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Information technology — Digital publishing — EPUB 3.0.1

Part 3: Content documents

Documents
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Foreword

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This document was prepared by the World Wide Web Consortium (W3C) (as EPUB Content Documents 3.0.1) and drafted in accordance with its editorial rules. It was adopted, under the JTC 1 PAS procedure, by Joint Technical Committee ISO/IEC JTC 1, *Information technology*.

A list of all parts in the ISO/IEC 23736 series can be found on the ISO website.

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EPUB Content Documents 3.0.1

Recommended Specification 26 June 2014

THIS VERSION

http://www.idpf.org/epub/301/spec/epub-contentdocs-20140626.html

LATEST VERSION

http://www.idpf.org/epub3/latest/contentdocs

PREVIOUS VERSION

http://www.idpf.org/epub/301/spec/epub-contentdocs-20140228.html

A diff of changes from the previous version is also available.

Please refer to the errata for this document, which may include some normative corrections.

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TABLE OF CONTENTS

1. Overview
- 1.1. Purpose and Scope
- 1.2. Relationship to Other Specifications
  - 1.2.1. Relationship to HTML5
  - 1.2.2. Relationship to SVG
  - 1.2.3. Relationship to CSS
  - 1.2.4. Future Maintenance
- 1.3. Terminology
- 1.4. Typographic Conventions
- 1.5. Conformance Statements
- 1.6. Namespace prefix mappings

2. EPUB Content Documents
- 2.1. XHTML Content Documents
  - 2.1.1. Content Conformance
  - 2.1.2. Reading System Conformance
  - 2.1.3. HTML5 Extensions
    - 2.1.3.1. Semantic Markup

Documents
Document Sharing Hub

Full document details: BS ISO/IEC 23736-3:2020

2.1.3.1.1. Semantic Inflection
2.1.3.1.1.1. Introduction
2.1.3.1.1.2. The `epub:type` Attribute
2.1.3.1.1.3. Vocabulary Association
2.1.3.1.1.4. Processing Requirements
2.1.3.1.2. Semantic Enrichment
2.1.3.1.2.1. Introduction
2.1.3.1.2.2. Content Conformance
2.1.3.1.2.3. Processing Requirements
2.1.3.2. SSML Attributes
2.1.3.2.1. Overview
2.1.3.2.2. The `ssml:ph` attribute
2.1.3.2.3. The `ssml:alphabet` attribute
2.1.3.3. Content Switching
2.1.3.3.1. Introduction
2.1.3.3.2. Definition
2.1.3.3.2.1. The `epub:switch` Element
2.1.3.3.2.2. The `epub:case` Element
2.1.3.3.2.3. The `epub:default` Element
2.1.3.3.3. Processing
2.1.3.4. The `epub:trigger` Element
2.1.3.5. Alternate Style Tags
2.1.3.6. Custom Attributes
2.1.3.7. The `aria-describedat` Attribute
2.1.4. HTML5 Deviations and Constraints
2.1.4.1. Embedded MathML
2.1.4.1.1. Introduction
2.1.4.1.2. Content Conformance
2.1.4.1.3. Reading System Conformance
2.1.4.1.4. Alternative Content
2.1.4.2. Embedded SVG
2.1.4.2.1. Embedded SVG and CSS
2.1.4.3. Unicode Restrictions
2.1.4.4. Discouraged Constructs
2.1.4.5. Special Considerations
2.1.4.5.1. The `body` element
2.2. EPUB Navigation Documents
2.2.1. Introduction
2.2.2. Content Conformance
2.2.3. Reading System Conformance
2.2.4. EPUB Navigation Document Definition
2.2.4.1. The `nav` Element: Restrictions
2.2.4.2. The `nav` Element: Types
2.2.4.2.1. The `toc nav` Element
2.2.4.2.2. The `page-list nav` Element
2.2.4.2.3. The `landmarks nav` Element
2.2.4.2.4. Other `nav` Elements
2.2.4.3. The `hidden` attribute
2.3. SVG Content Documents
2.3.1. Introduction
2.3.2. Content Conformance
2.3.3. Restrictions on SVG 1.1
2.3.4. Reading System Conformance
2.3.5. Semantic Inflection
2.4. Scripted Content Documents
2.4.1. Scripting Contexts
2.4.2. Content Conformance
2.4.3. Reading System Conformance
2.4.4. Security Considerations
2.4.5. Event Model Considerations
2.5. Fixed-Layout Documents
2.5.1. Introduction
2.5.2. Reading System Conformance

