# iBooks

## Beautiful books using HTML5, CSS3, and EPUB

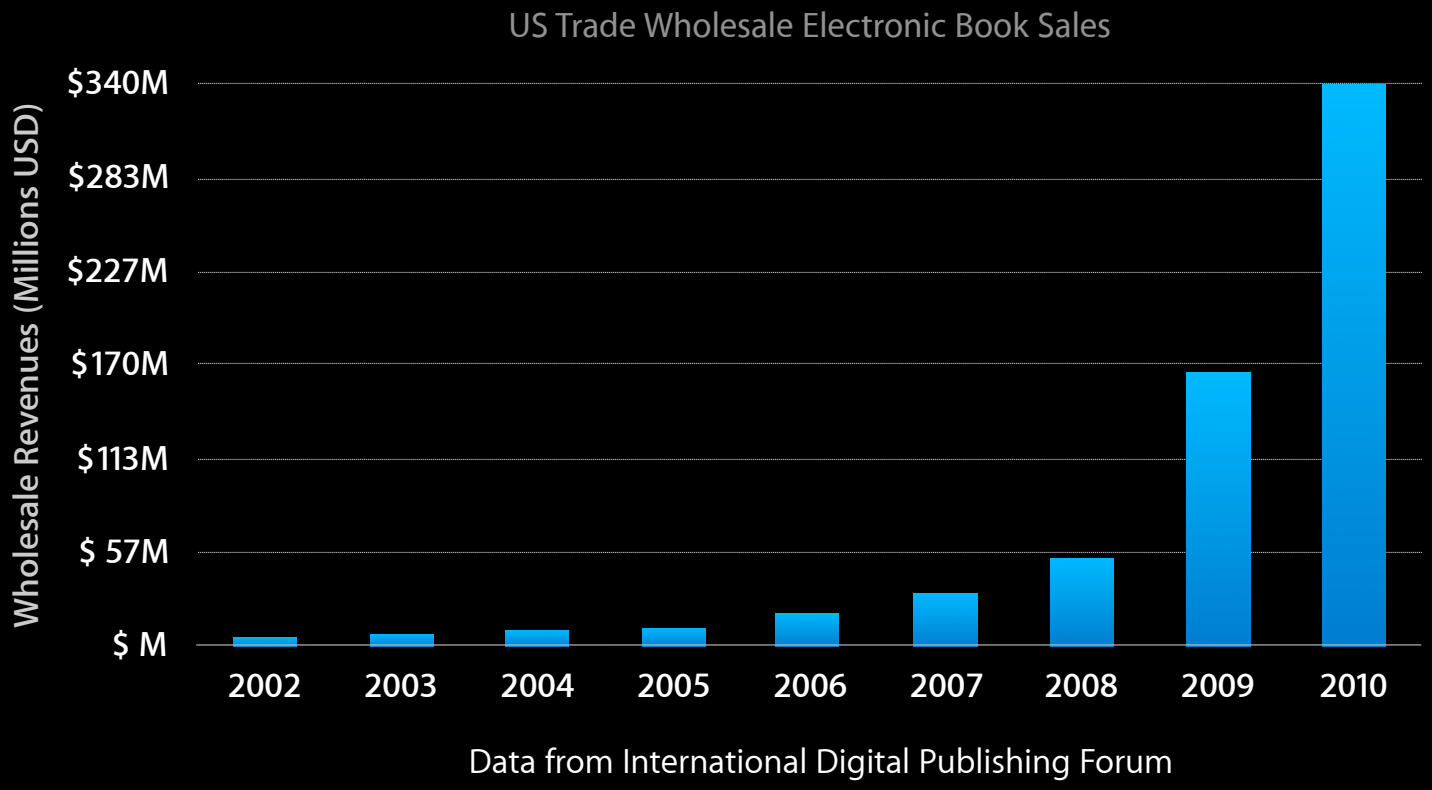
Session 507

**Alan Cannistraro**
iBooks

These are confidential sessions—please refrain from streaming, blogging, or taking pictures

# eBooks: Rise in Popularity

## #1 book format in Feb 2011



# eBooks: Rise in Popularity

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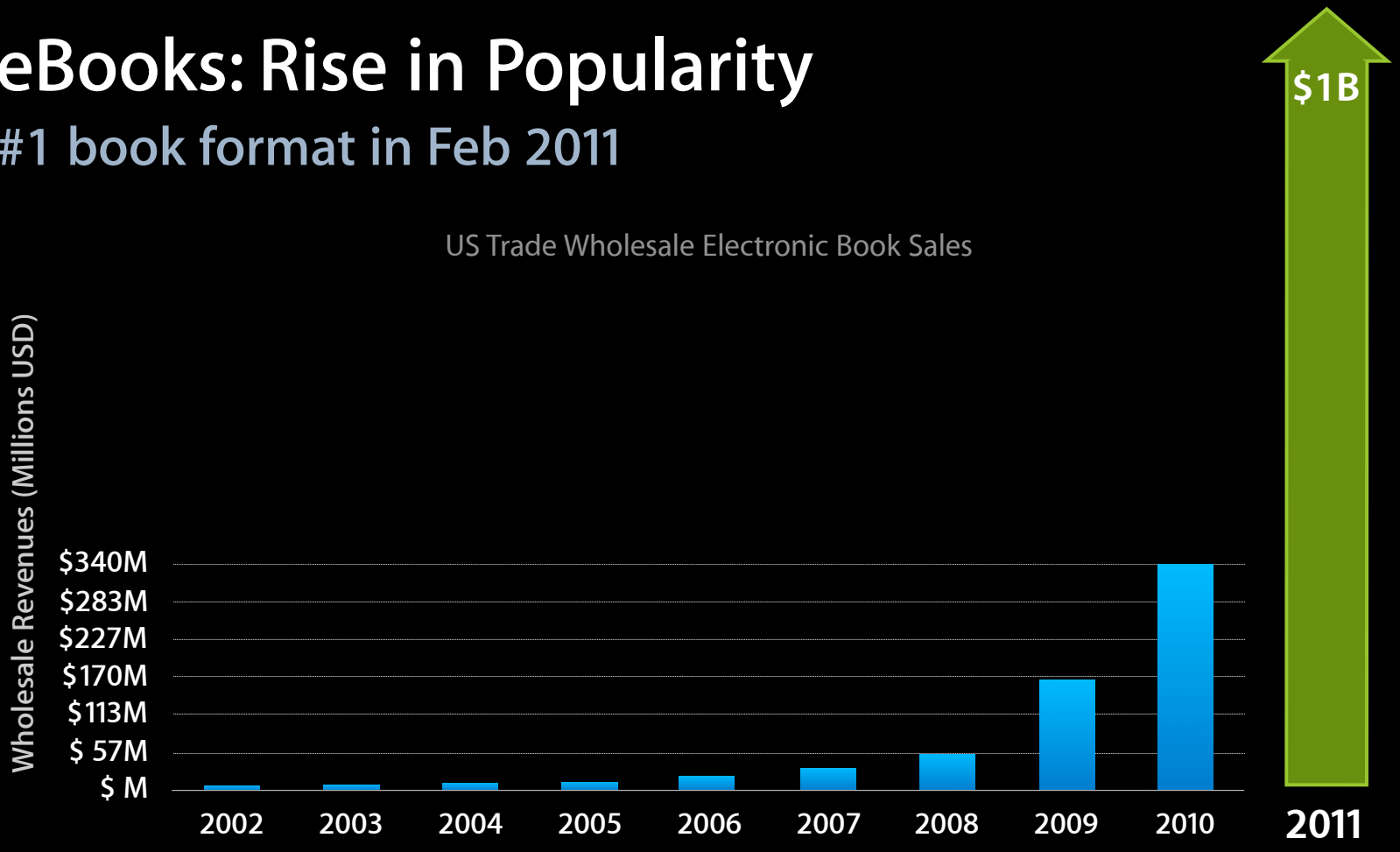
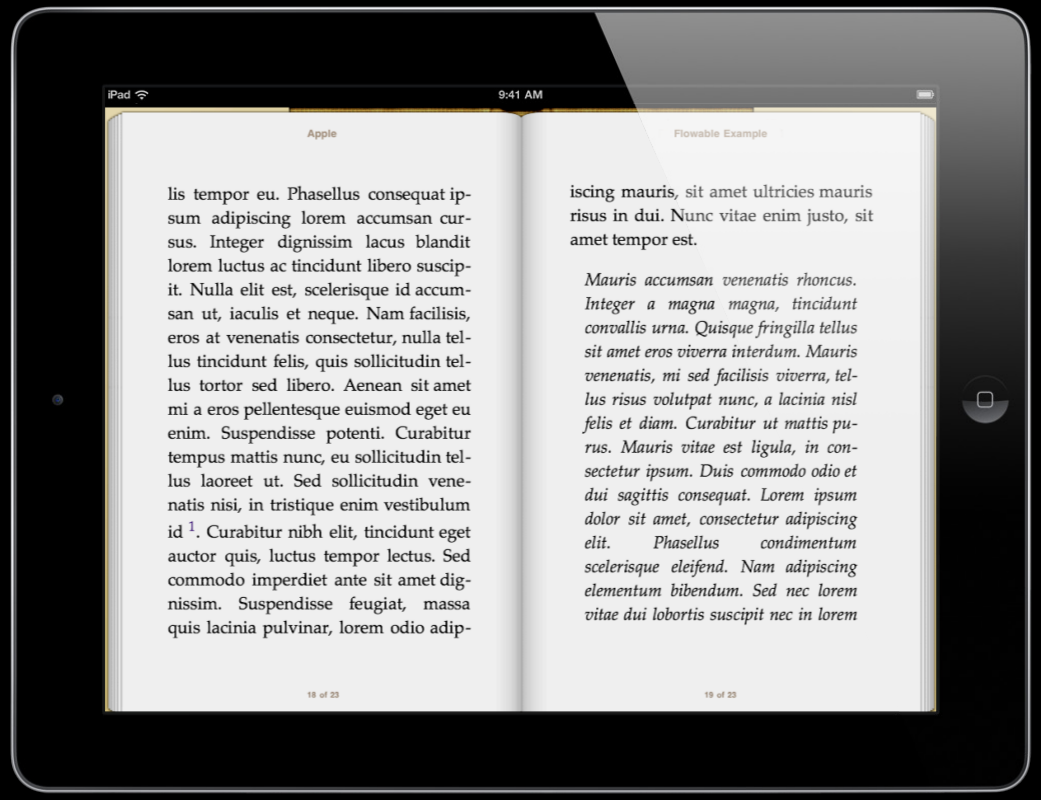



