



IMS Vocabulary Definition Exchange Conformance Requirements

Version 1.0 Final Specification

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1. Introduction

This section is not normative.

1.1 IMS Vocabulary Definition Exchange Specification Components

This document is the IMS Vocabulary Definition Exchange Specification version 1.0. As such it forms one of a set that comprise the specification, each with distinct scope:

1.1.1 Information Model

Describes the core aspects of the specification and contains parts that are normative for any binding claiming to use this Information Model. It contains details of: semantics, structure, data types, value spaces, multiplicity, and obligation (i.e., whether mandatory or optional).

1.1.2 XML Binding

Describes a binding of the Information Model to XML version 1.0 and is normative for any XML instance that claims to use this binding, whether by reference to the specification or by declaration of the namespace reserved by the specification. In cases of error or omission, the Information Model takes precedence. The VDEX XML Binding is released with a control document using W3C XML Schema 1.0 that should be used in implementations.

1.1.3 Best Practices and Implementation Guide

Provides non-normative guidance on application of the Information Model and XML Binding. This includes reference to existing practice in handling information that this specification seeks to support and guidance on practices that will promote interoperability and durability. It also includes examples to illustrate how the conceptual framework maps to practical uses and to identify the relationship between this specification and related IMS specifications. Implementers are encouraged, but not required, to follow guidance in this part of the specification.

1.1.4 Conformance Requirements (this document)

Provides a set of testable statements that may be used in relation to applications of the Information Model and XML Binding. These statements may form the basis of formal conformance testing and certification or informal assertions. This document makes no statement about the formal processes or method of certification; it only deals with criteria.

1.2 Nomenclature

The terms defined in RFC 2119 (IETF RFC 2119 – Key words for use in RFCs to Indicate Requirement Levels) are used with the meaning there defined in any section of this document stated to be “normative”.

1.3 Localization

Whereas the Information Model used plain formatted English terms for element names, since the language of the specification is English, the XML Binding uses tokens for element names. These follow the lower camel case convention and are derived from the Information Model element names. Translators of the Information Model may change the names used in that document but they must map to XML Binding element names exactly as presented in this document; translation of XML element names is not permitted. This restriction will ensure machine-level interoperability of data. See Table 2.2 - Binding names for Information Model elements in the XML Binding document.

Annotations and comment strings in the official IMS VDEX XSD files appear in at least US English. Annotations and comments in other languages may be added as deemed necessary by IMS stakeholders and such a revision must only be published by IMS¹. Since interoperability depends on trustworthy binding instances, only exact copies of the official IMS binding instance should be publicly circulated. Any entity other than IMS that needs localized annotations

or comments should create a separate document with such annotations and comments, and reference the official IMS binding instance rather than circulating a binding instance that is different to, but could be believed to be identical to, the official IMS version.

This Binding document may be translated except for the representations of:

- o binding structure names
- o binding structure value spaces
- o file naming syntax and examples
- o binding namespace URI
- o binding file path representation

The essence of this section is that XML instances expressing the same information should not differ if created by readers of different localized versions of this specification.

Localization of this document shall not cause any change in specification version numbering or binding revision instance numbering.

1. If only comments and annotations are added by the IMS, the revision number and revision level of the binding instance will not be changed because such an instance is functionally identical to the original.

2. Conformance Statements

This section is normative.

Conformance statements are divided into sections for the Information Model and for the XML Binding. At the current point in time, there is no other binding published by IMS but it is conceptually cleaner to identify statements that are binding independent.

Conformance statements are made at a syntactic level only – i.e., no statements attempt to provide criteria for the data being meaningful.

2.1 Information Model

2.1.1 Data

- 1) Data types must conform to the specifications of the Information Model
- 2) Value spaces must conform to the specifications of the Information Model. This includes but is not necessarily limited to the requirements that:
 - Character strings must conform to the requirements of ISO /IEC 10646-1:2000.
 - Characters strings that are restricted to the specifications of RFC2396 conform to the requirements of that RFC (as amended by RFC 2732).
- 3) Data element multiplicities must be within the limits defined for the profile type in use (“lax”, “thesaurus”, “flatTokenTerms”, “hierarchicalTokenTerms” or “glossaryOrDictionary”).
- 4) The number of characters in elements of type “string” may exceed the “SPM” defined in the Information Model.
- 5) Term relationships for monolingual thesauri should use the value domain identifiers and permitted term values defined in the Information Model specification.
- 6) Term relationships for multilingual thesauri should use the value domain identifiers and permitted term values defined in the Information Model specification unless the thesaurus contains only exact equivalences.
- 7) Extensions to the Information Model may be used provided that in all other respects the requirements of this document are met.
- 8) Langstring-containing elements must not contain more than one langstring where the same language is identified (including the case of no language being identified).
- 9) The language property of a langstring must conform to the requirements of RFC1766.

2.1.2 Processors – Receivers of Data

- 1) Processors must handle data that is valid in respect to the mandatory requirements of section 2.1.1.
- 2) A conformant receiver must support at least one of the profile types (“lax”, “thesaurus”, “flatTokenTerms”, “hierarchicalTokenTerms” or “glossaryOrDictionary”)².
- 3) Processors must handle at least the number of characters in elements of type “string” as defined under “SPM” in the Information Model.
- 4) Processors should not require the presence of extensions.
- 5) A processor may reject data where an optional element has not been used³ only if the data-exchanging parties both agree to an additional set of restrictions (an “application profile”).
- 6) Arbitrary content of the <metadata> element must be accepted (i.e., must not cause errors or process abortion).
- 7) Contents of the meta-data element may be ignored.

