NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY

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NGA STANDARDIZATION DOCUMENT

When the Standard comprises a logical data model and a content registry, use "Edition x.x". The subsequent identification of content updates associated with the Edition must be addressed within the text of the standard.

Name of document
(yyyy-mm-dd)

Version x.x

It is the Author's responsibility to obtain release approval and insert the appropriate DISTRIBUTION STATEMENT.

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Should this be removed? Use only for TAES-generated items?

NATIONAL CENTER FOR GEOSPATIAL INTELLIGENCE STANDARDS

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Introduction

[Provide an executive overview of such topics as the requirement(s) being satisfied by the standard]

Revision History

Version	Approval Date	POC	Change Description
	Date of authorization to publish		*[Include summary description of changes incorporated in this version.]*

1 Scope

[State what the document does through a series of statements of fact.]

2 Conformance

[Guidance: All testable NGA standardization documents provide an introductory conformance clause near the beginning of the document. The statements in this conformance clause are expanded upon in the Conformance Description clause near the end of the main document body, and in the Abstract Test Suite (ATS) annex(s) to the document. Paragraphs 2.1 – 2.4 provide a general layout template for the conformance clause].

2.1 Conformance Requirements.

[Guidance: The conformance clause starts with a general statement of the requirements to be satisfied in order for an implementation to claim conformance to the standard. The clause may identify conformance classes to define different kinds of conformance requirements. The actual requirements are stated in one or more instances of an Abstract Test Suite (ATS). When conformance classes are defined, a separate ATS may be used for each conformance class.

Definition of conformance classes may be useful when a standard has more than one anticipated use case for implementation. For example, a GEOINT data standard may have different test requirements for data production, data output, data dissemination, data exchange, data archiving, data discovery, data interpretation, data exploitation, data portrayal, etc. A GEOINT services interface standard may have different test requirements for server and client. For some GEOINT standards, the item to be evaluated for conformance may not be a system implementation, but some form of documentation such as an application schema, profile, technology-specific specification, platform-specific specification, etc.

Requirements of conformance classes may overlap, in which case, subparts of the ATS may be shared between different conformance classes.

A conformance level is a special kind of conformance class in which the requirements of a higher level contain all the requirements of the lower levels.

Exemplary statements:

An item conforms to this standard when it fulfills:
- The mandatory requirements of the standard, and
- The conditional requirements of the standard (when the stated conditions apply), and
- Those optional requirements of the standard needed to enable the purpose of the item.

Any item claiming conformance to this standard shall pass all the requirements described in the abstract test suite.

This standard defines three *[e.g.]* classes of conformance: class A, class B and class C. *[The intended application of the conformance classes may be stated here.]* Any item claiming conformance with one

of these classes shall pass all the requirements described in the corresponding abstract test suite.

2.2 Abstract Test Suite (ATS) for conformance class A

The ATS for conformance class A is at Annex …

2.3 Abstract Test Suite (ATS) for conformance class B

The ATS for conformance class B is at Annex …

2.4 *Abstract Test Suite (ATS) for conformance class ….*

The ATS for conformance class … is at Annex …

3 References

3.1 Normative

NOTE: references may be listed in bullet or table form.

Guidance: This section is mandatory. It is a list of referenced documents cited in the text as a requirements within this document.

Include standards conformance-related normative references pertinent to the standard. The following may have general pertinence to NGA standardization documents.

- NSG Directive 3201, The Geospatial Intelligence (GEOINT) Functional Manager Standards Assessment (GFMSA) Program
- NSG Manual 3202, GEOINT Functional Manager Standards Assessment Program

3.2 Informative

NOTE: references may be listed in bullet or table form.

4 Terms, Definitions and Acronyms

4.1 Terms and Definitions

NOTE: Insert in table or bullet form

Guidance: Include definitions for conformance related terms used in the standardization document. Use the following definitions when the terms are used within the document.

- Abstract Test Case. A generalized test for a particular requirement. [ISO 19105]
- Abstract Test Method. A method for testing an implementation that is independent of any particular test procedure. [ISO 19105]
- Abstract Test Module. A set of related abstract test cases. Abstract test modules may be nested in a hierarchical way. [ISO 19105]

- Abstract Test Suite (ATS). A set of abstract test modules and associated abstract test cases that collectively specify all the requirements to be satisfied for conformance. [digest from ISO 19105]

- Basic Test. An initial capability test intended to identify clear cases of non-conformance. [ISO 19105]

- Capability Test. A test designed to determine whether an IUT conforms to a particular characteristic of a standard as described in the test purpose. [ISO 19105]

- Compliance. Adherence to policy, directives, instructions, guidance, etc. Often used to define or mean the same as conformance. E.g. an implementation exhibits conformance when it complies with the conformance requirements of the applicable information standards.