Data from International Digital Publishing Forum


iPad
9:41 AM
Apple
lis tempor eu. Phasellus consequat ipsum adipiscing lorem accumsan cursus. Integer dignissim lacus blandit lorem luctus ac tincidunt libero suscipit. Nulla elit est, scelerisque id accumsan ut, iaculis et neque. Nam facilisis, eros at venenatis consectetur, nulla tellus tincidunt felis, quis sollicitudin tellus tortor sed libero. Aenean sit amet mi a eros pellentesque euismod eget eu enim. Suspendisse potenti. Curabitur tempus mattis nunc, eu sollicitudin tellus laoreet ut. Sed sollicitudin venenatis nisi, in tristique enim vestibulum id [1]. Curabitur nibh elit, tincidunt eget auctor quis, luctus tempor lectus. Sed commodo imperdiet ante sit amet dignissim. Suspendisse feugiat, massa quis lacinia pulvinar, lorem odio adip-
18 of 23
Flowable Example
iscing mauris, sit amet ultricies mauris risus in dui. Nunc vitae enim justo, sit amet tempor est.
Mauris accumsan venenatis rhoncus. Integer a magna magna, tincidunt convallis urna. Quisque fringilla tellus sit amet eros viverra interdum. Mauris venenatis, mi sed facilisis viverra, tellus risus volutpat nunc, a lacinia nisl felis et diam. Curabitur ut mattis purus. Mauris vitae est ligula, in consectetur ipsum. Duis commodo odio et dui sagittis consequat. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Phasellus condimentum scelerisque eleifend. Nam adipiscing elementum bibendum. Sed nec lorem vitae dui lobortis suscipit nec in lorem
19 of 23

iPad
9:41 AM
The moral of Pete's story is:
No matter what you step in,
keep walking along and
singing your song .....

# Why Make a Book?

- Focus on your content
- Beautiful stylizing options
- Standard technologies
  - Easy to create
  - Power of WebKit
  - Works across many readers
- Anyone can publish
- A book travels with you

# iBooks App

- Most fully-featured digital book reader on the market
- Visually rich images and layout
- Audio and video support
- iBookstore

# What You'll Learn

- Building block of books: EPUB
- Flowing books (novels)
  - HTML and CSS for flowable layouts
  - Embed charts, fonts, audio/video
  - Nonlinear documents
- Fixed-layout books (picture books)
  - Precise layouts using CSS
  - Surpass print experience

# EPUB

## Open-standard book format

**Casey Dougherty**
iBookstore

# EPUB

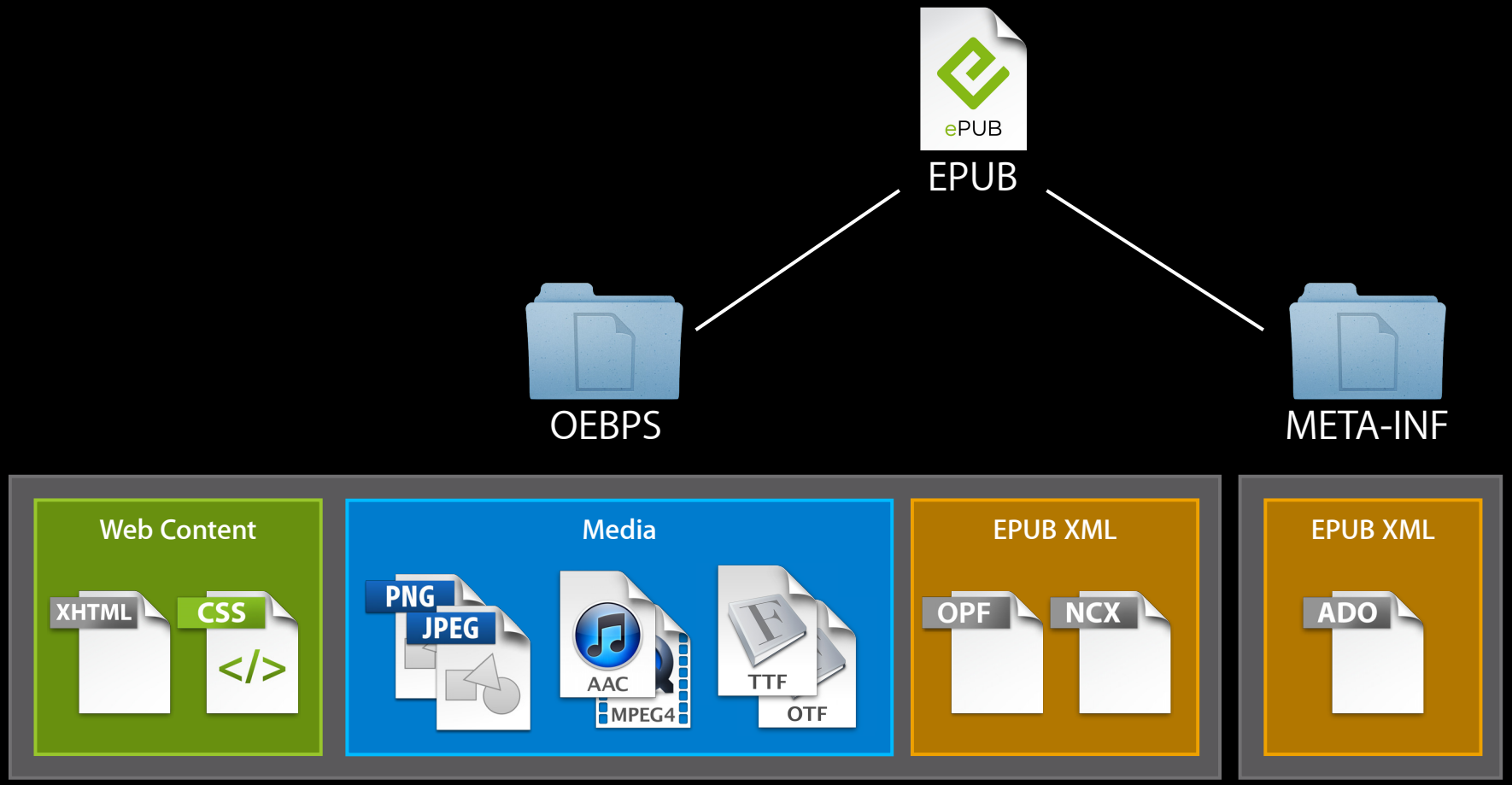
- What is EPUB?
- Contents of an EPUB
- Reading order and Table of Contents
- How to customize the iBooks experience

# What Is an EPUB?

## EPUB is web technology

- HTML5
- CSS3
- XHTML
- XML
- Folder/bundle of documents and media
- Zipped, with ".epub" folder extension

# Contents of an EPUB



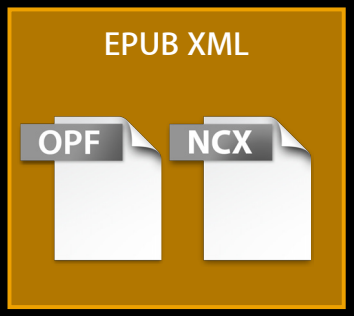
# .opf File

## Open packaging format

- Metadata
  - Title, language, identifier
- Manifest
  - List of all files in the package (XHTML, CSS, media, fonts)
- Spine
  - List all XHTML in linear reading order
- Guide (optional)
  - Identifies key files in the book (cover, text)

EPUB

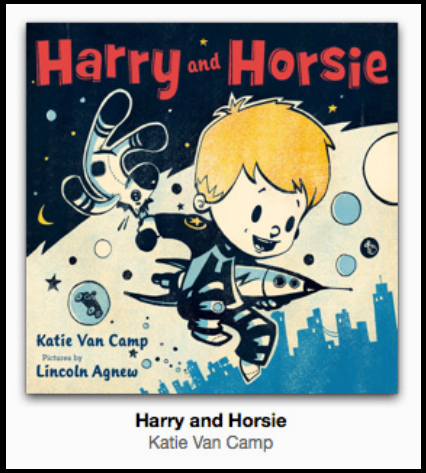
OEBPS



# .opf File: Metadata

## Title, Language, ID

```
<metadata xmlns:dc="http://purl.org/dc/elements/1.1/"
xmlns="http://www.idpf.org/2007/opf">
  <dc:title>Harry and Horsie</dc:title>
  <dc:identifier id="bookid">0123456789</dc:identifier>
  <dc:language>en</dc:language>
  <dc:subject>Children's</subject>
  <dc:creator>Katie Van Camp</dc:creator>
  <meta name="cover" content="imgcov"/>
</metadata>
```




