Document Markup Language (DML) Specification	1.0
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# Document Markup Language (DML) Specification 1.0

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### **Abstract**

This specification defines the Document Markup Language (DML), a markup language for books, articles, notes and other types of document. DML is normatively available as a RELAX NG (Appendix A, pg. 25) schema with additional Schematron (Appendix A, pg. 25) assertions.

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### 1. Introduction

DML is a general-purpose XML schema, particularly well suited to books, articles and annotations in other XML sources.

DML is normatively available as a RELAX NG (Appendix A, pg. 25) schema with additional Schematron (Appendix A, pg. 25) assertions to cover all missing cases.

DML is a simple set of elements and attributes which define the basic semantics for a generic document. It is designed keeping in mind that all specialization may be defined through a scoped XML schema. For example, to mark up code it may be used the *Programming Markup Language (Appendix A, pg. 26)*.

The *metadata model* use a set of metadata attributes (Section 4, pg. 22) which are originally defined in RDFa Syntax (Appendix A, pg. 25) from W3C.

This specification has a style and nomenclature conventions (Appendix B, pg. 26) to simplify the reading process.

# 1.1. Namespace

The *DML namespace* has the URI "http://purl.oclc.org/NET/dml/1.0/". It is usually associated with the "dml" prefix.

#### 1.2. Status of this document

This is a draft and it may change at any time based on comments and on its development process.

Use the DML-discuss mailing list (Appendix A, pg. 26) to discuss and learn about Document Markup Language.

# 1.3. Acknowledgments

Many people has helped to realise this document. Some of them in no particular order are: Àlex Royo, Ferran Cases, Alejandro Gonzalo Bravo, David Rodríguez, Choan Gálvez, Tatiana Ledesma, lu Siches and Oscar Sanchez Casamitjana, Carolina Figueroa.

### 2. Elements

#### 2.1. The abbr element

The abbr element represents an abbreviation or acronym.

Flow

```
Inline (Section 5.2, pg. 24)
```

Children

```
( $inline[not( abbr )] | text() )+
```

Attributes

```
( $core.attrs* | $meta.attrs* )
```

Parents

```
( $block | $inline[not( abbr )] )
```

The @content attribute (Section 4.2, pg. 23) may be used to provide an expansion of the abbreviation.

The @about attribute (Section 4.1, pg. 22) may be used to provide a resource which contains the expanded form.

@content and @about attributes are mutually exclusive.

#### Example 2.1-1: abbr element with inline expansion

Example of <abbr content="Document Markup Language">DML</abbr>'s abbr element.

#### Example 2.1-2: abbr element with remote expansion

Example of <abbr about="http://example.org/glossary#dml">DML</abbr>'s abbr element.

### 2.2. The cell element

The cell element represents a table data container.

Flow

```
Block (Section 5.1, pg. 24)
```

Children

```
( ( example | figure | list | note | p | quote )+ | ( $inline | text() )+ )
```

Attributes

```
( $core.attrs* | $meta.attrs* )
```

Parents

( group )

### 2.3. The citation element

The citation element represents a citation reference of a quotation block.

Flow

```
Block (Section 5.1, pg. 24)
```

Children

```
( $inline | text() )+
```

Attributes

```
( $core.attrs* | $meta.attrs* )
```

Parents

```
( quote )
```

### 2.4. The dml element

The dml element is the root element for a DML document.

Flow

```
Block (Section 5.1, pg. 24)
```

Children

```
title,
   $block[not( title | citation | preceding-sibling::section )]+,
   section*
)
```

Attributes

```
( $core.attrs* )
```

#### Example 2.4-1: Simple DML document

```
<dml xmlns="http://purl.oclc.org/NET/dml/1.0/">
  <title>Simple DML document</title>
  Lorem ipsum dolor sit amet...
</dml>
```

#### Example 2.4-2: DML document with metadata

### 2.5. The em element

The em element represents an emphasized text.

Flow

```
Inline (Section 5.2, pg. 24)
```

Children

```
( $inline | text() )+
```

Attributes

```
( $core.attrs* | $meta.attrs* | @role? )
```

Parents

```
( $block | $inline )
```

The @role attribute may be used to provide strong emphasized text with "strong" value.

