



Usability and accessibility in EPUB 3 and in the future of e-learning

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What are Print Disabilities?

1.114 “Print Disability” means any condition in which a user is unable to read or use standard printed material due to blindness, visual disability, physical limitations, organic dysfunction, or dyslexia. (*Google Books Settlement*)



Prevalence of print disabilities

21% of people
over the age of
50 experience
severe vision,
hearing or
dexterity
problems
(EU research)



The Aging Population

Year	Global population over 50	21% of population over 50
2000	1,080,836,770	226,975,722
2010	1,422,471,578	298,719,031
2025	2,097,792,003	440,536,321
2050	3,142,981,923	660,026,204

UN global population forecast / US Census International Data Base

Situational Disabilities

- Temporary inability to interact with the content in the reader's preferred modality
- Can affect anyone at any time
 - Inability to view screen (glare)
 - Inability to view content (cellphone screen)
 - Inability to hear sound (airplane, bus, subway)





Ebook Accessibility

The complete chain must be accessible:

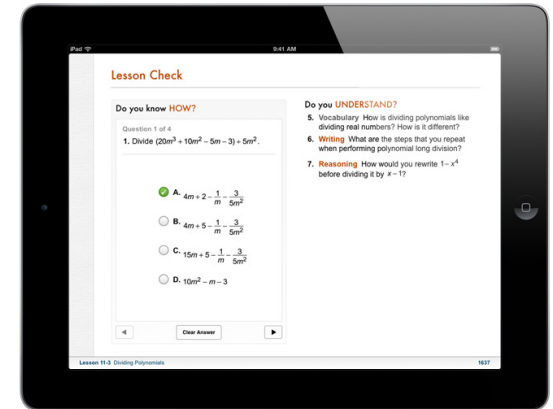
1. production: authoring, print-first or digital creation
2. ebook: format and features
3. distribution interface (retail, library, LMS, etc.)
4. reading system design and features
5. assistive technology (AT) itself



- EPUB is aligned with web accessibility
- Core WCAG requirements:
 - Perceivable
 - Operable
 - Understandable
 - Robust

<http://www.w3.org/TR/WCAG/>

- Roles, states and properties
 - Make forms and custom controls accessible
- Progressive enhancement
 - Script to enhance, not fallback
 - Content must always be readable



<http://www.w3.org/WAI/intro/aria.php>

EPUB 3 Accessibility

Text-to-Speech

Media Overlays

Web Techniques
(HTML5/WCAG)

ARIA

Rich Navigation



Metadata

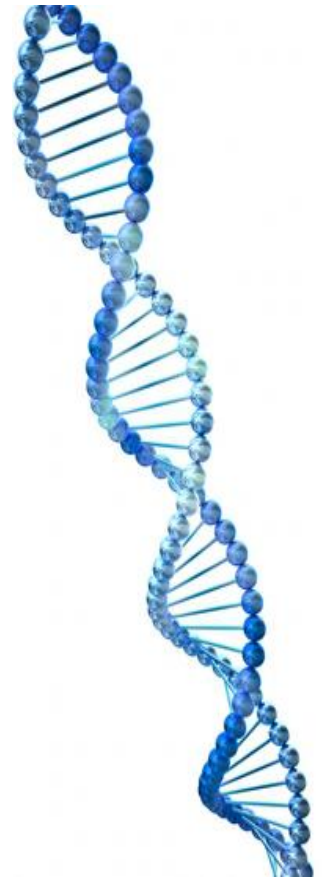
Structure and Semantics



EPUB 3: Structure and Semantics

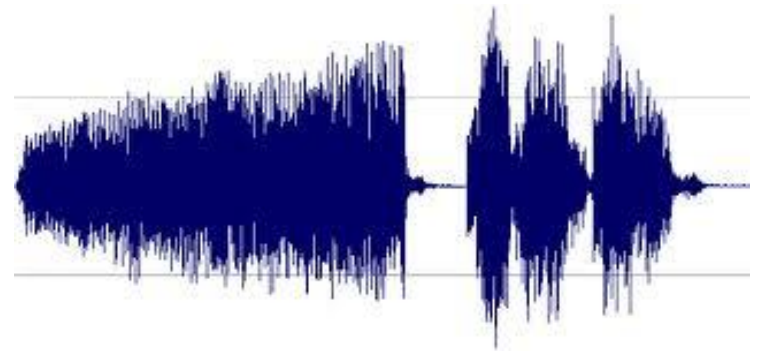
- The DNA of your document: describes the data
- Enables intelligent behaviors in reading systems
- Facilitates access to content and simplifies navigation
- HTML5 improves the base vocabulary
 - section, aside, article
 - audio, video, canvas, figure
- EPUB 3 adds annotation mechanism for domain- specific semantic inflection: *epub:type*

```
<section epub:type="chapter">  
  ...  
</section>
```



