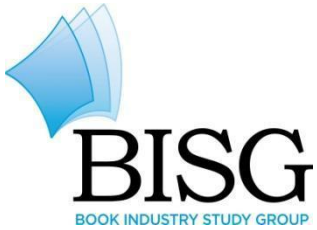

BISG Guide to Accessible Publishing

-*BISG Guide to Accessible Publishing* was written and compiled for the Book Industry Study Group, Inc. (BISG) by members of the BISG Content Structure Committee's Accessible Publishing Working Group.

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Dedicated to the memory of

ROBIN SEAMAN

whose brainchild and baby this Guide has been since she conceived it in 2015.
The publishing and accessibility communities will forever be in her debt.

Contents

About the Accessibility Cheat Sheets

The *BISG Guide to Accessible Publishing* is comprehensive—and long!

As a companion, we have created "Cheat Sheets" that briefly summarize a variety of issues and topics that are covered in more depth in the guide itself. They can be printed out and handed to somebody, posted on the wall of your cube, whatever.

Here are links to the content of the Cheat Sheets. Links to the printable PDFs will be provided when they are available.

- Accessibility (What it is and who it impacts)
- What It's Like to Read with a Print Disability
- Making the Social Case
- Making the Business Case
- Accessibility Standards
- The Legal Landscape
- Creating Accessible EPUB 3
- Accessibility Basics for Developers
- The EPUB Ecosystem
- EPUB vs. PDF
- Terms (Acronym Decoder)
- Resources

Introduction

Introduction to the 2019 Edition

The 2016 edition of this guide, entitled "The BISG Quick Start Guide to Accessible Publishing," outgrew its implication of brevity even before it was published. In an attempt to restore its original intent, it was divided into a twenty-some-page main section designed to be useful even to those new to the subject of accessibility, followed by extensive appendices that provided more detail and pointers to additional resources for those who needed a deeper dive.

It almost immediately achieved its ambition: it became a go-to reference that is still cited and used to this day, as this 2019 edition is published. But a lot has happened in those three years, and this new edition is more than just an update.

In 2016, it was clear that accessibility was becoming mainstream, and that the prospect for publications to be "born accessible" was achievable. One important factor was that the technical standards and guidelines for accessibility were beginning to converge. Today, in 2019, that convergence has largely been accomplished.

The foundation for accessibility standards is now almost universally acknowledged to be WCAG, the W3C's Web Content Accessibility Guidelines, and WCAG has been updated to WCAG 2.1. WCAG is also the foundation for the specification for accessible ebooks, EPUB Accessibility 1.0. And WCAG forms the basis of most accessibility requirements globally, including Section 508 in the United States, which was "refreshed" to align with WCAG in 2017 (among other refinements) and went into effect in 2018. At this same time, the Marrakesh Treaty was ratified by over 70 nations—including, near the end of 2018, by the United States.

Another significant development is that the file formats and markup standards for accessibility are no longer specialized. They are the file formats and markup schemes that are commonly used by publishers and their suppliers, such as HTML and EPUB.

Most importantly, awareness of the need for accessibility has grown dramatically. While we are still working toward all publications being "born accessible," that is now more than just a goal: there are concrete examples of this being accomplished in sectors as different as educational publishing, trade publishing, and scholarly publishing.

This progress has been accelerated by the wealth of helpful resources that have been developed since 2016. The DAISY Consortium has made major contributions. For example, Ace by DAISY is a free, online resource for automatically assessing the accessibility of EPUBs; Ace is linked to DAISY's

Accessible Publishing Knowledge Base, which provides detailed guidance to help publishers address the issues that Ace reports; and the website epubtest.org reports on the accessibility of EPUB reading systems. Benetech has continued to refine its Bookshare technology and to expand it internationally; enriched the wealth of services and training resources offered by the DIAGRAM Center; and developed Global Certified Accessible, which certifies a publisher's workflow as reliably producing accessible products. There are many, many more examples, as this new guide amply demonstrates.

To address the richness and complexity of today's accessibility ecosystem, this guide has been totally revamped. It is now the "BISG Guide to Accessible Publishing," and it's more than double the size of its predecessor. Does this mean the intention of being easy to use, even by those new to accessibility, has been abandoned? Not at all.

In order to create a structure that is both accessible and comprehensive, and to provide content that can be continually updated, it is now available only as the online resource you are reading. This format enables easy navigation to the various sections of the guide and extensive links both within the guide and to external resources.

It begins, following this introduction, with a section entitled "Did You Know?" that provides essential facts and issues about accessibility and the reasons accessibility is not just important but also valuable to publishers. That's followed by a section on "The EPUB Ecosystem," where this essential technology and the standards, guidelines, and resources associated with it are discussed.

Then there is perhaps the most useful section of this guide, "How to Create Accessible Content," which is structured as the "Top Tips" that publishers need to know. Each tip begins with a brief summary statement, followed by a bit more technical explanation, and includes a link to detailed code examples. Guidance on "How to Set Up Internal Teams and Processes" is then provided, followed by an extensive and thoroughly updated section devoted to "Legal Requirements."

Finally, a "Glossary" provides plain-English explanations of terms used in the guide, and a "Resources" section provides an extensively interlinked compendium of the wealth of resources and organizations available.

As a companion to the full guide, BISG has also published a group of "Cheat Sheets" that are short, pithy, engaging documents explaining a variety of the subjects that are treated more extensively in the guide itself. They're designed to provide quick talking points in a format that can be printed out and posted to a bulletin board or the wall of a cube. Their content is reproduced at the end of this guide in order for that information to be in a fully accessible form as well.

Despite doubling in size and richness, this 2019 edition of the guide fundamentally adheres to the vision of its predecessor—to be the go-to resource both for beginners and for the ever-growing cohort of practitioners who are all working toward a common goal: making publications "born accessible." The

publications everybody gets should have the features those needing assistive technology (AT) require, and they should be produced by standard workflows, not require "remediation" to make them accessible.

Maybe someday we'll be able to stop describing publications as "accessible," because it will be taken for granted. It's hoped that this guide helps us get there.

Introduction to the 2016 Edition

The issue of accessibility for publications is almost universally acknowledged as important and even urgent, but it is so complex that publishers, developers, and others in the publishing ecosystem often don't quite know where to start. There are a multitude of resources available (most of them excellent, many quite technical, and some well-intentioned but unfortunately contradictory)—so many, in fact, that it is hard to sort out which ones are the best fit for a given person or situation.

This "BISG Quick Start Guide to Accessible Publishing" is designed to be that good place to start. It is written and organized in a manner that provides both a brief, high-level overview of the key issues that everybody, from executives to production staff, needs to understand, as well as more detailed guidance and resources for developers, legal staff, and managers in editorial and production roles.

Creating born-accessible books should become the norm—and today's standard publishing technologies make this easier to accomplish than ever before. Born-accessible content not only ensures that users of all abilities can enjoy digital products; it also means that those digital products are more accessible, more logically organized, and easier to use for anyone. And it enables more ebook reading devices and platforms to do a better job of presenting those digital products.

Literacy and access to information underpin many of our most fundamental rights and values—education, employment, social inclusion, democracy. People with disabilities should have an equal opportunity to participate fully in society, and this includes having equal access to content at the same time and for the same price as everyone else.

Mainstream ebook reading system developers have embraced accessibility and are incorporating accessibility features at a rapid pace, taking advantage of the opportunities that the EPUB 3 format provides.

This is a critical and hopeful time, when technology and massive industry shifts are mitigating the constant catch-up effort that had for so long limited access and required so much extra work to create accessible content. When all content that's born digital is also born accessible, the dream of equal access to information for everyone will be a reality.

Did You Know?

Accessibility Facts

- There are over 54 million Americans with disabilities.
- They, and their immediate friends and family, have a disposable spending power of over $220 billion.
- People with disabilities make up 15% of the world's population, and some of the assistive technologies marketed to people with disabilities can also be sold to the other 85% of the population that is situationally challenged by their environmental conditions, at work and at play. For instance, the large numbers of people who benefit from TV captioning and from the speech-recognition capabilities of Siri (originally developed by SRI as an accessibility feature) proves that there are huge market advantages in making content accessible for the 85% of the market that's not disabled. Big mainstream product advances often come from unforeseen uses.
- Currently fewer than 5% of books published in the United States are available to people with print disabilities (those who have difficulty accessing printed books because of visual difficulties, dyslexia, mobility impairments, and other disabilities), and that number is closer to zero in the developing world.
- There are more people with print disabilities globally than the total print sales for the Twilight and Harry Potter series combined.
- At any moment, any one of us can become a person with a disability. A broken arm from a skiing accident; normal, age-related vision loss; even simple arthritis can make it hard to access traditional print content.
- Ebooks are not automatically accessible.

Accessibility Requirements

- People with print disabilities need:
    - markup in the EPUB file tagging headings, footnotes, sidebars, or other text elements;
    - structure to enable proper navigation through an ebook so that they can move efficiently through the content; and
    - "text-to-speech" (TTS) enabled within the content so that assistive technology (AT) can be used (the term *assistive technology* refers to both hardware and software).
- For blind users, a book's images need to be described or they're "invisible."
- For users with severe dyslexia, word-by-word highlighting synchronized with synthetic or narrated speech provides a powerful reading experience.

- For people with mobility impairments who may not be able to hold a book or turn a page, highly structured content enables efficient navigation through a text using special AT devices.

Accessible Content Creates Value

Content that is more usable is more valuable: the feature that's required for a person with a disability is a value-add for the person without a disability. The evolution in laptops, tablets, phones, and smartwatches shows that the way content is consumed is changing. Ensuring that content is accessible to those with vision, hearing, physical, and cognitive disorders makes it easier for everybody to navigate and consume.

Accessible Content Yields Value for Your Business

The potential market for accessible content will only continue to grow. Over 30% of the population in 64 countries will be over the age of 60 by 2050 (Gartner.com), and 21% will have reading impairments. Many people do not self-identify as having a disability but, for example, find large text easier to read. It makes great business sense to make the most of this market. In addition, publication sales can, in fact, hinge on whether content is accessible. Increasingly, institutions such as colleges and universities are required to give purchasing preference to content that is accessible.

Organizations can capitalize on the business—and social—opportunities that born-accessible content offers by establishing accessibility as fundamental company policy and appointing in-house advocates who can help establish strategy, organize training, and take responsibility for communicating the message about the importance of accessible publishing.

Here are some of the ways creating accessible content can add value to businesses:

Reaching an Untapped Market

One in eight people struggles to read conventional print. Publishers and content creators are leaving money on the table by not making their content accessible to all users, such as aging baby boomers, foreign language learners, struggling readers, and learners with ADHD and autism—individuals with "invisible" disabilities. Together with those who are blind and vision-impaired, dyslexic, or mobility-impaired, they create a huge market opportunity.

Making Content More Discoverable

Adding accessibility metadata using ONIX, Schema.org, or the Learning Registry makes content more discoverable on the web and in online repositories. Simple adjustments to metadata can yield great returns for discoverability. Transcripts make video content searchable; alternative text (alt text) makes image content searchable. These same advantages manifest themselves internally as well, making valuable company intellectual property much more discoverable within content management systems and databases, and therefore more readily leveraged for reuse, revision, and repurposing.

Streamlining the Production Workflow

EPUB 3 is flexible. When publishers create each title as one well-styled and accessible EPUB 3 file it can be delivered to all their distribution channels. The resulting savings in cost and time will redirect both budget and staff toward higher-value activities.

Avoiding the Cost of "Retrofitting" Content, and Appealing to All Learners

Most educational content today is not accessible upon publication, requiring that publishers either create a separate product with some degree of accessibility or that schools, disability services offices at post-secondary schools, or special accessibility service providers transform that content into an accessible form. The enormous cost and burden of retrofitting complex educational content is an ongoing challenge in the educational publishing world. Publishers should consider using the education profile of EPUB 3 to build educational content that is born accessible (accessible from the ground up). Importantly, well-designed, flexible content allowing multimodal learning offers users with different learning styles a variety of effective ways to engage with content.

The EPUB Ecosystem

What is EPUB?

The EPUB specification is a distribution and interchange format standard for digital publications and documents that is maintained and managed by Publishing@W3C. EPUB defines the means of representing, packaging, and encoding structured and semantically enhanced content—including HTML, CSS, SVG, images, and other resources—for distribution in a single-file format.

EPUB, widely adopted as the format for digital publications, has the ability to offer a mainstream format that is accessible to everyone.

The EPUB Accessibility 1.0 Specification

Although EPUB includes many features that enable the production of accessible publications, it is possible to produce an EPUB file that is not accessible at all. Understanding the practices and procedures to follow to ensure that EPUB content is accessible to as broad an audience as possible can be a challenging task, as it requires an understanding of web content accessibility and how to apply those practices to the digital publishing realm.

To address this need, the EPUB Accessibility 1.0 specification formalizes a set of requirements that EPUB publications need to meet in order to be certified as accessible. It is structured so that there is a set of universal high-level accessibility requirements for EPUB files. The specification does this by building on the W3C's Web Content Accessibility Guidelines (WCAG), establishing how the key principles—that content be Perceivable, Operable, Understandable, and Robust—apply to EPUB publications. It also adds new success criteria for features that are unique to EPUB publications, such as for page numbering and media overlays. In addition, it introduces a set of metadata requirements that describe the accessibility of the publication, using the schema.org accessibility properties.

The EPUB Accessibility 1.0 specification does not provide a prescriptive set of markup rules, but by addressing the needs of readers at the level of necessary principles for reading, it guides content creators in how to construct accessible materials.

In order to create accessible EPUBs, content providers are encouraged to take advantage of the accessibility features available within this specification as a baseline requirement for their publications.

EPUB Accessibility Techniques

The EPUB Accessibility Techniques document complements the EPUB Accessibility 1.0 specification—it describes ways to apply certain WCAG accessibility techniques (those that focus on individual web pages rather than publications) to EPUB and adds techniques for practices unique to digital publishing. This techniques document identifies specific practices and how they might be implemented within the various versions of EPUB.

The techniques document provides practical guidance that content creators need to solve common accessibility problems in their content. It can be referenced for practical solutions to meeting the higher-level principles and success criteria required of the EPUB Accessibility specification. The techniques are intended to supplement those provided in WCAG, and both documents should always be referenced when encountering accessibility concerns.

Advisory in nature, these techniques are intended to help content creators develop EPUB publications that conform to the EPUB Accessibility 1.0 specification.

The Digital Publishing WAI-ARIA Module

The Digital Publishing WAI-ARIA Module (DPUB-ARIA) adds an additional layer of publishing semantics to the W3C's Accessible Rich Internet Applications (ARIA) specification. These semantics enable reading systems to provide assistive technologies with additional information about the structures being represented, which in turn allows that information to be conveyed to readers to enhance their reading experience.

DPUB-ARIA semantics are used with the HTML role attribute to augment various HTML tags. It is important to ensure that the semantics are used properly and according to their definitions, as their misapplication can actually reduce the accessibility of the content.

EPUB 3 introduced an attribute named epub:type to address publishing semantics, but this attribute supplies information only for reading-system use (e.g., to enable pop-up footnotes). To maximize the usability of content for all readers, it is recommended that the two attributes be used in coordination with each other.

Ace by DAISY

Ace by DAISY is a free, open-source EPUB accessibility checking tool that has been created to assist in the evaluation of conformance to the EPUB Accessibility 1.0 specification. Ace is able to test EPUB publications for a variety of issues that can be reliably flagged as problematic and produces an easy-to-read report of violations, including where to locate the problem, tips on how to correct it, and links

to more in-depth information in the Accessible Publishing Knowledge Base. The tool also produces a variety of data visualizations to aid the manual inspection process (e.g., the alternative text provided for images and the hierarchy of headings used in the publication).

Designed to assist content providers at any stage in their workflow, Ace by DAISY will make it easier to produce higher-quality, more-accessible EPUB content files by performing a variety of automated checks and producing a list of violations that need fixing and data visualizations to aid the manual inspection process. Ace by DAISY can be used as a standalone tool or can be integrated as a third-party component in broader publishing workflows or authoring processes and integrated into publishing software.

The Ace tool is intended to be used in conjunction with the SMART tool when evaluating an EPUB publication for conformance with the EPUB Accessibility 1.0 specification, as many accessibility requirements cannot be verified by a machine alone.