Documents
Document Sharing Hub

Full document details: BS ISO/IEC 23736-3:2020
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2.5.3. Viewport Rendering
2.5.4. Content Dimensions for XHTML and SVG
2.5.4.1. Expressing ICB Dimensions in XHTML
2.5.4.2. Expressing ICB Dimensions in SVG
3. EPUB Style Sheets
3.1. Content Conformance
3.2. Reading System Conformance
3.3. EPUB 3 CSS Profile
3.3.1. CSS 2.1
3.3.2. CSS 2.0
3.3.3. CSS 3.0 Speech
3.3.4. CSS Fonts Level 3
3.3.5. CSS Text Level 3
3.3.6. CSS Text Decoration Level 3
3.3.7. CSS Writing Modes
3.3.8. Selectors
3.3.9. Media Queries
3.3.10. CSS Namespaces
3.3.11. CSS Multi-Column Layout
3.3.12. Ruby Positioning
3.3.13. Display Property Values `oeb-page-head` and `oeb-page-foot` [DEPRECATED]
4. PLS Documents
4.1. Overview
4.2. EPUB Publication Conformance
4.3. Content Conformance
4.4. Reading System Conformance
A. JavaScript epubReadingSystem Object
A.1. Syntax
A.2. Description
A.3. Properties
A.4. Methods
A.4.1. hasFeature
A.4.1.1. Syntax
A.4.1.2. Description
A.4.1.3. Features
B. `-epub-fullsize-kana` Character Mapping Reference
C. Acknowledgements and Contributors
References

› 1 Overview

› 1.1 Purpose and Scope

This section is informative

This specification, EPUB Content Documents 3.0.1, defines profiles of HTML5, SVG, and CSS for use in the context of EPUB® Publications.

This specification is one of a family of related specifications that compose EPUB 3, the third major revision of an interchange and delivery format for digital publications based on XML and Web Standards. It is meant to be read and understood in concert with the other specifications that make up EPUB 3:

Documents
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- The EPUB 3 Overview [EPUB3Overview], which provides an informative overview of EPUB and a roadmap to the rest of the EPUB 3 documents. The Overview should be read first.
- EPUB Publications 3.0.1 [Publications301], which defines the semantics and overarching conformance requirements for each Rendition of an EPUB Publication.
- EPUB Open Container Format (OCF) 3.0.1 [OCF301], which defines a file format and processing model for encapsulating a set of related resources into a single-file (ZIP) EPUB Container.
- EPUB Media Overlays 3.0.1 [MediaOverlays301], which defines a format and a processing model for synchronization of text and audio.

This specification supersedes EPUB Content Documents 3.0 [ContentDocs30]. Refer to [EPUB3Changes] for information on differences between this specification and its predecessor.

› 1.2 Relationship to Other Specifications

This section is informative

› 1.2.1 Relationship to HTML5

The XHTML document type defined by this specification is based on W3C [HTML5], and inherits all definitions of semantics, structure and processing behaviors from the HTML5 specification unless otherwise specified.

In addition, this specification defines a set of extensions to the W3C HTML5 document model that Authors may include in XHTML Content Documents.

This specification defines a simplified processing model that does not require Reading Systems to support scripting, HTML5 forms or the HTML5 DOM. EPUB Reading Systems conformant with this specification are only required to be able to process a conforming EPUB Content Document. As support for scripting and HTML5 forms are optional Reading System features, a conformant Reading System might not be a fully-conformant HTML5 User Agent (i.e., it might not implement the complete HTML5 processing model).

