government Systems, Raytheon, and Technology Services Corporation.

Relevant Information

This document is an implementation profile of International Standard ISO/IEC 15444-1:2004 | ITU-T Rec. T.800, Information Technology -- JPEG 2000 image coding system: Core coding system. See DISR citation for ISO/IEC 15444-1:2004 | ITU-T Rec. T.800. This citation is authored by the GWG NITFS Technical Board.

Implementation Guidance

See STDI-0005, Implementation Practices of the NITFS, available at:

<http://www.gwg.nga.mil/ntb/baseline/docs/ipon/index.html> The STDI-0005 document is a compilation of common practices, conventions, and guidelines for implementing the National Imagery Transmission Format Standard (NITFS). The objective is to help promote common specification and application of the NITFS suite of standards by all fielded and developmental digital imagery-related systems. It describes common conventions for implementing the suite of NITFS standards that promote and sustain NITFS compliance and interoperability for the production, storage, cataloging, discovery, selection, exploitation, and dissemination of digital imagery, raster map, and other related raster products.

Standard Selection Criteria

Net-Centric Interoperability

The BIIF Profile for JPEG 2000 (BPJ2K) tailors the ISO/IEC 15444-1 | ITU Recommendation T.800 JPEG 2000 standard for use with ISO/IEC 12087-5, Basic Image Interchange Format (BIIF). The BPJ2K is used with the National Imagery Transmission Format (NITF) and the NATO Secondary Imagery Format (NSIF), both of which are implementation profiles of BIIF that are intended to promote interoperability for the exchange of imagery among military Command, Control, Communications, and Intelligence (C3I) systems. This implementation profile is part of the National Imagery Transmission Format Standard (NITFS) suite of standards. NITFS is the common thread of interoperability for the formatting, imagery library storage and cataloging, dissemination, and exploitation of National Technical Means (NTM), Tactical Airborne, and Commercial imaging sources. JPEG 2000 promotes ease of scalability and interactive image viewing and exploitation within a net-centric environment.

Technical Maturity

The implementation profile is technically mature and stable, to include established conformance test criteria, tools, services and technical consultation for the implementation profile used by the NITFS. Existing commercial products conforming to this profile include, but not limited to: OverWatch Electronic Light Table Products (PocketELT ELT/4000 ELT/1500 Global Image Viewer ELT/5500 ELT/View Image Light Table (ILT) Plus and ELT/5500 Pro), BAE Socet GXP, ERDAS Imagine, OverWatch RemoteView Professional and ITT's Environment for Visualizing Imagery (ENVI). The NITFS profile of this standard has been part of the NITFS suite of standards and STANAG 4545, NATO Secondary Imagery Format (NSIF) since 2004. A follow on standard for use within NITFS/NSIF is not currently in consideration. A sunset status should not yet be added for this currently mandated (for use with NITFS/NSIF) standard implementation profile.

Public Availability

The BPJ2K01.00 is freely available at no charge from the following URLs: ISO/IEC International Register of Graphical Items (http://jitc.fhu.disa.mil/nitf/graph_reg/welcome.html).
<http://gwg.nga.mil/ntb/baseline/docs/bpj2k01/index.html>

Implementability

The BIIF Profile of JPEG 2000 is implemented by a variety of systems (data production, dissemination, library/archive, exploitation work stations, etc.) supporting the NITFS and NSIF suite of standards. Sample data, sample software, technical consultation, and conformance testing services are available to government and commercial implementers of the standard by contacting the NITFS Test Facility operated by the Joint Interoperability Test Command (JITC) on behalf of the National Geospatial-Intelligence Agency (NGA). Contact information available at <http://jitc.fhu.disa.mil/nitf/nitf.htm>, 1-800-538-5482, x8-5458, and jitcn@disa.mil. A list of government and commercially developed conforming implementations of the NITFS suite of standards is available at <http://jitc.fhu.disa.mil/nitf/register.html>.

Authority

ISO/IEC JTC 1/SC 29 and ITU-T (Coding of audio, picture, multimedia and hypermedia information), jointly developed and maintain the JPEG 2000 standard. The process for maintaining and developing the standard is an internationally open process by members of national bodies and liaison organizations participating with ISO/IEC and ITU-T. The international documentation, BPJ2K01.00, was developed jointly by the NTB and NATO standardization activities (STANAG 4545 Custodial Support Team), and placed on the International Items Register through international ballot. The NTB has broad participation across the DoD/IC with open participation by commercial industry.