SMART: Simple Manual Accessibility Reporting Tool

Designed to be used in conjunction with Ace by DAISY, the SMART tool simplifies the manual verification process required to certify that content conforms to the EPUB Accessibility 1.0 specification. It provides a comprehensive list of success criteria that the content has to meet and includes instructions on how to understand and implement the necessary requirements.

The tool also includes a basic visualization of the accessibility metadata properties and values to help evaluators produce the necessary accessibility metadata. After completing an evaluation, the tool offers the option to produce detailed conformance reports that can be published to the web, distributed with the EPUB, or shared privately with publishers. SMART is available to vendors and publishers via DAISY partners.

Accessible Publishing Knowledge Base

The Accessible Publishing Knowledge Base is a practical resource for EPUB technologists who need to solve the accessibility issues they encounter. It provides best practices for creating accessible digital publications with a specific focus on EPUB. Easy to navigate, this directory is organized by topic area and structural requirement to simplify finding the information you need.

Each section of the site identifies a specific issue that needs to be considered when creating accessible content and provides precise techniques that can be followed. Examples are also provided, as well as explanations of why the practices matter and how they affect usability.

The knowledge base is also the key reference for both the Ace and SMART tools, providing solutions for

the issues that both tools identify. It can be used as a reference for any HTML-based format.

Accessibility Testing of EPUB 3 Reading Systems

The objective of testing EPUB reading systems is to evaluate the accessibility of EPUB 3 reading systems through a crowd-sourced approach in order to help reading system developers improve the accessibility of their products, with the goal that reading systems should at minimum support the features listed in the EPUB Accessibility 1.0 specification.

Testing also helps learning institutions and end users by identifying the reading systems that work best for their accessibility needs. It also allows content developers to check the level of support for various content features.

Reading system testing has been carried out by the DAISY Consortium based on a set of essential and advanced features that users require in order to successfully navigate and consume content. These tests include everything from the ability to find and open a publication in a digital bookshelf, to proper navigation of content, to text-to-speech capabilities. Cumulative and detailed results are maintained on the epubtest.org site.

Global Certified Accessible (GCA)

The Benetech GCA program helps publishers produce born-accessible content by evaluating files and providing an in-depth report on compliance and recommendations for improved accessibility strategies. Individual features are scored, and files are given a pass/fail notification. Publisher workflows and practices are crucial to certification. Once a workflow is accredited, a publisher is granted an annual subscription license to auto-certify titles produced via the successful workflow.

How to Create Accessible Content

Creating accessible content is the first step toward publishing an accessible product, and it begins with making good decisions about which tools to use and how to use them. EPUB has been widely adopted across the digital publishing industry and is the right choice for delivery of a wide range of ebooks across multiple reading platforms.

This section provides practical tips toward getting started in creating accessible EPUB files. See also the BISG's Cheat Sheet Creating Accessible EPUB 3—a super-simplified, friendly summary of the Top Tips that follow.

The Tips progress in complexity from the most fundamental aspects of accessibility to the more nuanced. Publishers should implement those they can now and put the rest on their roadmaps for future development when resources become available. Each tip links to a specification or website that offers more information about how to accomplish this step. Code samples and further information are provided for each tip.

For in-depth instructions on how to implement these tips, refer to the Accessible Publishing Knowledge Base.

Top Tips for Creating Accessible EPUB 3 Files

1. Use HTML

<code samples>

HTML tags all elements and identifies them by name, resulting in a structured document that is accessible.

To benefit all readers, publishers must make use of the native semantics of HTML, which will enable logical reading order, effective navigation, skipping, and escaping content. HTML is the starting point of accessible content and the foundation of digital publishing.

2. Use HTML headings

<code samples>

Use HTML heading tags to navigate easily through the content.

HTML headings indicate elements such as chapter titles, section headings, and titles within offset or supplementary content. They enable all users to navigate the content.

3. Use HTML tags and EPUB structural semantics

<code samples>

When creating ebooks, it is important to include semantic information to describe the content by using HTML tags to convey the purpose of the elements.

Use native HTML semantics wherever possible. Also use the EPUB Structural Semantics Vocabulary and the Digital Publishing WAI-ARIA module to identify content. For example, a section tag for the table of contents would look like *<section epub:type="toc" role="doc-toc">* and a list of definitions in a glossary would be tagged with *<dl epub:type="glossary" role="doc-glossary">*.

4. Provide complete navigation

<code samples>

It is essential to enable navigation through a book by tagging every important section of the book: chapters, sections, etc. Include a complete table of contents in the front matter, and consider smaller tables of contents at the start of each section. This is particularly important for academic, educational, and other complex texts.

All important levels of the document structure should be provided in the EPUB navigation document. Use *<section>* and *<aside>* tags in the content and the *<itemref linear="no">* tag in the manifest file to define a logical reading order. Including lower-level headings that would not typically be included in a table of contents enables users to quickly access a specific section. It is possible to accomplish a very detailed, nested table of contents and a pleasing visual display by using the hidden attributes on some levels of the TOC tree.

5. Provide content in a logical reading order

<code samples>

Text must not be presented as images, be reordered by cascading style sheets (CSS), or require scripting to be accessed. Use structural markup to define the natural reading order of the primary narrative and to distinguish secondary material such as footnotes, references, figures, and other auxiliary content.

Content must be placed in the sequence in which it is intended to be read. Do not place elements (such as sidebars and tables that are set apart from the main text flow using CSS and scripting) in a separate file or at the end of the file. Instead, placing these elements in the location where they are meant to be read will ease reading for users of assistive technologies (AT).

6. Separate presentation from content

<code samples>

Visual reading is only one way of accessing content. Do not use visual-only cues, such as colored text, font size, or positioning, as the only clue to the meaning or importance of a word or section. Do not use tables or pictures of text to control the appearance of the content. The meaning of the content should be the same with and without any styles or formatting applied.

Separating the presentation (i.e., styling) from the content allows someone to easily change how the content is presented to meet their own needs. For example, embedding a specific font and point size for the text prevents someone from using a different font, such as one optimized for dyslexia, and doesn't allow for a low-vision user to increase the size of the text.

7. Do not use images to represent tables or text

<code samples>

Content embedded in an image is not available to visually impaired readers, so tables or text should not be produced as images. Tables or text presented as images cannot be navigated by a screen reader, leaving users unable to access all of the content in a manageable way.

If the textual content of a table or image is required for comprehension of the document, use proper and complete markup for text and tabular data, including headers and scope attributes for tables. The use of HTML table markup ensures that a screen reader can navigate elements and understand the hierarchical structure within the table, such as column header information. Including "live" tables preserves the fidelity of the table when the font is increased and makes it possible to tab from cell to cell on some readers. It is recommended that for complex tables a table summary be included.

If images of text are unavoidable, provide a description and transcription of the text and use accessible SVG. Accessible SVG graphics allow text in images to be rendered in an accessible way, which has the added benefit that they can be zoomed into without pixelation. They can also make it possible to deliver tactile images electronically to blind users with appropriate devices or to help automate the creation of tactile images that can be provided to the reader with minimal human intervention.

8. Use correct markup for decorative and redundant images

<code samples>

Decorative images convey no relevant information and should be tagged as decorative so that screen readers will ignore them rather than attempt to voice information about images that contain no relevant content. Redundant images are images that have already been described in either the caption or the surrounding text and therefore do not warrant additional description.

Both decorative and redundant images should be marked up with no alt attribute (i.e., *null* or alt=""). This ensures that the user doesn't wonder if they are missing relevant information.

9. Use image descriptions for complex, content-rich images

<code samples>

If content isn't described in the surrounding text, a complex image without a sufficiently descriptive caption is useless to a blind reader. Every content-rich image should have a relevant description, caption, or, at a minimum, alternative text (alt text).

When images are not sufficiently described in the caption or surrounding text, provide a description. When the image is a link, provide <alt> text to convey the title or function. Do not use generic alt text like "image" to describe any image. See the DIAGRAM Center Image Guidelines for EPUB 3 for markup best practices. An added bonus: a well-described image adds to the pedagogical richness of the experience and is "discoverable" by search engines, both externally and within internal content management systems.

10. Use page numbers when there is a print equivalent

<code samples>

Page numbers are the primary way to navigate within a print book, so always include them when there's a print version of the title. This gets tricky with multiple digital editions and "digital first" content.

When there is a print-equivalent book it is also important to include the ISBN of the source of the page numbers in the package metadata for the EPUB as well as in the page list in the navigation document.

Page numbers are the way many people navigate within a book. For any ebook with a print equivalent, use the *epub:type="pagebreak"* and *role="doc-pagebreak"* attributes to designate page numbers. A tag for a page number might look like this: **361**.

11. Define the language(s)

<code samples>

Assistive technologies need to know both the primary language of a publication and exceptions where other languages are used.

Provide for this by including both the xml:lang and lang attributes in the relevant enclosing elements. If you use a foreign word and don't tag it as such, the screen reader will read it as if it's the language of your device. To make sure each word will be rendered correctly, specify the default language of the content in the root HTML tag for each page (i.e., *<html xml:lang="en" lang="en">*, and in the OPF file, specify the

primary language of the document (i.e., *<dc:language>en</dc:language>*). Indicate any words, phrases, or passages in a different language by using the xml:lang attribute. It might look like this: **rue Saint-Andre-des-Arts**.

12. Use the EPUB for Education profile

<code samples>

Using the EPUB for Education profile guidelines for accessibility metadata and additional semantics, such as learning objectives and assessments, ensures a richer, more accessible digital product.

The education profile of EPUB 3 was developed to enable interoperability of rich educational content. EPUB for Education provides guidelines and best practices for accessibility that are applicable to many types of publications, beyond educational resources.

13. Use MathML

<code samples>

MathML (Mathematical Markup Language) presents math as textual markup that can be voiced or described automatically. MathML makes mathematical equations accessible to everyone by eliminating the ambiguity of a verbal description of a picture.

Many books show a math equation as an image, which can't be read by a screen reader. MathML can be read by a screen reader and makes mathematical equations accessible to everyone by eliminating the ambiguity of a verbal description of a picture of an equation. This is critical for complex equations. Unfortunately, many reading systems and some browsers do not currently support MathML. When determining whether to include MathML, it is important to assess the platforms and audiences to which the content will be delivered. Currently, tests are being conducted to determine the best approach for including MathML in EPUBs with an image fallback with alt text. You can find the latest results from these tests at epubtest.org.

14. Provide alternative access to media content

<code samples>

Captions offer a text transcription of spoken dialogue or audio content to aid users who have difficulty hearing or are situationally challenged. Described video, on the other hand, contains descriptions of visual actions for users who have a vision loss.

Make sure the platforms' native controls for video and audio content are enabled by default. Provide fallback options, such as captions or descriptions for video and transcripts for audio. The Described and Captioned Media Center has two references: the Captioning Key and the Description Key. It is also

recommended that a full transcript of the captioned video be provided to aid understanding by those with a cognitive disorder or by non-native speakers.

15. Make interactive content accessible

<code samples>

Ensure that all interactive content using JavaScript or SVG is accessible.

Custom controls should fully implement WAI-ARIA roles, states, and properties, as appropriate. See EPUB Scriptable Components for more information.

16. Use accessibility metadata

<code samples>

As part of a general good practice of documenting the accessibility of your content, provide accessibility metadata in your files so end users know what features are there and search engines can discover your accessible materials. Otherwise, your customers don't know it's accessible—and *how* accessible it is. This is your chance to show off all the work you've done!

As part of a general good practice of documenting the accessibility of your content, provide accessibility features in ONIX feeds and Schema.org accessibility metadata in your files so that end users know what features are included and so that search engines can discover your accessible materials.

17. Make sure your processes support the above best practices

<code samples>

Initiate a sustained company-wide effort to make accessibility a core value in the production and dissemination of content, including development of a company policy statement to express the commitment to accessibility. Communicate best practices to all staff and vendors; follow up with a review of all vendor processes and practices.

Make sure accessibility is embedded in your workflow. When content is born accessible (created for accessibility in the first place), it becomes an organic part of your workflow, increasing quality and efficiency while avoiding the cost and disruption of remediating for accessibility after publication.

- Develop and implement accessibility guidelines and training for authors.
- Develop and implement accessibility guidelines and training for editorial and production staff.
- Discuss accessibility requirements and standards with vendors.
- Include an accessibility review in the quality-assurance process.
- Include accessibility information on your website and in appropriate marketing materials.
- Add accessibility awareness training for customer service staff.

Code Samples & Additional Resources for Top Tips

Note: The Top Tip number is indicated in parentheses. Click on the number to link to the tip in this publication. Click on the heading to link out to more information.

(1) Use HTML

By using HTML elements that are provided by default, you get accessibility practically for free, as screen readers and other assistive technologies already understand and can navigate HTML web documents. It is recommended that you separate chapters using <section> tags and paragraphs using <p> tags. Using HTML paragraphs, sections, lists and tables, asides, etc. will allow assistive technologies that already understand these elements to interact with them without you having to do anything extra to make the text accessible.

(2) Use HTML headings

Headings within a single HTML document should be tagged with descending levels of HTML heading elements, such as **<h1>**, **<h2>**, **<h3>**, **<h4>**, etc. Here is an example:

```
<section epub:type="chapter" role="doc-chapter">
<h1>Chapter 1</h1>
<p>…</p>
<section>
<h2>Sub-section</h2>
<p>…</p>
            <section>
                  <h3>Sub-section</h3>
                  <p>…</p>
            </section>
</section>
</section>
<section epub:type="chapter" role="doc-chapter">
<h1>Chapter 2</h1>
<p>…</p>
<section>
```

```
<h2>Sub-section</h2>
<p>…</p>
</section>
</section>
…
```

The EDUPUB profile also requires this same structure. You can find the most up-to-date information on the use of headings in the DAISY Knowledge Base.

There are screen reader hotkeys to jump to the next h1, h2, h3, etc., so if users want to jump to the next chapter, they just advance to the next h1 instead of having to go through all the subsections. Similarly, if you are deep within a nested subsection and want to jump to the next subsection, advancing to the next h2 will easily accomplish this if the EPUB is tagged in this manner.

(3) Use HTML tags and EPUB structural semantics

Examples:

- Use the paragraph element `<p>` for paragraph (only).
- Avoid overusing `<div>` and `<span>` where there are more meaningful HTML elements available.
- Use `<section>` for body content and `<aside>` for ancillary content when both types of text are present, such as publications with text in margins or sidebars.
- Figures that are integral to the main content of the work should be tagged as `<figure>` and figure captions as `<figcaption>`. List markup should be used for ordered (`<ol>`) and unordered (`<ul>`) list content to ensure the screen reader can identify the hierarchy of the list and its sublists.
- Use table markup; see #7 for full details on proper HTML tables.
- Use DPUB-ARIA vocabulary to semantically tag the various sections of the EPUB, such as `role="doc-chapter"`, `role="doc-footnote"`, `role="doc-glossary"`, etc.