› 1.2.2 Relationship to SVG

This specification defines a restricted subset of SVG 1.1 to represent vector graphics inline in XHTML Content Documents and as standalone SVG Content Documents.

› 1.2.3 Relationship to CSS

The CSS profile defined in this specification has CSS 2.1 [CSS2.1] as its baseline. Any CSS Style Sheet that conforms to CSS 2.1 may be used in the context of an EPUB Publication, except as noted in CSS 2.1.

This specification also incorporates features defined by CSS3 Modules and introduces EPUB-specific CSS constructs.

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› 1.2.4 Future Maintenance

This specification references W3C specifications that are not yet final, and incompatible changes to them may occur in the future that would cause EPUB 3 Content Documents that were previously conformant to no longer be conformant to the latest versions of the referenced specifications.

The IDPF anticipates revising this specification if and when such incompatible changes occur, updating the normative constraints defined herein as necessary.

› 1.3 Terminology

EPUB Publication

A collection of one or more Renditions conforming to this specification and its sibling specifications , packaged in an EPUB Container.

An EPUB Publication typically represents a single intellectual or artistic work, but this specification and its sibling specifications do not circumscribe the nature of the content.

Rendition

A logical document entity consisting of a set of interrelated resources representing one rendering of an EPUB Publication.

Publication Resource

A resource that contains content or instructions that contribute to the logic and rendering of at least one Rendition of an EPUB Publication. In the absence of this resource, the EPUB Publication might not render as intended by the Author. Examples of Publication Resources include a Rendition's Package Document, EPUB Content Document, EPUB Style Sheets, audio, video, images, embedded fonts and scripts.

With the exception of the Package Document itself, the Publication Resources required to render a Rendition are listed in that Rendition's manifest [Publications301] and bundled in the EPUB Container file (unless specified otherwise in Publication Resource Locations [Publications301]).

Examples of resources that are not Publication Resources include those identified by the Package Document link [Publications301] element and those identified in outbound hyperlinks that resolve outside the EPUB Container (e.g., referenced from an [HTML5] `a` element `href` attribute).

Core Media Type Resource

A Publication Resource that is a Core Media Type and may therefore be included in the EPUB Publication without the provision of fallbacks [Publications301] .

EPUB Content Document

A Publication Resource that conforms to one of the EPUB Content Document definitions (XHTML or SVG).

An EPUB Content Document is a Core Media Type, and may therefore be included in the EPUB Publication without the provision of fallbacks [Publications301] .

XHTML Content Document

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An EPUB Content Document conforming to the profile of [HTML5] defined in XHTML Content Documents.

XHTML Content Documents use the XHTML syntax of [HTML5].

SVG Content Document

An EPUB Content Document conforming to the constraints expressed in SVG Content Documents.

EPUB Navigation Document

A specialization of the XHTML Content Document, containing human- and machine-readable global navigation information, conforming to the constraints expressed in EPUB Navigation Documents.

Scripted Content Document

An EPUB Content Document that includes scripting or an XHTML Content Document that contains HTML5 forms elements.

Refer to Scripted Content Documents for more information.

Top-level Content Document

An EPUB Content Document referenced from the spine, whether directly or via a fallback chain [Publications301] .

Fixed-Layout Document

An EPUB Content Document directly referenced from the spine that has been designated `pre-paginated` in the Package Document, as defined in The rendition:layout Property [Publications301] .

The dimensions to use for rendering Fixed-Layout Documents are defined in Fixed-Layout Documents [ContentDocs301] .

Core Media Type

A set of Publication Resource types for which no fallback is required. Refer to Publication Resources [Publications301] for more information.

Package Document

A Publication Resource carrying bibliographical and structural metadata about a given Rendition of an EPUB Publication, as defined in Package Documents [Publications301] .

Manifest

A list of all Publication Resources that constitute the given Rendition of a EPUB Publication.

Refer to manifest [Publications301] for more information.

