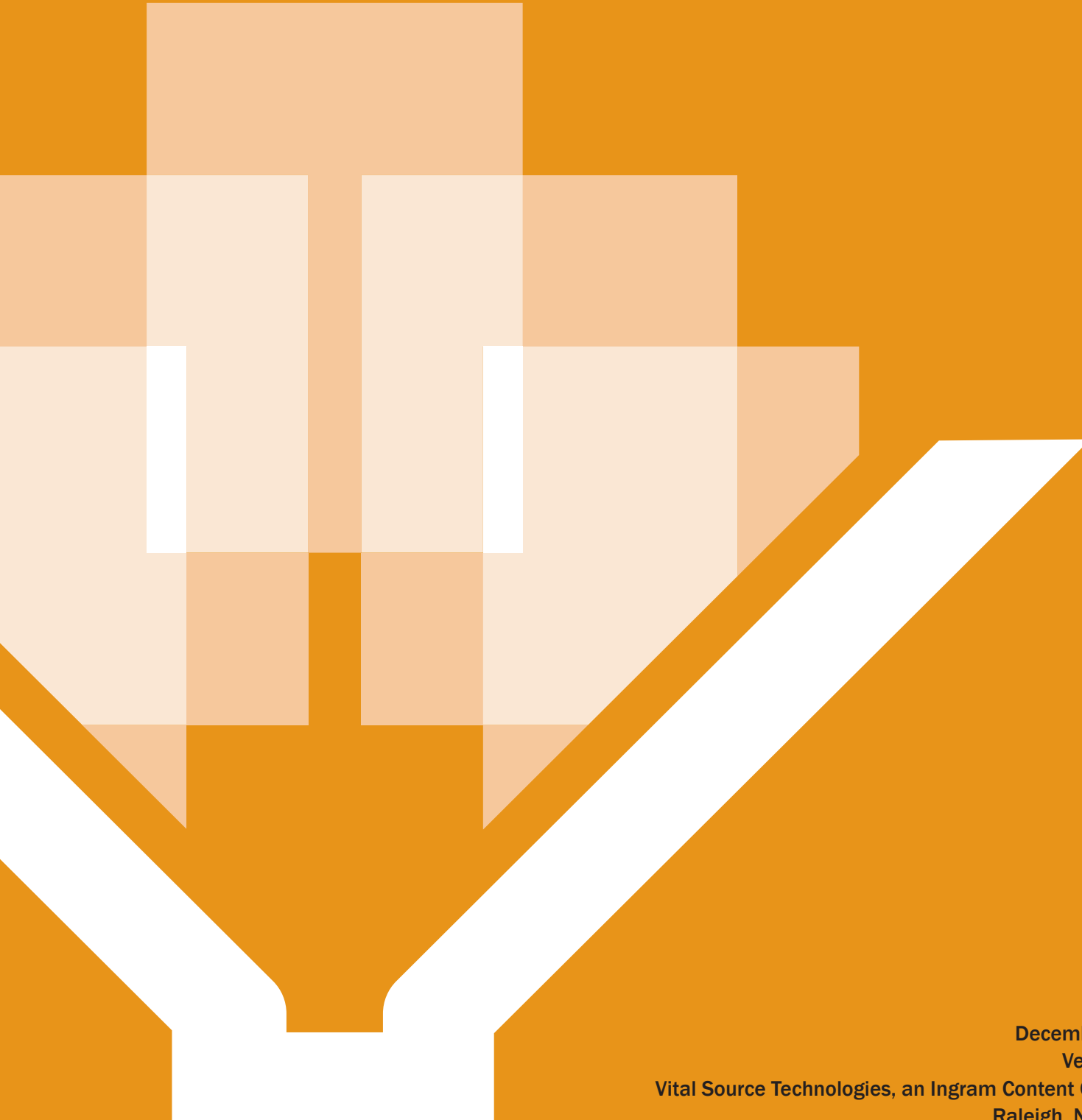


Vital Source[®] Implementing EPUB3[®] with VitalSource Bookshelf[®]



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2. INTRODUCTION

Vital Source® Technologies remains committed to assisting our partners in producing the high quality e-textbooks that educators and students demand. Conforming to the EPUB® specifications laid out by International Digital Publishing Forum (IDPF) helps ensure consistency in production standards and technology while enabling support of rich media and other features that make the electronic-textbook experience more compelling. This document provides guidance for designing ePub books for use with the VitalSource Bookshelf® eTextbook reader. Correct design and configuration allows you to upload files to Vital Source correctly and reduce errors and rework that could prevent timely distribution of your titles.

The EPUB3 specification recommendation by IDPF has not been finalized, and additional modifications that may impact production of VitalSource eTextbooks will be addressed in future releases of this document.

3. OVERVIEW OF EPUB3 AND SUPPORTED SPECIFICATIONS

EPUB specifications are developed by IDPF, the global trade and standards organization dedicated to the development and promotion of electronic publishing and content consumption. The current version of EPUB3 can be accessed at <http://idpf.org/epub>.

EPUB3 comprises [an overview](#) and four specifications:

- [Content Documents](#): defines profiles of XHTML, SVG and CSS for use in the context of EPUB Publications.
- [Publications](#): defines publication-level semantics and conformance requirements for EPUB3, including the format of the Package Document and rules for how this document and other Publication Resources are associated to create a conforming EPUB Publication.
- [Open Container Format \(OCF\)](#): defines a file format and processing model for encapsulating the sets of related resources that comprise one or more EPUB Publications into a single-file container.
- [Media Overlays](#): defines a usage of SMIL (Synchronized Multimedia Integration Language), the Package Document, the EPUB Style Sheet, and the EPUB Content Document for representation of audio synchronized with the EPUB Content Document.

The remainder of this guide provides specifics on how Vital Source is implementing EPUB3.

4. WORKING WITH EPUB CONTENT DOCUMENTS PROFILES FOR XHTML

The Content Documents specification defines profiles for using HTML5 to define XHTML documents for rendering on a Reading System. Content documents produced for VitalSource Bookshelf must conform to the EPUB Content Document 3.0 specification with the following exceptions:

- Media Overlays will not be available for the initial Bookshelf releases (Bookshelf 6.2 for Mac, Bookshelf 6.2 for Windows, Bookshelf Touch 2.2, Android 1.3 or Bookshelf Online release as of December, 2012).
- [<epub:trigger> \(for media controls\): Not supported](#)
- [Alternate Stylesheets: Not supported](#)

4.1. CONTENT SWITCHING

The [switch, case and default elements](#) allow you to modify publication content displayed to users without dependency on the scripting capabilities of the reading system. They also support backwards compatibility with older reading systems that conform to EPUB2.