#### Example 2.5-1: Usage of em element

```
<em>Lorem ipsum</em> dolor sit amet, consectetur adipisicing elit, sed do <em role="strong">eiusmod tempor incididunt ut labore</em> et dolore magna aliqua.
```

### 2.6. The example element

The example element represents an example.

Flow

```
Block (Section 5.1, pg. 24)
```

Children

```
( title?, $block[not( example | citation )]+ )
```

Attributes

```
( $core.attrs* | $meta.attrs* )
```

Parents

```
( dml | note | section )
```

#### Example 2.6-1: Usage of example element

```
<example xml:id="example-identifier">
  <title>Title of the Lorem Ipsum example</title>
  Lorem ipsum dolor sit amet...
</example>
```

# 2.7. The figure element

The figure element is a figure container; it usually contains an illustration or something to be shown graphically.

Flow

```
Block (Section 5.1, pg. 24)
```

Children

```
( title?, $block[not( example | figure | citation | quote )]+ )
```

Attributes

```
( $core.attrs* | $meta.attrs* )
```

Parents

```
( dml | example | note | section )
```

#### Example 2.7-1: Usage of figure element

```
<figure xml:id="figure-identifier">
  <title>It shown an illustration through a figure element</title>
  <object src="path/to/illustration"/>
  </figure>
```

# 2.8. The group element

The group element represents a generic table cell container.

Flow

```
Block (Section 5.1, pg. 24)
```

Children

```
( group+ | title+ | ( title?, cell+ ) )
```

Attributes

```
( $core.attrs* | $meta.attrs* | @role? )
```

Parents

```
( group | table )
```

The @role attribute *may* be used to provide a form to refine the group element meaning. Allowed values are:

• "header"

A header table group. Table header *must* be the first child of a table element.

• "footer"

A footer table group. Table footer *must* be child of a table element.

### 2.9. The item element

The item element represents a list item container.

• Flow

```
Block (Section 5.1, pg. 24)
```

Children

```
(
  ( title*, $block[not( item | title | citation )]+ ) |
  ( $inline | text() )+
)
```

Attributes

```
( $core.attrs* | $meta.attrs* )
```

Parents

```
( list )
```

### 2.10. The list element

The list element represents a list of items.

Flow

```
Block (Section 5.1, pg. 24)
```

Children

```
( title?, item+ )
```

Attributes

```
( $core.attrs* | $meta.attrs* | @role? )
```

Parents

```
( dml | $block[$block[not( self::list )]] )
```

The @role attribute may be used to define an ordered list with "ordered" value.

#### Example 2.10-1: Simple list

```
tem>sugar</item>
<item>salt</item>
<item>pepper</item>
</list>
```

#### Example 2.10-2: Ordered list

```
<list role="ordered">
  <item>first</item>
  <item>second</item>
  <item>third</item>
</list>
```

#### Example 2.10-3: List with title

```
<list>
  <title>List title</title>
  <item>first</item>
  <item>second</item>
  <item>third</item>
</list>
```

#### Example 2.10-4: Definition list

#### Example 2.10-5: Definition list with multiple terms and definitions

```
st>
 <item>
    <title>Center</title>
    <title>Centre</title>
   <list>
     <item>A point equidistant from all points on the surface of a
     sphere.</item>
     <item>In some field sports, the player who holds the middle position on
     the field, court, or forward line.</item>
   </list>
  </item>
  <item>
   <title>Color</title>
   <title>Colour</title>
   The property possessed by an object of producing different sensations on
   the eye.
  </item>
</list>
```

### 2.11. The metadata element

The metadata element represents a metadata container.

Flow

```
Block (Section 5.1, pg. 24)
```

Children

```
( $block+ )
```

Attributes

```
( $core.attrs* | $meta.attrs* )
• Parents
( dml | $block | $inline )
```

#### Example 2.11-1: Usage of metadata element

#### 2.12. The note element

The note element represents a generic document note or annotation. It *may* be used as a root element in *DML islands* in non-DML documents.