Spine

An ordered list of Publication Resources, typically EPUB Content Documents, representing the default reading order of the given Rendition of an EPUB Publication.

Refer to spine [Publications301] for more information.

Text-to-Speech (TTS)

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The rendering of the textual content of an EPUB Publication as artificial human speech using a synthesized voice.

EPUB Style Sheet (or Style Sheet)

A CSS Style Sheet conforming to the CSS profile defined in *EPUB Style Sheets* .

Viewport

The region of an EPUB Reading System in which the content of an EPUB Publication is rendered visually to a User.

CSS Viewport

A Viewport capable of displaying CSS-styled content.

SVG Viewport

A Viewport capable of displaying SVG images.

EPUB Container (or Container)

The ZIP-based packaging and distribution format for EPUB Publications defined in [OCF301].

Author

The person(s) or organization responsible for the creation of an EPUB Publication, which is not necessarily the creator of the content and resources it contains.

User

An individual that consumes an EPUB Publication using an EPUB Reading System.

EPUB Reading System (or Reading System)

A system that processes EPUB Publications for presentation to a User in a manner conformant with this specification and its sibling specifications .

› 1.4 Typographic Conventions

The following typographic conventions are used in this specification:

`markup`

All markup (elements, attributes, properties), code (JavaScript, pseudo-code), machine processable values (string, characters, media types) and file names are in red-orange monospace font.

`markup`

Links to markup and code definitions are underlined and in red-orange monospace font. Only the first instance in each section is linked.

`http://www.idpf.org/`

URIs are in navy blue monospace font.

hyperlink

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Hyperlinks are underlined and in blue.

[reference]

Normative and informative references are enclosed in square brackets.

Term

Terms defined in the Terminology are in capital case.

Term

Links to term definitions have a dotted blue underline. Only the first instance in each section is linked.

Normative element, attribute and property definitions are in blue boxes.

```
Informative markup examples are in white boxes.
```

NOTE

Informative notes are in yellow boxes with a "Note" header.

CAUTION

Informative cautionary note are in red boxes with a "Caution" header.

› 1.5 Conformance Statements

The keywords MUST, MUST NOT, REQUIRED, SHALL, SHALL NOT, SHOULD, SHOULD NOT, RECOMMENDED, MAY, and OPTIONAL in this document are to be interpreted as described in [RFC2119].

All sections of this specification are normative except where identified by the informative status label "This section is informative". The application of informative status to sections and appendices applies to all child content and subsections they may contain.

All examples in this specification are informative.

› 1.6 Namespace prefix mappings

For convenience, the following namespace prefix mappings [XMLNS] are used throughout this specification:

prefix	namespace URI
epub	http://www.idpf.org/2007/ops

Documents
Document Sharing Hub

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m	http://www.w3.org/1998/Math/MathML
pls	http://www.w3.org/2005/01/pronunciation-lexicon
ssml	http://www.w3.org/2001/10/synthesis
svg	http://www.w3.org/2000/svg

› 2 EPUB Content Documents

› 2.1 XHTML Content Documents

This section defines a profile of [HTML5] for creating XHTML Content Documents. An instance of an XML document that conforms to this profile is a Core Media Type and is referred to in this specification and its sibling specifications as an XHTML Content Document.

Unless otherwise specified, this specification inherits all definitions of semantics, structure and processing behaviors from the [HTML5] specification.

> CAUTION
>
> The EPUB 3 XHTML Content Document definition references features in the W3C [HTML5] specification that are still works in progress and may change in incompatible ways. When utilizing such features, authors should consider the inherent risks in terms of the potential impact on interoperability and document longevity.

› 2.1.1 Content Conformance

An XHTML Content Document MUST meet all of the following criteria:

Document Properties

› It MUST meet the conformance constraints for XML documents defined in XML Conformance [Publications301] .

› It MUST be an [HTML5] document that conforms to the XHTML syntax.