(4) Provide complete navigation

The code excerpt below shows a table of contents file in an EPUB that includes links to all relevant chapters and sections within the text.

```
<nav epub:type="toc" id="toc">
  <h1>Table of contents</h1>
  <ol>
    <li><a href="chap1.xhtml">Chapter 1</a>
```

```
        <ol>
        <li><a href="chap1.xhtml#sec-1.1">Chapter 1.1</a>
          <ol hidden="">
            <li><a href="chap1.xhtml#sec-1.1.1">Section 1.1.1</a></li>
            <li><a href="chap1.xhtml#sec-1.1.2">Section 1.1.2</a></li>
          </ol></li>
         <li><a href="chap1.xhtml#sec-1.2">Chapter 1.2</a></li>
       </ol></li>
    <li><a href="chap2.xhtml">Chapter 2</a></li>
  </ol>
</nav>
```

(5) Provide content in a logical reading order

Example:

```
<body>

<section>

<h1>Topic Heading</h1>

<p>This is a paragraph of content about my topic</p>

<p>Here is another paragraph of content about my topic</p>

<aside>

<p>Here is content that exists as a margin note in my text.</p>

</aside>

<p>Here is the last paragraph of content about my topic</p>

</section>

</body>
```

(6) Separate presentation from content

HTML provides the structural markup:

```
<h1 class="chap">CHAPTER I<br /><span class="chapname">Under Spain and
France</span></h1>
```

The corresponding cascading style sheet (CSS) governs the presentation:

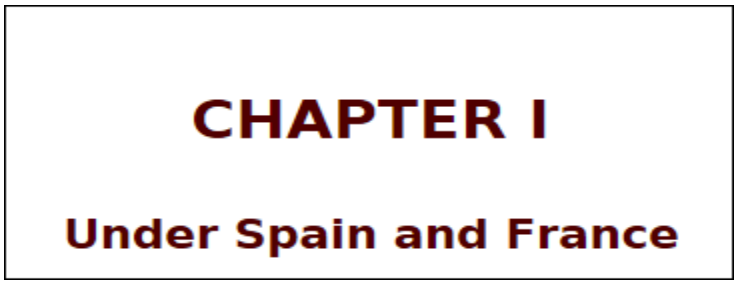
```
h1.chap {

      text-align: center;

      margin: 0;
```

```
	font-size: 2.5em;
	font-weight: bold;
	font-family: sans-serif;
	color: #500000;
}
span.chapname {
	font-size: 0.75em;
	margin-top: 1.5em;
	display: block;
	font-family: sans-serif;
}
```

The resulting rendered content:



Examples for bold and italicized content:

- Use tags to indicate all text that is to be vocally stressed.
- Use tags to indicate where importance is being conveyed.
- Use <i> and <b> tags for non-emphasized text that is semantically significant and indicates a change in tone.
- Use CSS styling for presentational bolding and italics.

Code Sample:

```
<p>The boy shouted <em>"WATCH OUT for the train!"</em></p>
```

vs.

```
<p><b>Note:</b>When cooking you should always wash your hands before you start.</p>
```

Font size:

- Do not declare absolute values in CSS size; allow the device to default and give the reader opportunity for customization.

Correct CSS:

```
h1.chap {
      font-size: 2.5em;
}
```

Incorrect CSS:

```
h1.chap {
      font-size: 11pt;
}
```

Font color:

- Important: If you override the font color using CSS, make sure that the color contrast is at least 4.5:1 for WCAG-AA conformance. If you want conformance with WCAG-AAA, then the color contrast must be 7:1. Here is a great online tool to check your color contrast.

Text in images:

- Symbols and special characters should be represented with unicode values and not inline images.

Correct:

```
<p>Until we meet again &#x2026;</p>
```

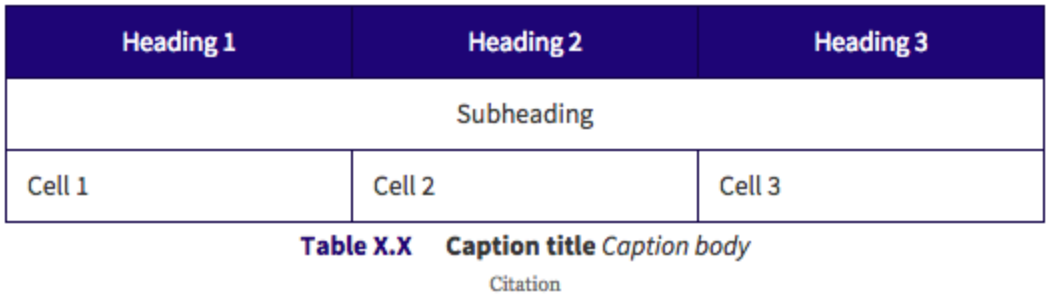
or

```
<p>Until we meet again &hellip;</p>
```

Incorrect:

```
<p>Until we meet again <img src="ellipsis.png" alt="…"/></p>
```

(7) Do not use images to represent tables



Heading 1	Heading 2	Heading 3
Subheading		
Cell 1	Cell 2	Cell 3

Table X.X **Caption title** *Caption body*

Citation

```
<table>
<caption class="table-info">
<span class="table-designation">Table</span>
<span class="table-enumeration">X.X</span>
<span class="caption-title">Caption title</span>
<span class="caption-body">Caption body</span>
<span class="caption-citation">Citation</span>
</caption>
<thead>
<tr>
<th>Heading 1</th>
<th>Heading 2</th>
<th>Heading 3</th>
</tr>
</thead>
<tbody>
<tr>
<th colspan="3">Subheading</th>
</tr>
<tr>
<td>Cell 1</td>
```

```
<td>Cell 2</td>
<td>Cell 3</td>
</tr>
</tbody>
</table>
```

(8) Use correct markup for decorative or redundant images

Code sample:

```
<img src="border.jpg" role="presentation" alt="" />
```

(9) Use image descriptions for complex, content-rich images

It is often necessary to provide a longer, more detailed image description as well. The method for providing long descriptions of images and other media is one of the great debates of accessibility markup. A conclusive decision will hopefully be reached soon. See the epubtest.org's accessibility results on extended descriptions as this work is currently being tested. Until then, here are some options:

ARIA describedby:

Note: This technique is no longer recommended. This was the recommended solution for short extended descriptions, which a lot of reading systems still support, and which, for simple text descriptions, could be still a viable solution. Using this technique is no longer recommended because aria-describedby is only meant for short plain text, and anything more complex, such as tables, lists, links, etc., will be flattened and not spoken correctly by assistive technologies.

```
<figure>
<img aria-describedby="capt_image07" src="images/alamo.jpg" alt="A modern view of the
      Alamo Plaza, San Antonio"/>
<figcaption>
<p>A modern view of the Alamo Plaza, San Antonio</p>
<aside id="capt_image07">
<p>The picture shows a color view of the Alamo plaza from the early 21st century. The
                  Alamo itself is centered in the frame with trees on the sides.</p>
</aside>
</figcaption>
</figure>
```

Extended description via hyperlink:

Note: This technique links the extended description via a normal hyperlink to somewhere in the EPUB (usually at the end of the chapter). It is important that you also include linking back to the original image. There may potentially be issues with some reading systems if the extended image descriptions are located in a different file (e.g., in an appendix).

<figure id="fig-01">

<img src="graphics/water-cycle.jpg"

alt="The hydrologic cycle, showing the circular nature of the process as water evaporates from a body of water and eventually returns to it"/>

<figcaption>

The hydrologic cycle. **Description**

</figcaption>

</figure>

…

<h2>Image Descriptions</h2>

<aside **role="doc-footnote" id="desc-01"**>

<a role="doc-backlink"

href="#fig-01">Figure 1. — The diagram shows the processes of evaporation, condensation, evapotranspiration, water storage in ice and snow, and precipitation. A large body of water …

</aside>

<details> and <summary> linked to by ARIA details:

Note: aria-details was just introduced in ARIA 1.1 and will take some time to be fully implemented by reading systems. Having aria-details link to an HTML Summary/Details directly below the image is currently the best technique for adding extended image descriptions.

```
<figure>
<img aria-details="capt_image07" src="images/alamo.jpg" alt="A modern view of the
      Alamo Plaza, San Antonio"/>
```

```
<figcaption>
<p>A modern view of the Alamo Plaza, San Antonio</p>
<details id="capt_image07">
<summary>Extended description</summary>
<p>The picture shows a color view of the Alamo plaza from the early 21st century. The
                  Alamo itself is centered in the frame with trees on the sides.</p>
</details>
</figcaption>
</figure>
```

(10) Use page numbers when there is a print equivalent

Use the epub:type="pagebreak" and role="doc-pagebreak" attribute to designate page numbers.

A tag for a page number might look like:

```
<span id="page361" epub:type="pagebreak" role="doc-pagebreak" title="361"/>
```

There are several ways to label page numbers. The method above is considered best practice and ensures that the page numbers do not display unless the reading system generates numbering.

(11) Define the language(s)

Each HTML document in the EPUB should include the language definition for the default language used—for example: `<html xml:lang="en" lang="en">`. Indicate phrases or passages in a different language by using these attributes on whatever internal elements need them—for example: `<i xml:lang="fr" lang="fr">Il n'y a pas de fumée sans feu.</i>`. **Note:** These can be used on both block and inline elements within the document.

Note: It is not necessary to tag every English word that has an accent or has a foreign language origin, like café, resumé, mea culpa, etc. If a whole passage in a foreign language appears in an English text or if a word or phrase does not commonly occur in English, however, you should always tag that content.

(12) Consider using the EPUB 3 EDUPUB profile

See BISG's *Getting Started with EDUPUB* guide for more information on EDUPUB and its implementation, which is currently undergoing a major update.

(13) Use MathML

Publishers often put mathematical expressions in the form of an image for display purposes. This means that math, particularly in instructional material, is often inaccessible for readers with print disabilities,

unless those images are described or linked to the original MathML (Mathematical Markup Language). MathML presents math as textual markup that can be voiced or described automatically.

Today, not all reading systems and assistive technologies support MathML. It is still extremely useful for increasing accessibility of math in ebooks, however, and there are many tools to assist publishers in generating MathML; see the complete tools list from the World Wide Web Consortium (W3C) for more details.

Until reading systems, browsers, and assistive technologies provide full support for MathML, there's no perfect way to implement it. One simple option is to provide both—the images plus MathML. That way, the MathML is available to reading systems implementers or service providers who can benefit from it but does not interfere with reading systems that can't.

There is work being done by DAISY and the DIAGRAM Center, who created an accessible Math EPUB test book that has the MathML hidden visually offscreen and has a visible image of the math with a text description of the math as a fallback when MathML is unable to be used by the reading system. The results of these tests on various reading systems will be shared at epubtest.org.

Code sample:

In order for MathML to work, include the script below between the <head> tags:

```
<script type="text/javascript"
src="https://cdn.mathjax.org/mathjax/latest/MathJax.js?config=TeX-AMS-MML_HTMLorMML">
</script>
```

(14) Provide alternative access to media content

Make sure the native controls for video and audio content are enabled by default. The <video> element provides an attribute called controls that governs whether or not the controls are visible. Unless there's a specific reason *not* to display them, they should always be visible.

Provide alternatives, such as captions and descriptions, for video and transcripts for audio. For example: http://www.jjslist.com/blog/audio-description-and-documentary-film.

In the paragraph of text that introduces the audio clip, it is generally best to place the link to the transcript before the link to the player. That way, users will be able to find it before they try to operate the player, which may or may not be accessible.

(15) Make interactive content accessible

If you add any JavaScript or embed any video/audio player or override the native controls, ensure that your new widget is accessible by testing your publication with assistive technologies. All controls must be also be accessible via the keyboard.

Code sample:

```
<span role="button" tabindex="0" onclick="handleCommand()"
onKeyPress="handleCommand()">Button Name</span>
```

(16) Use accessibility metadata

The following example shows how accessibility metadata is used to enhance a Bookshare record. A description of the process of adding this metadata and a corpus of searchable books can be found at the accessibility metadata website.

```
    <meta property="schema:accessMode">textual</meta>
    <meta property="schema:accessMode">visual</meta>
    <meta property="schema:accessModeSufficient">textual</meta>
    <meta property="schema:accessModeSufficient">visual</meta>
    <meta property="schema:accessModeSufficient">textual,visual</meta>
    <meta property="schema:accessibilitySummary">This title is a well-marked up and
structured book, which is fully accessible. The images of this book are well described
and, when necessary, short alt texts and/or extended longer descriptions are
provided.</meta>
    <meta property="schema:accessibilityFeature">longDescription</meta>
    <meta property="schema:accessibilityFeature">alternativeText</meta>
    <meta property="schema:accessibilityFeature">readingOrder</meta>
    <meta property="schema:accessibilityFeature">structuralNavigation</meta>
    <meta property="schema:accessibilityFeature">tableOfContents</meta>
    <meta property="schema:accessibilityHazard">none</meta>
    <meta property="schema:accessibilityAPI">ARIA</meta>
```

(17) Make sure your processes support the above best practices

For example: Make `alt="…"` text a part of the authoring step for accessible image descriptions.

Create and test HTML versions of content earlier in the layout phase when design and structural decisions are being made. (See Accessible Books Consortium: Accessible Publishing Best Practice Guidelines for Publishers.)

How to Set Up Internal Teams and Processes

Creating an Internal Team

Companies are encouraged to appoint an accessibility lead who is responsible for ensuring that all departments and individuals within the company collaborate to implement accessibility policy. Support for this role must come from the in-house leadership team, who can demonstrate the importance of accessibility throughout the organization.

Large companies often are organized in “silos” that allow for endlessly diverse workflows and strategies. An accessibility lead can work to standardize the approach to accessibility across those silos and simultaneously bake accessibility into the processes and evangelize the accessibility message internally and externally.

Key tasks of this role include:

- Collaborating with executive leadership to develop corporate accessibility policies for products as well as internal systems and tools.
- Documenting, communicating, promoting, and getting consensus on the implementation of the accessibility policies established at the highest level within your company.
- Promoting internal awareness of accessibility issues and messaging industry change.
- Influencing decision making at all levels of seniority and in all departments to align efforts so that your accessibility policies are standardized for consistency and efficiency.
- Communicating and promoting the company’s accessibility policies to vendors, clients, partners, and customers.
- Participating in industry organizations and working groups that set industry accessibility standards.

Support your accessibility lead by nominating colleagues or asking for volunteers to serve as “champions” for each group and division within your organization. These champions can help spread the message, identify gaps in product accessibility and workflows, and address questions and concerns raised by colleagues and customers. Working *with* the accessibility lead, rather than *for* him or her, supports accessibility as a responsibility of the entire organization, not just a specific department.

In order to gauge their current capabilities and to understand what they need to do moving forward, publishers need to conduct an accessibility audit to identify how compliant their products are. They can do this internally or by utilizing one of the many accessibility organizations that can conduct in-depth technical and non-technical audits.

Setting Up Workflow Processes to Ensure That Content Is Born Accessible

Practices publishers may want to adopt as they work toward incorporating accessibility into internal workflow processes include:

- Identify internal accessibility leads and champions.
- Define product accessibility specifications.
- Educate every team about the purpose and meaning of accessibility.
- Audit existing products to assess how effectively they meet accessibility standards.
- Develop a strategy: set priorities and identify commonalities across products.
- Consider writing alternative text (and long descriptions) at the point when images are created or acquired; create captions when videos are created.
- Make accessibility an integral function of design.
- Familiarize every team with assistive technologies.
- Set up a testing process early in development, when design decisions are being made, and test them on an ongoing basis.
- Don’t rely exclusively on automated testing: implement user testing and feedback, particularly regarding how the content is consumed on assistive technology (AT) devices.
- Tell authors about your organization’s accessibility commitment.
- Talk with educators about their accessibility commitments and requirements.
- Promote accessibility initiatives on your website.
- Provide an easy way for customers to ask you about accessibility status and initiatives.

Legal Requirements

The provision of accessible content and technology to users with disabilities in a wide range of contexts is increasingly being motivated by legal policy, in addition to business and social responsibility considerations. The following provides an overview that, while intended neither as legal advice nor as a comprehensive summary of requirements that currently exist, highlights a number of key legislative enactments, regulations, and other legal developments in the United States and also includes a snapshot of requirements and standards in a few non-US markets.

Be it in education, professional settings, government procurement, or the general consumer space, content producers face an expanding demand, rooted in the law, for both their print and digital products to be accessible to users with disabilities.

Often an entity that is required to comply with requirements against discriminating based on an individual's disability—such as a college or university system, or a government agency—will require that materials and technologies be accessible as a precondition to their procurement. In some instances, laws obligate publishers themselves to take certain steps to help ensure that users with disabilities can access the material. Finally, with the signing of the international Marrakesh Treaty[1] in 2013, and subsequent ratification by the required number of signatories, the world community has moved to significantly expand national laws creating exceptions to copyright in order to allow the creation and delivery of accessible-format copies of textual works to users with disabilities in given circumstances, without the authorization of the copyright holder.

Below is a high-level overview of various accessibility laws that set requirements for content, technology, and infrastructure to be usable by individuals with disabilities.

- Part I addresses US laws that generally apply to third parties rather than to publishers but that indirectly create incentives for increased accessibility of published content.
- Part II addresses US laws that affect publishers directly, such as by placing requirements on them or providing copyright exceptions.
- Part III briefly summarizes the Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired or Otherwise Print Disabled.
- Part IV touches on requirements in Canada, the European Union, Germany, and the United Kingdom.
- Part V provides a summary of national and international accessibility criteria used by publishers in varying circumstances.

