BS ISO/IEC 19757-5:2011

BSI Standards Publication

Information technology — Document Schema Definition Languages (DSDL) —

Part 5: Extensible Datatypes

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National foreword

This British Standard is the UK implementation of ISO/IEC 19757-5:2011.

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This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

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ISO/IEC 19757-5 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 34, *Document description and processing languages*.

ISO/IEC 19757 consists of the following parts, under the general title *Information technology — Document Schema Definition Languages (DSDL)*:

— *Part 1: Overview*

— *Part 2: Regular-grammar-based validation — RELAX NG*

— *Part 3: Rule-based validation — Schematron*

— *Part 4: Namespace-based Validation Dispatching Language (NVDL)*

— *Part 5: Extensible Datatypes*

— *Part 7: Character Repertoire Description Language (CREPDL)*

— *Part 8: Document Semantics Renaming Language (DSRL)*

— *Part 9: Namespace and datatype declaration in Document Type Definitions (DTDs)*

— *Part 11: Schema Association*

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Introduction

This part of ISO/IEC 19757 specifies a powerful, XML-based language which enables users to create and extend their own libraries of datatypes using straightfoward declarative XML constructs. Such libraries are well-suited to being used in pipelining validation processes in conjunction with other XML schema languages.

Unlike W3C Schema[1], ISO/IEC 19757-2:2008 (RELAX NG) does not itself provide a declarative mechanism for users to define their own datatypes. If they are not satisfied with the two built-in types of `string` and `token`, RELAX NG users have had either to use a pre-written library bundled with their validator, or to program a datatype library using that validator's API. Such programmed datatype libraries are hard to construct for non-programmer users, and built-in datatype libraries are often insufficient for users' needs.

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Information technology — Document Schema Definition Languages (DSDL) —

Part 5: Extensible Datatypes

1 Scope

This part of ISO/IEC 19757 specifies an XML language that allows users to create and extend datatype libraries for their own purposes. The datatype definitions in these libraries can be used by XML validators and other tools to validate content and make comparisons between values.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IETF RFC 3023, *XML Media Types*, Internet Standards Track Specification, January 2001, http://www.ietf.org/rfc/rfc3023.txt

IETF RFC 3987, *Internationalized Resource Identifiers (IRIs)*, Internet Standards Track Specification, January 2005, http://www.ietf.org/rfc/rfc3987.txt

ISO/IEC 19757-2:2008, *Information technology — Document Schema Definition Language (DSDL) — Part 2: Regular-grammar-based validation — RELAX NG*

W3C XML, *Extensible Markup Language (XML) 1.0 (Fourth Edition)*, W3C Recommendation, 16 August 2006, edited in place 29 September 2006, http://www.w3.org/TR/2006/REC-xml-20060816

W3C XML Names, *Namespaces in XML 1.0 (Third Edition)*, W3C Recommendation, 8 December 2009, http://www.w3.org/TR/2009/REC-xml-names-20091208/

W3C XPath 2.0, *XML Path Language (XPath) 2.0*, W3C Recommendation, 23 January 2007, http://www.w3.org/TR/2007/REC-xpath20-20070123/

W3C XPath 2.0 Functions, *XQuery 1.0 and XPath 2.0 Functions and Operators*, W3C Recommendation, 23 January 2007, http://www.w3.org/TR/2007/REC-xpath-functions-20070123/

W3C XSLT 2.0, *XSL Transformations (XSLT) Version 2.0*, W3C Recommendation, 23 January 2007, http://www.w3.org/TR/2007/REC-xslt20-20070123/

W3C XLink 1.0, *XML Linking Language (XLink) Version 1.0*, W3C Recommendation, 27 June 2001, http://www.w3.org/TR/2001/REC-xlink-20010627/

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3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
candidate value
some character data in an XML document that is to have its datatype tested

3.2
datatype
named property of sequences of character data that validate against datatype definitions as described by this part of ISO/IEC 19757

3.3
datatype definition
formal specification of constraints upon XML character data for the datatype being defined

3.4
datatype library
collection of datatype definitions that share the same XML Namespace

3.5
Extensible Datatypes document
XML document which is valid to the normative schema presented in this part of ISO/IEC 19757, and which conforms to its provisions

3.6
forwards-compatible mode
operating mode in which an implementation ignores language constructs which are labelled as having a version later than that understood by the implementation, unless they are explicitly labelled as requiring processing

3.7
implementation
Extensible Datatypes implementation that conforms to this part of ISO/IEC 19757

3.8
extended implementation
implementation that conforms to this part of ISO/IEC 19757, and which provides additional functionality provided by the extension mechanisms of Extensible Datatypes

4 Extensible Datatypes schema overview

The schema for Extensible Datatypes is interspersed as fragments within the narrative text of this part of ISO/IEC 19757 and appears rendered against a grey background. The schema language used is the compact syntax of RELAX NG, as defined by Annex C of ISO/IEC 29500:2008.

Concatenating the schema fragments in this part of ISO/IEC 19757 gives a RELAX NG schema that normatively defines the grammar of Extensible Datatypes. The consolidated schema is shown in Annex A.

NOTE 1 Throughout, as per ISO/IEC 19757-2:2008, RELAX NG compact syntax keywords used as identifiers in the schema are prefixed with the "\" character.

NOTE 2 The null Namespace is bound to the prefix `"local"` so that it can be referenced later in the schema.

```
default namespace dt =
          "http://purl.oclc.org/dsdl/extensible-datatypes"
namespace local = ""
```


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