VitalSource supports each of the elements: [<epub:switch>](#), [<epub:case>](#), [<epub:default>](#) in Bookshelf EPUB3 v 1.0. However, keep in mind that VitalSource only supports the MathML namespace, and any other requested namespace will fall through to the default.

4.2. MATHML

In accordance with the constraints presented in EPUB3, the only support for [embedded MathML](#) is Presentation MathML.

Note: highlighting is currently disabled within MathML because the MathJax library is incompatible with the Bookshelf highlighting mechanism.

4.3. EMBEDDED SVG AND CSS

Support for [Embedded SVG](#) is available in Bookshelf EPUB3 v1.0, but is dependent on the native reading system. As a result, Bookshelf Online will render properly in later browsers, but earlier versions, such as Internet Explorer prior to V. 9, will have issues.

3. WORKING WITH EPUB CONTENT DOCUMENTS PROFILES FOR XHTML

4.4. NAVIGATION

While navigation in EPUB3 publications is usually controlled by XHTML content document as the top-level document type, some circumstances require use of the [SVG Content Document](#) (for example, where final-form page images are required to represent content). Like embedded SVG, Vital Source provides support where the reading system / browser natively supports it. As a result, older browsers (Internet Explorer prior to version 9) will have issues with rendering properly.

4.5. SCRIPTED CONTENT

4.5.1. READING SYSTEM CONFORMANCE

The EPUB3 specification designates support for scripting within a reading system as optional ([Reading System Conformance](#)). Vital Source will support both container-constrained and spine-level scripting, with some restrictions on script execution and capabilities, which will be distributed as they become available

Vital Source supports the [navigator.epubReadingSystem Object](#), which provides an interface through which a Scripted Content Document can query information about a user's reading system, such as its name and version. It provides the `hasFeature` method which can be invoked to determine the features it supports.

4.5.2. EVENT MODEL

EPUB3 specifies [EPUBEvent Model Considerations](#). Vital Source has determined that most (if not all) DOM Events will be passed on to the book's scripting environment, but that scripting environment MUST NOT cancel event bubbling or interfere with events used for core reading functionality. As such, we may provide an event interface that will proxy native events, sending a subset of events on to the book's scripting environment as we deem necessary.

Vital Source is currently developing an API for event binding and delegation.

3. WORKING WITH EPUB CONTENT DOCUMENTS PROFILES FOR XHTML

4.6. MULTI-MEDIA

4.6.1. AUDIO / VIDEO

Vital Source provides support for audio and video in EPUB3 as follows:

- H.264 video, up to 1.5 Mbps, 640 x 480, 30 frames per sec., Baseline Low-Complexity Profile with AAC-LC audio up to 160 kbps, 48 Khz, stereo audio in .m4v & .mp4 file formats.
- H.264 video, up to 768 kbps, 320 x 240, 30 frames per sec., Baseline Profile up to Level 1.3 with AAC-LC audio up to 160 kbps, 48 Khz, stereo audio in .m4v & .mp4 file formats.
- MPEG-4 video, up to 2.5 Mbps, 640 x 480, 30 frames per sec., Simple Profile with AAC-LC audio up to 160 kbps, 48 Khz, stereo audio in .m4v & .mp4 file formats.

4.6.2. AUDIO ONLY

- AAC audio, up to 256 kbps, in .m4a file format.
- MP3 audio, up to 256 kbps, in .mp3 file format.

5. IMPLEMENTING EPUB STYLE SHEETS

You should take into account both the inconsistencies among browsers and specific nuances when authoring CSS. Some things will not work in certain browsers. As a general rule, “-epub-” prefixed CSS rules will not be available in the initial Bookshelf releases (see above).

In addition, the following are not currently supported (hyperlinks lead directly the specification section at idpf.org):

- [3.3.3 CSS 3.0 Speech](#)
- [3.3.5 CSS Text Level 3](#)
- [3.3.10 Ruby Positioning](#)
- [3.3.11 Display Property Values: oeb-page-head and oeb-page-foot](#)

Note: If you are authoring CSS that includes [3.3.4 CSS Fonts Level 3](#), it is not consistently supported in all browsers. Use caution with [3.3.9 CSS Multi-Column Layout](#) as well, because it is only supported in a subset of reading environments.

6. VITALSOURCE LIMITATIONS ON CONFIGURING EPUB PUBLICATIONS

[PLS Documents](#), (Pronunciation Lexicon Specification) define syntax and semantics for XML-based pronunciation lexicons to be used by Automatic Speech Recognition and Text-to-Speech (TTS) engines. However, Vital Source does not support PLS at this time.

Vital Source does not support [Manifest Fallbacks](#). In addition, the [Fixed Layout](#) specification is not supported at this time. Titles marked up in-line with the fixed layout spec will be accessible, but the fixed layout markup will be ignored.

7. UNSUPPORTED EPUB EXTENSIONS

Publishers should be aware that in the initial Bookshelf platform releases (see above) , Vital Source will not support the following EPUB3 extensions:

- Advanced Adaptive Layout
- Dictionaries and Glossaries
- Indexes

8. TIMELINE FOR ADDITIONAL EPUB3 SUPPORT

Client	Bookshelf Android	Bookshelf Online	Bookshelf iOS	Bookshelf Kindle Fire	Desktop Mac	Desktop Windows	Priority	Notes
EPUB 3.0 SUPPORT / FUNCTIONALITY								
Navigation Elements								
Metadata								
Multiple title types	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled	NP	
External metadata records (ONIX, MARC, XMP, etc.)	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled	NP	
Pagination								
Fixed layout	Q1/2013	Q1/2013	Q1/2013	Q1/2013	Q1/2013	Q1/2013	1	
Text Content								
Linking								
Text Layout & Styling								
Global Language Support								
Ruby Positioning (over/under/inter-character)	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled		
Page-progression-direction	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled		
Fonts								
Obliterated embedded	No Plans	No Plans	No Plans	No Plans	No Plans	No Plans		
Speech (TTS)								
Pronunciation Lexicon Specification (PLS) Version 1.0	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled		
Speech Synthesis Markup Language (SSML)	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled		
CSS Speech Module	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled		
Scripting & Interactivity								
bindings	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled		
epub:trifinger	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled		
Multimedia								
Video	No Plans	Only if supported by Browser	No Plan	No Plan	No Plan	IE9 /10 only		
VP8	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled		
Media Overlays	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled		
Media Overlays highlight styling	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled		
Test and Reporting								
FLOE in Book	Q4/2012	Yes	Yes	Q4/2012	Yes	Yes	1	
FLOE in Client	Q2/2013	NA	Q2/2013	Q2/2013	Q2/2013	Q2/2013	1	
Report data to Business Center (LTI)	Q2/2013	Q4/2012	Q2/2013	Q2/2013	Q2/2013	Q2/2013	1	
Separate Device Features								
Usability and Accessibility								
Other								
Dictionary	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled		http://idpl.org/chaers2012/dictionaries/
Index	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled	Unscheduled		http://idpl.org/chaers2012/indexes/

9. SPECIAL CONSIDERATIONS & KNOWN ISSUES

9.1. EMBEDDED FONTS

Desktop readers from Vital Source are EPUB3 compliant on Mac OS X and on Windows® XP when Internet Explorer 7/8 is installed on the user's machine. However, Windows machines using IE9 create issues for both the Desktop or Online reader. Because Microsoft chose to not support Open Type fonts in IE 9, and the EPUB spec supports only Open Type or the less common WOFF fonts, we were forced into using a different renderer in order to preserve Jaws12 functionality for accessibility.

If a publisher chooses to use an Open Type font, it will not render in IE9 and the default web fonts will be used in their place.

See <http://idpf.org/epub/30/spec/epub30-overview.html#sec-fonts> for more information.

9.1.1. THE SOLUTION

To make titles use embedded fonts in the cases where IE9 is the primary rendering engine (Windows Bookshelf Desktop or Windows Bookshelf Online), publishers must take two extra steps:

1. Convert the fonts to Embedded Open Type (EOT)
2. Create references to those additional fonts in the .opf file and the css file.

- a. In the .opf file

```
[[The standard font embedding for ePub Titles]]
```

```
<item id="SOMEFONT" href="OEBPS/fonts/SOMEFONT.otf"
media-type="application/vnd.ms-opentype"/>
```

```
[[The additional entry for the IE9 version]]
```

```
<item id="SOMEFONT_ie" href="OEBPS/fonts/SOMEFONT.eot"
media-type="application/vnd.ms-fontobject"/>
```

- b. In the css file

```
@font-face {
font-family:"SOMEFONT";
src:url("fonts/SOMEFONT.otf"),
src:url("fonts/SOMEFONT.eot");
```

```
}
```

These two changes ensure font fidelity across all Vital Source platforms and supported operating systems.

8. SPECIAL CONSIDERATIONS & KNOWN ISSUES

9.2. PAGE NUMBERING

Page numbering is not required in the EPUB specification, however, Vital Source strongly recommends that publishers submit files that contain page numbering. Books without page numbering will not offer:

- Accurate analytics
- Accurate print restrictions
- Go to page functionality

As the [Daisy Consortium](#), an organization focused on accessibility of ePubs, states, “If an ebook is produced from the same workflow as a print document, print pagination markers should be retained in the document to assist readers who may be operating in a mixed print/digital environment, such as a classroom. The page numbers allow a common point of reference between the two editions.”

9.2.1. EPUB2 PAGE LABELS

To ensure compliance with EPUB2, take the following two actions:

1. The toc.ncx file must contain a pageList element.

Example:

```
<pageList>

<pageTarget type="normal" id="p1"
value="1"><navLabel><text>1</text></navLabel><content
src="ch0001.xlink.html#page_1"/></pageTarget>

</pageList>
```

2. Where page 1 is actually located in the book file, it must be labeled.

Example:

```
<a id="page_1"/>
```

NOTE: Go To Page uses whatever you define in the <text> element. Vital Source recommends using only a number or a Roman numeral (as we use in appendixes), or a letter number combination (G-1 A5). If you include additional text, such as “Page No. 1,” in your toc.ncx file, then Go To Page will not find “1” but will find “Page No. 1.”

8. SPECIAL CONSIDERATIONS & KNOWN ISSUES

9.2.2. EPUB3 PAGE LABELS

Like EPUB2, page numbering in EPUB3 on the VitalSource platform requires a marker in the body of the volume and an index in the TOC xhtml file.navigation document (often named toc.xhtml or nav.xhtml).

Markers in the file can come in several formats.

- Page number as a content element (page number is exposed in the book)

```
<p>  
<span epub:type="pagebreak" id="page23">23</span>  
</p>
```
- Page number as an empty element (page number not visible in book but go to page will still work)

```
<p>  
<span epub:type="pagebreak" id="page24" title="24"/>  
</p>
```
- Page number as a block element

```
<div epub:type="pagebreak" id="page25">25</div>
```

Then the navigation document should have page-list section that would follow this form

```
<nav epub:type="page-list">  
<ol>  
<li><a href="somepage/chapter-in-book.xhtml#page0">0</a></li>  
</ol>  
</nav>
```

NOTE: For additional guidance, visit <http://matt.garrish.ca/epub3/guidelines/content/xhtml/pagenum.php>.

9.3. DRAGGABLE ELEMENTS (TABLETS ONLY)

Some javascript and HTML5 interactive elements on mobile devices require swipe and drag events. This can confuse some mobile devices that use swipe events as a page turn trigger.

8. SPECIAL CONSIDERATIONS & KNOWN ISSUES

To suppress that behavior and make an interactive element works as expected, add `<div class = "VST-draggable">` as a wrapper around the interactive element.

9.4. DISABLING HIGHLIGHTS

In some instances, it may be desirable to disable highlighting on a specific section of content.

To suppress highlights, add a `<div class="vstdontheight">YOUR CONTENT</div>`

9.5. ANCHOR TAGS

All anchor tags must include a href attribute, even if they do not link to an asset. All local linked assets must be included in the spine or be linked to an absolute URL. Local linking to assets not in the spine is prohibited in the EPUB3 Specification. The href attribute cannot be null nor set to #, it must be set to `javascript:void(0)`; when used in Bookshelf.