Harry and Horsie
Katie Van Camp

# .opf File: Metadata

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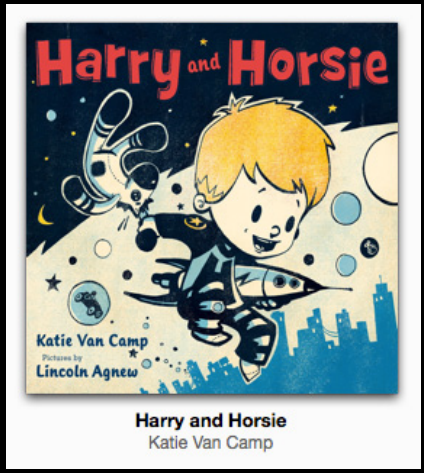
  <dc:subject>Children's</subject>
  <dc:creator>Katie Van Camp</dc:creator>
  <meta name="cover" content="imgcov"/>
</metadata>
```



Harry and Horsie
Katie Van Camp

# .opf File: Manifest

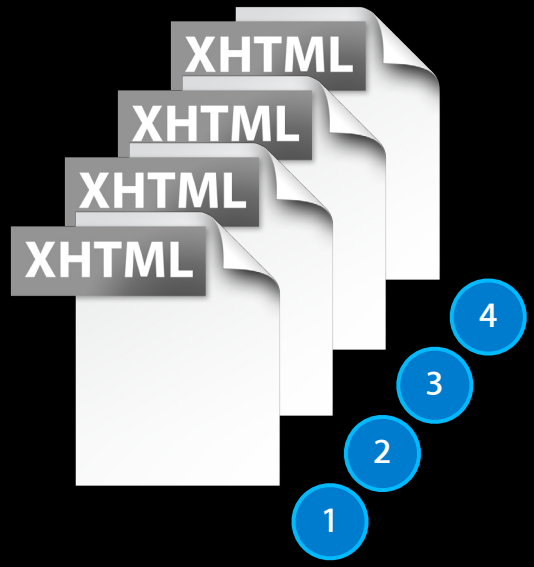
## List of all files in EPUB package

```
<manifest>
...
  <item id="ncx" href="toc.ncx" media-type="application/x-dtbncx+xml"/>
  <item id="pg-1" href="page001.xhtml" media-type="application/xhtml+xml"/>
  <item id="img1" href="image/pg1.jpg" media-type="image/jpeg"/>
  <item id="css1" href="stylesheet.css" media-type="text/css"/>
...
</manifest>
```

# .opf File: Spine

## List content documents in linear reading order

```
<spine>
...
<itemref idref="pg001"/>
<itemref idref="pg002"/>
<itemref idref="pg003"/>
<itemref idref="pg004"/>
...
</spine>
```



# .opf File: Guide

- Identifies key files (optional)
- Guides sample cutting for iBooks
- Define default start page

```
<guide>
  <reference type="cover" title="Cover"
  href="cover.xhtml"/>

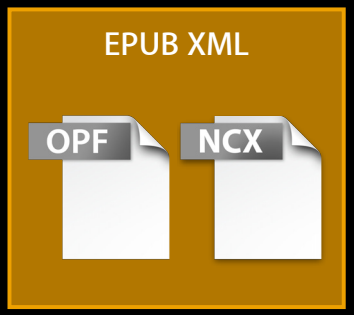
  <reference type="text" title="Story”
  href="page001.xhtml"/>
</guide>
```

# .opf File

- Metadata
- Manifest
- Spine
- Guide (optional)

EPUB

OEBPS

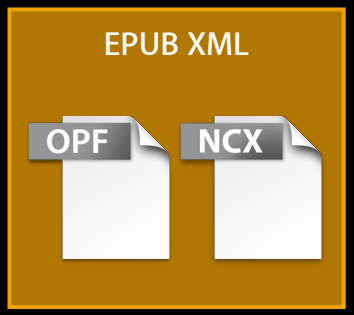


# .ncx File—Table of Contents

## Navigation Control XML

EPUB

OEBPS



# .ncx File

## Table of Contents

```
<navMap>
  <navPoint id="np-1" playOrder="1">
    <navLabel><text>Title Page</text></navLabel>
    <content src="titlepage.xhtml"/>
  </navPoint>
  <navPoint id="np-2" playOrder="2">
    <navLabel><text>Chapter 1</text></navLabel>
    <content src="chapter1.xhtml"/>
  </navPoint>
 </navMap>
```

# .ncx File

## Table of Contents

```
<navMap>
  <navPoint id="np-1" playOrder="1">
    <navLabel><text>Title Page</text></navLabel>
    <content src="titlepage.xhtml"/>
  </navPoint>
  <navPoint id="np-2" playOrder="2">
    <navLabel><text>Chapter 1</text></navLabel>
    <content src="chapter1.xhtml"/>
  </navPoint>
 </navMap>
```

# .ncx File

## Table of Contents

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# .ncx File

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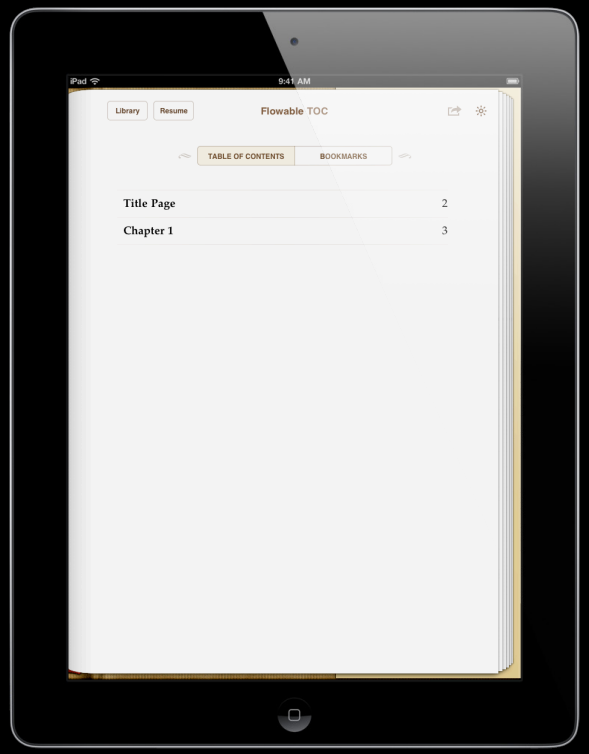
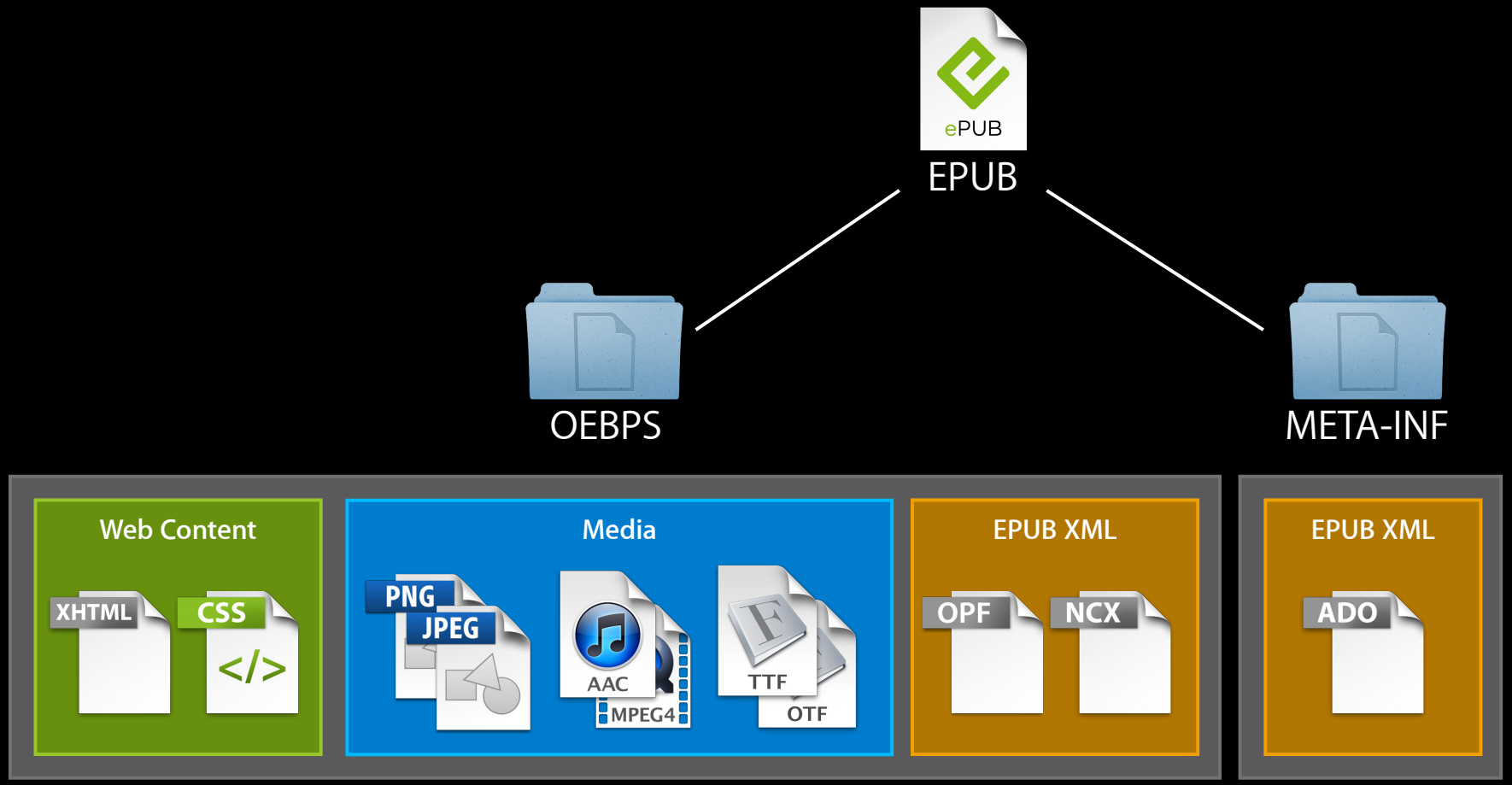
  </navPoint>
 </navMap>
```