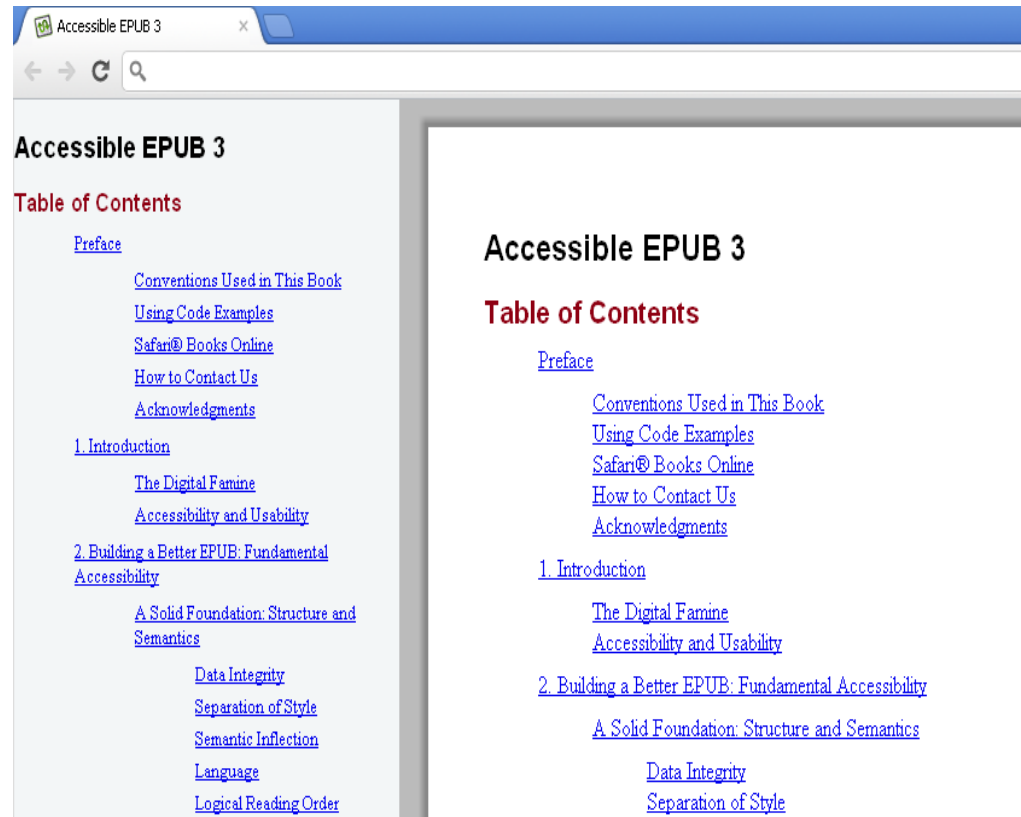
EPUB 3: Multiple Modalities

- **Media Overlays** adds DAISY-style capability of synchronizing text and pre-recorded audio.
 - childrens books, learning to read
 - Audio book & ebook: *lets the user decide*
- EPUB 3 adds ability for producers to include **TTS** pronunciation and prosody instructions:
 - PLS
 - SSML
 - CSS 3 Speech
- Lexicons can be reused



EPUB 3: Rich Navigation

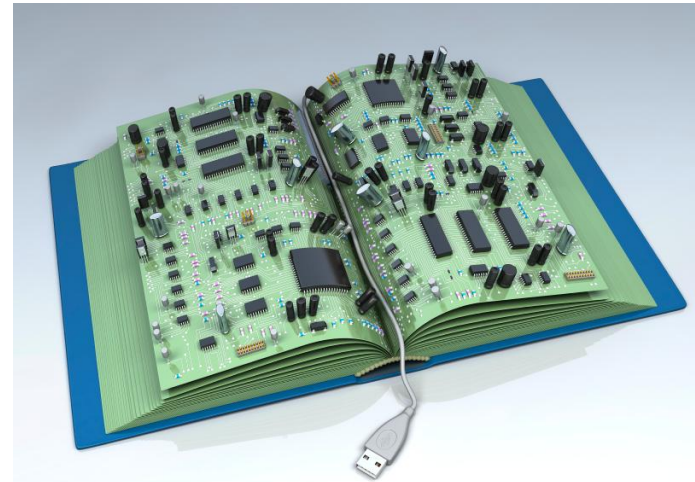
- TOC
- Pagination
- Landmarks
- Custom lists





EPUB 3: Interactive and Advanced content

- For school books and academic literature
 - MathML, SVG
 - Interactive content: WAI ARIA



EPUB 3 Audio & Video – Timed Tracks



The EPUB 3 specification is young. It was less than 2 months ago now, that the IDPF



Accessibility Metadata

- New extension to ONIX to describe accessibility features of e-books
 - codelist 196 – vocabulary for description of accessibility of an e-publication
 - works with ONIX 2.1 and ONIX 3
 - process in place for revision and extension
- ONIX records can be referenced from EPUB 3 publications and embedded within them
- Facilitate discovery of accessible publications in delivery channels

Challenges in e-learning

... at the ecosystem level:

Achieving complete chain accessibility: *all about knowledge and concrete solutions being available to tool and content providers*