- Conformance. The fulfilment of specified requirements. [ISO 19105]

- Conformance Class. Conformance classes may be used to group, define, and label different kinds of conformance requirements pertinent to implementation of the standard. [digest from ISO 19105]

- Conformance Level. A conformance level is a special kind of conformance class in which the conformance requirements of a higher level contain all the requirements of the lower levels. [digest from ISO 19105]

- Executable Test Suite (ETS). A set of executable test cases. [ISO 19105]

  An executable test suite (ETS) is an instantiation of an ATS, in which all implementation-dependent parameters are assigned specific values. An executable test case is derived from an abstract test case and is in a form that allows it to be run on the IUT. Executable test cases result from the instantiation of specific values for parameters in abstract test cases. Executable test cases may be unique to each IUT. [digest from ISO 19105]

- Implementation Conformance Statement (ICS). A statement made by the supplier of an implementation or system claimed to conform to a given standard (or set of standards/specifications), asserting which capabilities have been conformingly implemented. [digest from ISO 19105]

- Implementation Under Test (IUT). The realization of a specification that is the focus of test. [digest from ISO 19105]

- Pro forma. Latin for the term “form”.

- Reference Implementation (RI). A conformant, trusted, or well-known exemplar implementation of one or more standards used to support standards conformance and interoperability testing. In some instances, the RI is suitable for reuse by developers in their own instantiations of the standardized function or service.

- Standards Conformance Testing. Testing performed to determine the extent to which a system or subsystem adheres to or implements a standard. It involves testing the capabilities of an implementation against both the conformance requirements in the relevant standard(s) and the statement of the implementation's capabilities. [NSGM 3202]

- System Under Test (SUT). The computer hardware, software and communication network required to support an IUT. [ISO 19105]

4.2 Acronyms

The acronyms that are used in this standard are specified in the following list.

NOTE: Insert in bullet form

Guidance: Include abbreviations for conformance-related terms used in the standardization document. Use the following spell-out of abbreviations when the abbreviations appear within the document.

- ATS Abstract Test Suite
- ETS Executable Test Suite
- ICS Implementation Conformance Statement
- IUT Implementation Under Test
- RI Reference Implementation
- SUT System Under Test

5 [Insert descriptive title of what the section is; for example, Logical Data Model or Governance Policy and Procedures]

NOTE: "Requirements" is not an appropriate section-title as either "requirements" are for the creation of the standard or "requirements" are in regard to conformance to the standard and therefore belong, respectively, in the Conformance section or the Abstract Test Suite.

Add additional sections as required. The following section is numbered "6" only because it is automatically generated and will be correctly numbered in your document after previous sections.

6 Conformance Description

Guidance: The conformance description clause describes what it means to conform to the standard. This clause expands upon the content of the introductory conformance clause found near the beginning of the standardization document.

This clause defines conformance classes and/or conformance levels, and describes the anticipated use cases that may have been introduced in the introductory conformance clause.

It may also be used to define conformance relationships as they may pertain to other standardization documents.

NOTE: Annexes, if included, must state whether they are normative or informative in nature, see examples below. Normative Annexes precede Informative Annexes.

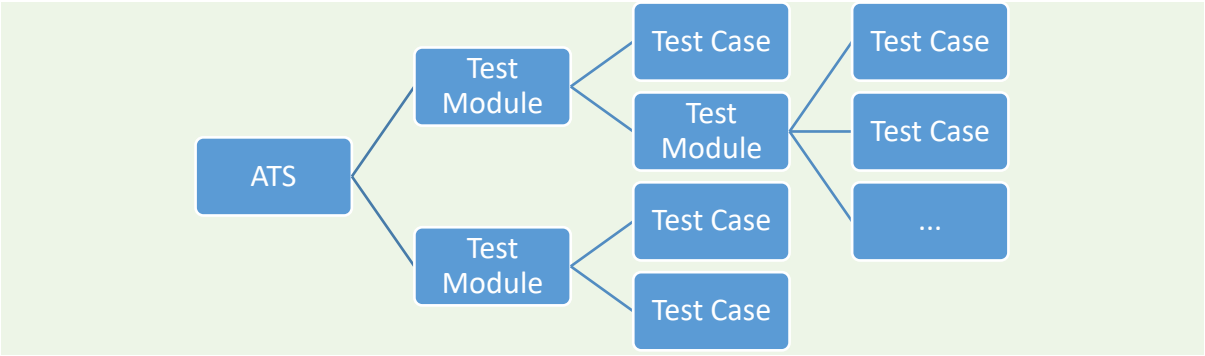
Annex A – Abstract Test Suite (Normative)

Guidance: Ideally the ATS is documented within the standard. If an ATS is documented external to the standard, provide reference information in the standard about the ATS.