# Contents of an EPUB



# Apple Display Option File

## Customize the iBooks experience

- Lives in the META-INF folder
- Customizations
  - Fixed layout
  - Zoom level
  - Fonts
  - Orientation lock
- Global, or device-specific

EPUB

META-INF

# Apple Display Option File

## Customize the iBooks experience

```
<display_options>
  <platform name="*">
    <option name="fixed-layout">true</option>
    <option name="open-to-spread">true</option>
    <option name="specified-fonts">true</option>
    <option name="orientation-lock">landscape-only</option>
  </platform>
</display_options>
```

# Apple Display Option File

## Customize the iBooks experience

```
<display_options>
  <platform name="ipad">
    <option name="fixed-layout">true</option>
    <option name="open-to-spread">true</option>
    <option name="specified-fonts">true</option>
    <option name="orientation-lock">landscape-only</option>
  </platform>
</display_options>
```

# Apple Display Option File

## Customize the iBooks experience

```
<display_options>
  <platform name="iphone">
    <option name="fixed-layout">true</option>
    <option name="open-to-spread">true</option>
    <option name="specified-fonts">true</option>
    <option name="orientation-lock">landscape-only</option>
  </platform>
</display_options>
```

# Apple Display Option File

## Customize the iBooks experience

```
<display_options>
  <platform name="*">
    <option name="fixed-layout">true</option>
    <option name="open-to-spread">true</option>
    <option name="specified-fonts">true</option>
    <option name="orientation-lock">landscape-only
    </option>
  </platform>
</display_options>
```

# Apple Display Option File

## Customize the iBooks experience

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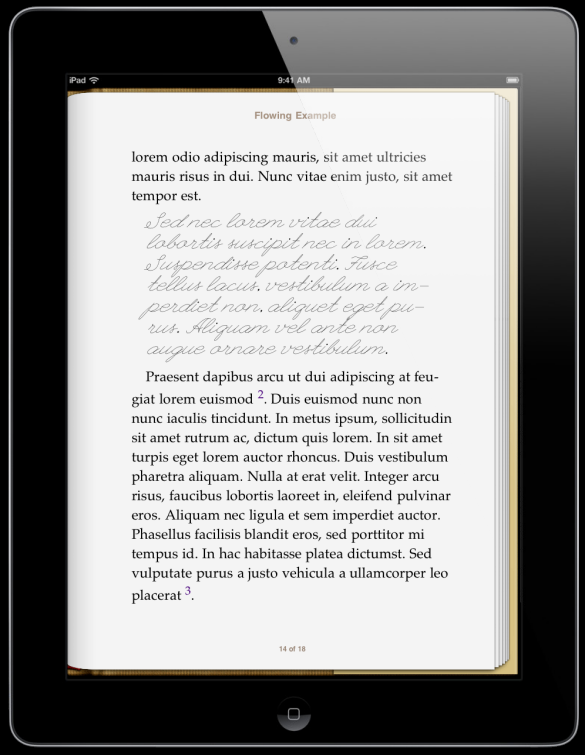
    </option>
  </platform>
</display_options>
```



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  <platform name="*">
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    <option name="open-to-spread">true</option>
    <option name="specified-fonts">true</option>
    <option name="orientation-lock">landscape-only
    </option>
  </platform>
</display_options>
```

# Summary: EPUB Contents

- Web documents (XHTML, CSS)
- Media: (images, video, audio)
- Fonts

- OPF file: metadata, manifest, reading order
- NCX file: table of contents

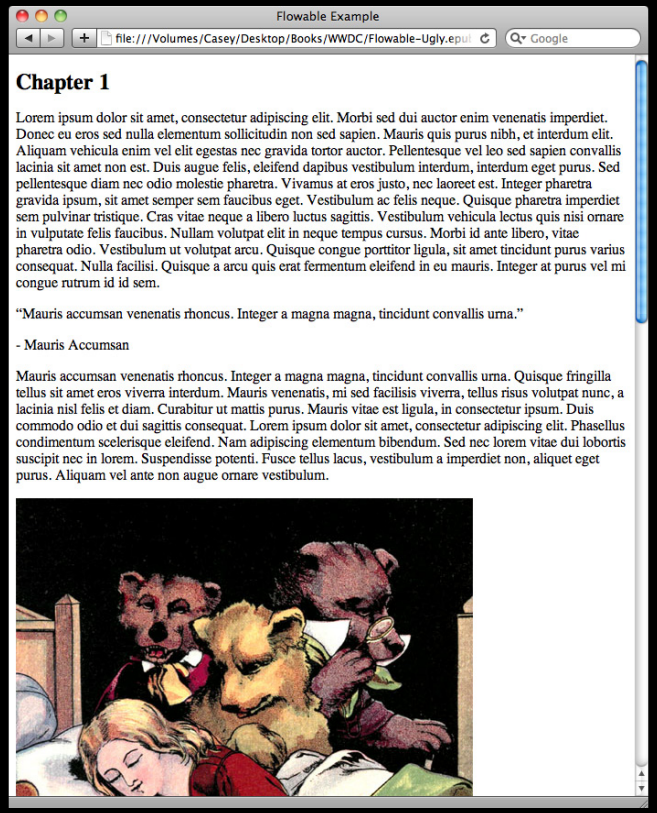
- AppleDisplayOptions

# Flowing Books

## Flexible layouts with user control

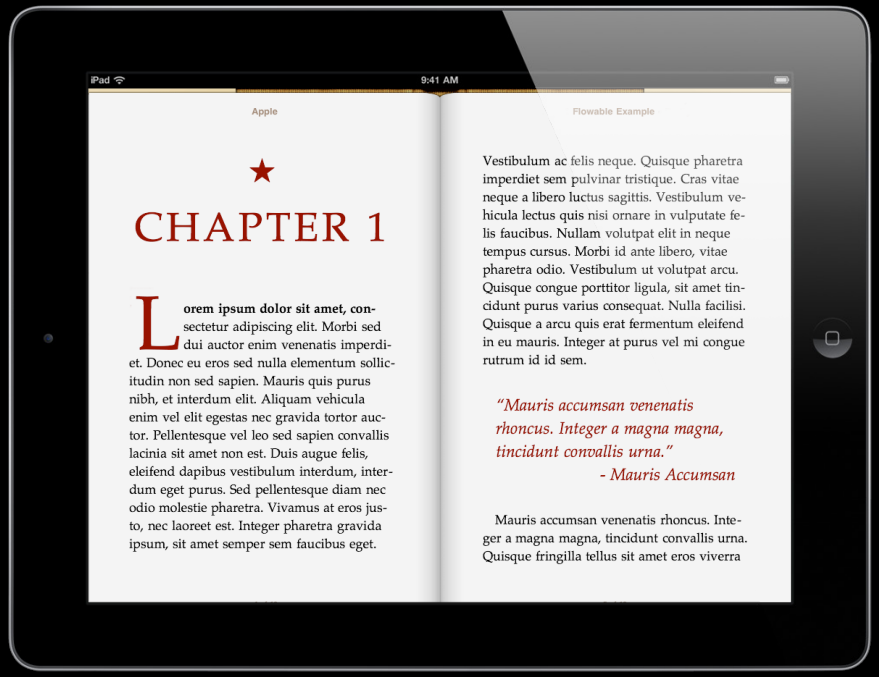
# Flowing Books

## Best format for text-heavy books, novels



# Flowing Books

## Best format for text-heavy books, novels



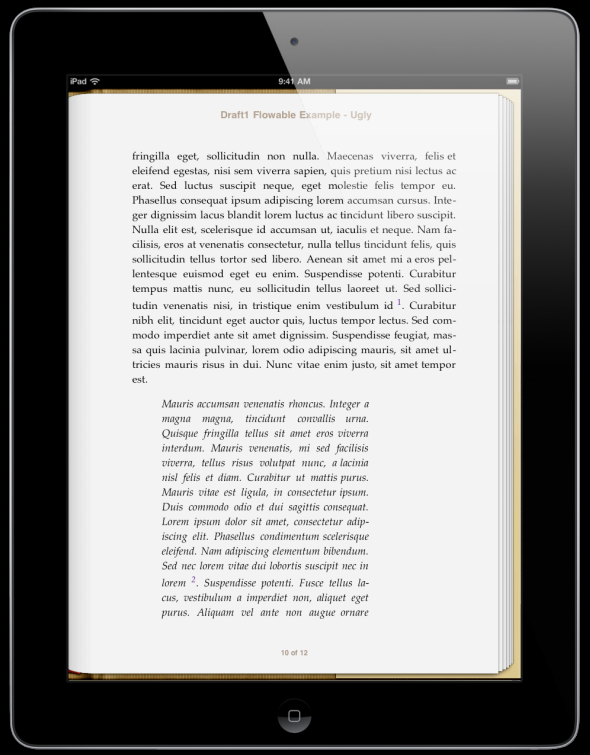
# Flowing Books

- Create stunning text
- Embed fonts
- Incorporate auxiliary content
- Enhance books with audio and video