Flow

```
Block (Section 5.1, pg. 24)
```

Children

```
(
  ( title?, $block[not( title | note | citation )]+ ) |
  ( $inline | text() )+
)
```

Attributes

```
( $core.attrs* | $meta.attrs* | @role? )
```

Parents

```
( dml | $block[$block[not( self::note )]] )
```

The @role attribute may be used to provide a form to refine the note element meaning. Allowed values are:

# Document Markup Language (DML) Specification 1.0 Elements

• "tip"

A suggestion, tip or trick.

• "warning"

An admonition note.

• "sidebar"

A note that is isolated from the main narrative flow.

• "footnote"

A footnote. Footnotes in paged media usually occur at the end of the page that reference it.

#### Example 2.12-1: Usage of note element

#### Example 2.12-2: Usage of note[@role="footnote"] element

```
  Lorem ipsum dolor sit amet, <span href="#a-footnote">consectetur
  adipisicing</span> elit...

  ( ... )
  <note role="footnote" xml:id="a-footnote">

        ...sunt in culpa qui officia deserunt mollit anim id est laborum.

  </note>
```

# 2.13. The object element

The object element represents a generic embedded media object like images, videos, audio and other types of multimedia files.

Flow

When its parent is an inline element or a block element that only allows inline elements its flow is inline (Section 5.2, pg. 24), otherwise its flow is block (Section 5.1, pg. 24).

Children

```
( $block* | ( $inline | text() )* )
```

#### Attributes

```
( $core.attrs* | $meta.attrs* | @src | @type? )
>>>>>>>( $core.attrs* | $meta.attrs* | @src | @type? | @width? |
@height? )
```

#### Parents

```
( dml | $block | $inline )
```

The @src attribute *must* be used to provide the URI (xs:anyuri) of the resource. It also specifies a *resource object* in RDF triple, as it is described in RDFa Recomendation (Appendix A, pg. 25) of W3C.

The @type attribute may be used to provide the MIME type (Appendix A, pg. 25) of the resource.

The children of the object element *must* be used to provide an alternative content if the resource provided by @src fails to load.

The alternative content *must* be *inline* or *block* in accordance of the flow of its object parent.

#### **Example 2.13-1:** Usage of block flow object element.

```
<figure xml:id="fig-markup-trends">
 <title>Usage of markup language in %</title>
 <object src="markup-trends.svg" type="application/svg+xml">
   st>
     <item>
       <title>HTML</title>
       98%
     </item>
     <item>
       <title>DocBook</title>
       1%
     </item>
     <item>
       <title>Other</title>
       1%
     </item>
   </list>
  </object>
</figure>
```

#### **Example 2.13-2:** Usage of inline flow object element.

```
    Press the <object src="accept-call-button-icon.svg"/><em>accept
    call</em></object> button to allow an incoming call.
```

# 2.14. The p element

The p element represents a generic block of text, usually a paragraph.

Flow

```
Block (Section 5.1, pg. 24)
```

Children

```
( $inline | text() )+
```

Attributes

```
( $core.attrs* | $meta.attrs* )
```

Parents

```
( dml | $block[$block] )
```

### 2.15. The quote element

The quote element represents a generic quotation container.

Flow

When its parent is an inline element or a block element that only allows inline elements its flow is inline (Section 5.2, pg. 24), otherwise its flow is block (Section 5.1, pg. 24).

Children

```
( $block[not( quote | citation )]+ citation? | ( $inline | text() )+ )
```

Attributes

```
( $core.attrs* | $meta.attrs* | @citation? )
```

Parents

```
( dml | $block[not( quote | citation )] | $inline[not( quote )] )
```

The @citation attribute *must* be used to provide the URI (xs:anyURI) of the resource cited when the flow of quote element is *inline*, otherwise it *must not* be used.

#### Example 2.15-1: Usage of block flow quote element.

```
<section>
  ( ... )
  <quote>
    op>DML is a general-purpose XML schema, particularly well suited to books,
    articles and annotations in other XML sources.
    <citation><span href="http://purl.oclc.org/NET/dml/1.0/">Document Markup
    Language Specification 1.0, Introduction</span>. A. Siches. 2009</citation>
  </quote>
    ( ... )
  </section>
```

#### Example 2.15-2: Usage of inline flow quote element.

### 2.16. The section element

The section element represents a generic document section.