2. The conformance assertions in respect of a specific processor must identify which profile types are supported. Additional detail of handling of elements for a lax profile type and the particular significance of patterns of elements that are assumed to be meaningful should be provided if relevant.

3. An example of this might be a requirement that a vocabulary identifier must be present even though it is formally optional.

2.1.3 Processors – Creators of Data

- 1) A conformant creator must create valid data as defined in section 2.1.1.
- 2) A conformant creator must support at least one of the profile types (“lax”, “thesaurus”, “flatTokenTerms”, “hierarchicalTokenTerms” or “glossaryOrDictionary”)⁴.
- 3) The Vocabulary Identifier element must be controlled as described in the VDEX Information Model.
- 4) Data may be included within the <metadata> element.
- 5) Term Identifiers must be unique.
- 6) Relationship referential integrity must be rigorously assured. This applies strictly only to terms referenced within the same vocabulary.
- 7) The most restrictive profile type should be declared that is sufficient to permit the elements required for the type of vocabulary being created.

2.1.4 Processors – Transmitters of Data

If data is relayed without change of content then the processor may be described as a transmitter of data. NB: the content is not dependent upon the binding.

2.2 XML 1.0 Binding

2.2.1 General

- 1) A conformant XML 1.0 VDEX instance or processor must conform to the requirements of section 2.1, VDEX Information Model.

2.2.2 Instances

- 1) A conformant VDEX XML instance must conform to the W3C XML 1.0 Specification (<http://www.w3.org/TR/1998/REC-xml-19980210>).
- 2) A conformant VDEX XML instance must declare the namespace “http://www.imsglobal.org/xsd/imsvdex_v1p0”.
- 3) A conformant VDEX XML instance should associate the namespace with a control document such that it can be validated.
 - By referencing a control document located on the IMS website under <http://www.imsglobal.org/xsd/>.
 - Or by referencing a local copy of this control document.
- 4) A conformant VDEX XML instance must be valid according to the control document located on the IMS website under <http://www.imsglobal.org/xsd/>.
- 5) A conformant VDEX XML instance should be encoded using UTF-8.
- 6) Any extensions are expressed as described in IMS Vocabulary Definition Exchange Binding Guide Version 1.0.⁵
- 7) If meta-data is present then it must be included as described in IMS Vocabulary Definition Exchange Binding Guide Version 1.0.

2.2.3 Processors – Receivers of Data

- 1) Processors must handle data that is valid according to the mandatory requirements of sections 2.2.1 and 2.2.2
- 2) Processors may reject data that does not conform to the mandatory requirements of sections 2.2.1 and 2.2.2 and should emit a warning if invalid data is processed.
- 3) Processors must handle UTF-8 encoded data
4. The conformance assertions in respect of a specific processor must identify which profile types are supported. Additional detail of handling of elements for a lax profile type and the particular significance of patterns of elements that are assumed to be meaningful should be provided if relevant.
5. If no extensions are used then neither yes nor no should be asserted; no should be reserved to state that extensions are used that do not conform.

- 4) Processors may handle data encoded in schemes other than UTF-8

2.2.4 Processors – Creators of Data

- 1) Processors must create data that is valid according to the mandatory requirements of sections 2.2.1 and 2.2.2

2.2.5 Processors – Transmitters of Data

- 1) The transmitted XML instance should be lexically identical
- 2) The transmitted XML instance may be lexically different but must be equivalent as an XML Information Set (<http://www.w3.org/TR/2001/REC-xml-infoset-20011024>)

2.3 Making Conformance Claims

This section is not normative and should not be interpreted to guide any formal certification or testing process; it provides some outline recommendations for making unverified assertions.

Claims of conformance should provide a statement, detailing the level of conformance, substantially similar to the information outlined below.

Conformance would typically be presented in two parts:

- Conformance summary – this is a summary that shows, in colloquial terms, the capabilities of a particular implementation with respect to the IMS VDEX Specification;
- Interoperability statement – this is a detailed technical checklist that identifies all of the feature capabilities of the implementation in terms of the IMS VDEX Conformance Requirements Specification (this document).

The “conformance summary” should include clear indications of the classes of vocabulary that are supported and include comment on semantic issues (i.e., meaningfulness of data).

The form of an interoperability statement will probably vary but should at least attempt to identify all of the conformance statements in this document and for identify:

- Statements using “must” or “shall” where the clause is not implemented or incompletely implemented;
- Statements using “should” or “should not” where an alternative to the clause is implemented (the justification for the deviation may be helpful);
- Statements using “must not” or “shall not” where the clause is implemented;
- Statements of option that an implementation requires (for example elements that are optional in VDEX being required);
- Where extensions have a functional role and what that role is.

Specific applications are expected to define more detailed application profiles, especially in relation to use of meta-data.

About This Document

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List of Contributors

The following individuals contributed to the development of this document:

Name	Organization
Adam Cooper	FD Learning
Brendon Towle	Thomson NETg

Revision History

Version No.	Release Date	Comments
Public Draft 1.0	4 August 2003	The first draft of the VDEX Conformance specification.
Final 1.0	23 February 2004	Made minor editorial changes, and added a new section about localization.

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