# Perfecting Flexible Layout with CSS

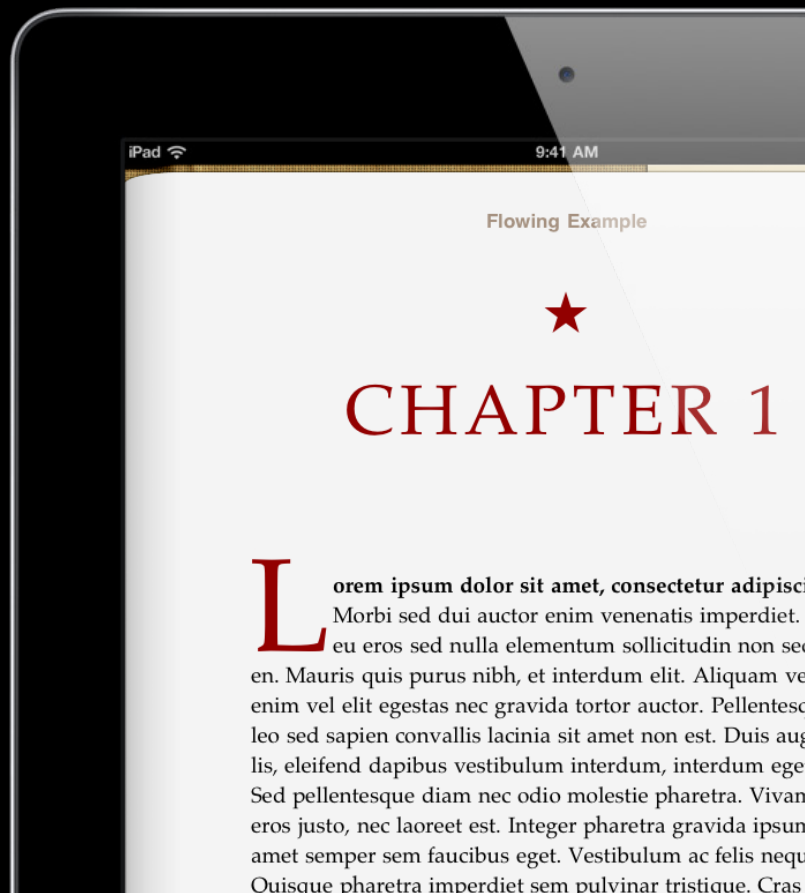
- Width in % (not pixels)
- Font size in ems

```
.quote {
    font-style: italic;
    font-size: 1em;
    width: 90%;
    margin: 0 auto 0 50px;
}
```



# Styling Flexible Layout with CSS

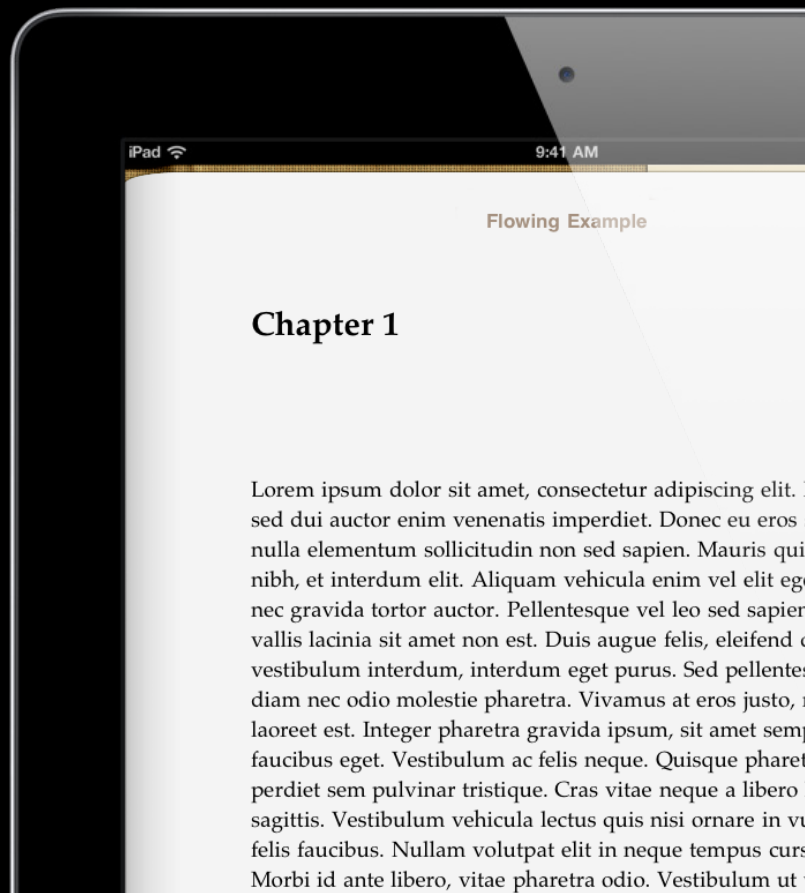
- Pseudo-class
  - :first-of-type
- Pseudo-element
  - ::first-line
  - ::first-letter
  - ::before



# Styling Flexible Layout with CSS

## Pseudo-class

```
.chapter > p:first-of-type {
    margin: 20% 0 0 0;
}
```



# Styling Flexible Layout with CSS

## Pseudo-element

```
.chapter > p:first-of-type::first-letter {
    font-size: 6em;
    color: red;
    float: left;
    line-height: .5;
}
```

# Styling Flexible Layout with CSS

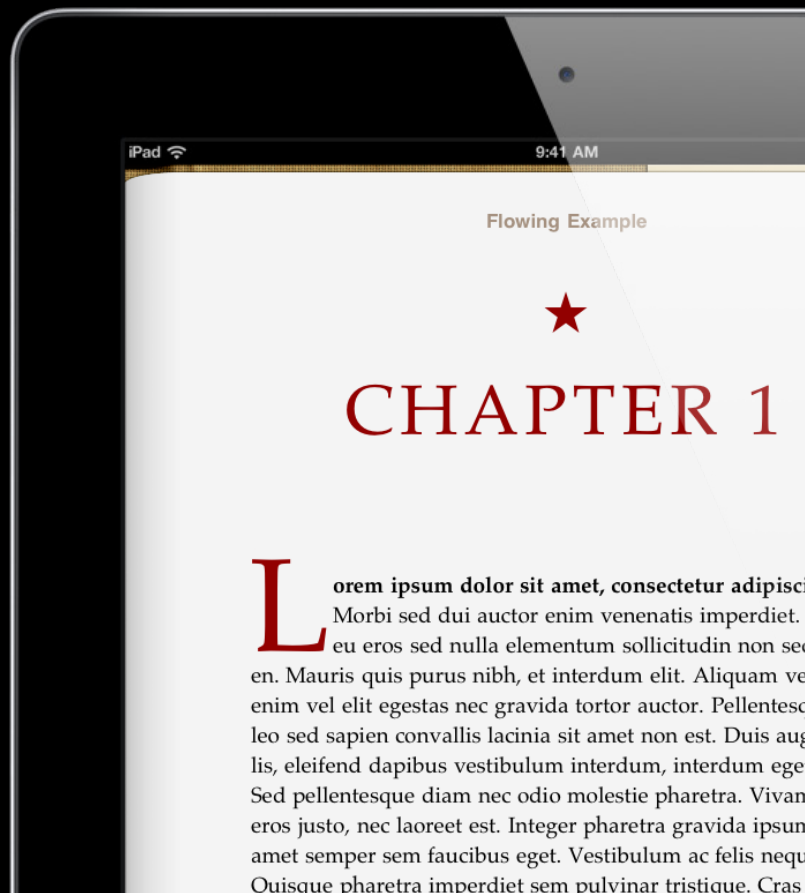
## Pseudo-element

```
.chapter > p:first-of-type::first-line {
    font-weight: bold;
}
```