Part I — US Laws Generally Applying to Third Parties Procuring Publishers' Materials

Americans with Disabilities Act (ADA)[2] and the ADA Amendments Act

The ADA and the ADA Amendments Act (2008) impose accessibility requirements both on governmental entities, pursuant to Title II, and on private entities that are considered "public accommodations," pursuant to Title III. The US Department of Justice, Department of Education, Department of Transit, and Equal Employment Opportunity Commission share oversight and enforcement of the ADA and create regulations to implement certain provisions.

Under Title II, public schools in the United States must communicate equally and effectively with individuals who have a disability that "substantially limits a major life activity" (e.g., blindness limits reading). Public schools must also give such individuals an equal opportunity to benefit from all of their programs, services, and activities. Title III imposes similar nondiscrimination requirements on private entities that are considered "places of public accommodation," which range from brick-and-mortar retail shops to private colleges to commercial websites. In an effort to help ensure ADA compliance, entities subject to Title II or Title III of the ADA may include accessibility obligations in contractual agreements with publishers.

The ADA and Websites/Web-Delivered Content

Recent lawsuits in certain (although not all) federal judicial districts have expanded the scope of websites considered "places of public accommodation" and thus the application of Title III's nondiscrimination requirements. For instance, a district court in Massachusetts found that plaintiffs' allegations had sufficiently established Netflix's web-based video subscription service to be a "place of public accommodation," analogizing it to brick-and-mortar video rental stores.[3] A Vermont district court held similarly with respect to the website and mobile applications of the ebook subscription service Scribd.com.[4]

In addition, EdX, a nonprofit provider of massive open online courses (MOOCs) entered into a settlement agreement with the Department of Justice to make its EdX website, mobile applications, and Learning Management System accessible (implementing WCAG 2.0 Level AA).[5] Similar settlements were reached in 2014 with H&R Block[6] and the online grocer Peapod.[7]

It should be noted, however, that courts within the jurisdiction of the US Court of Appeals for the Ninth Circuit (such as federal district courts in California) have been less willing to treat websites as places of public accommodation under the ADA. The websites of Facebook and eBay, for example, have been held by the US District Court for the Northern District of California (with the eBay decision subsequently

affirmed by the Court of Appeals for the Ninth Circuit) not to be ADA places of public accommodation, on the basis that they were not connected to an associated physical space.[8][9][10] The retailer Target's website, on the other hand, was held by the Northern District to be subject to claims as a place of public accommodation, to the extent that a sufficient nexus could be established between the website and the goods and services offered in Target's physical stores.[11]

Where ADA Title III "place of public accommodation" claims cannot be sustained, plaintiffs bringing actions in California may nevertheless be able to succeed with claims under California's own civil rights laws, but only under certain circumstances. California's Unruh Civil Rights Act (Cal. Civ. Code § 51), for example, allows a claim based on inaccessibility of a website without any nexus to a physical location, but the plaintiff must plead (and, to be successful, prove) intentional discrimination[12] (whereas to succeed with an ADA Title III claim, the complainant need merely show failure to provide access[13]).

ADA Flexibilities

1. Reasonable Accommodations

Public institutions and "places of public accommodation" are not restricted to procuring and using products that are inherently accessible. In higher education settings, for example, inaccessible products may be assigned so long as "the universit[y] provide[s] reasonable accommodation or modification so that a student can acquire the same information, engage in the same interactions, and enjoy the same services to sighted students with substantially equivalent ease of use."[14] Nevertheless, entities subject to the ADA's requirements have a natural incentive to seek materials and platforms that are inherently accessible in order to efficiently fulfill compliance obligations.

2. Undue Burden

Title III also provides that its accessibility requirements do not apply if "the entity can demonstrate that taking" steps to ensure equal access "would fundamentally alter the nature of the good [or] service…or would result in an undue burden"—that is, a "significant difficulty or expense"—taking into account factors such as the nature and cost of the steps needed and the overall financial resources of the entity.

Rehabilitation Act of 1973

Two sections of the Rehabilitation Act of 1973, Sections 504 and 508, impose accessibility obligations on educational institutions and on the federal government, respectively.

Section 504

Section 504 requires public schools and most higher education institutions (those that receive federal financial assistance) to provide students who have qualifying disabilities with access to assigned instructional materials that is equal to that of their classmates.[15]

Section 508

Section 508 of the Rehabilitation Act requires the federal government to make electronic and information technology accessible to federal employees and members of the public. The US Access Board promulgates the accessibility standards that establish the criteria for compliance with Section 508. An updated version, called the 508 Refresh, went into effect in January 2018 and incorporates the WCAG 2.0 criteria for web content as well as non-web electronic documents and software.[16]

A number of states also require their own departments, agencies, and universities to follow the Section 508 standards under state-adopted "mini 508" laws.[17] Private corporations acquiring digital content or delivery platforms sometimes require products to conform to Section 508 standards as well.

Part II — US Laws Affecting Publishers Directly

Individuals with Disabilities Education Act (IDEA)

The Individuals with Disabilities Education Act (IDEA) is a federal grant statute that applies only to the public K–12 market. Under amendments to the IDEA in 2004—which the Association of American Publishers participated in crafting—if state and local K–12 educational agencies opt to coordinate with the National Instructional Materials Access Center (NIMAC), a national repository for digital files of print instructional materials, the agencies must require publishers to provide NIMAC with a digital file (in NIMAS format) of the print textbooks adopted by the school. Subsequently, school systems, typically with the help of a specialist vendor, convert the NIMAS-compliant files into specialized accessible formats for use by students with disabilities[18].

Furthermore, a June 22, 2012, letter from the US Department of Education's Office of Special Education and Rehabilitative Services notes that although the NIMAS standard does not address the markup of mathematical and scientific content, the department encourages states and school districts to ask publishers providing NIMAS files to the repository to use MathML for math and science content.[19] The state of Texas has now issued a mandate consistent with the department's recommendation for NIMAS files provided for materials with math and science content that are used in the state's K–12 education system.[20] The Department of Education has recently indicated its support for requiring the deposit of born-digital formats. The NIMAS regulations are currently limited to depositing digital files of print formats only.

State Requirements for Digital Content in Higher Education

Accessibility requirements for K–12 instructional materials delivered digitally are frequently seen at the state level. For example, Texas Proclamation 17 mandates that such materials conform to WCAG 2.0 Level AA, as well as the federal Section 508 standards[21].

State Higher Ed "Etext" Laws

Under state "etext" statutes, publishers are often required to provide university disability support services (DSS) offices with electronic versions of print textbooks (or other materials) that have been assigned in courses in which students with disabilities are enrolled. The electronic file is then provided to the student as is or after further conversion into an accessible format by the DSS office.

DSS offices usually must certify that a copy of the printed material has been purchased by or for the student before a publisher can be required to provide the etext version. In addition, some etext laws exempt publishers from providing an etext file when a sufficiently accessible electronic version is commercially available.

Etext statutes have been enacted in at least 13 states (Arkansas, California, Kentucky, Maryland, Michigan, Nevada, New Mexico, New York, Oregon, Texas, Utah, Washington, and Wisconsin), although many textbook publishers provide etexts in response to requests from institutions in states without etext laws as well.

Proposed Accessibility Guidelines Legislation for Higher Education

Introduced in the House of Representatives in 2013 and the Senate in 2014, the *Technology, Equality, and Accessibility in College and Higher Education* (TEACH) Act (HR 3505; S 2060) is currently sitting in committee.[22] The proposed legislation, whose language was in negotiation for several years, was drafted with significant input from the National Federation of the Blind, the Association of American Publishers, the American Council on Education, and EDUCAUSE. The bill enjoys bipartisan support in both houses of Congress. Its aim is to direct the Architectural and Transportation Barriers Compliance Board to develop accessibility guidelines for commercially available electronic instructional materials and related information technologies intended for institutions of higher education, and for other purposes.

Section 121 of the US Copyright Act (the Chafee Amendment)

Section 121 of the US Copyright Act, aka the Chafee Amendment,[23] is an exception to copyright that allows "authorized entities" (for example, Bookshare) under certain circumstances to create and distribute special accessible versions of certain published materials for users with disabilities, without getting permission from the copyright holder. In order to ensure consistency with the Marrakesh Treaty, the Chafee Amendment has undergone a definitional expansion of beneficiaries and specialized formats. Updates to the description of the beneficiaries of section 121, who were originally termed "blind or other persons with disabilities," now define the "eligible person" as someone who is either blind, has a "visual impairment or perceptual or reading disability rendering them unable to read printed works" to "substantially the same degree as a person without an impairment or disability," or has a physical disability making them unable to hold or manipulate a book or focus or move their eyes to read. The new

language also provides additional flexibility in who can determine eligibility. The determination must be made by a "competent authority possessing experience in making such determinations." Furthermore, the definition of "authorized entity" has been broadened to include those entities with a primary mission to serve eligible persons.

For additional information on Chafee and Marrakesh, see https://www.copyright.gov/legislation/2018_marrakesh_faqs.pdf

Part III — Marrakesh Treaty

In 2013, the member countries in the World Intellectual Property Organization (WIPO), including the United States, adopted the Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired, or Otherwise Print Disabled. On September 30, 2016, the Marrakesh Treaty entered into force after ratification by 20 member states. As of 2018, over 70 countries have ratified it, including the United States. Signatories need to enact, in their national laws, a copyright exception or limitation allowing the creation and distribution of accessible formats of books or other textual works for use specifically by readers with disabilities, which also allows such copies to be provided across international borders to recipients in other signatory nations. On October 9, 2018, President Trump gave final approval to the Marrakesh Treaty Implementation Act. The bill had significant bipartisan support in the both the House and the Senate.

It is worth noting that each member country has the option to confine its copyright limitation or exception to books or other textual works that, in the particular accessible format, cannot be obtained commercially under reasonable terms for beneficiary persons in that market. In other words, the country could in its own discretion provide that its exception does not apply if the publisher of the book offers it commercially in the accessible format on reasonable terms.

Part IV — Accessibility Laws Internationally

The UN Convention on the Rights of Persons with Disabilities,[24] which has been ratified by more than 160 countries as well as the European Union (although not yet the US), was created "to promote, protect, and ensure the full and equal enjoyment of all human rights and fundamental freedoms by all persons with disabilities, and to promote respect for their inherent dignity." The wide range of obligations assumed by the countries joining the convention include, among many other things:

- Ensuring that people with disabilities have access, on an equal basis with others, to information and communications. Communications are defined to include multimedia and written communications, and information and communication technology;
- Promoting the availability and use of "universally designed" goods, services, equipment, and facilities. "Universal design" is defined as the "design of products, environments, programs, and

services to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design," although universal design shall not exclude assistive devices for particular groups of persons with disabilities where needed;
- Urging private entities that provide services to the general public, including through the Internet, to provide information and services in accessible and usable formats for persons with disabilities;
- Ensuring equal access to education; and
- Adopting legislative, administrative, and other measures for the implementation of rights recognized in the convention.

The following is a summary of accessibility laws in a few major international markets for US publishers. For information on additional countries, please see the resources page on the World Wide Web Consortium's (W3C's) website.

Canada

Government Web Standards

A wide range of Canadian government departments and agencies are required to implement the Standard on Web Accessibility.

Ontario

The Canadian province of Ontario's Accessibility for Ontarians with Disabilities Act of 2005 and the associated accessibility standards contained in Ontario Regulation 191/11 place requirements on private and public-sector organizations.

For companies obligated to comply with requirements contained in the regulation, distinctions are made between "large organizations," meaning organizations with 50 or more employees in Ontario, and "small organizations," those with at least one but fewer than 50 employees in Ontario.

Large organizations (but not small organizations) are required to make their Internet websites and web content conform with WCAG 2.0, initially at Level A and increasing to Level AA, by the following deadlines: Beginning January 1, 2014, new Internet websites and web content on those sites must conform with WCAG 2.0 Level A. By January 1, 2021, all Internet websites and web content must conform with WCAG 2.0 Level AA, other than success criteria 1.2.4 Captions (Live) and success criteria 1.2.5 Audio Descriptions (Pre-recorded).[25]

Both large and small organizations are bound by certain other requirements, such as to develop accessibility policies and to train employees with respect to accessibility standards.

The regulation provides for administrative penalties for noncompliance, up to $50,000 for individuals and unincorporated organizations, and up to $100,000 for corporations.

European Union

Public and Private Sector Websites and Accessible Procurement

The Web Accessibility Directive, described below, is now in effect, as of September 23, 2018. It is anticipated that the European Accessibility Act, which aims to address the lack of EU coordination on how to implement accessibility obligations in areas such as public procurement, will soon pass into effect. (For information, please see http://ec.europa.eu/social/main.jsp?catId=1202.)

The Web Accessibility Directive covers all public sector websites, intranets, apps, and documents. All ICT suppliers that would like to sell to the public sector need to understand how to offer compliant products and services. When the European Accessibility Act enters into force, the regulations may be broadened to cover parts of the commercial sector as well, such as banks, TV, self-service terminals, computers, and many others.

Public Sector Websites

(1) Standard

In February 2014, three European standards organizations—CEN, CENELEC, and ETSI—published the standard EN 301 549, "Accessibility Requirements for Public Procurement of ICT Products and Services in Europe" (ICT stands for "Information and Communication Technology," also the subject of the 508 Refresh in the US). As explained on ETSI's website, the standard "is intended in particular for use by public authorities and public sector bodies during procurement, to ensure that websites, software, digital devices are more accessible—so they may be used by persons with a wide range of disabilities." The standard was produced in response to a request from the European Commission known as Mandate 376.

FAQs provided by CEN, CENELEC, and ETSI note that EN 301 549 "was developed to be closely harmonised with the updated" Section 508 Guidelines in the United States. EN 301 549 also contains numerous references to WCAG throughout. The FAQs also state, "At the time of writing (January 2014) no EU-level legislation exists that requires Member States to use EN 301 549 in the public procurement of ICT. However, should any EU directives" in the future define essential requirements for accessible ICTs, "it is likely that EN 301 549 will be referenced as the relevant technical specifications, compliance with which will provide a presumption of conformity with the essential requirements."

The FAQs emphasize that EN 301 549 is in and of itself a voluntary standard, and that it "may also be useful for other purposes, such as procurement in the private sector, technical reference in the development of new ICT products and services, etc." They go on to indicate that the standard could be used for any policy or legal purpose, including but not exclusively public procurement: "Policy makers need to consider the use of harmonised accessibility requirements, as defined in EN 301 549 in policies and legislation related to public procurement, as well as in more general disability and anti-discrimination

legislation."

(2) Proposed Directive

In 2012, the European Commission issued a proposed directive on the accessibility of the websites of public sector bodies, such as national, regional, or local authorities, within EU member nations.[26] In an explanatory memorandum accompanying the proposed directive, the commission referenced what eventually became standard EN 301 549 mentioned above: "A European standard that includes web accessibility in line with WCAG 2.0 (including its use at level AA and associated compliance assessment methods) is under development within the Commission mandate M/376 to the European Standardisation Organisations CEN, CENELEC and ETSI."

The memorandum notes further that Article 9 of the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD), to which the EU is a party, obliges the EU and its member states "to take appropriate measures to ensure access for persons with disabilities, on an equal basis with others" to "information and communication technologies, including the Internet."

The directive itself, although it has not yet been enacted, would require EU member states to take necessary steps to ensure the accessibility of public-sector websites and would provide that websites comporting with the harmonized standard created pursuant to mandate M/376 (discussed above) would be presumed to be accessible.

Private Sector

The commission has also proposed the development and passage of one or more directives "containing general obligations, to be put in place by the Member States on manufacturers and service providers to improve accessibility of goods and services before their placing on the market."[27] Although the creation of such directive(s) has been delayed, it is still a subject of significant interest and discussion in Europe.[28]

Copyright Exceptions

Article 5 (3b) of the EU's Copyright Directive enacted in 2001 allows member nations to provide exceptions or limitations to copyright facilitating use of works by people with disabilities (such as the UK's exception mentioned below).