Standard Type

Non-Military

Keywords for Search

None

Standard Identifier

FSMMG v1.0

Title of Standard

Frame Sensor Model Metadata Profile Supporting Precise Geopositioning, Version 1.0, 13 June 2007

Standards History

Date Active	Date Inactive
2007-11-06	n/a

Standards Body

[DoD](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.csmwg.seicorp.com/>

Standard Applicability

2007-11-08

This Frame Sensor Model Metadata Profile Supporting Precise Geopositioning information and guidance document details the various parameters to be considered when constructing a frame sensor model capable of enabling photogrammetric equations to establish the geometric relationship between sensor, image, and object imaged. A frame sensor is one that acquires all of the data for an image (frame) at an instant of time.

Standard Abstract

2007-11-08

The Frame Sensor Model Metadata Profile Supporting Precise Geopositioning information and guidance document details the various sensor and collection system (platform and other external sources of data) parameters to be considered when constructing a frame sensor model capable of providing the minimum essential metadata necessary to support the capability of precise geolocation. A compilation of the fundamental metadata that the sensor must provide such that an exploitation tool can recognize the sensor, and therefore, those parameters specifically required to define the image geometry. A frame sensor is one that acquires all of the data for an image (frame) at an instant of time. Typical of this class of sensor is that of having a fixed exposure and is comprised of a two-dimensional detector or array; e.g., focal plan array (FPA) or Charge-Coupled Device (CCD) array. The term sensor usually refers to digital collections; camera is typically used to denote use of film-based collectors. The focus of this document is upon those sensor properties necessary for accurate and precise geolocation with electro-optical (visible) frame sensors and not on the spectral sensitivity of the sensor; although the definitions and development apply equally to film and infrared (IR) arrays.

Products Incorporating This Standard

None

Relevant Information

Use of the information provided within this document will enable the design, development, and Validation and configuration management of geopositioning capabilities across the DoD Distributed Common Ground/Surface System (DCGS) within the Imagery Intelligence (IMINT) Community. This document is a GWG Community Sensor Model Working Group (CSMWG) sponsored and authored work item. The intent of the document is to provide technical details on the various parameters a sensor developer must consider when designing and constructing a sensor and attendant sensor model.

Implementation Guidance

None

Standard Selection Criteria

Net-Centric Interoperability

This information and guidance document supports and significantly enhances Joint and/or combined Service/Agency information exchange and supports Joint and coalition activities.

Technical Maturity

The Frame Sensor Model Metadata Profile Supporting Precise Geopositioning information and guidance document has been exhaustively vetted through the DoD and Intelligence Community (IC) Sensor Model Program POCs. Additionally, numerous representatives of industry and academia supporting either sensor model development or application tools using sensor models have reviewed and coordinated on this guidance document.

Public Availability

The Frame Sensor Model Metadata Profile Supporting Precise Geopositioning information and guidance document is not proprietary and is publicly available.

Implementability

The information and guidance provided in this document has been formally adopted and implemented by the Air Force, Navy and NGA. The AF, under its Sensor Model Program, and NGA have completed numerous sensor models using the guidance provided by the document.

Authority

The Frame Sensor Model Metadata Profile Supporting Precise Geopositioning information and guidance document is a DoD and IC document prepared by the National Geospatial-Intelligence Agency (NGA).

Standard Type Military

Keywords for Search None

Standard Identifier

ISO 19113:2002

Title of Standard

Geographic information -- Quality principles

Standards History

Date Active	Date Inactive
2007-02-27	n/a

Standards Body

[ISO](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.ansi.org>

Standard Applicability

2007-02-27

This International Standard is applicable and provides guidelines to data producers for describing the quality of their data; the quality information may be used by data users attempting to determine whether or not specific data is of sufficient quality for their particular application. This standard along with ISO 19114 Quality evaluation procedures:2002 and ISO/TS 19138:2006 Data quality measures provides for the quality guidelines and details on describing quality of their data for geospatial datasets.

Standard Abstract

2007-02-27

One of the main objectives of this family of standards is to enable geographic data to be shared and widely available in and across application domains. As this objective becomes realized it will increasingly be important to data users to determine fitness for use. This International Standard provides guidelines to data producers for describing the quality of their data; the quality information may be used by data users attempting to determine whether or not specific data is of sufficient quality for their particular application. Two components of data quality are identified. Data quality overview elements providing informative non-quantitative information that may be subjectively evaluated, and data quality elements providing quantitative quality information that reports how well a dataset meets the criteria set forth in its product specification. Data quality elements include the quality components of completeness, logical consistency, positional accuracy, temporal accuracy, thematic accuracy and allow for the creation of additional user defined components. Each component is comprised of several aspects called data quality sub-elements. Data quality information for each data quality sub-element is reported in several parts, including a data quality scope, data quality measure, data quality evaluation procedure, data quality result, data quality value domain, and data quality date. The metadata schema given in ISO 19115 is the mandatory method for reporting data quality information.