9.6. PLUG-INS

EPUB3 requires strict use of XHTML5 for all documents. It is important to note that not all plug-ins respect the strict XHTML5 specification. If a plug-in dynamically inserts elements into the DOM, those elements MUST conform to the XHTML5 specification. Attributes must include a value and all elements must be closed.

Invalid:

```
<video width="320" height="240" controls></video>

<br>
```

Valid:

```
<video width="320" height="240" controls="controls"></video>
</img>
<br/>
```

8. SPECIAL CONSIDERATIONS & KNOWN ISSUES

9.7. VIDEO

As noted in Section 3.6.1, Vital Source supports the .264 or MPEG-4 encoded video spec in EPUB3. However, publishers should address the following considerations when including video in a title.

1. Encode MPEG-4 video using Advanced Video Coding (sometimes called MPEG-4 Part 10), which utilizes H.264. Do not use Advanced Simple Profile (MPEG-4 Part 2), since it does not utilize H.264.

Note: Encoders such as Nero Digital AVC and Quicktime 7 will produce properly encoded videos. Encoders such as DivX, Xvid, Nero Digital, 3ivx and Quicktime 6 will cause problems in your titles.

2. H.264 video will enable video playback in all VitalSource application-based platforms (Bookshelf Windows/Mac, Bookshelf Touch (iPad) and supported Android devices. It will also work in most browsers without issue. However it may not display properly in Bookshelf online, because Firefox does not fully support the H.264 standard. Publishers may choose to include an alternative webM encoded video, as the Bookshelf online platform will support it.

3. Example Video Element Embed:

```
<video width="320" height="240" controls="controls">
  <source src="movie.mp4" type="video/mp4"></source>
  <source src="movie.webm" type="video/webm"></source>
  Your browser does not support the video tag.
</video>
```

More information on the video element can be found at:

<https://developer.mozilla.org/en-US/docs/HTML/Element/video>

9.8. ENSURING QUALITY SUBMISSIONS OF YOUR VITALSOURCE TITLES

All errors are bad. And while some may not impact the performance of a title in the current lineup of VitalSource products, they may cause problems in the future. We recommend publishers implement a pre-submission quality check process that includes validating against the ePubCheck tool, which can be accessed or downloaded at <http://code.google.com/p/epubcheck/>. Talk with your Vital Source account manager about which method of running ePubCheck you should use: as a standalone command line tool, server side Java web application or a Java Library.

8. SPECIAL CONSIDERATIONS & KNOWN ISSUES

Follow the quality check process for each title you submit to Vital Source:

1. Before the EPUB3 package is created, test each XHTML file in every Bookshelf Online-supported web browser. A list of these browsers can be found here: <http://support.vitalsource.com/kb/vbso/getting-started-vitalsource-bookshelf-online-browser-requirements>

EPUB3 is an HTML-derived standard, and Vital Source, like most other suppliers of readers, use a web-based renderer for our Bookshelf Online reader. We've worked to eliminate as much as possible browser based differences in our application-based products (where we can control the rendering experience). But the online experience is dependent on the browser installed by the end user. Most problems are caused by IE 8/9 rendering engines and can usually be eliminated by simple tweaks to the EPUB's css file, XHTML code, and Javascript.

4. Validate against ePubCheck. Correct for any of the following errors, prior to submission:
 - a) Any "referenced resource missing in the package error:"
 - b) Any "Length of the first filename in archive must be 8" (this mean that when the EPUB was packaged into the EPUB container, the mimetype file was not put at the top of the package.
 - c) Any error related to content contained in the EPUB that is not actually used by the title.
 - d) Any error related to duplicate IDs.
5. All modern browsers can open an error console while displaying pages. The error check console is important because neither ePubCheck nor the secondary validation VitalSource performs on titles at file ingestion have the ability to check for errors in any javascript that may be present. Publishers should address any javascript errors that appear in the error console. Note that while the javascript may work perfectly in the current file, it may not in future browser versions.
6. As a final check before file submission, use Bookshelf downloadable (both Mac and PC), which is capable of viewing any EPUB by simply dragging the file to a user created folder within Bookshelf. The file will work exactly as if it was ingested into our system with one exception - Notes and Highlights will not work with files before they are wrapped in the VitalSource vbk format.

10. SUPPLEMENTAL TECHNICAL REFERENCES

10.1. CONVERTING ONLINE URLS TO OFFLINE URLS

Converting an online URL to an “offline” URL is as simple as identifying which pattern it matches and performing the substitutions described in each. If your URL does not match one of the patterns outline below, it probably is not a universal URL.

This section also describes each URL and what the parameters mean, as well as what book formats it applies to. However, this is provided for informational purposes only. To convert a URL from universal to offline, you need not know which format the book uses. Just match the patterns.

The three book formats are as follows:

- XML-based: refers to our legacy DTD, sometimes also referred to as DashML.
- PDF-based: refers to fixed layout books built using PDF input files.
- EPUB-based: refers to our newer books built using EPUB input files.

Note: The Pageburst branded client for Mac / Windows produces Universal URLs that also fit this same format, except that the “online.vitalsource.com” hostname is replaced with the branded “pageburstls.elsevier.com” hostname.

10.1.1. BOOK URL

A book URL links the user to a book without specifying any specific location within the book.

Book URLs apply to XML-based, PDF-based, and EPUB-based books. These URLs for online take the form:

[http://online.vitalsource.com/books/\[VBID\]](http://online.vitalsource.com/books/[VBID])

To convert this to an offline URL just construct the URL as follows:

[vbk://\[VBID\]](vbk://[VBID])

For example, this URL:

<http://online.vitalsource.com/books/L-999-70168>

would become this URL:

<vbk://L-999-70168>

All of the other URL formats contain the book URL with additional path components appended to it describing a location within the book. The path component immediately after the VBID in the URL will determine the type of the URL, according to the following table:

9. SUPPLEMENTAL TECHNICAL REFERENCES

Path Component	URL Type
outline	Outline URL
id	ID URL
page	Page URL
pageid	Page ID URL
epubcfi	EPUB CFI URL

If this path component exists but does not match any of the values described in this document, then the URL is not a valid universal URL and you should not attempt to convert it.

Additionally, the Search Query URL format is a book URL with a search query string, but no additional path components.