Germany

German law requires that government websites meet prescribed accessibility criteria, pursuant to the Federal Ordinance on Barrier-Free Information Technology (known as the BITV), as amended in September 2011 (BITV 2.0). The site bitvtest.eu explains: "On September 22, 2011, the German directive 'Barrierefreie-Informationstechnik-Verordnung' (BITV 2.0) came into effect for German federal websites. BITV 2.0 is a complete overhaul of the old BITV that had been modelled on WCAG 1.0. The new directive

is based on the Web Content Accessibility Guidelines (WCAG) 2.0 published in December 2008 by the Web Accessibility Initiative (WAI)."

United Kingdom

Accessibility legal developments have included the following:

Exams Administered by Qualifications Bodies

In 2007, an Employment Appeal Tribunal in the United Kingdom upheld a judgment against a US-based not-for-profit corporation finding that it had not made its exam for qualification of project management professionals accessible as required by the United Kingdom's Disability Discrimination Act of 1995. It was held that the organization should have enabled the test taker to use JAWS text-to-speech software during the exam, and that the case could be brought in the United Kingdom because the claimant worked in England and the exam took place in Scotland.

Websites, Printed Books, and Ebooks

The Equality Act 2010 (EQA), which came into force in October 2010, replaced the Disability Discrimination Act of 1995 in England, Scotland, and Wales. Among other things, the EQA prohibits discrimination by providers of services, goods, and facilities. The Equality and Human Rights Commission published a Statutory Code of Practice that came into force in October 2010 and stated explicitly that websites are included under the EQA's requirements for the provision of services.

The British Standards Institute (BSI) in December 2010 published the "Web Accessibility Code of Practice," BS 8878:2010. BSI's website says it is the first British standard to outline a framework for web accessibility when designing or commissioning web products, and that it provides guidance for all sectors on meeting the requirements of the EQA.

The Publishers Association (PA) in the United Kingdom advises that "since the UK's Disability Discrimination Act 1995 (now repealed but replaced by the Equality Act 2010) it has been illegal for providers of goods and services (including publishers) to discriminate" against people with disabilities.[29]

The PA goes on to state, "'Discriminating' is widely defined as 'treating less favourably,' or failing to make 'reasonable adjustments' to account for the disability concerned. If necessary, a publisher must provide a 'reasonable alternative method' of making its goods or services available" to persons with disabilities "where a physical feature makes it unreasonably difficult for Print Impaired People to use them. Publishers are not legally required to provide accessible versions of every book published, but may rely on, for example, a reasonably accessible licensing scheme."[30]

Copyright Exception

The Copyright and Rights in Performances (Disability) Regulations of 2014 provide an update of the United Kingdom's exception to copyright to allow, under certain circumstances, the making/provision of an accessible copy of a work for personal use by someone with a disability without getting permission from the copyright holder. The exception applies, however, only if the same kind of accessible copies of the work as are sought to be provided are not commercially available on reasonable terms by or with the authority of the copyright owner.

Part V — Accessibility Standards

BITV 2.0

BITV2.0 is Germany's required accessibility criteria for government websites. The current version is based on the Web Content Accessibility Guidelines (WCAG) 2.0, discussed later in this section.

EN 301 549

Created jointly by standards bodies in Europe, EN 301 549 is intended for implementation by government authorities and bodies when procuring websites, software, or digital devices.

National Instructional Materials Access Standard (NIMAS)

NIMAS provides technical specifications for electronic files that publishers provide to the National Instructional Materials Access Center (NIMAC) in the United States. NIMAS is closely aligned with the DAISY accessible digital publication standard, which is now fully incorporated into the EPUB specification broadly used by the publishing industry.

Ontario Regulation 191/11

Ontario Regulation 191/11 defines accessibility obligations for private and public-sector organizations, including a schedule for WCAG 2.0 Level A and Level AA implementation by large private organizations.

Section 508 Standards for "Electronic and Information Technology"

The Section 508 standards govern federal government procurement processes and provide guidance on accessibility features for technology developers and content providers. An updated version of the 508 standards, called the 508 Refresh, went into effect in January 2018 and incorporates the WCAG 2.0 criteria for web content as well as non-web electronic documents and software.

Standard on Web Accessibility

Canada's Standard on Web Accessibility took effect in 2011. It was enacted to ensure the uniform

application of a high level of web accessibility across Government of Canada websites and web applications.

Web Accessibility Code of Practice

This is a British standard outlining a framework for web accessibility and meeting the requirements of the United Kingdom's Equality Act 2010.

Web Content Accessibility Guidelines (WCAG)

Developed and maintained by the World Wide Web Consortium (W3C), the guidelines are currently in Version 2.1 (WCAG 2.1). There are three levels of WCAG conformance with increasing degrees of rigor: A, AA, and AAA. For information, see https://www.w3.org/WAI/standards-guidelines/wcag/new-in-21/.

References

[1] Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired, or Otherwise Print Disabled, VIP/DC/8/REV, July 31, 2013, http://www.wipo.int/treaties/en/ip/marrakesh/.

[2] Americans with Disabilities Act of 1990, 1990 Enacted S. 933, 101 Enacted S. 933, 104 Stat. 327, http://www.ada.gov/2010_regs.htm.

[3] National Association of the Deaf v. Netflix, Inc., 869 F. Supp. 2d 196 (D. Mass. 2012), https://casetext.com/case/natl-assn-of-the-deaf-v-netflix-inc.

[4] National Federation of the Blind v. Scribd Inc., 2015 U.S. Dist. LEXIS 34213 (D. Vt. Mar. 19, 2015), http://cases.justia.com/federal/district-courts/vermont/vtdce/2:2014cv00162/24384/30/0.pdf?ts=1426875932.

[5] Settlement Agreement Between the United States of America and edX Inc. under the Americans with Disabilities Act, DJ No. 202-36-255, http://www.ada.gov/edx_sa.htm.

[6] Consent Decree in National Federation of the Blind et al. v. HRB Digital LLC et al., Civil Action No. 1:13-cv-10799-GAO (D. Mass. 2013), http://www.ada.gov/hrb-cd.htm.

[7] Settlement Agreement between the United States of America and Ahold U.S.A., Inc., and Peapod, LLC, under the Americans with Disabilities Act, DJ 202-63-169, http://www.justice.gov/opa/pr/justice-department-enters-settlement-agreement-peapod-ensure-peapod-grocery-delivery-website.

[8] Young v. Facebook, Inc., 790 F. Supp. 2d 1110 (N.D. Cal. 2011).

[9] Earll v. eBay, Inc., 2011 U.S. Dist. LEXIS 100360 (N.D. Cal. Sept. 6, 2011).

[10] Earll v. Ebay, Inc., 599 Fed. Appx. 695 (9th Cir. Cal. 2015) (hereafter, eBay, Ninth Circuit).

[11] National Federation of the Blind v. Target Corp., 452 F. Supp. 2d 946 (N.D. Cal. 2006).

[12] eBay, Ninth Circuit at 696.

[13] Ariz. ex rel. Goddard v. Harkins Amusement Enters., 603 F.3d 666, 670 (9th Cir. 2010).

[14] US Department of Education and US Department of Justice Joint "Dear Colleague Letter: Electronic Book Readers (2010)," p. 2 (citing 28 CFR 35.130(b)(1)(iii) and 34 CFR 104.4(b)(1)(iii).

[15] US Department of Education Office for Civil Rights, FAQs About Section 504 and the Education of Children with Disabilities, http://www2.ed.gov/about/offices/list/ocr/504faq.html.

[16] US Department of Justice, Section 508 Home Page, http://www.justice.gov/crt/section-508-home-page-0; *see also* United States Access Board, Rehabilitation Act of 1973, http://www.access-board.gov/the-board/laws/rehabilitation-act-of-1973.

[17] See, e.g., New York State Information Technology Policy number P08-005, which establishes minimum accessibility requirements for web-based information and applications developed, procured, maintained, or used by state entities, expressly including the State University of New York and the City University of New York. The policy incorporates sections of subparts B and C of the 508 standards. http://www.governor.ny.gov/sites/governor.ny.gov/files/archive/assets/documents/NYS-P08-005.pdf

[18] See ED.gov, National Instructional Materials Accessibility Standard (NIMAS), http://idea.ed.gov/explore/view/p/%2Croot%2Cdynamic%2CTopicalBrief%2C12%2C.

[19] US Department of Education Office of Special Education and Rehabilitative Services "Dear Colleague" letter, June 22, 2012, https://www2.ed.gov/policy/speced/guid/idea/memosdcltrs/osers-nimas.pdf.

[20] Texas Education Agency, Proclamation 2017, Amended September 2015, http://tea.texas.gov/interiorpage.aspx?id=2147486662.

[21] Ibid.

[22] This is not to be confused with the *Technology, Education and Copyright Harmonization* ("TEACH") *Act* signed into law in 2002.

[23] 17 U.S.C. § 121.

[24] Convention on the Rights of Persons with Disabilities [A/RES/61/106, Annex 1], http://www.un.org/disabilities/convention/conventionfull.shtml.

[25] An exception is provided when meeting the requirement is not practicable. In determining whether

meeting the requirement is not practicable, organizations may consider, among other things, the availability of commercial software or tools or both, and significant impact on an implementation timeline that was planned or initiated before January 1, 2012.

[26] COM (2012) 721: Proposal for a Directive of the European Parliament and of the Council on the accessibility of public sector bodies' websites, http://eur-lex.europa.eu/procedure/EN/2012_340.

[27] ROADMAP: European Accessibility Act: legislative initiative to improve accessibility of goods and services in the Internal Market, http://ec.europa.eu/smart-regulation/impact/planned_ia/docs/2012_just_025_european_accessibiliy_act_en.pdf.

[28] See, e.g., European Accessibility Act: European Commission Breaks Promises, EBU (February 12, 2015), www.euroblind.org/news/nr/2505.

[29] New Copyright Exceptions for Print Impaired People, The Publishers Association (February 24, 2015) , page 2, http://publishers.org.uk/EasySiteWeb/GatewayLink.aspx?alId=18189.

[30] Ibid.

Glossary

A11y A numeronym, or number-based abbreviation that represents the word *accessibility*— "a" followed by 11 letters and ending in "y". Used as the hashtag #A11y in tweeting to save characters.

Accessibility Metadata Metadata that is used specifically to describe the accessibility of content.

ADA (Americans with Disabilities Act) This piece of US legislation prohibits discrimination against people with disabilities to ensure that they have equal opportunities to participate in mainstream life.

Alt Text (alternative text) A description of the content of an image that is not normally visible to a user. It is usually accessed through text-to-speech applications or with other specialist assistive technologies (ATs) that allow the user to choose to have it displayed. It is helpful both to blind users who cannot see the image at all and to those who are partially sighted who may be able to read large type but find images hard to interpret.

ARIA (or WAI-ARIA) Accessible Rich Internet Applications (or Web Accessibility Initiative– Accessible Rich Internet Applications). A World Wide Web Consortium (W3C) initiative specifying how to increase the accessibility of web content and recommending ways to prepare dynamic content for greater usability by people with disabilities. The ARIA specification provides an ontology of roles, states, and properties that define an accessible interface of web content and applications. The semantics allow the author of flat or interactive content to properly convey behaviors and structural information to assistive technology (AT) in markup.

Assistive Technology (AT) Technological devices that have been developed with features that are specifically helpful for people with disabilities. Publishers may be asked to supply file formats that are compatible with particular types of assistive technology.

Braille Display A type of assistive technology (AT); a hardware device that can be attached to a computer or mobile device and that interprets text into braille in real time. It contains sets of pins that can be raised and lowered to construct the braille encoding, readable by touch.

Chafee Amendment The Chafee Amendment, passed in the United States in 1996, builds upon copyright law to enable nonprofit organizations or governmental agencies to provide accessible versions of works for use by the blind or persons with disabilities. Before Chafee was passed, this could be done only after receiving explicit permission from the copyright holder. For more information, see The Chafee Amendment: Improving Access To Information.

CSS (Cascading Style Sheets) CSS is a simple mechanism for adding style (e.g., fonts, colors, spacing) to web documents. For more information, see the W3C's Cascading Style Sheets home page.

DAISY (Digital Accessible Information System) The DAISY Consortium, a not-for-profit organization that represents libraries for people with print disabilities, has developed a specialist standard format for use in the creation of accessible versions for the print-impaired. The DAISY format allows the digital distribution of both text and audio formats and has much more sophisticated navigational information than has been typical in commercial ebooks or audiobooks. Although effective use of the DAISY format has required specific reader software (which may be implemented either on a PC or on a specialist audio device), the new version of the EPUB specification, EPUB 3.0, represents a complete convergence with the DAISY delivery format. Any platform that is fully compliant with EPUB 3.0 should also be compliant with DAISY.

DAISY Pipeline An open suite of validation tools designed to assist in the format conversion to DAISY files, available from the DAISY Consortium.

DIAGRAM The DIAGRAM Center (Digital Image and Graphic Resources for Accessible Materials), a Benetech initiative, is a research and development center established in 2010 whose goal is to dramatically change the way digital content for Accessible Educational Materials (AEM) is produced and accessed, so that students with disabilities are provided equal access to general education curriculum, especially science, technology, engineering, and mathematics (STEM). The DIAGRAM Center is funded by the US Department of Education, Office of Special Education Programs (OSEP), and managed by Benetech in partnership with the US Fund for DAISY (USF DAISY).

DRM (Digital Rights Management) Access-control technologies (also known as technical protection measures) that may be applied to a digital file to automate control over access and use of the file. The content itself is encrypted, and certain types of use may be controlled—for example, the number of devices onto which a file can be copied, or the number of pages of a file that can be printed. DRM can hinder interoperability between platforms and can prevent many assistive technologies from working. See also "Social DRM" below.

DTB, DT Book Digital Talking Book, sometimes a generic term, and sometimes synonymous with a DAISY-format book. Also refers to DTBook, the XML–based format for textual content that is used in a DAISY-format book.

EPUB EPUB is the distribution and interchange format standard originally developed by the IDPF and now maintained by the W3C for digital publications and documents based on web standards. It defines a means of representing, packaging, and encoding structured and semantically enhanced content for distribution in a single file format.

EPUB FOR EDUCATION (formerly EDUPUB) is a set of specifications that optimize the EPUB 3 standard for educational content.

HTML (HyperText Markup Language) HTML is the core markup language for the World Wide Web. It provides structural semantics—the elements and attributes that define the components of web documents such as sections, headings, lists, etc.—as well as corresponding application programming interfaces (APIs) that guide the processing of documents. It is explicitly designed for accessibility: proper HTML markup is what guides most assistive technology (AT) to navigate and render the content.

International Digital Publishing Forum (IDPF) The IDPF, the organization initially responsible for EPUB, has become part of the W3C and no longer functions as an independent organization. Its activities are now part of the W3C publishing activities under the Publishing@W3C umbrella.

Individuals with Disabilities Education Act (IDEA) A US federal law that requires schools to support the educational needs of students with disabilities.

Inclusive Publishing refers to the delivery of born-accessible content that is accessible to all readers. Thanks to technological advances, inclusive publishing is now a real possibility via mainstream publishing processes.

Learning Registry A central data repository for gathering publishers' metadata information on educational resources available online. For more, see learningregistry.org.

Learning Resources Metadata Initiative (LRMI) Established in 2011, the LRMI aimed to develop a common metadata framework for learning resources on the Internet. LRMI transferred stewardship to Dublin Core in 2014. For more, see http://dublincore.org/dcx/lrmi-terms/1.1/.

Marrakesh Treaty The Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired or Otherwise Print Disabled was adopted on June 27, 2013, in Marrakesh, Morocco; it forms part of the body of international copyright treaties administered by the World Intellectual Property Organization (WIPO). Click here for a full list of countries that have ratified the treaty to date. On October 10, 2018, President Trump signed the Treaty after it was passed by House of Representatives and unanimously ratified by the Senate. Now that the president has signed the Marrakesh Treaty, the US State Department will need to deposit the instrument of ratification with the World Intellectual Property Organization.

NIMAS (National Instructional Materials Accessibility Standard) A standard developed in the United States to assist with the production of accessible content in the K–12 education sector. The NIMAS standard is based on the DAISY standard.