Products Incorporating This Standard

None

Relevant Information

Citation authored by the GWG Metadata Focus Group.

Implementation Guidance

ISO/TS 19138: 2006 Data quality measures provides for the implementation requirements of this standard

Standard Selection Criteria

Net-Centric Interoperability

This standards (in conjunction with other ISO TC 211 standards) will form the basis for the interchange and

distribution of future geospatial intelligence data. Specifically ISO 19114 and ISO/TS 19138: 2006 Data quality measures. ISO 19113 is additionally complimentary to ISO 19115 w/corrigendum - Metadata Standard.

Technical Maturity

This is a mature International Standard. Drafts of this standard were reviewed by experts from a number of nations, and the standard was approved by multiple national standards bodies, including the USA (ANSI).

Public Availability

This standard is publicly available, in either hardcopy (paper) or softcopy (PDF) form, from the International Standards Organization and/or ANSI.

Implementability

Although this standard itself is an abstract standard, the ISO implementation of quality is ISO/TS 19138 , to which this standard is complimentary.

Authority

This is an International Standard, published by the ISO (International Organization for Standardization).

Standard Type Non-Military

Keywords for Search None

Standard Identifier

ISO 19114:2003 w/ISO 19114/Cor. 1:2005

Title of Standard

Geographic information - Quality evaluation procedures, 4 September 2003, with Corrigendum 1, 15 September 2005

Standards History

Date Active	Date Inactive
2007-02-27	n/a

Standards Body

[ISO](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.ansi.org>

Standard Applicability

2007-02-27

This International Standard is applicable and allows for the reporting of quality evaluation results. This standard along with ISO 19113 Quality Principals:2002 and ISO/TS 19138:2006 Data quality measures: 2006 provides for the Quality assessment and reporting for Geospatial datasets.

Standard Abstract

2007-02-27

This International Standard establishes a framework of quality evaluation procedures for a dataset of geospatial data so that data producers can define how well their products meet their product specification and users can define their requirements and how well they are met. The product specification or user requirements should allow the acceptable quality levels to be determined for each quality metric. An estimation of a dataset's quality is made by sampling, computer processing and/or indirectly by deduction for comparison with the acceptable quality level.

Products Incorporating This Standard

None

Relevant Information

This citation is authored by the GWG's Metadata Focus Group.

Implementation Guidance

ISO/TS 19138: 2006 Data quality measures provides for the implementation requirements of this standard.

Standard Selection Criteria

Net-Centric Interoperability

This standards (in conjunction with other ISO TC 211 standards) will form the basis for the interchange and distribution of future geospatial intelligence data. Specifically ISO 19113 and ISO/TS 19138: 2006 Data quality measures which is the quality implementation specification from ISO. ISO 19114 is additionally complimentary to ISO 19115 with corrigendum - Metadata Standard.

Technical Maturity

This is a mature International Standard. Drafts of this standard were reviewed by experts from a number of nations, and the standard was approved by multiple national standards bodies, including the USA (ANSI).

Public Availability

This standard is publicly available, in either hardcopy (paper) or softcopy (PDF) form, from the International Standards Organization and/or ANSI.

Implementability

Although this standard itself is an abstract standard, the ISO implementation of quality is ISO/TS 19138, to which this standard is complimentary.

Authority

This is an International Standard, published by the ISO (International Organization for Standardization).

Standard Type Non-Military

Keywords for Search None

About This Information/Guidance Document

Current Status *I/G-Active*

Standard Identifier

NGA.SIG.0001 v2.0

Title of Standard

Distributed Common Ground/Surface System Acquisition Standards Handbook - Imagery Intelligence (IMINT) (DASH-I), v2, 3 December 2007

Standards History

Date Active	Date Inactive
2008-04-03	n/a

Replaced

[DASH-I v1.4](#)

Standards Body

[DoD](#)

[Broken Link?](#)

URL to Access or Acquire

<https://www.dcgsonline.hq.af.mil/login.asp>

Standard Applicability

2008-03-27

The DASH-I lists the physical, network, and information standards and identifies the fundamental architectural concepts that will be used for the development of a Service DCGS.