Flow

```
Block (Section 5.1, pg. 24)
```

Children

```
( title, $block[not( title | citation )]+ )
```

Attributes

```
( $core.attrs* | $meta.attrs* | @role? )
```

Parents

```
( dml | note | object[parent::$block] | quote[parent::$block] | section )
```

The <code>@role</code> attribute may be used to provide a form to refine the meaning of the <code>section</code> element. Allowed values are:

• "abstract"

A summary or statement of the contents of a document.

• "part"

A part of a book. Parts usually group related chapters in a book.

• "chapter"

A main division of a book.

• "appendix"

An appendix in a document. Appendixes usually occur at the end of a document.

• "header"

A header section. Usually it groups common parts like a tagline, author, version history information, etc.

• "footer"

A footer section. Usually it groups information about its parent such as rights, related links, etc.

• "toc"

A table of contents.

#### Example 2.16-1: Usage of section element

```
<section xml:id="introduction">
  <title>Introduction</title>

    Lorem ipsum dolor sit amet, consectetur adipisicing elit...

</section>
```

#### Example 2.16-2: An appendix section

```
<section role="appendix">
  <title>Resources</title>
  st>
        ( ... )
      </list>
</section>
```

### 2.17. The span element

The span element has no specific semantic. It is provided as a container of inline content.

Flow

Inline (Section 5.2, pg. 24)

Children

```
( $inline | text() )+

    Attributes

    ( $core.attrs* | $meta.attrs* )
```

Parents

```
( $block | $inline )
```

### 2.18. The sub element

The sub element represents a subscript.

Flow

```
Inline (Section 5.2, pg. 24)
```

Children

```
( $inline | text() )+
```

Attributes

```
( $core.attrs* | $meta.attrs* )
```

Parents

```
( $block | $inline )
```

# 2.19. The summary element

The summary element is a tabular data summary.

Flow

```
Block (Section 5.1, pg. 24)
```

Children

```
( $inline | text() )+
```

Attributes

```
( $core.attrs* | $meta.attrs* )
```

Parents

```
( table )
```

# 2.20. The sup element

The sup element represents a superscript.

Flow

```
Inline (Section 5.2, pg. 24)
```

Children

```
( $inline | text() )+
```

Attributes

```
( $core.attrs* | $meta.attrs* )
```

Parents

```
( $block | $inline )
```

### 2.21. The table element

The table element represents a table container.

Flow

```
Block (Section 5.1, pg. 24)
```

Children

```
( title?, summary, group+ )
```

Attributes

```
( $core.attrs* | $meta.attrs* | @scope )
```

Parents

```
( dml | $block[$block] )
```

The <code>@scope</code> attribute *must* be used to provide the primary scope of groups. Allowed values are: <code>"row"</code> and <code>"column"</code>.

#### Example 2.21-1: Usage of table element

```
<title>ISO-639-1 codes</title>
 <summary>Common ISO-639-1 codes with its english name/summary>
 <group role="header">
   <title>Name</title>
   <title>Code</title>
 </group>
 <group>
   <group>
     <cell>English</cell>
     <cell>en</cell>
   </group>
   <group>
     <cell>German</cell>
     <cell>de</cell>
   </group>
 </group>
```

### 2.22. The title element

The title element represents a header container.

```
    Flow
    Block (Section 5.1, pg. 24)
```

Children

```
( $inline | text() )+
```

Attributes

```
( $core.attrs* | $meta.attrs* )
```

Parents

```
( dml | $block[$block] )
```

# 3. Core attributes

```
$core.attrs = (
   @class | @dir | @href | @status | @xml:base | @xml:id | @xml:lang
)
```

These attributes *must not* be repeated in the same element.

# 3.1. The @class attribute

The @class attribute provides additional user-specified classification for an element. Value type is xs:NMTOKENS.

Any number of elements may be assigned the same class name.

### 3.2. The @dir attribute

The @dir attribute specifies the direction of the element and its descendants. Allowed values are:

• "ltr"

Left to right text.

• "rtl"

Right to left text.

### 3.3. The @href attribute

The @href attribute specifies the location of a resource through an URI (xs:anyuRI). It also specifies a resource object in RDF triple, as it is described in RDFa Recomendation (Appendix A, pg. 25) of W3C.

### 3.4. The @status attribute

The @status attribute specifies the status of the content in the element. Allowed values are:

• "added"

Added text since last revision.