10.1.2. OUTLINE URL

An outline URL specifies the VBID of a book and an outline number to go to within a book. Outline numbers only apply to XML-based books.

Universal URL format:

[http://online.vitalsource.com/books/\[VBID\]/outline/\[outline number\]](http://online.vitalsource.com/books/[VBID]/outline/[outline number])

Offline URL Format:

[vbk://\[VBID\]#outline\(\[outline number\]\)](vbk://[VBID]#outline([outline number]))

For example, this URL:

<http://online.vitalsource.com/books/L-999-70168/outline/18>

Becomes this URL:

[vbk://L-999-70168#outline\(18\)](vbk://L-999-70168#outline(18))

10.1.3. ID URL

An ID URL specifies the VBID of a book and an identifier to go to within the book. An identifier is a unique id specified in the markup that uniquely identifies an element. These are most commonly used with figures and tables, but they can appear on other elements as well.

9. SUPPLEMENTAL TECHNICAL REFERENCES

ID URLs only apply to XML-based books. Universal URL format:

http://online.vitalsource.com/books/[VBID]/id/[IDENTIFIER]

Offline URL Format:

vbk://[VBID]#[IDENTIFIER]

For example, this URL:

http://online.vitalsource.com/books/9780072965476/id/ch08fig04

Becomes this URL:

vbk://9780072965476#ch08fig04

10.1.4. SEARCH QUERY URL

A search query specifies the VBID of a book, and one or more search terms. When the URL is opened, it opens the book and performs a search for the search terms. Search terms MUST be URL encoded.

Search query URLs apply to XML-based, PDF-based, and EPUB-based books. Universal URL Format:

http://online.vitalsource.com/books/[VBID]?q=[SEARCH TERMS]

Offline URL format:

vbk://[VBID]?q=[SEARCH TERMS]

For example, this URL:

http://online.vitalsource.com/books/9780072965476?q=political%20movement

Becomes this URL:

vbk://9780072965476?q=political%20movement

10.1.5. PAGE URL

Page URLs specify the VBID of a book, and a printed page number to go to within that book.

Page URLs apply to both XML-based, PDF-based, and EPUB-based books. Universal URL Format:

http://online.vitalsource.com/books/[VBID]/page/[PAGE]

9. SUPPLEMENTAL TECHNICAL REFERENCES

Offline URL Format:

vbk://[VBID]#page([PAGE])

For example, this URL:

http://online.vitalsource.com/books/PBK9780135024171/page/1

Becomes this URL:

vbk://PBK9780135024171#page(1)

10.1.6. PAGE ID URL

Page ID URLs specify both the VBID of a book, and a page id. A page id is a zero-based index that specifies a page within a PDF-based book. (For example, the cover is page id 0.) Page IDs are used in cases where a page in a PDF-based book does not have a printed page number associated with it.

Page ID URLs only apply to PDF-based books. Universal URL Format:

http://online.vitalsource.com/books/[VBID]/pageid/[PAGE ID]

Offline URL Format:

vbk://[VBID]#pageid([PAGE ID])

For example, this URL:

http://online.vitalsource.com/books/PBK9780135024171/pageid/0

Becomes this URL:

vbk://PBK9780135024171#pageid(0)

10.1.7. EPUB CFI URL

EPUB CFI URLs specify the VBID of a book along with a CFI specifying the location within the book. CFI is a part of the EPUB standard that specifies a unique identifier for any location within an EPUB document.

A CFI resembles a path, for example: “/6/4!/10/4”

For more information on CFI see: <http://idpf.org/epub/linking/cfi/epub-cfi.html>

EPUB CFI URLs only apply to EPUB-based books. Notes:

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- The `vbk://` form of these URLs is different from the other URL types. Instead of using a URL fragment to specify the CFI, the CFI is specified within the path in precisely the same way that it is specified in the Universal URL format. Conversion of these URLs between the universal and offline formats is therefore much simpler, and can be performed by replacing the prefix `http://online.vitalsource.com/books/` with the prefix `vbk://` with no parsing necessary.
- When escaping a raw CFI string for inclusion in the path portion of a CFI URL, characters that are legal in a path should not be URL escaped. This improves the readability of the CFI URL. Characters that should not be URL escaped in a CFI are `:` `/` and `!`.
- Also note that there is no `/` character between `epubcfi` and `[EPUBCFI]` (the CFI string). A CFI string is a path and it always begins with a `/` - this initial `/` is the path separator between `epubcfi` and the rest of the path.

Universal URL Format:

`http://online.vitalsource.com/books/[VBID]/epubcfi[EPUBCFI]`

Offline URL Format:

`vbk://[VBID]/epubcfi[EPUBCFI]`

For example, this URL:

`http://online.vitalsource.com/books/EPUB-TEST-9781444331332/epubcfi/6/28!/4/2/6/3:0`

Becomes this URL:

`vbk://EPUB-TEST-9781444331332/epubcfi/6/28!/4/2/6/3:0`

In these examples the CFI string is:

`/6/28!/4/2/6/3:0`

Note that the leading slash in the CFI string is also the separator between the `epubcfi` path component and the CFI, and also note that `:` `/` and `!` are not escaped.

10.1.8. CLIENT COMPATIBILITY CHART

This chart lists each of the offline URL types and which clients (and versions) support each of them. A version number indicates the earliest version of the client that supports that format.

	Desktop (Mac / Win)	iOS	Android
Book URL	5.5	1.3.2	1.1
Outline UR	5.5	1.3.2	1.1

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ID URL	5.5	1.3.2	1.1
Search Query URL	5.5	1.3.2	1.1
Page URL	5.5	1.3.2	1.1
Page ID URL	5.5	1.3.2	1.1
EPUB CFI URL	6.0	2.1.1	Future Update

10.2. TIPS FOR DESIGNING

- If you are unsure whether an HTML5 or CSS3 feature is widely implemented, we recommend <http://html5test.com> as an excellent resource
- To help future proof your publication use Canonical Fragment Identifiers (CFI).CFIs identify discrete chunks of content and enable functions such as intrabook linking, Notes, and Highlights. At a minimum, chapters and sections within chapters (H1-H5 elements) should have unique ids. But current best practice is to apply CFIs to everything down to the paragraph level. This greatly reduces the likelihood of publication revisions breaking notes and highlights already inserted by users.

10.3. BOOKSHELF COPY PRINT RESTRICTION (CPR)

Copy print restrictions allow the publisher to determine to control the user's ability to copy and print text from an EPUB book.