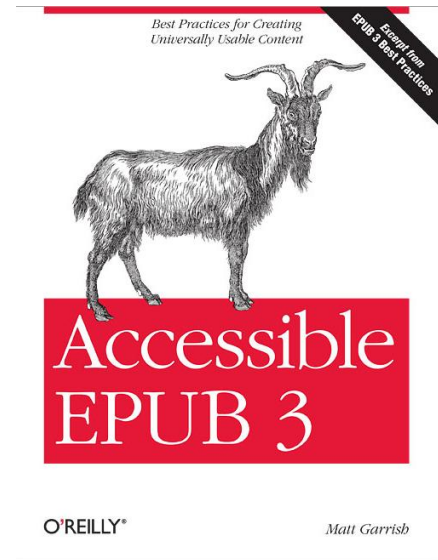
... at the content level:

- Advanced and Interactive content
 - Rendering of e.g. MathML through AT
 - Interactive content: beyond ARIA
- Synthetic speech
 - Authoring and rendering solutions for optimal pronunciation



What is IDPF doing?

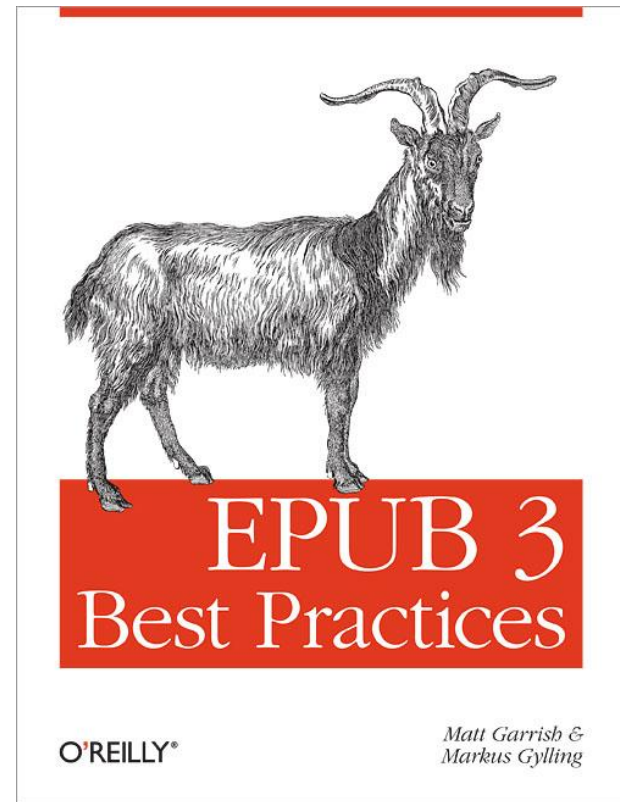
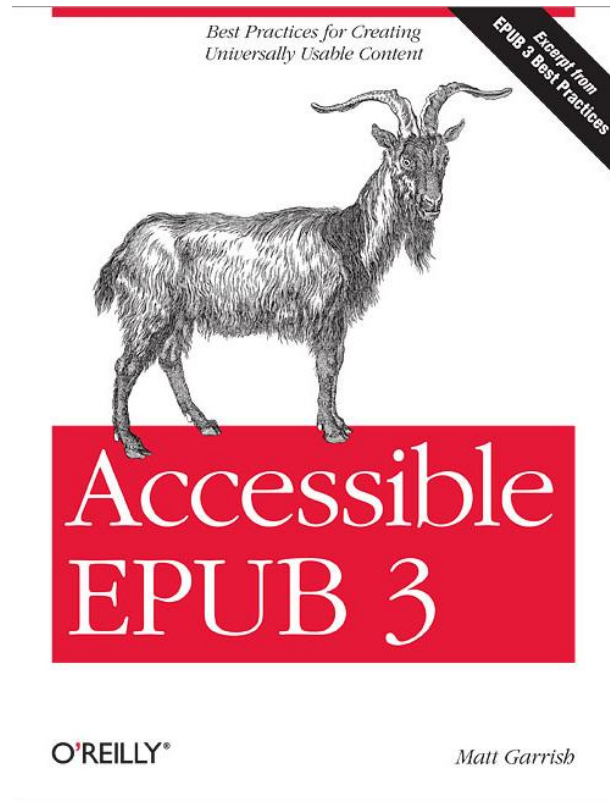
- “Accessible EPUB 3” Guidelines
- Forums on idpf.org
- Online checklist for content optimization (2013)
- In collaboration with DAISY during 2013:
 - Reading System accessibility evaluation
- Tools:
 - Radium: targeting fully accessible reference impl
 - “Preflight” interactive checking tool (proposal)
 - “Standard EPUB Widget Toolkit” (proposal)
- Standards
 - EPUB 3.X





FREE

Coming Soon



<http://shop.oreilly.com/product/0636920025283.do>



Resources

- IDPF and EPUB
<http://www.idpf.org>
- IDPF EPUB Accessibility Forum
<http://www.idpf.org/forums>
- Samples
<http://code.google.com/p/epub-samples/>
- Radium
<http://readium.org>