› For all document constructs used that are defined by [HTML5], it MUST conform to the conformance criteria defined for those constructs in that specification, unless explicitly overridden in HTML5 Deviations and Constraints.

› It MAY include extensions to the [HTML5] grammar as defined in HTML5 Extensions, and MUST conform to all content conformance constraints defined therein.

File Properties

› The XHTML Content Document filename SHOULD use the file extension `.xhtml`.

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NOTE
All Publication Resources referenced from an XHTML Content Document must conform to the constraints for Publication Resources defined in EPUB Publication — Content Conformance [Publications301]

› 2.1.2 Reading System Conformance

A conformant EPUB Reading System MUST meet all of the following criteria for processing XHTML Content Documents:

› Unless explicitly defined by this specification or its sibling specifications as overridden, it MUST process XHTML Content Documents using semantics defined by the [HTML5] specification and honor any applicable User Agent conformance constraints expressed therein.

› It MUST meet all Reading System conformance criteria defined in HTML5 Extensions.

› It MUST recognize and adapt behaviorally to the constraints defined in HTML5 Deviations and Constraints.

› It MUST meet the Reading System conformance criteria defined in Scripted Content Documents — Reading System Conformance.

› It MUST support visual rendering of XHTML Content Documents as defined in EPUB Style Sheets — Reading System Conformance.

› It SHOULD recognize embedded ARIA markup and support exposure of any given ARIA roles, states and properties to platform accessibility APIs [WAI-ARIA].

› 2.1.3 HTML5 Extensions

This section defines EPUB 3 XHTML Content Document extensions to the underlying [HTML5] document model.

› 2.1.3.1 Semantic Markup

› 2.1.3.1.1 Semantic Inflection

› 2.1.3.1.1.1 Introduction

This section is informative

Semantic inflection is the process of attaching additional meaning about the specific purpose and/or nature an element plays in an XHTML Content Document. In the context of EPUB Publications, the `epub:type` attribute is typically used to express domain-specific semantics, with the inflection(s) it carries complementing the underlying [HTML5] host vocabulary. The applied semantics always refine the meaning of their containing elements, never override their nature (e.g., the attribute can be used

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Document Sharing Hub

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to indicate a `section` is a chapter in a work, but cannot be used to turn `p` elements into list items to avoid proper list structures).

Semantic metadata is not intended for human consumption; it instead provides a controlled way for Reading Systems and other User Agents to learn more about the structure and content of a document, providing them the opportunity to enhance the reading experience for Users.

This specification defines a method for semantic inflection using *the attribute axis*: instead of adding new XML elements to the XHTML Content Document vocabulary, the `epub:type` attribute can be appended to existing elements to inflect the desired semantics. A mechanism to identify external vocabularies that provide controlled values for the attributes is also defined.

› 2.1.3.1.1.2 The `epub:type` Attribute

The `epub:type` attribute inflects semantics on the element on which it appears. Its value is one or more space-separated terms stemming from external vocabularies associated with the document instance, as defined in Vocabulary Association.

The inflected semantic MUST express a subclass of the semantic of the carrying element. In the case of semantically neutral elements (such as [HTML5] `div` and `span`), the inflected semantic MUST NOT attach a meaning that is already conveyed by an existing element (e.g., that a `div` represents a paragraph or section). Reading Systems MUST ignore inflected semantics that conflict with the carrying element.

As the [HTML5] `head` element is a metadata container for a document, structural semantics expressed on this element or any descendant of it have no meaning. Reading Systems MUST ignore such semantics.

> NOTE
>
> The `epub:type` attribute is intended to be functionally equivalent to the W3C Role Attribute [Role], but with restrictions as specified in Vocabulary Association. The IDPF's intent is to harmonize this attribute with W3C mechanisms for semantic inflection in a future major revision of the specification.

Attribute Name

`type`

Namespace

`http://www.idpf.org/2007/ops`

Usage

Global attribute. MAY be specified on all elements.

Value

A space-separated list of property [Publications301] values, with restrictions as defined in Vocabulary Association.