# Styling Flexible Layout with CSS

## Pseudo-element

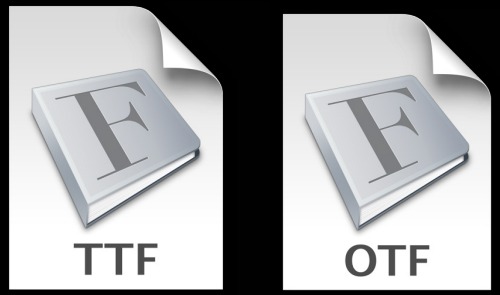
```
.chapter::before {
     content: "\2605";
     color: red;
     font-size: 2em;
}
h1 {
     color: red;
     font-size: 3em;
     text-transform: uppercase;
     margin: .5em 0 0 0;
     text-align: center;
}
```



# Fonts

## Add character to your books

- System fonts
  - 60 font families on iOS
  - Embedded fonts
  - OpenType (.otf) or TrueType (.ttf)
  - “Font mangling” optional
  - Verify usage rights

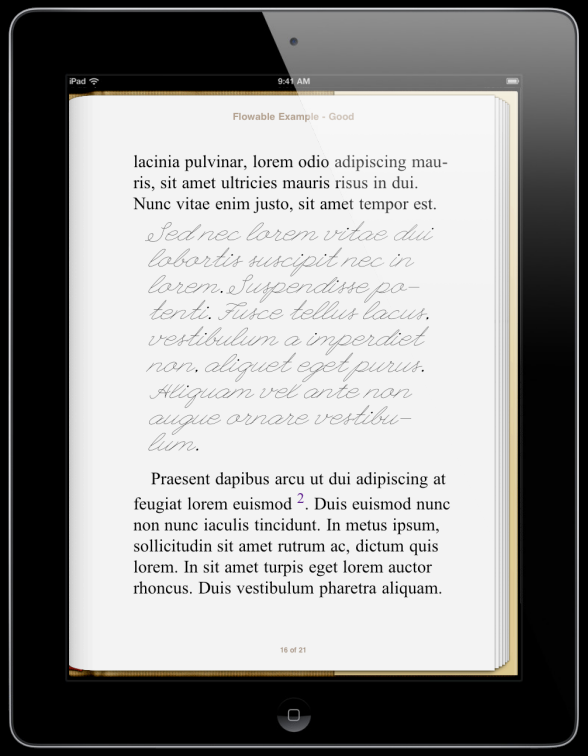


# Embedding Fonts

- System fonts
- Embedded fonts

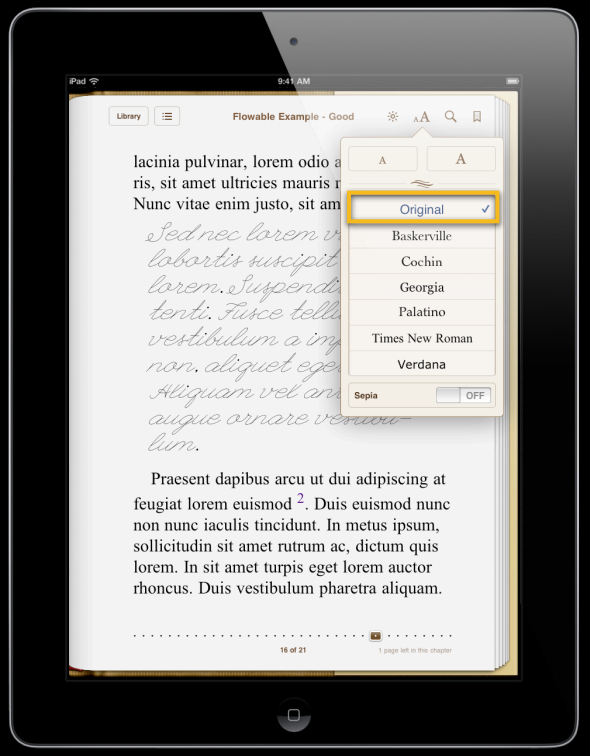
```
p.handwritten {
    font-family: "LeagueScript";
}


@font-face {
    font-family: "LeagueScript";
    src: url(../fonts/LeagueScript.otf);
}
```



# Fonts in iBooks

- Users can change fonts
- "Original" option
  - Allow users to see your intended style
  - Set AppleDisplayOption "specified-fonts" to "true"



# Enhancing Your Books

## Going beyond text

# Nonlinear Documents

## Breaking out of the book

- Links to supplementary content
- Embed PDFs, charts, etc.
- Pan and zoom

# Nonlinear Documents

```
<html>
  <body>
    <p>...</p>
       <a href="chart.xhtml">
         <img src="images/chart.png"
         alt="chart of data"/>
       </a>
    <p>...</p>
  </body>
</html>
```

```
<html>
  <body>
    <table></table>
  </body>
</html>
```

```
<spine toc="ncx">
  <itemref idref="cov" />
  <itemref idref="tit" />
  <itemref idref="sec" />
  <itemref idref="ch1" />
  <itemref idref="ch2" />
  <itemref idref="end" />
  <itemref idref="bib" />
  <itemref idref="chr" linear="no" />
</spine>
```

# Nonlinear Documents

# Embedding Audio and Video

## Standard HTML5 tags

```
<video src="myvideo.m4v"
  controls="controls"
  poster="posterimage.jpg"
  width="300" height="200" />
```

```
<audio src="myaudio.m4a"
  controls="controls"
  width="300" />
```

# Embedding Audio and Video

## Standard HTML5 tags

```
<video src="myvideo.m4v"
  controls="controls"
  poster="posterimage.jpg"
  width="300" height="200" />

<audio src="myaudio.m4a"
  controls="controls"
  width="300" />
```

# Embedding Audio and Video

## Standard HTML5 tags

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<video src="myvideo.m4v"
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```

```
<audio src="myaudio.m4a"
  controls="controls"
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# Embedding Audio and Video

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```

# Embedding Audio and Video

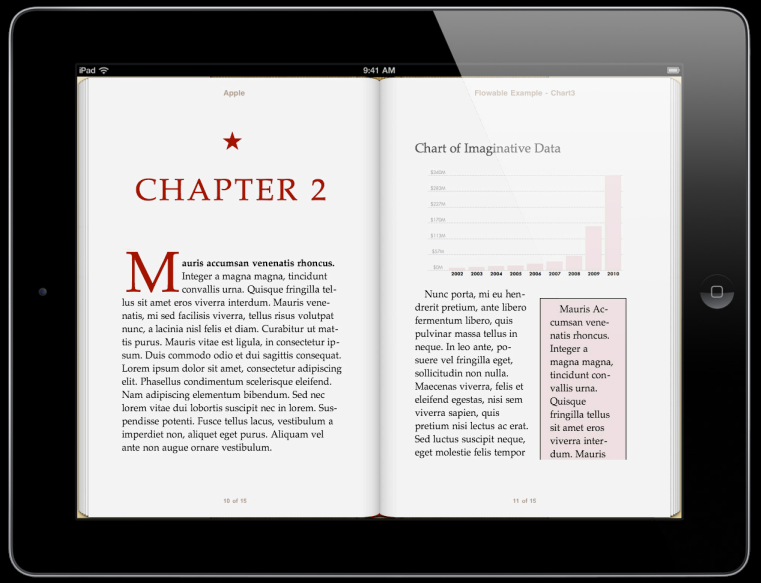
## Standard HTML5 tags

```
<video src="myvideo.m4v"
  controls="controls"
  poster="posterimage.jpg"
  width="300" height="200" />
```

```
<audio src="myaudio.m4a"
  controls="controls"
  width="300" />
```

# Flowing Layout Summary

- CSS
  - % width (not pixels)
  - em for margin and font size
  - Embed fonts
- HTML
  - Enhance with audio and video
- EPUB
  - Nonlinear documents



# Fixed-Layout Books

## Precise layout for highly formatted books

**Alan Cannistraro**
iBooks

# What Is a Fixed-Layout Book?

## Highly designed books

- Precise layouts
- Full-bleed images
- Text over images

# Fixed-Layout Books

- Set up
- Lay out
- Prepare
- Enhance

# Setting Up Your Book

- Same EPUB format as Flowing Books
- One XHTML document per page (two per spread)
- Set Viewport dimensions
- Add Apple display options

# One XHTML Document per Page

# Viewport Dimensions

- Aspect ratio of the page
- Correlates to the body dimensions
- Present and identical in every content document

```
<head>
  <title>Fixed Layout Example</title>
  <link href="css/stylesheet.css" type="text/css" rel="stylesheet"
  <meta content="text/html; charset=UTF-8"/>
  <meta name="viewport" content="width=800, height=600" />
</head>
```

# Apple Display Option for Fixed-Layout Books

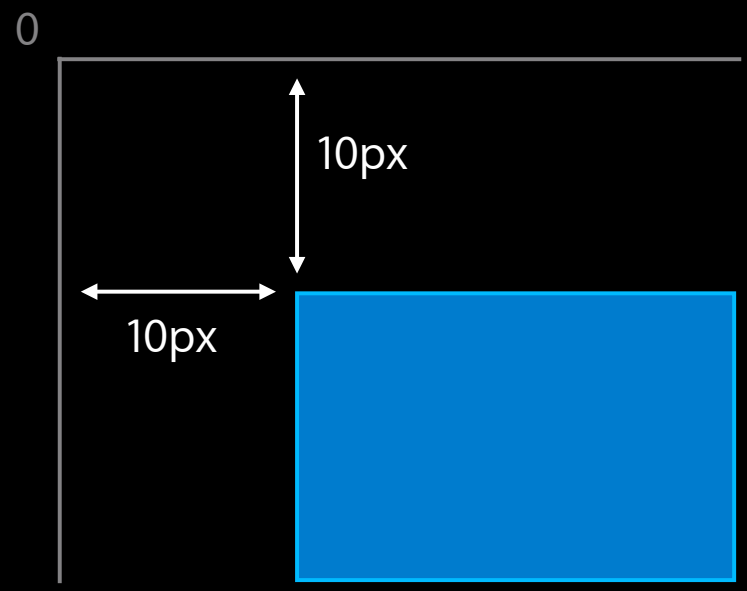
## Defining your book type