To enable these capabilities, EPUB book must be marked up with page breaks and labels. See 8.21 and 8.22 above for explanation and examples or review the specifications as defined in the EPUB Structural Semantics Vocabulary. <http://idpf.org/epub/vocab/structure/>.

10.3.1. COPY

10.3.1.1. EPUB BOOK WITH PAGE BREAKS AND LABELS

In an EPUB book that contains page breaks and labels, the CPR copy settings are honored. For example, if the copy restriction is set to two (2) pages, the user will only be able to copy a maximum of two (2) full pages at a time. A full page is defined as the content between two page breaks.

10.3.1.2. EPUB BOOK WITHOUT PAGE BREAKS AND LABELS

In an EPUB book that does not contain page breaks/labels; the CPR copy settings are honored by Bookshelf creating a virtual page of 300 words. The user would be able to copy a

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maximum three hundred (300) words per page times the number of allowed pages in the CPR settings at a time. For example, if the copy limit is ten (10) pages, then the limit is three thousand (3000) words at a time and if the copy limit was five (5) pages it would be fifteen hundred (1500) words at a time.

10.3.2. PRINTING

10.3.2.1. EPUB BOOK WITH PAGE BREAKS AND LABELS

In an EPUB book that contains page breaks and labels, the CPR print settings are honored. For example, if the print restriction is set to two (2) pages, the user will only be able to print two (2) pages at a time.

10.3.2.2. EPUB BOOK WITHOUT PAGE BREAKS AND LABELS

In an EPUB book that does not contain page breaks and labels, the CPR settings are NOT honored. If printing is allowed, the user will be able to print all the content that was loaded into the scrolling content box. For example, if the EPUB book loads an entire chapter to be read, the user will be able to print that chapter.

10.4. HTML5 SUPPORT IN LEGACY BROWSERS

EPUB3 embraces both HTML5 and CSS3 as part of the core specification. At this time, Bookshelf support Internet Explorer 8 which has very limited support for HTML5 nor CSS3. In order to allow your EPUB3 document to display in Internet Explorer 8, specific Internet Explorer 8 modifications must be made.

10.4.1. HTML5 SHIM CODE

HTML5 introduced new sectioning elements to HTML documents. In order to support these elements in Internet Explorer 8, a polyfill is required. We recommend the “html5shiv” code found here: <http://html5shiv.googlecode.com/svn/trunk/html5.js>

It is recommended that you download this javascript file and place it within your code. The following IE8 specific conditional should then be added into your <head> element:

```
<!--[if lt IE 9]>
<script src="{pathcode}/html5.js"></script>
<![endif]-->
```

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10.4.2. HTML5 VIDEO/AUDIO SUPPORT FALLBACKS

The new HTML5 `<video>` and `<audio>` elements are not available in Internet Explorer 8. In order to embed video and/or audio in your EPUB 3 document, you must provide an alternative method for video playback. There are several video player alternatives that fall back to Adobe Flash when run in Internet Explorer 8. (Note: Flash should not be the primary display method as it is not supported in Bookshelf) Popular video and audio playback plug-ins include VideoJS (<http://videojs.com/>) and audio.js (<http://kolber.github.com/audiojs/>) both of which use the `<video>` and `<audio>` elements as their primary display mechanism.

10.4.3. SHORTHAND CLOSING ELEMENTS

XHTML requires that all tags be closed with complete closing tags or inline shorthand markup. However, Internet Explorer 8 does not support inline shorthand markup.

For example, when including a `<script>` element, it should be written as:

```
<script src="script.js"></script>
```

Not:

```
<script src="script.js"/>
```

This also applies to other tags such as `<p>`, `
` and ``.

11. JAVASCRIPT PRACTICES

11.1. EXTERNAL JAVASCRIPT

Vital Source does not recommend linking to externally hosted javascript files, as access to those scripts requires an internet connection. Only assume an internet connection with use of the Bookshelf Online reader.

12. APPENDIX: EPUB SPECIFICATION QUICK REFERENCES

See the following pages for:

- VitalSource Bookshelf Features Quick Reference Guide
- Vital Source EPUB3 Supported Functionality (as of October 24, 2012)
- VitalSource Bookshelf Online EPUB3 Support (as of October 24, 2012)
- VitalSource Bookshelf FLOE™ Support

Resolve to application	Y	Y	Y	Y	Y	Y	
Access to VitalSource store	Y	Y	Y	N	N	N	
All titles	Y	Y	Y	Y	Y	Y	
Titles by subject	Y	Y	Y	N	N	N	
Recently viewed	Y	Y	Y	Y	Y	Y	
Recently Added/Downloads	Y	Y	Y	N	N	N	
Downloaded Books	NA	Y	Y	Y	Y	Y	
Taxonomy Support/Custom Library	Y	Y	Y	N	N	N	
References	N	Y	Y	Y	Y	Y	
Books with Notes	N	Y	Y	Y	Y	Y	
Covers View	Y	Y	Y	Y	Y	Y	
List View	Y	Y	Y	Y	Y	Y	
Collections	Y	Y	Y	N	N	N	
		Desktop		Mobile			
	Online	Mac	Windows	iOS	Android	Fire	
Go to Page	N	Y	Y	Y	Y	Y	
Swipe to change page	NA	NA	NA	Y	Y	Y	
Arrows to change page	Y	Y	Y	NA	NA	NA	
Keyboard to change pages	Y	Y	Y	NA	NA	NA	
Jump to Chapter from Table of Contents	Y	Y	Y	Y	Y	Y	
Jump to figure from Figure Pane	N	NA	NA	NA	NA	NA	
Jump to Highlight from Notes pane	Y	Y	Y	Y	Y	Y	
Jump back to original location (Back Button)	NA*	Y	Y	Y	Y	Y	* This is a browser function
Full Page	Y	Y	Y	Y	Y	Y	
Fixed Page	N	N	N	N	N	N	
Reflowable	Y	Y	Y	Y	Y	Y	
Reading View (Two Pages Side by Side)	N	D	D	N	N	N	Capability is controlled by the book
Two Books Open	Y*	Y	Y	N	N	N	* Two books can be open using the same browser
Font Size Change	D	D	D	D	D	D	Capability is controlled by the book
Zoom	Y	N	N	Y	Y	Y	
Contrast Control	N	D	D	N	N	N	Capability is controlled by the book
Double Byte Language Support	N	N	N	N	N	N	
Vertical Text Support	N	N	N	N	N	N	
FLOE Elements	Y	Y	Y	Y	N	N	
Test To Speech Compatibility	Y	Y	Y	Y	N	N	OS or 3rd party provided
Keyboard Navigation	Y	Y	Y	NA	NA	NA	
Contrast Control	D	D	D	D	D	D	Capability is controlled by the book
Font Size Control	D	D	D	D	D	D	Capability is controlled by the book