An ATS is represented as a hierarchical structure of abstract test modules and test cases. Abstract test

cases form the lowest level in the ATS hierarchy. Abstract test modules are used to classify and group (nest) abstract test cases and other abstract test modules. Each abstract test case exercises at least one test purpose from the standard. Abstract test modules may be nested to any depth needed to provide a logical ordering of the abstract test cases.

Figure 2



First identify the main test purpose as the root node of the ATS. Decompose the main test purpose into test modules (child nodes). Continue the parent/child node decomposition process until all test purposes are decomposed into sufficiently small/basic nodes, i.e. abstract test cases.

The following template (paragraphs A.1 – A.2) illustrates the test module and test case structure for a notional ATS. The test module and test case structure may be documented using a hierarchal paragraph numbering as illustrated below, in a table, in a graphical representation, or other representation suitable for expressing the abstract test requirements in human readable form.

A.1 Test Module for MMM

A.2.1 MMM

a) Test Purpose:
Guidance: Provide a precise description of the test objective.

b) Test Method:
*Guidance: The description of a test method for an **abstract test module** typically contains references to other clauses. It may also include statements on whether it is mandatory, optional, or conditional.*

*Specific test methods and test-verdict criteria are stated in **abstract test cases**. Provide a narrative description for what is to be measured and the criteria for evaluating pass or fail.*

Example: Verify that foreign information items do not reside within the KML namespace; they are placed in another namespace.

c) Reference:
Guidance: Designate the clause(s) in the main body of the standard where the requirements to be tested are specified.

d) Test Type:
*Guidance: Test type is either a **basic test** or a **capability test**.*

*A **basic test** is an initial capability test intended to identify clear cases on non-conformance. Basic tests provide limited testing of an IUT in order to establish whether or not it is appropriate to perform more thorough testing. Basic tests are simple capability tests.*

*A **capability test** is designed to determine whether an IUT conforms to a particular characteristic of the standard as described in the test purpose. Capability tests should exercise an implementation as thoroughly as is practical over the full range of conformance requirements specified in the standard. Capability tests should be provided to check mandatory capabilities and those conditional and optional capabilities that are identified in the ICS as being supported by the IUT.*

A.2 Test Module for NNN *(a child node of Test Module MMM)*

A.2.1 NNN

a) Test Purpose:
b) Test Method:
c) Reference:
d) Test Type:

A.2.2 Test Case for PPP *(a child node of Test Module NNN)*

a) Test Purpose:
b) Test Method:
c) Reference:
d) Test Type:

A.2.3 Test Case for QQQ (a child node of Test Module NNN)

a) Test Purpose:
b) Test Method:
c) Reference:
d) Test Type:

A.2.4 Test Case for RRR *(a child node of Test Module MMM)*

a) Test Purpose:
b) Test Method:
c) Reference:
d) Test Type:

A.3 Test Module for SSS

A.3.1 SSS

Annex B – Implementation Conformance Statement (ICS) Pro forma (Normative)

Guidance: Ideally the ICS pro forma is documented within the standard. If an ICS pro forma is documented external to the standard, provide reference information in the standard about the ATS pro forma.

To test the conformance of a particular implementation of the standard, one needs to know which provisions of the standard were implemented. An ICS pro forma provides a uniform means for the implementer to declare the mandatory, conditional, and optional provisions of the standard that were

actually implemented. This will allow the implementation to be tested for conformance against the relevant requirements, and against those requirements only.

There is no universal template for designing an ICS pro forma. This gives the authors of the standard the latitude to layout the pro forma in a manner that best portrays an overall summary for the conformance status of the IUT. The pro forma shown below is a notional exemplar depicting the type of content that is to appear in the ICS pro forma.

An ICS is a statement made by the supplier of an implementation or system claimed to conform to a given standard (or set of standards/specifications), asserting which capabilities have been conformingly implemented. An ICS pro forma provides a uniform means for the implementer to declare the mandatory, conditional, and optional provisions of the standard that were actually implemented.

The following ICS pro forma may be used by the supplier or sponsor of an implementation as a framework to document the standards conforming capabilities of the implementation of this standard.