```
<display_options>
  <platform name="*">
    <option name="fixed-layout">true</option>
  </platform>
</display_options>
```

# Laying Out Your Pages

## CSS positioning

- Specify `<body>` dimensions to match your Viewport dimensions
- Work in pixels
- Absolute vs. relative positioning
  - Relative: align elements relative to its default position
  - Absolute: align elements relative to its container



# Fixed-Layout HTML

# Fixed-Layout HTML

```
<body>
<div class="page004">
      <img src="images/page004.jpg" alt="choppy surf"/>
      <p>Hasellus ultricies erat<br/>
         <span class="p2">dunt ipsum. Set velit.</span><br/>
         <span class="p2">Condimentum quis</span><br/>
         <span class="p3">fermentum elementum.</span>
      </p>
</div>
</body>
```

# Fixed-Layout CSS

## Global

```
body {
    width: 800px;
    height: 600px;
    border: thin solid yellow;
    margin: 0;
}
img {
    position: absolute;
    z-index: 0;
}
p {
    position: relative;
    margin: 0;
}
```

# Fixed-Layout CSS

## Page-specific

```
.page004 > p {
    font: 30px "Blackout-Midnight";
    color: blue;
    top: 75px;
    left: 60px;
    -webkit-transform: rotate(-10deg);
}
.page004 > p > .p2 {
    padding-left: 60px;
}
.page004 > p > .p3 {
    padding-left: 30px;
}
```

iPad
9:41 AM
HASELLUS ULTRICIES ERAT
DUNT IPSUM. SET VELIT.
CONDIMENTUM QUIS
FERMENTUM ELEMENTUM.

# Preparing Your Images

- Dimensions of images should be ~1.5 times the intended display size
  - ex: CSS = 800px, image file = 1200px
- Image limit: 2Mpx
  - ex: 1600 x 1200px
- Use jpgs; png if transparent
- Alt tags for accessibility

```
<img src="images/myimage.jpg"
alt="text describing the image" />
```

# Fixed-Layout Book Features

- Embed audio and video
- SVG
  - Curved text paths
  - Vector graphics
- CSS animations

# Fixed-Layout Books Summary

- EPUB with absolute positioning
- Enhancements to EPUB
  - Apple display options
  - Viewport
  - One XHTML document per page
- Image requirements
- Foundation for new capabilities

# iBooks 1.3

## Read aloud

# Demo

## Read aloud

# iBooks—Read Aloud

## How to sync audio and text

**Casey Dougherty**
iBookstore

# Read Aloud

- Media overlays—sync audio with text
- CSS:  style the currently playing word
- Ambient soundtrack

# How to Create a Media Overlay

## EPUB3 audio, text sync

- HTML: identify individual words
- Audio: identify start and end time for each word
- SMIL: associate text IDs with audio clips

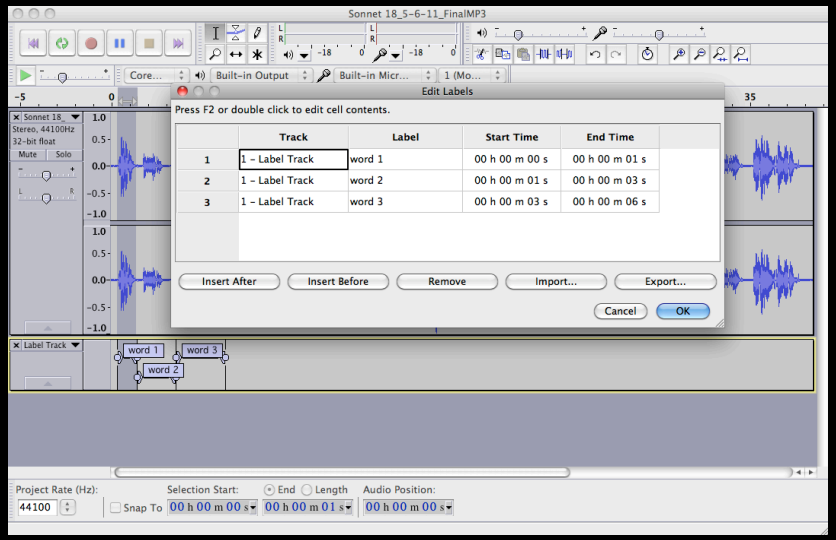
# Identify Text

- Assign unique `id` to text
- Granularity by word or sentence

```
<p>
   <span id="word1">Shall</span>
   <span id="word2">I</span>
   <span id="word3">compare</span>
   <span id="word4">thee</span>
</p>
```

# Define Audio Clip

- Mark the start and end times
- Audacity exports times

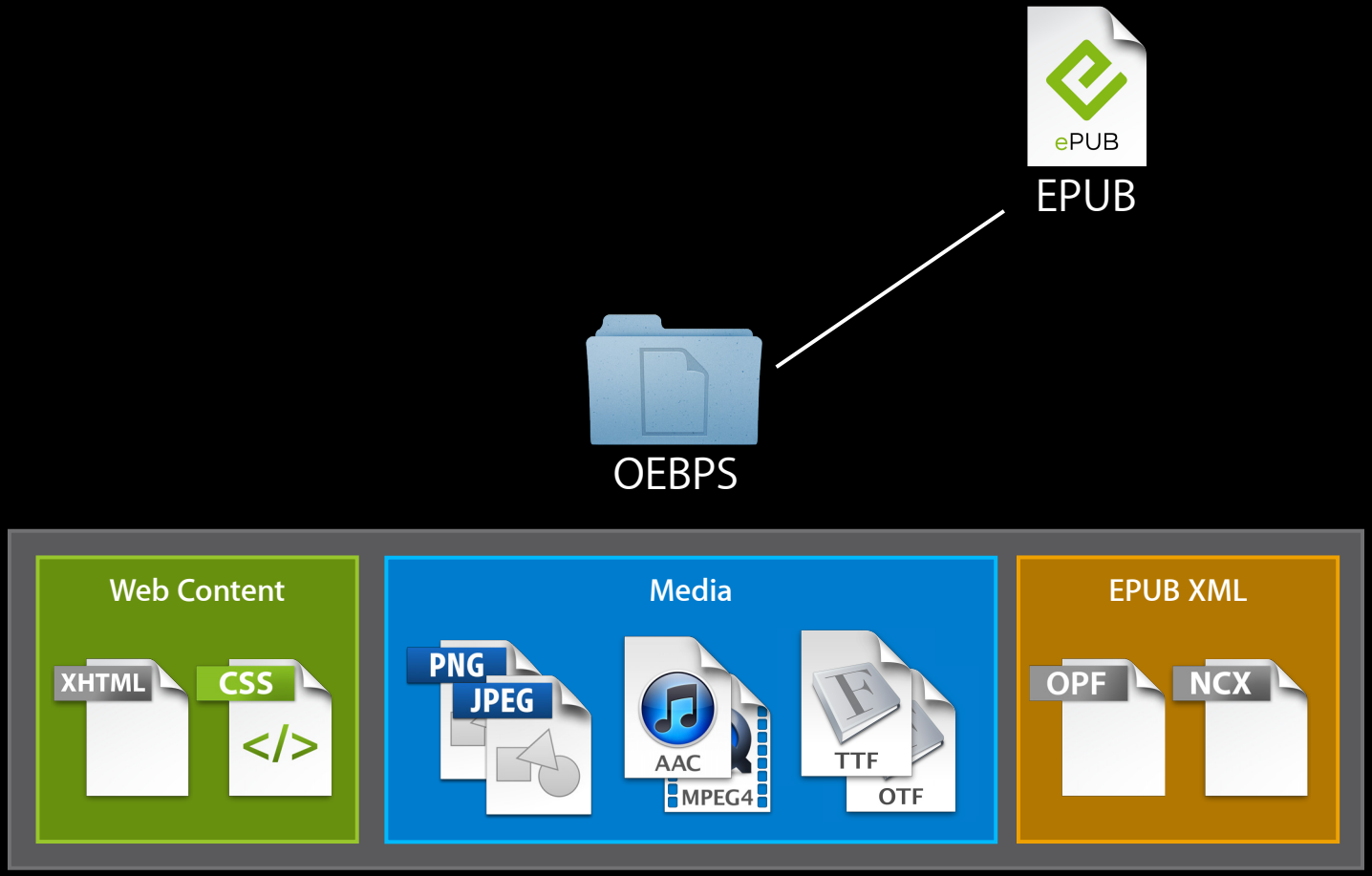


# Pair Audio and Text

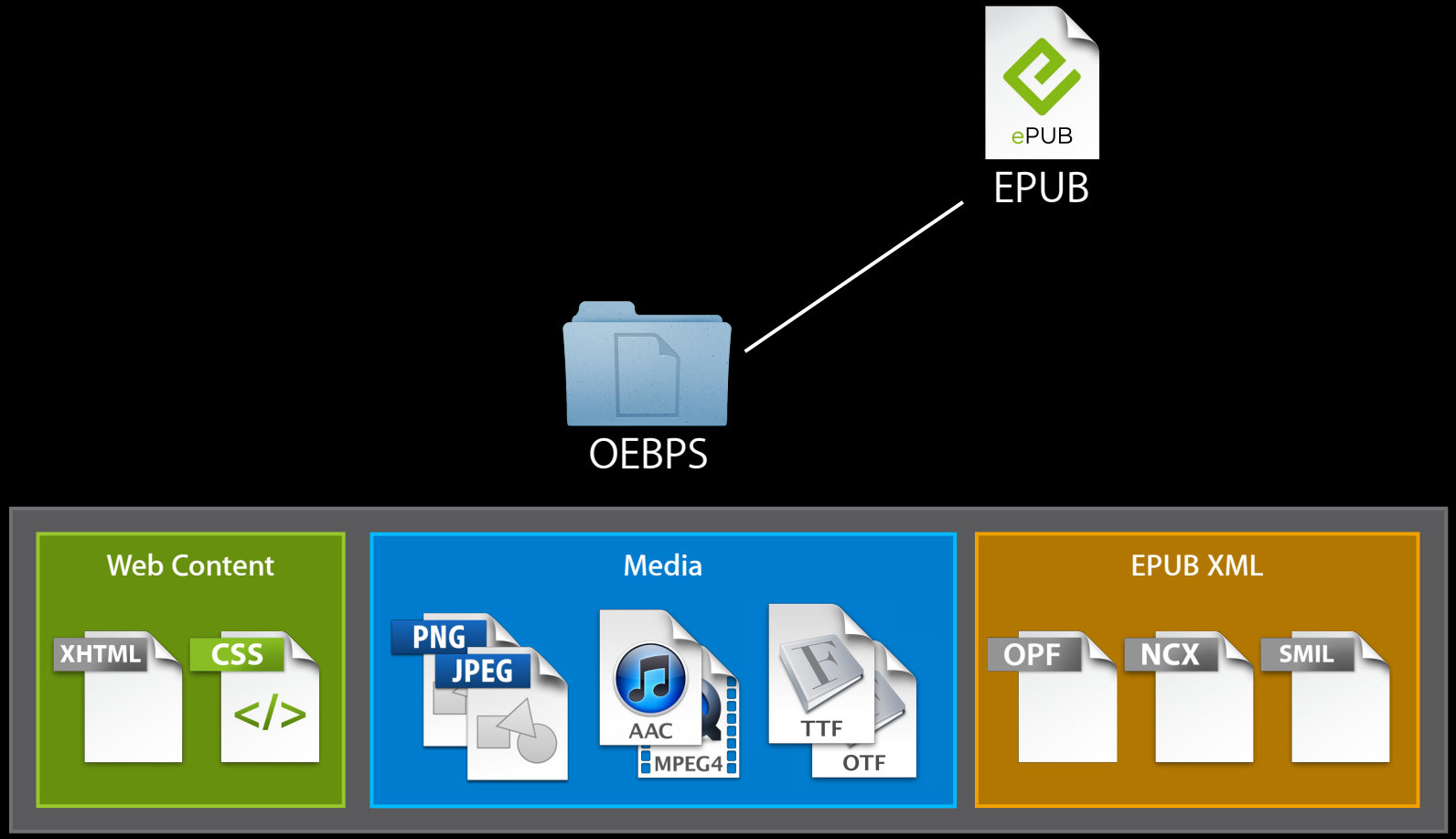
## SMIL

- Synchronized Multimedia Integration Language
- SMIL: XML used to pair text with audio
- Located in OEBPS folder

# Contents of an EPUB



# Contents of an EPUB



# Pair Audio and Text

## SMIL

- Text = URL + ID
- Audio = URL + `clipBegin` and `clipEnd`