ONIX for Books ONIX is a product metadata standard widely used in commercial book publishing and retailing. Its Code List 196 allows publishers and others to describe all aspects of print, braille, ebooks, and audiobooks. Publishers now have an opportunity to describe the accessibility features within ebooks, affording greater discoverability and more accurate detail for the consumer.

Print Disability This term refers to an inability to engage with traditionally printed content for a number of reasons, including visual, cognitive, or physical, or because of learning issues that make printed material inaccessible in its standard form.

Readium The Readium Foundation (Readium.org) is an open-source foundation collaboratively developing technology to accelerate the adoption of EPUB 3 and the Open Web Platform by the digital publishing industry.

Schema.org Schema.org is a collaborative, community activity with a mission to create, maintain, and promote schemas for structured data on the Internet, on web pages, in email messages, and beyond. Schema.doc metadata includes four accessibility properties to help users identify accessible books and videos on most major search engines (including Google, Yahoo!, Bing, and Yandex).

Screen Reader A software application that runs at the same time as other computer programs and reads aloud whatever is displayed on the computer screen, enabling a visually impaired person to use a computer or mobile device, such as a phone, to navigate menus and read within applications.

Section 508 Section 508 of the US Rehabilitation Act requires federal agencies to make their electronic and information technology (EIT) accessible to people with disabilities.

Social DRM An approach to protecting content that can include the use of user names and passwords or other approaches such as "watermarking" that embed information about the purchaser (licensee) into an electronic publication, to encourage compliance with the terms of a license. In contrast to other forms of DRM, social DRM does not enforce the license terms, though it may enable detection of breaches of the licensed rights and tracing of those accountable. The content of the publication is not encrypted (although the embedded information might be); as a result, social DRM does not interfere with assistive technology in the way that other DRMs do.

Synthetic Speech Artificial speech generated by a computer, widely used in both mainstream and assistive technologies. Sounds are based on a dictionary of pronunciation and/or phonetic knowledge. Many different synthetic "voices," including frequently both male and female voices, are available to cover different languages. Many audio books use human-narrated audio, which is the accessible preference for some because the added "color" of a human reader improves comprehension.

TTS (Text-to-Speech) The capability, available on many ebook reading devices, to render digital text as synthetic speech, allowing someone who cannot see the text to listen to it instead (see also Screen reader). This capability may be built into the reading device, but it may need to be enabled specifically for each product as it can be disabled on some platforms.

WCAG (Web Content Accessibility Guidelines; pronounced "WickAg") A set of technical documents developed by the WCAG Working Group (from the World Wide Web Consortium Web

Accessibility Initiative, or W3C WAI. Click here for an overview of the WCAG guidelines.

World Intellectual Property Organization (WIPO) The World Intellectual Property Organization (WIPO) is a specialized agency of the United Nations. It is dedicated to developing a balanced and accessible international intellectual property system that rewards creativity, stimulates innovation, and contributes to economic development while safeguarding the public interest.

Resources

Categories

Organizations and Initiatives

Includes organizations with a major focus on accessibility.

Accessibility Action Group (AAG) (Publishers Association, UK)

Accessible Books Consortium (ABC) (WIPO), Geneva, Switzerland

Accessible Publishing Working Group

American Council for the Blind (ACB)

American Foundation for the Blind (AFB)

Benetech

Book Industry Communication (BIC) (UK)

Book Industry Study Group (BISG)

BISG Accessible Publishing Working Group (Book Industry Study Group)

Born Accessible (Benetech)

CAST

DAISY Consortium

DIAGRAM Center (Digital Image and Graphic Resources for Accessible Materials) (Benetech)

Dyslexia Foundation

EDItEUR

Global Initiative for Inclusive Information and Communication Technology (G3ict)

International Association of Accessibility Professionals (IAAP)

International Digital Publishing Forum (IDPF); now part of the W3C; see Publishing@W3C

International Dyslexia Association (IDA)

International Publishers Association (IPA) (Switzerland)

Marrakesh Treaty

National Center on Accessible Educational Materials (AEM Center) (CAST)

National Center for Accessible Materials (NCAM) (WGBH)

National Federation of the Blind (NFB)

W3C WAI (World Wide Web Web Accessibility Initiative)

Publishers Association (PA) (UK)

Publishing@W3C

RNIB (The Royal National Institute of Blind People) (UK)

W3C (World Wide Web Consortium)

World Blind Union (WBU)

World Intellectual Property Organization (WIPO)

Standards, Recommendations, and Guidelines

Ace by DAISY Getting Started Guide (Inclusive Publishing)

Accessibility, Penn State University

Accessibility Guidelines for Digital Learning Products, Pearson

Accessible EPUB 3 (Matt Garrish, O'Reilly Media)

Accessible Image Sample Book (DIAGRAM Center) (Benetech)

Accessible Publishing Knowledge Base (DAISY)

Accessible Publishing: Best Practice Guidelines for Publishers

BISG "Cheat Sheets"

BISG Guide to Accessible Publishing 2019 (the present publication)

Braille Authority of North America (BANA) Guidelines and Standards for Tactile Graphics

Buy Accessible: What to Look for in Accessible Ebooks (Benetech)

DIAGRAM Center (Digital Image and Graphic Resources for Accessible Materials) (Benetech)

Guide to Inclusive Communication (UK Government Publication)

Guidelines for Self-Publishing Authors (Accessible Books Consortium) (WIPO)

Image Guidelines for EPUB 3 (DIAGRAM Center)

Inclusive Learning Design Handbook—Section on Inclusive EPUB 3, Floe Project

Ontario Council of University Libraries (OCUL), (Canada)

Pearson Accessibility Guidelines for Digital Learning Products

Top Tips for Creating Accessible EPUB 3 Files

W3C Resources

World Wide Web Consortium (W3C)

W3C WAI (World Wide Web "Web Accessibility Initiative")

WAI Accessibility Principles

EPUB Accessibility 1.0 Specification (W3C Member Submission)

EPUB Accessibility Techniques (W3C)

Publishing@W3C

WCAG 2 at a Glance

Web Content Accessibility Guidelines (WCAG) 2.1

WAI-ARIA (W3C)

WGBH National Center for Accessible Media (NCAM) Guidelines

Resources for Creating Accessible Images and Graphics

Braille Authority of North America (BANA) Guidelines and Standards for Tactile Graphics

CADET (Caption and Description Editor)

Image Guidelines for EPUB 3 (DIAGRAM Center)

Poet Image Description Training Module (DIAGRAM Center)

RNIB Tactile Images

Resources for Creating Accessible Math

MathML Cloud (Benetech)

MathJax

MathType (WIRIS)

DAISY Structure Guidelines Part 2 MathML

Resources for Creating Accessibility Metadata

Accessibility Metadata Project

Learning Registry

Learning Resource Metadata Initiative (LRMI)

ONIX Accessibility Metadata

Schema.org Accessibility Metadata

Publications: Books, Articles, Newsletters, Blogs, Twitter Feeds

Books, Articles, Newsletters

Accessible EPUB 3 (Matt Garrish, O'Reilly Media)

Accessible Image Sample Book (DIAGRAM Center) (Benetech)

Accessible Publishing: Best Practice Guidelines for Publishers

Buy Accessible: What to Look for in Accessible Ebooks (Benetech)

DAISY Planet

Guide to Inclusive Communication (UK Government Publication)

Inclusive Publishing Newsletter

Wikipedia Accessible Publishing

Blogs

American Library Association (ALA) Blog — District Dispatch

Association of Research Libraries Blog

Benetech Blog

Bookshare Blog

EPUBSecrets Blog

Inclusive Publishing Blog

Twitter Feeds

#axschat

#a11y

#eprdctn

Sources for Accessible Materials (Digital, Audio, Braille)

Digital

ABC Global Book Service (formerly Trusted Intermediary Global Access Resource, TIGAR)

Access Text Network (ATN) (Georgia Tech)

Bookshare (Benetech)

CELA (Center for Equitable Library Access) (Canada)

HathiTrust

Internet Archive

National Instructional Materials Accessibility Center (NIMAC)

Perkins eLearning and Library

ReadHowYouWant

RNIB Bookshare (UK)

Audio

Bookshare (Benetech)

Learning Ally

National Library Service for the Blind and Physically Handicapped (NLS), Library of Congress

Perkins eLearning and Library

ReadHowYouWant

Braille

American Printing House for the Blind (APH)

Bookshare (Benetech)

National Braille Press

National Library Service for the Blind and Physically Handicapped (NLS), Library of Congress

Perkins eLearning and Library

ReadHowYouWant

International Libraries and Sources for Accessible Materials

Bookshare (Benetech)

Calibre Audio Library (UK)

CELA (Center for Equitable Library Access) (Canada)

CNIB Library (Canadian National Institute for Blind People) (Canada)

Dedicon (Netherlands)

LIA (Italy)

National Network for Equitable Library Services (NNELS) (Canada)

Once (Spain)

RNIB Bookshare (UK)

Vision Australia (Australia)

Training Resources

Accessible Books Consortium (ABC) (WIPO), Geneva, Switzerland

Accessible Books Consortium Online Training Resources

Accessibility, Penn State University

Accessible EPUB 3 (Matt Garrish, O'Reilly Media)

California State University Tutorials

DIAGRAM Center (Digital Image and Graphic Resources for Accessible Materials) Webinars (Benetech)

How People with Disabilities Use the Web: Overview

Poet Image Description Training Module (DIAGRAM Center)

The National Center on Disability and Access to Education (NCDAE) Accessibility Resources

W3C WAI (World Wide Web "Web Accessibility Initiative")

WebAIM (Web Accessibility in Mind)

Tools & Solutions

Ace by DAISY (Accessible Checker for EPUB) (DAISY Consortium)

CADET (Caption and Description Editor)

Dolphin EasyConverter & Publisher

epubtest.org

Global Certified Accessible (GCA) (Benetech)

IBM Bluemix

Obi (DAISY Consortium) Audio Production Tool

Poet Image Description Training Module (DIAGRAM Center)

Readium

ReadSpeaker Narrator

Save as DAISY

Save as EPUB

SMART (Simple Manual Accessible Reporting Tool) (DAISY Consortium)

Tobi (DAISY Consortium)

VPAT

Accessibility Conferences

American Council for the Blind (ACB)

Accessing Higher Ground (AHG) (AHEAD)

Assistive Technology Industry Association (ATIA) Conference

CSUN Assistive Technology Conference (California State University, Northridge)

Future of Education Technology Conference (FETC)

ICT Accessibility Testing Symposium

M-Enabling Summit

National Federation of the Blind (NFB) National Convention

Resources A to Z

#axschat

see category: Twitter Feeds

https://twitter.com/hashtag/axschat?src=hash

Twitter feed dedicated to discussions on accessibility and inclusion in business on the web and beyond, held every Tuesday at 8:00 pm London time (3:00 pm New York time). For more: @axschat.

#a11y

see category: Twitter Feeds

https://twitter.com/hashtag/a11y

A numeronym, or number-based abbreviation, that represents the word accessibility— "a" followed by 11 letters and ending in "y". Used as #A11y in tweeting to save characters.

#eprdctn

see category: Twitter Feeds

https://twitter.com/hashtag/eprdctn

Pronounced "e-production," this twitter feed is used by professional book designers, compositors, publishers, authors, and others to discuss and learn about the trends, techniques, and issues surrounding ebook design and production.

ABC Global Book Service

(formerly Trusted Intermediary Global Access Resource, TIGAR)

see: Accessible Books Consortium (ABC) (WIPO), Geneva, Switzerland

see category: Sources for Accessible Materials (Digital)

http://www.accessiblebooksconsortium.org/globalbooks/en/

The ABC Global Book Service, formerly known as the TIGAR Service, is an online catalog that allows participating libraries for the blind and organizations serving people who are print disabled to easily obtain the accessible content they need.

Accessibility Action Group (AAG)

(Publishers Association, UK)

see category: Organizations and Initiatives

http://www.publishers.org.uk/campaigns/accessibility/

Chaired by the UK Publishers Association, the AAG works to ensure a focus on accessibility from all elements of the supply chain.

Accessibility, Penn State University

see categories: Standards, Recommendations, and Guidelines; Training Resources

http://accessibility.psu.edu/training/

Recorded webinars, live events, online training, training on demand, external websites, and books on accessibility.

Accessibility Guidelines for Digital Learning Products, Pearson

see category: Standards, Recommendations, and Guidelines

http://wps.pearsoned.com/accessibility/

These guidelines were created to guide Pearson's development teams and are updated regularly with new techniques. They are public so that customers and others can see what Pearson is working toward and determine if they are useful for their own e-learning projects.

Accessibility Metadata Project

see: Bookshare (Benetech); Benetech; Learning Resource Metadata Initiative (LRMI)

see category: Resources for Creating Accessibility Metadata

http://www.a11ymetadata.org/

Led by Benetech, with significant contributions from participants in IMS Global's Access for All and the Learning Resource Metadata Initiative (LRMI) groups and with funding from the Gates Foundation, the Accessibility Metadata Project developed a common metadata framework for describing or "tagging" the accessibility attributes and alternatives on the web. This project worked to make accessible content discoverable so that quality educational resources on the web can be found and used by students and others who need it.

Accessible Books Consortium (ABC)

(WIPO), Geneva, Switzerland

see: World Intellectual Property Organization (WIPO); ABC Global Book Service (formerly Trusted Intermediary Global Access Resource (TIGAR); Accessible Books Consortium Online Training

Resources

see categories: Organizations and Initiatives; Training Resources

http://www.accessiblebooksconsortium.org/portal/en/index.html

The Accessible Books Consortium (ABC), based in Geneva, Switzerland, aims to increase availability of books in accessible formats to people who are blind, have low vision, or are otherwise print disabled. The ABC is a multi-stakeholder partnership, comprising the World Intellectual Property Organization (WIPO); organizations that serve people with print disabilities; and organizations representing publishers and authors. ABC's Charter for Accessible Publishing has been signed by a number of publishers who have committed to its eight fundamental principles of accessibility; see http://www.accessiblebooksconsortium.org/portal/en/charter.html

Accessible Books Consortium Online Training Resources

(Produced by EDItEUR with funding from WIPO)

see: Accessible Books Consortium (ABC) (WIPO)

see category: Training Resources

http://www.accessiblebooksconsortium.org/publishing/en/

Five free 30-minute online training modules are available covering the creation of accessible content for publishers.

Accessible Publishing: Best Practice Guidelines for Publishers

(Produced by EDItEUR with funding from WIPO)

see: World Intellectual Property Organization (WIPO)

see categories: Standards, Recommendations, and Guidelines; Books, Articles, Newsletters

http://www.accessiblebooksconsortium.org/publishing/en/accessible_best_practice_guidelines_for_publishers.html

High-level guidance for publishers on how to approach and implement accessible publishing processes and strategies, this guide covers the creation of accessible content together with the infrastructure required in order to publish in a mainstream environment.

Accessible Publishing Knowledge Base (DAISY)

see category: Standards, Recommendations, and Guidelines

http://kb.daisy.org/publishing/

The Accessible Publishing Knowledge Base provides best practices for creating accessible digital publications. Its primary focus is on EPUB, but it can be used as a reference for any HTML-based format.

Accessible Publishing Working Group

see category: Organizations and Initiatives

https://bisg.org/page/AccessibleWG

The Accessible Publishing Working Group develops educational resources that promote best practices for accessibility in publishing. In 2016, the working group released the "BISG Quick Start Guide to Accessible Publishing." This guide, "The BISG Guide to Accessible Publishing," was published in February 2019.

Accessible EPUB 3 (Matt Garrish, O'Reilly Media)

see categories: Standards, Recommendations, and Guidelines; Training Resources; Books, Articles, Newsletters

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

A free publication from one of the foremost experts in digital publishing.

Accessible Image Sample Book (DIAGRAM Center) (Benetech)

see: Bookshare (Benetech); DIAGRAM Center

see categories: Standards, Recommendations, and Guidelines; Books, Articles, Newsletters

http://diagramcenter.org/standards-and-practices/accessible-image-sample-book.html

A free online resource that presents a range of options for creating accessible versions of digital images of a wide variety of types, including charts, graphs, diagrams, and other technical images.

Access Text Network (ATN)

(Georgia Tech)

see category: Sources for Accessible Materials (Digital)

www.accesstext.org

AccessText is a conduit between the publishing world and colleges and universities across the country, with a shared mission to ensure that students with disabilities have equal access to their textbooks in an accessible format and in a timely manner.