Standard Abstract

2008-03-27

The DASH-I addresses the TO-BE architecture of the DCGS. It promotes interoperability among Service DCGS imagery systems by presenting operational and system architectural views. The DASH-I allows for the acquisition standards to be overlaid onto the Service-provided system architectures. These views enable acquisition organizations to determine where the standards in this document apply within their system architectures. The DASH-I identifies the DCGS system and technical architecture and shows how the DCGS Enterprise integrates to the NSG Enterprise. It provides insight into the DCGS capabilities and elements. The DASH-I defines the standard functions, information standards, and interfaces required for implementing the DCGS TO-BE architectures.

Products Incorporating This Standard

None

Relevant Information

The DCGS Acquisition Standards Handbook - Imagery (DASH-I) is the guidance document of recommended standards for new system development or significant upgrades in DoD acquisition. In all cases, mandated standards listed in the most recent baseline of the DoD IT Standards Registry (DISR) shall take precedence over DASH-I recommended standards. This citation authored by the GWG NITFS Technical Board (NTB).

Implementation Guidance

The DASH-I is a reference document that will be published annually. Therefore it is not as current as the DISR, which is updated three times a year. The DISR Baselines take precedence over the standards listed in the DASH-I should a conflict exist.

Standard Selection Criteria

Net-Centric Interoperability

The DoD DCGS is an Office of the Secretary of Defense (OSD) level strategy for achieving an interoperable family of systems that will provide an enterprise within which a multi-INT Task, Post, Process, and Use (TPPU) construct will be provided to the Joint Task Force (JTF) and below. This will be accomplished through a

combination of web-services based capabilities and architectures that enable distributed workflow, exploitation, and analysis; collaboration amongst Service DCGS elements and within a single Service DCGS element; forward support to the C2 user and war-fighter; and reach back from theater to CONUS.

Technical Maturity

The DASH-I lists the physical, network, and information standards and identifies the fundamental architectural concept for use as a point of departure for the transformation of Service DCGS architectures. This has been vetted through the services, represented in the DCGS IMINT-IPT. This document is primarily based on commercial web-services standards and other web-based enterprise enabling standards, standards described in the DoD Information Technology Standards Registry (DISR), and standards described in the National System for Geospatial-Intelligence (NSG) technical architecture.

Public Availability

The DASH-I v2.0 3 December 07 is available on the DCGS online under "Documents" at <https://www.dcgsonline.hq.af.mil/login.asp>

Implementability

The mission and function of Service DCGS elements is to satisfy: the Service commanders at the battalion, squadron, and ship level; Service component and intelligence organizations; the JTF; the Unified Commands; and the Combatant Commanders. The DCGS Implementation Backbone (DIB) provides a Commercial-Off-the-Shelf (COTS) enterprise integration framework.

Authority

The DASH-I is a military document prepared by the National Geospatial-Intelligence Agency (NGA). The DASH-I, as a living document, will be maintained with continued coordination with the IMINT IPT, the DCGS community, and with cross walks against the most recent baseline of standards in the DoD IT Standards Register (DISR).

Standard Type Military

Keywords for Search None

About This Information/Guidance Document

Current Status *I/G-Active*

Standard Identifier

NGMDR v1.0

Title of Standard

The National System for Geospatial Intelligence (NSG) Geospatial Metadata Desk Side Reference (NGMDR), Version 1.0, August 2007

Standards History

Date Active	Date Inactive
2007-11-06	n/a

Standards Body

[NGA](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.gwg.nga.mil>

Standard Applicability

2007-11-08

The NSG Geospatial Metadata Desk Side Reference is intended to promote and assist in the development of interoperability requirements for the discovery and retrieval of metadata within the Geospatial Community of Interest (COI).

Standard Abstract

2007-11-08

This document has been developed to be used as a general reference for Geospatial Metadata users and developers. The Reference may be consulted for guidance and helpful information pertaining to questions and issues that have been raised frequently in various form and fora within the geospatial community. Furthermore, it is intended for those individuals or organizations who desire to develop their metadata activities within the harmonization and interoperability requirements for Geospatial Metadata development. Due to the numerous questions concerning metadata from various working groups, this document is intended to address at a high level, some of these questions.

Products Incorporating This Standard

This is a reference document and is not designed for incorporation into products.

Relevant Information

Citation authored by the GWG Metadata Focus Group.