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› 2.1.3.1.1.3 Vocabulary Association

This specification adopts the vocabulary association mechanisms defined in Vocabulary Association Mechanisms [Publications301] , with the following modifications:

› Default Vocabulary

The default vocabulary for Content Documents is defined to be the EPUB 3 Structural Semantics Vocabulary.

› Reserved Prefixes

This specification reserves prefixes that Authors MAY use in the `epub:type` attribute in the normative document EPUB Content Documents Reserved Prefixes.

› The `prefix` Attribute

The `prefix` attribute definition is unchanged, but the attribute is defined to be in the namespace `http://www.idpf.org/2007/ops` when used in EPUB Content Documents.

The `prefix` attribute is only valid on the [HTML5] root `html` element.

› Examples

The following example shows the `epub:type` attribute used to inflect footnote and note reference semantics. The properties used are defined in the default vocabulary.

```
<html … xmlns:epub="http://www.idpf.org/2007/ops">
    …
    <p> … <a epub:type="noteref" href="#n1">1</a> … </p>
    …
    <aside epub:type="footnote" id="n1">
        …
    </aside>
    …
</html>
```

The following example shows the `epub:type` attribute used to inflect glossary semantics on an HTML5 definition list. The property used is defined in the default vocabulary.

```
<html … xmlns:epub="http://www.idpf.org/2007/ops">
    …
    <dl epub:type="glossary">
        …
    </dl>
    …
</html>
```

The following example shows the `epub:type` attribute used to inflect source publication pagebreak semantics. The property used is defined in the default vocabulary. (Note that the dc:source [Publications301] element provides a means of identifying the source publication to which the given pagination information applies.)