Bookshelf EPUB 3.0 SUPPORT LAST UPDATED: October 24, 2012							
Client	Bookshelf Android	Bookshelf Online	Bookshelf iOS	Bookshelf Kindle Fire	Desktop Mac	Desktop Windows	Notes
PLATFORM	Webkit	Browser	Webkit	Webkit	Webkit	IE9 /19 Or Awesomium 1.6	
EPUB 3.0 SUPPORT / FUNCTIONALITY							
Navigation Elements							
Metadata							
Multiple title types	No	No	No	No	No	No	
External metadata records (ONIX, MARC, XMP, etc.)	No	No	No	No	No	No	
Pagination							
Reflowable	Yes	Yes	Yes	Yes	Yes	Yes	
Fixed layout	No	No	No	No	No	No	
Text Content							
XHTML	Yes	Yes	Yes	Yes	Yes	Yes	
SVG	Yes	Yes	Yes	Yes	Yes	Yes	
MathML	Yes	Yes	Yes	Yes	Yes	Yes	
epub:switch	Yes	Yes	Yes	Yes	Yes	Yes	For MathML
Preserves UTF-8 or UTF-16 encoding	Yes	Yes	Yes	Yes	Yes	Yes	
Linking							
Embedded IDs	Yes	Yes	Yes	Yes	Yes	Yes	
CFI	Yes	Yes	Yes	Yes	Yes	Yes	
Linking inside the book	Yes	Yes	Yes	Yes	Yes	Yes	
Linking outside the book	Yes	Yes	Yes	Yes	Yes	Yes	
Text Layout & Styling							
Preservation of publisher-provided styling and layout	Yes	Yes	Yes	Yes	Yes	Yes	
Tables	Yes	Yes	Yes	Yes	Yes	Yes	
Numbered lists	Yes	Yes	Yes	Yes	Yes	Yes	
Bulleted lists	Yes	Yes	Yes	Yes	Yes	Yes	
Text on background images	Yes	Varies by browser	Yes	Yes	Yes	Yes	
Floating elements (boxed text, callouts, sidebars, images with text wrapping, drop caps)	Yes	Varies by browser	Yes	Yes	Yes	Yes	
Multi-Column Layout	Yes	Varies by browser	Yes	Yes	Yes	Yes	
Headers and Footers (oeb-page-head, oeb-page-foot)	Yes	Varies by browser	Yes	Yes	Yes	Yes	
Media Queries	Yes	Varies by browser	Yes	Yes	Yes	Yes	
Global Language Support							
Ruby Positioning (over/under/inter-character)	No	No	No	No	No	No	
CSS Writing Modes (vertical text direction)	Yes	Varies by browser	Yes	Yes	Yes	Yes	
Right-to-left and left-to-right text direction	Yes	Varies by browser	Yes	Yes	Yes	Yes	
Page-progression-direction	No	No	No	No	No	No	
Alternate Style Sheets	Yes	Varies by browser	Yes	Yes	Yes	Yes	
Fonts							
Embedded	Yes	Yes	Yes	Yes	Yes	Yes	
Obfuscated embedded	No	No	No	No	No	No	
Built-in Unicode font support	Yes	Yes	Yes	Yes	Yes	Yes	

Figure 11-2: VitalSource EPUB3 Supported Functionality (as of October 24, 2012)

Font Descriptors (font-family, font-style, font-weight, src, unicode-range)	Yes	Yes	Yes	Yes	Yes	Yes	
Speech (TTS)							
Text-to-Speech (TTS)	No	Yes	Yes	No	Yes	IE9/10 only	
Pronunciation Lexicon Specification (PLS) Version 1.0	No	No	No	No	No	No	
Speech Synthesis Markup Language (SSML)	No	No	No	No	No	No	
CSS Speech Module	No	No	No	No	No	No	
Scripting & Interactivity							
Container-constrained scripts	Yes	Yes	Yes	Yes	Yes	Yes	
Spine-level scripts	Yes	Yes	Yes	Yes	Yes	Yes	
epubReadingSystem object	Yes	Varies by Browser	Yes	Yes	Yes	Yes	
bindings	No	No	No	No	No	No	
epub.trigger	No	No	No	No	No	No	
XMLHttpRequest for embedded data	Yes	Varies by Browser	Yes	Yes	Yes	Yes	For MathML
XMLHttpRequest for remote data	Yes	Varies by Browser	Yes	Yes	Yes	Yes	
Multimedia							
Audio							
MP3	Yes	Yes	Yes	Yes	Yes	Yes	
AAC	Yes	Yes	Yes	Yes	Yes	Yes	
Remote	Yes	Yes	Yes	Yes	Yes	Yes	
Embedded	Yes	Yes	Yes	Yes	Yes	Yes	
Video							
H.264	Yes	Yes	Yes	Yes	Yes	IE9/10 only	
VP8	No	Varies by browser	No	No	No	IE9 /10 only	
Remote	Yes	Yes	Yes	Yes	Yes	Yes	
Embedded	Yes	Yes	Yes	Yes	Yes	Yes	
Media Overlays							
Media Overlays highlight styling	No	No	No	No	No	No	
Test and Reporting							
FLOE in Book	No	No	No	No	Yes	Yes	
FLOE in Client	No	No	No	No	No	No	
Report data to Business Center (LT11)	No	Prototype	No	No	No	No	
Separate Device Features							
Region magnification	No	No	No	No	No	No	
Pinch & zoom	Yes	No	Yes	Yes	No	No	Ability to zoom in and out of e-book pages when the user makes a pinch gesture on the screen.
Orientation lock	Yes	No	Yes	Yes	No	No	
Usability and Accessibility							
Hide structural navigation levels	Yes	Yes	Yes	Yes	Yes	Yes	
Device Keyboard Accessibility	No	No	No	No	No	No	
User Interface controls exposed to and traversible by assistive technologies	Yes	Yes	Yes	Yes	Yes	Yes	
Text content exposed to and traversible by assistive technologies	Yes	Yes	Yes	Yes	Yes	Yes	
Other							
Dictionary	No	No	No	No	No	No	http://idpf.org/charters/2012/dictionaries/
Index	No	No	No	No	No	No	http://idpf.org/charters/2012/indexes/