```
<par id="par1">
  <text src="page1.xhtml#word1"/>
  <audio src="audio/page1.m4a" clipBegin="5s" clipEnd="7s" />
</par>
```

# Adding a Media Overlay to an EPUB

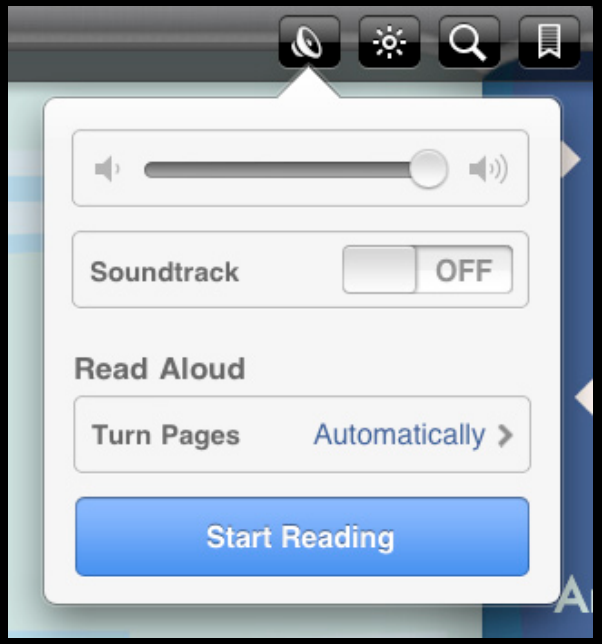
## OPF manifest

- Manifest: SMIL documents and audio files
- Media-overlay attribute: cross-reference a SMIL with its XHTML

```
<manifest>
  ...
  <item id="mo-page1" href="page1.smil" media-type="application/smil+xml"/>
  <item id="narrat" href="audio/page1.m4a" media-type="audio/mpeg"/>
  <item id="page1" href="page1.xhtml" media-type="application/xhtml+xml"
  media-overlay="mo-page1"/>
  ...
</manifest>
```

# iBooks Read Aloud

- Audio/Text Syncing
- Style word highlights
- Include soundtrack



# Add Style to Read Aloud

## CSS .-epub-media-overlay-active

- Styles the currently playing word
- Accepts standard CSS styling: `color`, `text-shadow`, etc.
- Dependent on granularity of text IDs

```
.-epub-media-overlay-active {
    color: red;
}
```

# Ambient Soundtrack

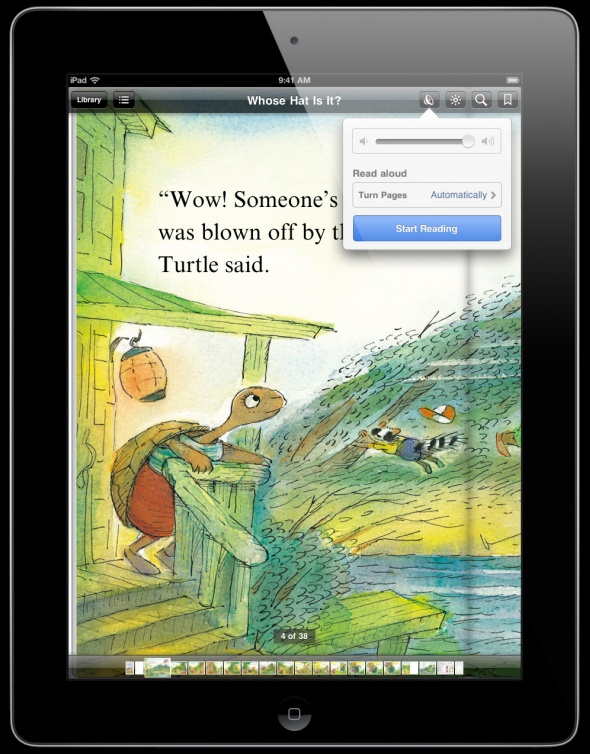
- HTML audio element + EPUB3 `epub:type` attribute
- Embed audio in every content document

```
<html xmlns="http://www.w3.org/1999/xhtml"
xmlns:epub="http://www.idpf.org/2007/ops">
…
  <audio epub:type="ibooks:soundtrack" src="audio/sonata14.m4a" />
…
</html>
```

# iBooks Read Aloud

## Audio/text syncing

- Media overlays: EPUB3
- Style word highlights
- Include soundtrack



# iBooks: Summary

**Al Cannistraro**
iBooks

# iBooks

- Anyone can publish
- Standard technologies
  - HTML, CSS, EPUB
  - Easy and powerful
- Beautiful flowing and fixed layout
- Enhance
  - Audio and video
  - Nonlinear content
  - Read aloud

# More Information

**Vicki Murley**
Safari Technologies Evangelist
vicki@apple.com

**iBookstore**
ebookquery@apple.com

**iTunes Connect**
http://itunes.com/sellyourbooks

**International Digital Publishing Forum**
EPUB Documentation
http://idpf.org/epub

# Related Sessions

| | |
|---|---|
| Advanced HTML5 Media Controllers in Safari | Marina<br>Tuesday 2:00PM |
| What's New in CSS Effects and Animations | Marina<br>Wednesday 4:30PM |
| Understanding Layout and Gestures in Safari on iOS and Lion | Marina<br>Thursday 4:30PM |
| Understanding and Optimizing Web Graphics | Marina<br>Wednesday 3:15PM |

# Labs

| | |
|---|---|
| iBooks Lab | Internet and Web Lab B<br>Wednesday 4:30PM–6:00PM |

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