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```
<html … xmlns:epub="http://www.idpf.org/2007/ops">
   …
  <p> … <span epub:type="pagebreak" title="234"/> … </p>
   …
</html>
```

› 2.1.3.1.1.4 Processing Requirements

A Reading System MUST process the `epub:type` attribute as follows:

- It MAY associate specialized behaviors with none, some or all of the terms defined in the default vocabulary.
- It MAY associate specialized behaviors with terms given in vocabularies other than the default.
- It MUST ignore terms that it does not recognize.

When Reading System behavior associated with a given `epub:type` value conflicts with behavior associated with the carrying element, the behavior associated with the element MUST be given precedence.

› 2.1.3.1.2 Semantic Enrichment

› 2.1.3.1.2.1 Introduction

This section is informative

Unlike semantic inflection, which is about refining the structures within your markup, semantic enrichment enables the layering of meaning into the content in order to facilitate machine processing.

The [Microdata] and [RDFa11] specifications both define sets of attributes that can be used in XHTML Content Documents to semantically enrich the content.

› 2.1.3.1.2.2 Content Conformance

A conformant XHTML Content Document MUST meet all of the following criteria:

- It MUST allow the use of [Microdata] attributes as defined in that specification.
- It MUST allow the use of [RDFa11] attributes as defined in [HTML+RDFa11].

› 2.1.3.1.2.3 Processing Requirements

Reading Systems MAY process [Microdata] and [RDFa11] attributes as defined in their respective specifications, but such support is OPTIONAL.

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› 2.1.3.2 SSML Attributes

› 2.1.3.2.1 Overview

The W3C Speech Synthesis Markup Language [SSML] is a language used for assisting Text-to-Speech (TTS) engines in generating synthetic speech. Although SSML is designed as a standalone document type, it also defines semantics suitable for use within other host languages.

This specification recasts the SSML 1.1 `phoneme` element as two attributes — `ssml:ph` and `ssml:alphabet` — and makes them available within EPUB XHTML Content Documents.

Reading Systems with Text-to-Speech (TTS) capabilities SHOULD support the SSML Attributes as defined below.

> NOTE
>
> For more information on EPUB 3 features related to synthetic speech, refer to Text-to-speech [EPUB3Overview] .

› 2.1.3.2.2 The `ssml:ph` attribute

The `ssml:ph` attribute specifies a phonemic/phonetic pronunciation of the text represented by the element to which the attribute is attached.

Attribute Name

`ph`

Namespace

`http://www.w3.org/2001/10/synthesis`

Usage

Global attribute. May be specified on all elements with which a phonetic equivalent can logically be associated (e.g., elements that contain textual information).

Must not be specified on a descendant of an element that already carries this attribute.

Value

A phonemic/phonetic expression, syntactically valid with respect to the phonemic/phonetic alphabet being used.

This attribute inherits all the semantics of the SSML 1.1 `phoneme` element `ph` attribute, with the following addition:

› When the `ssml:ph` attribute appears on an element that has text node descendants, the corresponding document text to which the pronunciation applies is the string that results from concatenating the descendant text nodes, in document order. The specified phonetic

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pronunciation MUST therefore logically match the element's textual data in its entirety (i.e., not just an isolated part of its content).

NOTE

Reading Systems that support the SSML Attributes and PLS Documents must honor the defined precedence rules for these two constructs.

› 2.1.3.2.3 The `ssml:alphabet` attribute

The `ssml:alphabet` attribute specifies which phonemic/phonetic pronunciation alphabet is used in the value of the `ssml:ph` attribute.

Attribute Name

`alphabet`

Namespace

`http://www.w3.org/2001/10/synthesis`

Usage

Global attribute. MAY be specified on any element.

Value

The name of the pronunciation alphabet used in the value of `ssml:ph` (inherited).

This attribute inherits all the semantics of the SSML 1.1 `phoneme` element `alphabet` attribute, with the following addition:

› The value of the `ssml:alphabet` attribute is inherited in the document tree. The pronunciation alphabet used in a given `ssml:ph` attribute value is determined by locating the first occurrence of the `ssml:alphabet` attribute starting with the element on which the `ssml:ph` attribute appears, followed by the nearest ancestor element.

Reading Systems that support the SSML Attributes feature of this specification SHOULD support the IPA alphabet [refIPA], as expressed by the value "`ipa`".

› 2.1.3.3 Content Switching

› 2.1.3.3.1 Introduction

This section is informative

The `switch` element provides a simple mechanism through which Authors can tailor the content displayed to Users, one that isn't dependent on the scripting capabilities of the EPUB Reading System.

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Reading System developers may choose to support XML vocabularies and new HTML elements that are not valid in XHTML Content Documents. The `switch` mechanism encourages this type of development and experimentation, but at the same time provides Authors who wish to take advantage of it the security of knowing that their content will still display on any compliant Reading System (i.e., it maintains the baseline requirement that all XHTML Content Documents be valid if none of the specialized markup is supported).

Content switching is not just about encouraging future development, however; it can also be used to create EPUB Publications that maintain a level of compatibility with older Reading Systems unable to handle the new features of EPUB 3. For example, instances of MathML, now a native type, could be added using `switch` elements so that EPUB 2 Reading Systems could instead provide fallback images or text.

› 2.1.3.3.2 Definition

› 2.1.3.3.2.1 The `epub:switch` Element

The `switch` element allows an XML fragment to be conditionally inserted into the content model of an XHTML Content Document.

Element name

`switch`

Namespace

`http://www.idpf.org/2007/ops`

Usage

In Flow and Inline content. Repeatable.

Attributes

`id` [optional]

The ID [XML] of this element, which MUST be unique within the document scope.

Content Model

In this order: `case` [1 or more], `default` [exactly 1].

A Reading System MUST individually process each `switch` element in a document to determine whether it can render any of the child `case` elements (as determined by the value of their `required-namespace` attributes).

For each `switch` encountered, the Reading System SHOULD render the content of the first `case` it supports, but is free to select from any of the available options. If the Reading System does not support the markup contained in any of the child `case` elements, it MUST render the contents of the `default` element.

The [HTML5] `object` element SHOULD be used to embed custom (non-core) content types in XHTML Content Documents. Custom markup SHOULD be wrapped in a `switch` element only when the content

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