Accessing Higher Ground (AHG)

(AHEAD)

see category: Accessibility Conferences

https://accessinghigherground.org/

Accessing Higher Ground is a conference that focuses on the implementation and benefits of accessible media, universal design, and assistive technology in university, business, and public settings; legal and policy issues, including ADA and 508 compliance; and the creation of accessible media and information resources, including web pages and library resources.

Ace by DAISY

(Accessible Checker for EPUB) (DAISY Consortium)

see: DAISY Consortium

see category: Tools & Solutions

https://daisy.github.io/ace/

Ace by DAISY is a free online tool, which can be run online or offline, that will analyze an EPUB and report in detail how well it conforms to EPUB Accessibility 1.0, flagging those issues for which checking can be automated. A caveat: it can tell whether a required feature is present, but it still needs human review to tell whether it's been done well.

Ace by DAISY Getting Started Guide

(Inclusive Publishing)

see category: Standards, Recommendations, and Guidelines

https://inclusivepublishing.org/toolbox/accessibility-checker/getting-started/

Ace (Accessibility Checker for EPUB) is a tool developed by the DAISY Consortium to assist with the evaluation of the accessibility of EPUB publications. Its automated accessibility checks assist in the evaluation of conformance to the EPUB Accessibility 1.0 specification.

American Council for the Blind (ACB)

see categories: Organizations and Initiatives; Accessibility Conferences

https://www.acb.org/

The American Council of the Blind (ACB) is a US organization comprised of approximately 70 state chapters and special-interest affiliates representing a diverse range of groups within the blind community

who want to achieve independence and equality.

American Foundation for the Blind (AFB)

see category: Organizations and Initiatives

https://www.afb.org/

Founded in 1921, the AFB has spent nearly a century ensuring that individuals who are blind or visually impaired have access to the information, technology, education, and legal resources they need to live independent and productive lives.

American Library Association (ALA) Blog — District Dispatch

see category: Blogs

http://www.districtdispatch.org/category/accessibility/

Get the latest library policy news on the District Dispatch from the American Library Association.

American Printing House for the Blind (APH)

see category: Sources for Accessible Materials (Braille)

http://www.aph.org/

APH provides specialized materials, products, and services to visually impaired persons.

Assistive Technology Industry Association (ATIA) Conference

see category: Accessibility Conferences

https://www.atia.org/conference/

The ATIA conference is the world's most extensive assistive technology conference showcasing international excellence in the field.

Association of Research Libraries (ARL) Blog

see category: Blogs

http://accessibility.arl.org/blog

A blog of the Association of Research Libraries (ARL), a nonprofit organization of the largest research and university libraries in the United States and Canada. ARL influences the changing environment of scholarly communication and the public policies that affect research libraries and the diverse communities they serve.

Benetech

see: Bookshare (Benetech); DIAGRAM Center; Accessibility Metadata Project; Global Certified Accessible (GCA)

see category: Organizations and Initiatives

https://benetech.org/

Benetech is a nonprofit social enterprise organization that includes multiple program areas and initiatives that provide software to improve the lives of people across the world. Its four main areas are education, human rights, the environment, and poverty. Its largest initiative is Bookshare, which provides accessible books to people with print disabilities. Benetech was founded in 1989 by high-technology social entrepreneur Jim Fruchterman in Palo Alto, California.

Benetech Blog

see category: Blogs

https://benetech.org/blog/

The latest nonprofit technology news about Benetech, its software and its impact.

Book Industry Study Group (BISG)

see: BISG Accessible Publishing Working Group (Book Industry Study Group)

see category: Organizations and Initiatives

https://bisg.org/

The Book Industry Study Group, Inc. (BISG), is the leading US book trade association for standardized best practices, research and information, and events. BISG facilitates connections and conversations to solve common problems, advance new ideas, and more profitably bring published content to readers across the full publishing supply chain.

BISG Accessible Publishing Working Group

(Book Industry Study Group)

see: Book Industry Study Group (BISG)

see category: Organizations and Initiatives

http://bisg.org/?page=AccessibleWG&hh

The Accessible Publishing Working Group develops educational resources to promote best practices for

accessibility in publishing, including this guide and the BISG "Cheat Sheets" for creating accessible ebooks.

BISG "Cheat Sheets"

(Book Industry Study Group)

see category: Standards, Recommendations, and Guideline

The BISG has created a set of 12 "Cheat Sheets" that briefly summarize a variety of issues and topics that are covered in more depth in this Guide. They can be printed out and handed to somebody, posted on the wall of your cube—whatever!

BISG Guide to Accessible Publishing 2019

(Book Industry Study Group)

see category: Standards, Recommendations, and Guidelines

The *BISG Guide to Accessible Publishing* was first published in 2016 as *The BISG Quick Start Guide to Accessible Publishing*. This major revision provides both a brief, high-level overview of the key issues that everybody, from executives to production staff, needs to understand, as well as more detailed guidance and resources for developers, legal staff, and managers in editorial and production roles.

Book Industry Communication (BIC) (UK)

see category: Organizations and Initiatives

http://www.bic.org.uk/

BIC is the United Kingdom's book industry's independent supply chain organization, committed to improving the efficiency of the trade and library supply chains, reducing cost, and automating processes.

Bookshare (Benetech)

see: Accessible Image Sample Book; Image Guidelines for EPUB 3 (DIAGRAM Center); MathML Cloud; Accessibility Metadata Project; Benetech; Born Accessible; Buy Accessible: What to Look for in Accessible Ebooks; DIAGRAM Center Webinars

see also: DIAGRAM Center

see categories: Sources for Accessible Materials (Digital, Audio, Braille); International Libraries and Sources for Accessible Materials

https://www.bookshare.org/cms

Bookshare, an initiative of the Palo Alto–based nonprofit Benetech is the largest online library in the world of digital books (in text, digital audio, and braille) for people with print disabilities.

Bookshare Blog

see category: Blogs

https://bookshareblog.wpengine.com/

A blog of Bookshare, the world's largest online library of accessible ebooks for people with reading barriers. Read about the latest feature updates, member stories, book suggestions, and more.

Born Accessible (Benetech)

see: Bookshare (Benetech)

see category: Organizations and Initiatives

http://bornaccessible.org

https://bornaccessible.org/certification/

An initiative to provide publishers with tools, guidelines, and best practices on how to ensure that content that is born digital is born accessible. Born Accessible's Global Certified Accessible (GCA) initiative is a program for publishers and vendors to certify that the content they produce is compliant with accessibility standards.

Braille Authority of North America (BANA) Guidelines and Standards for Tactile Graphics

see categories: Standards, Recommendations, and Guidelines; Resources for Creating Accessible Images and Graphics

http://www.brailleauthority.org/tg/web-manual/index.html

Developed as a joint project of the Braille Authority of North America and the Canadian Braille Authority / L'Autorité Canadienne du Braille, these guidelines and standards provide transcribers, educators, and producers with information about best practices, current methods, and design principles for the production of readable tactile graphics.

Buy Accessible: What to Look for in Accessible Ebooks (Benetech)

see: Bookshare (Benetech)

see categories: Standards, Recommendations, and Guidelines; Books, Articles, Newsletters

https://benetech.org/wp-content/uploads/2017/08/Born-Accessible-Buy-Accessible_3-28-17.pdf

Guidance from Benetech on what to look for when purchasing accessible digital textbooks.

CADET (Caption and Description Editor)

see: WGBH National Center for Accessible Materials (NCAM)

see categories: Resources for Creating Accessible Images and Graphics; Tools & Solutions

http://ncamftp.wgbh.org/cadet/

A free downloadable caption-authoring software that enables anyone to produce high-quality caption files that are compatible with any media player that supports the display of captions. CADET can also be used to generate audio-description scripts.

Calibre Audio Library (UK)

see category: International Libraries and Sources for Accessible Materials

www.calibre.org.uk

Calibre Audio Library is a UK charity providing a subscription-free service of unabridged audio books for adults and children with sight problems, dyslexia, or other disabilities who cannot read print.

California State University Tutorials

see category: Training Resources

http://www.calstate.edu/accessibility/tutorials/math.shtml

Tips and tutorials for creating accessible content.

CAST

see: National Center on Accessible Educational Materials (AEM Center) (CAST)

see category: Organizations and Initiatives

http://www.cast.org/

CAST researches and develops solutions to make education more inclusive and effective by applying the principles of Universal Design for Learning (UDL). It runs the AEM Center (National Center on Accessible Educational Materials).

CELA (Center for Equitable Library Access) (Canada)

see categories: Sources for Accessible Materials (Digital); International Libraries and Sources for Accessible Materials

http://iguana.celalibrary.ca/iguana/

The Centre for Equitable Library Access (CELA) is Canada's most comprehensive accessible reading service, providing books and other materials to Canadians with print disabilities in the formats of their choice.

CNIB Library (Canadian National Institute for Blind People) (Canada)

see category: International Libraries and Sources for Accessible Materials

http://www.cnib.ca/en/services/library/Pages/default.aspx

The CNIB Library is Canada's largest library of accessible materials for people with print disabilities.

CSUN Assistive Technology Conference

see category: Accessibility Conferences

https://www.csun.edu/cod/conference

The foremost conference in the world on the use of technology for people with disabilities.

DAISY Consortium

see: Ace by DAISY (Accessible Checker for EPUB) (DAISY Consortium); DAISY Structure Guidelines Part 2 MathML; Inclusive Publishing (DAISY); Inclusive Publishing Blog; DAISY Planet; Dolphin EasyConverter & Publisher; Save as DAISY; Tobi; Obi Audio Production Tool

see category: Organizations and Initiatives

http://www.daisy.org

The DAISY Consortium is a global partnership of organizations committed to creating the best way to read and publish—for everyone. For guidance on how to create an accessible, navigable ebook, see http://www.daisy.org/structure.

DAISY Planet

see: DAISY Consortium

see category: Books, Articles, Newsletters

http://www.daisy.org/planet-2014-12

Regular newsletter from the DAISY Consortium featuring news articles and information on latest industry developments.

DAISY Structure Guidelines Part 2 MathML

see: DAISY Consortium

see category: Resources for Creating Accessible Math

http://www.daisy.org/z3986/structure/SG-DAISY3/part2-math.html

A guide to using elements in the markup of mathematical expressions in DAISY.

Dedicon (Netherlands)

see category: International Libraries and Sources for Accessible Materials

https://www.dedicon.nl/

Dedicon is a Dutch foundation that specializes in making books, newspapers, magazines, sheet music, and other information available in alternative reading formats for people with a reading disability.

DIAGRAM Center (Benetech)

(Digital Image and Graphic Resources for Accessible Materials)

see: MathML Cloud; Accessible Image Sample Book; Image Guidelines for EPUB 3; Poet Image Description Training Module; Top Tips for Creating Accessible EPUB 3 Files; DIAGRAM Center Webinars

see also: Bookshare (Benetech); National Center for Accessible Materials (WBGH) (NCAM)

see categories: Organizations and Initiatives; Standards, Recommendations, and Guidelines

http://diagramcenter.org

The DIAGRAM Center is a research and development center whose goal is to dramatically change the way image and graphic content for Accessible Electronic Media (AEM) is produced and accessed so that students with print disabilities are provided equal access to the general education curriculum. The DIAGRAM Center is a Benetech Global Literacy initiative.

DIAGRAM Center Webinars (Benetech)

see: DIAGRAM Center; Bookshare (Benetech); Benetech

see category: Training Resources

http://diagramcenter.org/diagramwebinars.html

A wide range of training webinars for the creation of accessible images and graphics.

Dolphin EasyConverter & Publisher

see: DAISY Consortium

see category: Tools & Solutions

http://yourdolphin.com

EasyConverter enables users to create accessible Microsoft Word documents, large-print books, MP3 audio, DAISY talking books, and braille. Dolphin Publisher assists with the creation of talking books in DAISY or EPUB 3 formats.

The Dyslexia Foundation

see category: Organizations and Initiatives

http://dyslexiafoundation.org/

TDF is a nonprofit organization established in 1989 to identify and assist children with dyslexia to establish higher levels of learning through specialized programs promoting better reading.

EDItEUR

see category: Organizations and Initiatives

https://www.editeur.org/

EDItEUR is the international group coordinating development of the standards infrastructure for electronic commerce in the book, ebook, and serials sectors. It provides its membership with research, standards, and guidance in diverse areas, such as bibliographic and product information; EDI and other e-commerce transaction standards; the standards infrastructure for digital publishing; and rights management and trading.

EPUB Accessibility 1.0 Specification (W3C Member Submission)

see category: Standards, Recommendations, and Guidelines

https://www.w3.org/Submission/epub-a11y/

This is the “baseline specification” for publication accessibility. It’s based on EPUB, which in turn is based on web accessibility standards, with additions specifically for publishing. It’s the basis for most accessibility conformance testing and certification.

EPUB Accessibility Techniques (W3C)

see category: Standards, Recommendations, and Guidelines

http://www.idpf.org/epub/a11y/techniques/techniques.html

This document provides guidance on how to meet the EPUB Accessibility discovery and accessibility requirements for EPUB publications.

EPUBSecrets

see category: Blogs

http://epubsecrets.com/

EPUBSecrets is part of the Creative Publishing Network family of sites and services for creative professionals. Produced by CPN co-founders David Blatner and Anne-Marie Concepción, EPUBsecrets.com is one of the best resources for all things EPUB.

epubtest.org

see category: Tools & Solutions

http://epubtest.org/

The EPUB 3 Support Grid, led by the BISG and now maintained by DAISY, is a resource for determining which features of EPUB 3 render correctly on the most commonly used devices, apps, and reading systems. The grid includes results of tests conducted by industry experts representing leading publishers, service providers, and technology vendors. Accessibility tests show how reading systems support key requirements for accessible reading.

Future of Education Technology Conference (FETC)

see category: Accessibility Conferences

http://www.fetc.org/

For nearly 40 years, the Future of Education Technology Conference (FETC) has gathered the most dynamic and creative education professionals from around the world for an intensive, highly collaborative exploration of new technologies, best practices, and pressing issues. School and district administrators, classroom teachers, IT professionals, special education directors, curriculum and media specialists, and other educators with roles or interest in educational technology—all attend FETC to find the professional learning, technology solutions, and connections they need to transform learning in and out of the classroom.

Global Initiative for Inclusive Information and Communication Technology (G3ict)

see category: Organizations and Initiatives

http://g3ict.org/

G3ict is an international advocacy initiative to facilitate and support the implementation of the dispositions of the Convention on the Rights of Persons with Disabilities (CRPD) for the accessibility of information communication technologies (ICTs) and assistive technologies (ATs).

Global Certified Accessible (GCA) (Benetech)

see: Born Accessible, Benetech

see category: Tools & Solutions

https://bornaccessible.org/certification/

Benetech's certification program, Global Certified Accessible (GCA), is the first-ever program to certify the accessibility of ebooks. Using a two-step process involving accreditation and auto-certification, Benetech works with a publisher to extensively evaluate their production process for creating accessible books and ensures that all titles produced through that process are accessible from the start.

Guidelines for Self-Publishing Authors

(Accessible Books Consortium) (WIPO)

see category: Standards, Recommendations, and Guidelines

http://www.accessiblebooksconsortium.org/export/abc/abc_ebook_guidelines_for_self-publishing_authors.pdf

This guide introduces authors to the ways people with print disabilities can read using ebook technologies. It highlights some of the potential challenges and outlines the steps to make publications more accessible.

Guide to Inclusive Communication

(UK Government Publication)

see categories: Standards, Recommendations, and Guidelines; Books, Articles, Newsletters

https://www.gov.uk/government/publications/inclusive-communication/using-a-range-of-communication-channels-to-reach-disabled-people

Written originally for government communicators, these guidelines are also useful to other professionals seeking to increase the accessibility of their communications.

HathiTrust

see category: Sources for Accessible Materials (Digital)

https://www.hathitrust.org/

HathiTrust is a partnership of academic and research institutions that offers a collection of millions of titles, digitized from libraries around the world, to patrons of its member libraries.