Implementation Guidance

The importance of metadata is that it enables discovery of information and many other resources and is a key enabler of data and system interoperability. Metadata is first data about data that describes the content and the appropriate use of a data resource. Second, metadata has been expanded to enable finding other resources such as geospatial systems, standards and other specific information. In the current movement to an increasingly net-centric world, the speed, agility and interoperability required cannot be met without metadata. Metadata is becoming even more critical as the volumes of archived data and imagery, and other geospatial resources continue to grow at rapid rates. One example is the airborne community's imagery libraries with its volume of data. Human search efforts could not possibly access and evaluate all this volume of data to come even close to the operational time constraints. Without metadata many of the searches would have to be conducted with Google-like tools with much effort spent trying to determine if the data or other resource meets the specific need. Without metadata, a consumer could not search and retrieve the data that contains the characteristics and content necessary to support a required mission. Metadata instills data accountability and limits data liability. This is especially true for the National System for Geospatial-Intelligence (NSG) in the use of geospatial intelligence (GEOINT) data. Providing metadata according to the applicable standards, including harmonization between the required metadata standards, further increases the metadata work. It is critical that the work and development of

Standard Identifier

STDI-0005 Version 1.0

Title of Standard

Implementation Practices of the National Imagery Transmission Format Standard (IPON), 2 August 2007

Standards History

Date Active	Date Inactive
2008-04-03	n/a

Standards Body

[NGA](#)

[Broken Link?](#)

URL to Access or Acquire

<http://www.gwg.nga.mil/ntb/baseline/1999.html>

Standard Applicability

2008-03-27

The National Imagery Transmission Format Standard (NITFS) is a DoD and Federal Intelligence Community suite of standards for the exchange, storage, and transmission of digital-imagery products and image-related products. Other image formats can be used internally within a single system; however, NITFS is the default format for interchange between systems. NITFS provides a package containing information about the image, the image itself, and optional overlay graphics. The format provides a data structure for containing one or more images, subimages, symbols, labels, and text as well as other information (metadata) related to the image(s). NITFS supports the dissemination of digital imagery from overhead collection platforms and post-processed imagery-derived products. STDI-0005, Implementation Practices of the NITFS, provides guidance for the application of the NITFS suite of standards in support of interoperability among systems within the National System for Geospatial Intelligence (NSG), systems that interface with the NSG, and commercial systems that implement the NITFS.

Standard Abstract

2008-03-27

Members of the Geospatial Intelligence Standards Working Group's NITFS Technical Board (NTB) compiled these practices as an aid to those involved with the implementation and use of the NITFS. The content is based upon common practices, procedures, and guidelines used in fielded systems that have successfully implemented the NITFS. To meet a wide range and variety of imagery-related functional requirements, the NITFS has many combinations of implementation options to select from. Those implementing the NITFS should select and apply common practices to meet operational requirements whenever practicable.

Products Incorporating This Standard

BAE Systems, DigitalGlobe, General Dynamics, GeoEye, Harris Corporation, ITT, Leica Geosystems, OverWatch, PAR, PCI Geomatics, PhotoTelesis, Raytheon, and Technology Services Corporation (TSC).

Relevant Information

This citation authored by the GWG NITFS Technical Board (NTB).

Implementation Guidance

This document (IPON) provides guidance for using/implementing the NITFS suite of standardization documents.

Standard Selection Criteria

Net-Centric Interoperability

These guidelines (STDI-0005) support implementation of the National Imagery Transmission Format Standard (NITFS) suite of standards. NITFS is the common thread of interoperability for the formatting, imagery library storage and cataloging, dissemination, and exploitation of National Technical Means (NTM), Tactical Airborne,

and Commercial imaging sources.

Technical Maturity

The suite of standards that comprise the NITFS has evolved over time to meet the requirements of user systems. These practices address implementation topics for the NITFS associated with NITF version 1.1, NITF version 2.0, and NITF version 2.1. Many of these practices are also suitable for use with Standardization Agreement (STANAG) 4545, North Atlantic Treaty Organisation (NATO) Secondary Imagery Format (NSIF). Both NITF version 2.1 and NSIF version 1.0 are now documented in the NSIF01.00 Profile of ISO/IEC 12087-5, Basic Image Interchange Format (BIIF).

Public Availability

The IPON is freely available at the following URL: <http://www.gwg.nga.mil/ntb/baseline/1999.html>

Implementability

The NITFS is widely implemented within the DOD and Intelligence Community by National Technical Means (NTM), tactical airborne, commercial satellite imaging systems, imagery library and dissemination systems, and a variety of commercial exploitation workstations. A standards compliance and interoperability program supports implementation of the capabilities specified within this standard.

Authority

The NITFS and this related guidance document (IPON) are prepared by the National Geospatial-Intelligence Agency (NGA). The Geospatial Intelligence Standards Working Group (GWG) and its NITFS Technical Board (NTB) provide an open process for maintaining and developing this guidance document.

Standard Type Military

Keywords for Search None