Bookshelf Online EPUB 3.0 SUPPORT LAST UPDATED: October 24, 2012						
Client	Chrome	FireFox 15/16	Internet Explorer 9	Internet Explorer 10	Safari 5.1/6	Notes
EPUB 3.0 SUPPORT / FUNCTIONALITY						
Navigation Elements						
Metadata						
Multiple title types	No	No	No	No	No	
External metadata records (ONIX, MARC, XMP, etc.)	No	No	No	No	No	
Pagination						
Reflowable	Yes	Yes	Yes	Yes	Yes	
Fixed layout	No	No	No	No	No	
Text Content						
XHTML	Yes	Yes	Yes	Yes	Yes	
SVG	Yes	Yes	Yes	Yes	Yes	
MathML	Yes	Yes	Yes	Yes	Yes	
pub:switch	Yes	Yes	Yes	Yes	Yes	For MathML
Preserves UTF-8 or UTF-16 encoding	Yes	Yes	Yes	Yes	Yes	
Linking						
Embedded IDs	Yes	Yes	Yes	Yes	Yes	
CFI	Yes	Yes	Yes	Yes	Yes	
Linking inside the book	Yes	Yes	Yes	Yes	Yes	
Linking outside the book	Yes	Yes	Yes	Yes	Yes	
Text Layout & Styling						
Preservation of publisher-provided styling and layout						
Tables	Yes	Yes	Yes	Yes	Yes	
Numbered lists	Yes	Yes	Yes	Yes	Yes	
Bulleted lists	Yes	Yes	Yes	Yes	Yes	
Text on background images	Yes	Yes	Yes	Yes	Yes	CSS3 opacity property This is a browser specific support item.
Floating elements (boxed text, callouts, sidebars, images with text wrapping, drop caps)	Yes	Yes	Yes	Yes	Yes	CSS float Property This is a browser specific support item.
Multi-Column Layout	Yes	Yes	No	No	Yes	This is a browser specific support item.
Headers and Footers (oeb-page-head, oeb-page-foot)	Yes	Yes	Yes	Yes	Yes	
Media Queries	Yes	Yes	Yes	Yes	Yes	This is a browser specific support item.
Global Language Support						
Ruby Positioning (over/under/inter-character)	No	No	No	No	No	
CSS Writing Modes (vertical text direction)	Yes	Yes	Yes	Yes	Yes	XSL-FO writing-mode Property This is a browser specific support item.
Right-to-left and left-to-right text direction	Yes	Yes	Yes	Yes	Yes	CSS direction Property This is a browser specific support item.
Page-progression-direction	No	No	No	No	No	
Alternate Style Sheets	Yes	Yes	Yes	Yes	Yes	This is a browser specific support item.
Fonts						
Embedded	Yes	Yes	Yes	Yes	Yes	
Obfuscated embedded	No	No	No	No	No	
Built-in Unicode font support	Yes	Yes	Yes	Yes	Yes	

Figure 11-3: Vital Source Bookshelf Online EPUB3 Support (as of October 24, 2012)

	Font Descriptors (font-family, font-style, font-weight, src, unicode-range)	Yes	Yes	Yes	Yes	Yes	
Speech (TTS)							
	Text-to-Speech (TTS)	Yes	Yes	Yes	Yes	Yes	Third Party Software or OS provided
	Pronunciation Lexicon Specification (PLS) Version 1.0	No	No	No	No	No	
	Speech Synthesis Markup Language (SSML)	No	No	No	No	No	
	CSS Speech Module	No	No	No	No	No	
Scripting & Interactivity							
	Container-constrained scripts	Yes	Yes	Yes	Yes	Yes	
	Spine-level scripts	Yes	Yes	Yes	Yes	Yes	
	epub Reading System object	Yes	Yes	Yes	Yes	Yes	
	bindings	No	No	No	No	No	
	epub.trigger	No	No	No	No	No	
	XMLHttpRequest for embedded data	Yes	Varies by Browser	Yes	Yes	Yes	
	XMLHttpRequest for remote data	Yes	Varies by Browser	Yes	Yes	Yes	
Multimedia							
	Audio						
	MP3	Yes	Yes	Yes	Yes	Yes	
	AAC	Yes	Yes	Yes	Yes	Yes	
	Remote	Yes	Yes	Yes	Yes	Yes	
	Embedded	Yes	Yes	Yes	Yes	Yes	
	Video						
	H.264	Yes	Yes	Yes	Yes	Yes	
	VP8	Yes	Yes	No	No	No	
	Remote	Yes	Yes	Yes	Yes	Yes	
	Embedded	Yes	Yes	Yes	Yes	Yes	
	Media Overlays	No	No	No	No	No	
	Media Overlays highlight styling	No	No	No	No	No	
Test and Reporting							
	FLOE in Book	No	No	No	No	Yes	
	FLOE in Client	No	No	No	No	No	
	Report data to Business Center (LTI1)	No	Prototype	No	No	No	
Separate Device Features							
	Region magnification	No	No	No	No	No	zoom in and out of e-book pages when the user makes a pinch gesture on the screen.
	Pinch & zoom	Yes	No	Yes	Yes	re	
	Orientation lock	Yes	No	Yes	Yes	No	ability to lock into one orientation. Particularly relevant for fixed layout e-books.
Usability and Accessibility							
	Hide structural navigation levels	Yes	Yes	Yes	Yes	Yes	
	Keyboard Accessibility	Yes	Yes	Yes	Yes	Yes	
	User Interface controls exposed to and traversible by assistive technologies	Unknown	Unknown	Unknown	Unknown	Unknown	
	Text content exposed to and traversible by assistive technologies	Unknown	Unknown	Unknown	Unknown	Unknown	
Other							
	Dictionary	No	No	No	No	No	http://idpf.org/charters/2012/dictionaries/
	Index	No	No	No	No	No	http://idpf.org/charters/2012/indexes/