• "deleted"

Deleted text since last revision.

• "draft"

Text work in progress.

• "review"

Text to evaluate or reevaluate but publishable.

# Document Markup Language (DML) Specification 1.0 Metadata attributes

• user-value

Specific status defined by the users according their publishing process. This value *must* be an xs:NMTOKEN.

### 3.5. The @xml:base attribute

The <code>@xml:base</code> attribute specifies the base URI (<code>xs:anyURI</code>) of the element and its descendants. Its value *must* be interpreted according xml:base W3C recomendation (Appendix A, pg. 25).

### 3.6. The <code>@xml:id</code> attribute

The <code>@xml:id</code> attribute identifies the unique ID (<code>xs:ID</code>) value of the element. Its value *must* be interpreted according xml:id W3C recomendation (Appendix A, pg. 25).

### 3.7. The @xml:lang attribute

The <code>@xml:lang</code> attribute identifies the language of the element and its descendants. Its value *must* be interpreted according XML 1.0 (Appendix A, pg. 25).

### 4. Metadata attributes

```
$meta.attrs = (
    @about | @content | @datatype | @property | @rel | @resource | @rev | @typeof
)
```

These attributes *must not* be repeated in the same element.

### 4.1. The @about attribute

The @about attribute provides a *subject* for an RDF triple through an URIorSafeCURIE (Appendix A, pg. 25).

This attribute is part of RDFa Recomendation (Appendix A, pg. 25) of W3C.

### 4.2. The @content attribute

The @content attribute provides a machine-readable content for a literal in an RDF triple.

This attribute is part of RDFa Recomendation (Appendix A, pg. 25) of W3C.

### 4.3. The @datatype attribute

The @datatype attribute provides a datatype of a literal through a CURIE (Appendix A, pg. 25).

This attribute is part of RDFa Recomendation (Appendix A, pg. 25) of W3C.

### 4.4. The @property attribute

The @property attribute provides a predicate for an RDF triple through a whitespace separated list of CURIEs (Appendix A, pg. 25).

This attribute is part of RDFa Recomendation (Appendix A, pg. 25) of W3C.

### 4.5. The @rel attribute

The @rel attribute provides a predicate for an RDF triple through a whitespace separated list of CURIEs (Appendix A, pg. 25).

This attribute is part of RDFa Recomendation (Appendix A, pg. 25) of W3C.

### 4.6. The @resource attribute

The @resource attribute provides an object for an RDF triple through a URIorSafeCURIE (Appendix A, pg. 25).

This attribute is part of RDFa Recomendation (Appendix A, pg. 25) of W3C.

### 4.7. The @rev attribute

The @rev attribute provides a reverse predicate for an RDF triple through a whitespace separated list of CURIEs (Appendix A, pg. 25).

This attribute is part of RDFa Recomendation (Appendix A, pg. 25) of W3C.

# 4.8. The @typeof attribute

The <code>@typeof</code> attribute provides the type(s) associated with a subject for an RDF triple through a whitespace separated list of CURIEs (Appendix A, pg. 25).

This attribute is part of RDFa Recomendation (Appendix A, pg. 25) of W3C.

# 5. Flow

Usually any elements belong to a single flow type, block or inline flow type but there are two cases (object and quote) where they change their type depending on their sibling elements.

#### 5.1. Block

Block elements are containers of other block elements or wrappers of inline (Section 5.2, pg. 24) elements and raw text.

```
$block = (
  cell | citation | example | figure | group | item | list | metadata | note |
  object | p | quote | section | summary | table | title
)
```

### 5.2. Inline

Inline elements are used to mark up running text. It may contain inline elements and raw text.

```
$inline = (
  abbr | em | object | quote | span | sub | sup
)
```

(Draft)

### 6. Schema

**RELAX NG and Schematron references** 

# Appendix A — Resources

#### **RELAX NG**

- ISO/IEC 19757-2:2008: Information technology Document Schema Definition Language (DSDL) — Part 2: Regular-grammar-based validation — RELAX NG (http://standards.iso.org/ittf/PubliclyAvailableStandards/c052348\_ISO\_IEC\_19757-2\_2008(E).zip). ISO/IEC. 2008.
- RELAX NG Home page (http://www.relaxng.org/)