Table 1. Notional Implementation Conformance Statement (ICS) Pro forma

KML 2.2 - Implementation Conformance Statement (ICS)					
B=Baseline KML P=Profile Obligation I=Implemented P/F=Pass/Fail					
M=Mandatory O=Optional C=Conditional					
Implementation Under Test:		**Conformance Level (1, 2 or 3):**			
Test Point:		**Profile Identifier:**			
Date of Initial ICS Completion:		**Test Sponsor:**			
Date of Test Completion:		**Test Organization:**			
Characteristic	**Parameter**	**Obligation**			
		B	**P**	**I**	**P/F**
General Capabilities. KML is an XML grammar used to encode and transport representations of geographic data for display in an earth browser, such as a 3D virtual globe, 2D web browser application, or 2D mobile application. Those parameters shown on the right as 'implemented' provide an indication of the capabilities enabled by KML instance documents produced by the implementation under test. These parameters are informational only; the concept of pass/fail is not applicable for this characteristic.	KML is used to annotate the Earth.	O			
	KML is used to specify icons and labels to identify locations on the surface of the planet.	O			
	KML is used to create different camera positions to define unique views for KML features.	O			
	KML is used to define image overlays to attach to the ground or screen.	O			
	KML is used to define styles to specify KML feature appearance.	O			
	KML is used to write HTML descriptions of KML features, including hyperlinks and embedded images.	O			
	KML is used to Organize KML features into hierarchies.	O			
	KML is used to locate and update retrieved KML documents from local or remote network locations.	O			
	KML is used to define the location and orientation of textured 3D objects.	O			

Table 1. Notional Implementation Conformance Statement (ICS) Pro forma

KML 2.2 - Implementation Conformance Statement (ICS) B=Baseline KML P=Profile Obligation I=Implemented P/F=Pass/Fail M=Mandatory O=Optional C=Conditional **Implementation Under Test:** **Conformance Level (1, 2 or 3):** **Test Point:** **Profile Identifier:** **Date of Initial ICS Completion:** **Test Sponsor:** **Date of Test Completion:** **Test Organization:**					
Characteristic	**Parameter**	**Obligation**			
		B	**P**	**I**	**P/F**
	Other (Describe):	O			
Conformance Level. The OGC Abstract Test Suite (ATS) for KML 2.2 (OGC document 07-134r2, version 1.0.0) is a compendium of abstract test cases that provide a basis for verifying the structure and content of OGC KML 2.2 instance documents. Three conformance levels are defined; each level builds on the preceding ones.	Conformance Level 1. KML instance documents produced by this implementation conform to absolute baseline requirements. A KML document must satisfy all assertions at this level to be minimally conformant.	M		X	
	Conformance Level 2. KML instance documents produced by this implementation conform to recommended requirements that should be satisfied by a KML document. Non-conformance at this level may hinder the utility, portability, or interoperability of the KML instance document.	O			
	Conformance Level 3. KML instance documents produced by this implementation conform to suggested constraints that are informative in nature. KML documents at this level do not use deprecated elements and are in alignment with existing (non-normative) standards or conventions.	O			
Extensions to KML. The content of KML instance documents can optionally be extended to the extent permitted by the KML standard. The KML schema provides a number of extension points that may be used. When opting to extend KML, the parameters to the right apply.	Elements and attributes that are not part of the KML standard (foreign information items) are defined in a KML application profile. Identify profile used:	M			
	Foreign information items do not reside within the KML namespace; they are placed in another namespace.	M			
	No KML components are redefined (structurally or semantically) within the KML namespace.	M			

Table 1. Notional Implementation Conformance Statement (ICS) Pro forma

KML 2.2 - Implementation Conformance Statement (ICS) B=Baseline KML P=Profile Obligation I=Implemented P/F=Pass/Fail M=Mandatory O=Optional C=Conditional **Implementation Under Test:** **Conformance Level (1, 2 or 3):** **Test Point:** **Profile Identifier:** **Date of Initial ICS Completion:** **Test Sponsor:** **Date of Test Completion:** **Test Organization:**					
Characteristic	**Parameter**	**Obligation**			
		B	**P**	**I**	**P/F**
	The XML structure of new elements and attributes is defined in a valid application profile schema that imports the KML schema.	M			
	New elements are added to existing concrete KML elements by substitution only, where permitted by the KML schema.	M			
	New complex types of complex content are derived directly or indirectly by extension from kml:AbstractObjectType.	M			
	New complex types of complex content are derived by extension from the relevant KML abstract type whose semantics it shares.	M			
	New elements and attributes are declared as optional, i.e. minOccurs="0", to support the KML update mechanism. This however does not preclude asserting minimum occurrence constraints as conformance rules within supplementary normative application profile documentation.	M			
	Extension elements and attributes are placed in a "vendor-neutral" namespace to support any future potential integration with the KML standard, and encourage interoperability in general.	O			
	Extensions used are based on an adopted OGC application profile that extends KML. Identify OGC application profile used. OGC KML Profile:	O			

Annex C - title (Informative)