#### **Schematron**

- ISO/IEC 19757-3:2006: Information technology Document Schema Definition Language (DSDL) — Part 3: Rule-based validation — Schematron (http://standards.iso.org/ittf/ PubliclyAvailableStandards/c040833\_ISO\_IEC\_19757-3\_2006(E).zip). ISO/IEC. 2006.
- Schematron Home page (http://www.schematron.com)

#### **IETF (Internet Engineering Task Force)**

- RFC 2119: Key words for use in RFCs to Indicate Requirement Levels (http://www.apps.ietf.org/rfc/rfc2119.html). S. Bradner. 1997.
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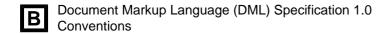
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#### **XPath**

• XML Path Language (XPath) 2.0, A.1 EBNF (http://www.w3.org/TR/xpath20/#id-grammar). A. Berglund, S. Boag, D. Chamberlin, M. F. Fernández, M. Kay, J. Robie, J. Siméon. 2007.

#### **Discuss**

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#### **XML Schemes**

 Programming Markup Language Specification 1.0 (http://purl.oclc.org/NET/pml/1.0/). A. Siches. 2009.

#### **CSS**

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# Appendix B — Conventions

The keywords *must*, *must* not, *required*, *shall*, *shall* not, *should*, *should* not, *recommended*, *may*, and *optional*, when emphasized, are to be interpreted as described in IETF RFC 2119 (Appendix A, pg. 25).

- A monospaced font is used for code, elements, atributes, tags and value literals.
- An italic monospaced font is used for variables.

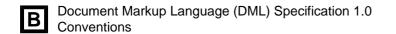
The expressions to define allowed *children*, *attributes* and *parent* for an element uses XPath 2.0 grammar (Appendix A, pg. 26) with addition of quantifier modificators (Appendix B, pg. 27).

When an element (node with type "element") is mentioned in the text with an associated attribute (Appendix B, pg. 26) it is always showed as a predicate. Element EBNF definition (Appendix B.1, pg. 28).

**Example B-1:** Notation for the section element

section
section[@role]

When an attribute (node with type "attribute") is mentioned in the text, it is always preceded by an at-sign (a) and it optionally has an associated value. Attribute EBNF definition (Appendix B.1, pg. 28).



#### **Example B-2:** Notation for the @role attribute

@role
@role="chapter"

When a value is mentioned in the text, it is always preceded and followed by an quote ("). Value EBNF definition (Appendix B.1, pg. 28).

Example B-3: Notation for the "chapter" value

"chapter"

When a tag is mentioned in the text, it is always preceded by a less-than symbol (<) and it is followed by a greater-than symbol (>). Tag EBNF definition (Appendix B.1, pg. 28).

When a tag is mentioned with some omitted attributes it has an ellipsis symbol (...) preceding greater-than symbol (>).

**Example B-4:** Notation for the start tag <section ...>

<section role="chapter" ...>

Any element or attribute can be modified by a quantifier modificator as follows:

?Zero or one time.

+
 One or more times.

Zero or more times.

Therefore, to indicate that an "status" attribute is optional the expression will be @status?. Or, if a "section" element is repeatable the expression will be section+.

For brevity, throughout this document, assume that the following namespace prefixes have been defined:

- "dct" http://purl.org/dc/terms/
- "dml" http://purl.oclc.org/NET/dml/1.0/

"rdf" http://www.w3.org/1999/02/22-rdf-syntax-ns#

"xi" http://www.w3.org/2001/XInclude

• "xs"

http://www.w3.org/2001/XMLSchema

# B.1 EBNF<sup>[1]</sup> definitions

```
Element ::= Name ('[' Attribute ']')*
Attribute ::= '@' Name ('=' Value)?
Tag ::= '<' Name (S Name '=' Value)* S? '...'? '/'? '>'
Name ::= ([A-Za-z]+ ':')? [A-Za-z_] [A-Za-z0-9_-.]*
Value ::= '"' [^<>"]+ '"'
S ::= (#x20 | #x9 | #xD | #xA)+
```

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<sup>[1]</sup> W3C notation (http://www.w3.org/TR/REC-xml/#sec-notation)

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