How People with Disabilities Use the Web: Overview

see: World Wide Web Consortium (W3C)

see category: Training Resources

http://www.w3.org/WAI/intro/people-use-web/

This resource introduces how people with disabilities, including people with age-related impairments, use the web.

IBM Bluemix

see category: Tools & Solutions

www.ibm.com/cloud-computing/bluemix/

IBM offers a set of cloud-based tools to help create accessible content and applications, in particular the newly developed Digital Content Checker and the Automated Accessibility Checker, as well as their Text to Speech Service, which is available in several voices.

ICT Accessibility Testing Symposium

see category: Accessibility Conferences

https://www.ictaccessibilitytesting.org/

An annual two-day symposium with talks and workshops on how to make sure accessibility is built into the product design and development process.

Image Guidelines for EPUB 3 (DIAGRAM Center)

see: DIAGRAM Center; Bookshare (Benetech)

see categories: Standards, Recommendations, and Guidelines; Resources for Creating Accessible Images and Graphics

http://diagramcenter.org/59-image-guidelines-for-epub-3.html

These guidelines outline the essential requirements for including images in EPUB 3 and methods on how to implement them.

Inclusive Learning Design Handbook — Section on Inclusive EPUB 3, Floe Project

see category: Standards, Recommendations, and Guidelines

https://handbook.floeproject.org/InclusiveEPUB3.html

The Floe Project is based at OCAD University in Toronto and funded by the William and Flora Hewlett Foundation.

Inclusive Publishing (DAISY Consortium)

see: DAISY Consortium; Inclusive Publishing Blog

see category: Organizations and Initiatives

http://accessiblepublishing.org

DAISY's list of best practice resources offers technical guidance on the creation of accessible content.

Inclusive Publishing Blog (DAISY Consortium)

see: DAISY Consortium; Inclusive Publishing (DAISY)

see category: Blogs

http://accessiblepublishing.org/#blog_sidebar

An essential resource for the latest news on accessible digital publishing, guidelines, best practices, tools, and advice.

Inclusive Publishing Newsletter

see category: Books, Articles, Newsletters

https://inclusivepublishing.org/newsletter/

A leading newsletter for the latest thinking and developments on accessible publishing, with information on industry news, accessibility events, and details on how to become involved in the wider accessibility community.

International Association of Accessibility Professionals (IAAP)

see category: Organizations and Initiatives

www.accessibilityassociation.org

The mission of the IAAP is to define, promote, and improve the accessibility profession globally through networking, education, and certification.

International Digital Publishing Forum (IDPF)

The IDPF has become part of the W3C and no longer functions as an independent organization. Its activities are now part of the W3C publishing activities under the Publishing@W3C umbrella.

International Dyslexia Association (IDA)

see category: Organizations and Initiatives

https://dyslexiaida.org/

The International Dyslexia Association (IDA) is a nonprofit education and advocacy organization devoted to issues surrounding dyslexia.

International Publishers Association (IPA) (Switzerland)

see category: Organizations and Initiatives

http://www.internationalpublishers.org/policy-issues/visually-impaired-persons

The IPA is an international publishing industry federation of national publisher associations representing book and journal publishing.

Internet Archive

see category: Sources for Accessible Materials (Digital)

https://archive.org/index.php

The Internet Archive is a San Francisco–based nonprofit digital library of millions of books, nearly one million of which are available in the accessible DAISY format.

Learning Ally

see category: Sources for Accessible Materials (Audio)

https://www.learningally.org/

Learning Ally provides support for people with print disabilities through audiobooks and parent support services. It was formerly known as Reading for the Blind and Dyslexic (RFB&D).

Learning Registry

see category: Resources for Creating Accessibility Metadata

http://learningregistry.org/

An open-source metadata aggregation platform of online educational materials for teachers, parents, publishers, content creators, and students that allows users to tag content with accessibility metadata so that accessible materials can be easily discoverable on the web.

Learning Resource Metadata Initiative (LRMI)

see: Accessibility Metadata Project; Schema.org Accessibility Metadata

see category: Resources for Creating Accessibility Metadata

http://www.lrmi.net/

A common metadata framework incorporating accessibility features for describing or "tagging" learning resources on the web. The metadata schema has been adopted by Schema.org so that educational content using LRMI markup to provide rich, education-specific metadata about their resources will be recognized by major search engines.

LIA (Italy)

see category: International Libraries and Sources for Accessible Materials

http://www.libriitalianiaccessibili.it

This catalog of more than 9,000 ebooks accessible to blind and visually impaired people has become a reference point for the Italian community of readers with visual impairments.

MathType (WIRIS)

see category: Resources for Creating Accessible Math

http://www.wiris.com/en

www.dessci.com/en/products/mathtype

An equation editor for the creation of math and chemistry formulas for publishing and mathematical documents that enables the automatic generation of MathML.

M-Enabling Summit

see category: Accessibility Conferences

https://www.m-enabling.com/

This annual meeting is dedicated to promoting accessible and assistive technology for senior citizens and users of all abilities by those who create and contribute accessible ICT products, services, connected devices, and consumer technologies.

Marrakesh Treaty

see category: Organizations and Initiatives

http://www.wipo.int/treaties/en/ip/marrakesh/

The Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired, or Otherwise Print Disabled (MVT) makes the production and international transfer of specially adapted books for people with blindness, visual impairments, or print disabilities easier by establishing a set of limitations and exceptions to traditional copyright law. The treaty was signed in Marrakesh on June 27, 2013, and came into effect on September 30, 2016. It was signed into law in the United States in October 2018.

MathJax

see category: Resources for Creating Accessible Math

https://www.mathjax.org/

A JavaScript display engine for mathematics that works in all browsers and that provides semantics useful for accessibility.

MathML Cloud (Benetech)

see: Bookshare (Benetech); DIAGRAM Center (Digital Image and Graphic Resources for Accessible Materials) (Benetech)

see category: Resources for Creating Accessible Math

http://mathmlcloud.org

An open-source tool for the creation of math content that is accessible to all readers.

National Braille Press

see category: Sources for Accessible Materials (Braille)

http://www.nbp.org/

The guiding purposes of National Braille Press are to promote the literacy of blind children through braille and to provide access to information that empowers blind people to actively engage in work, family, and community affairs.

National Center on Accessible Educational Materials (AEM Center) (CAST)

see: CAST

see category: Organizations and Initiatives

http://www.cast.org/our-work/capacity-building/projects/national-center-accessible-educational-materials-aem.html#.W-cRCXpKgWo

An initiative of CAST, the National Center on Accessible Educational Materials, referred to as the AEM Center, provides resources for educators, parents, students, publishers, conversion houses, and accessible media producers.

National Center on Disability and Access to Education (NCDAE) Accessibility Resources

see category: Training Resources

http://ncdae.org/resources/cheatsheets/

These one-page accessibility resources have been developed to assist anyone who is creating accessible content.

National Federation of the Blind (NFB)

see category: Organizations and Initiatives

https://nfb.org/

The National Federation of the Blind (NFB) is the oldest and largest organization led by blind people in the United States. The NFB works to promulgate its philosophy by educating and recruiting new members, working to educate the general public, and interacting with legislators and policy makers at the local, state, and national levels.

National Federation of the Blind (NFB) National Convention

see category: Accessibility Conferences

https://nfb.org/convention

The largest gathering of blind people in the world, the National Federation of the Blind's annual national convention is the premier event for training, support, and inspiration for the blind community.

National Instructional Materials Accessibility Center (NIMAC)

see category: Sources for Accessible Materials (Digital)

Created by IDEA 2004, the NIMAC is a federally funded, searchable online file repository of K–12 print textbook content in the XML-based NIMAS (National Instructional Materials Accessibility Standard) format. K–12 educational publishers are required to create NIMAS files for all textbooks; these files are stored in the NIMAC, where they are available to authorized users.

National Library Service for the Blind and Physically Handicapped (NLS), Library of Congress

see category: Sources for Accessible Materials (Audio, Braille)

http://www.loc.gov/nls/

Through a national network of cooperating libraries, NLS administers a free library program of braille and audio materials circulated to eligible borrowers in the United States by postage-free mail.

National Network for Equitable Library Services (NNELS) (Canada)

see category: International Libraries and Sources for Accessible Materials

https://nnels.ca/

The National Network for Equitable Library Service (NNELS) is a repository of content owned and sustained by Canadian public libraries, working with international partners, libraries, readers, and publishers (particularly Canadian ones) to make copies of books in accessible formats available to readers in Canada who have print disabilities.

Obi (DAISY Consortium) Audio Production Tool

see: DAISY Consortium

see category: Tools & Solutions

https://www.daisy.org/obi

Obi is an open-source audio book production tool that produces digital talking books (DTBs) conforming to DAISY 3 (officially, the ANSI/NISO Z39.86), Accessible EPUB 3, and DAISY 2.02 standards.

Once (Spain)

see category: International Libraries and Sources for Accessible Materials

https://www.once.es/

The Organización Nacional de Ciegos Españoles (ONCE), or National Organization of Spanish Blind People, is a Spanish foundation that raises funds to provide services for the blind and people with serious visual impairment in Spain.

ONIX Accessibility Metadata

see category: Resources for Creating Accessibility Metadata

http://www.editeur.org/8/ONIX/

ONIX, the international standard for representing and communicating book-product information in electronic form, enables the inclusion of accessibility compliance metadata in an ONIX message. This information can then travel with the publication through distribution channels so that customers can be made aware of the accessible features the EPUB offers.

Ontario Council of University Libraries (OCUL) (Canada)

see category: Standards, Recommendations, and Guidelines

www.ocul.on.ca/node/2127

OCUL's publication, "Accessibility Toolkit for Libraries," provides examples of best practices for libraries.

Pearson Accessibility Guidelines for Digital Learning Products

see category: Standards, Recommendations, and Guidelines

http://wps.pearsoned.com/accessibility/115/29601/7577872.cw/

A directory of over 40 different accessibility guidelines for various e-learning topics by Pearson.

Perkins eLearning and Perkins Library

see category: Sources for Accessible Materials (Digital, Audio, Braille)

www.perkins.org

Perkins eLearning is an online portal designed to provide resources and support to anyone, anywhere, in the field of blindness education. The Perkins Library circulates more than 530,000 items in braille, audio, electronic, and large-print formats to about 28,000 patrons in the United States.

Poet Image Description Training Module (DIAGRAM Center)

see: WGBH National Center for Accessible Media (NCAM) Guidelines

see also: DIAGRAM Center; Benetech

see categories: Resources for Creating Accessible Images and Graphics; Tools & Solutions; Training Resources

http://www.diagramcenter.org/development/poet/html

The Poet Image Description Training Module is a collection of reference guides and hands-on practices to help cultivate skills for writing image descriptions. The module is available from a drop-down menu in Poet and provides guidance for common types of complex images such as flow charts and Venn diagrams, following an expanded list of NCAM guidelines.

Publishing@W3C

see categories: Organizations and Initiatives; Standards, Recommendations, and Guidelines

https://www.w3.org/publishing/

An activity of the W3C that is devoted to working to address the needs of publishers in the context of the web. It is composed of the Publishing Business Group, the Publishing Working Group, and the EPUB 3 Community Group.

Publishers Association (PA) (UK)

see category: Organizations and Initiatives

http://www.publishers.org.uk/campaigns/accessibility/

The PA chairs the Accessibility Action Group (AAG), which comprises publisher and advocacy groups that work together to ensure a focus on accessibility from all elements of the supply chain.

ReadHowYouWant

see category: Sources for Accessible Materials (Digital, Audio, Braille)

www.readhowyouwant.com

ReadHowYouWant reformats existing books into a range of alternative formats including braille, DAISY, and ebooks.

Readium

see category: Tools & Solutions

http://readium.org

The Readium Foundation develops technology to accelerate the adoption of EPUB 3 and the Open Web Platform.

ReadSpeaker Narrator

see category: Tools & Solutions

www.readspeaker.com/accessible-publishing/

Automatic creation of audio books using high-quality text to speech in 32 languages and a variety of formats.

RNIB (Royal National Institute of Blind People) (UK)

see category: Organizations and Initiatives

https://www.rnib.org

The Royal National Institute of Blind People is a UK charity offering information, support, and advice to almost two million people in the United Kingdom with sight loss.

RNIB Bookshare (UK)

see categories: Sources for Accessible Materials (Digital); International Libraries and Sources for Accessible Materials

https://www.rnibbookshare.org/

RNIB Bookshare is a free online resource that allows educators to download curriculum materials in a range of formats and adapt them to suit personal reading needs of readers with print disabilities.

RNIB Tactile Images

see category: Resources for Creating Accessible Images and Graphics

http://www.rnib.org.uk/professionals/services/tactile/pages/tactile_images_services.aspx

Products for reading and writing braille. Information about RNIB's tactile image services can be found at https://www.rnib.org.uk/rnib-business/tactile-images-maps-and-touch-installations.

Save as DAISY

see: DAISY Consortium

see category: Tools & Solutions

www.daisy.org/project/save-as-daisy-microsoft

A Microsoft Office Word add-in.

Save as EPUB

see category: Tools & Solutions

A Google Docs built-in feature.

Schema.org Accessibility Metadata

see: Learning Resource Metadata Initiative (LRMI)

see category: Resources for Creating Accessibility Metadata

http://schema.org

Schema.org is a collaborative, community activity with a mission to create, maintain, and promote schemas for structured data on the Internet, on web pages, in email messages, and beyond. Schema.org metadata includes four accessibility properties to help users identify accessible books and videos on the major search engines (including Google, Yahoo!, Bing, and Yandex) using vocabulary developed in collaboration with and identical to that in EPUB Accessibility 1.0.

SMART (Simple Manual Accessible Reporting Tool)

(DAISY Consortium)

see: DAISY Consortium

see category: Tools & Solutions

SMART provides a simple manual counterpart to the more automated and comprehensive Ace by DAISY tool. It facilitates human review and generates reports.

Tobi (DAISY Consortium)

see: DAISY Consortium

see category: Tools & Solutions

www.daisy.org/tobi

An authoring tool for DAISY and EPUB 3 talking books.

Top Tips for Creating Accessible EPUB 3 Files (DIAGRAM Center)

see: DIAGRAM Center (Digital Image and Graphic Resources for Accessible Materials) (Benetech); BISG "Cheat Sheets" (Book Industry Study Group)

see category: Standards, Recommendations, and Guidelines

http://diagramcenter.org/54-9-tips-for-creating-accessible-epub-3-files.html

Practical guidance for the creation of accessible EPUB 3 files. This guide contains a more in-depth version of the Top Tips with links to code samples and additional information for each tip. The BISG has also created a Cheat Sheet with a nontechnical version of the tips, presented at the end of this Guide and in a separate document.

Trusted Intermediary Global Access Resource (TIGAR)

see: Accessible Books Consortium (ABC) (WIPO), Geneva, Switzerland

see category: Sources for Accessible Materials (Digital)

http://www.accessiblebooksconsortium.org/globalbooks/en/

TIGAR, now the ABC Global Book Service from the Accessible Books Consortium, aims to provide access to copyright-protected works in accessible formats for people with print disabilities across borders.

Vision Australia (Australia)

see category: International Libraries and Sources for Accessible Materials

https://visionaustralia.org/

Vision Australia is a leading national provider of blindness and low-vision services in Australia. They are a not-for-profit organization and a major participant and partner in the international blindness community.

VPAT

see category: Tools & Solutions

https://www.itic.org/policy/accessibility/vpat

The Information Technology Industry Council's VPAT (Voluntary Product Accessibility Template) is the leading global reporting format for explaining how information and communication technology (ICT) products such as software, hardware, electronic content, and support documentation meet (conform to) the Revised 508 Standards for IT accessibility. VPATs help federal agency contracting officials and government buyers to assess ICT for accessibility when doing market research and evaluating proposals.

WAI-ARIA (W3C)

see: W3C (World Wide Web Consortium)

see category: Standards, Recommendations, and Guidelines

https://www.w3.org/WAI/standards-guidelines/aria/

WAI-ARIA (Web Accessibility Initiative–Accessible Rich Internet Applications) is a technical specification published by the World Wide Web Consortium (W3C) that specifies how to increase the accessibility of web pages—in particular, dynamic content, and user interface components developed with Ajax, HTML, JavaScript, and related technologies.

W3C WAI (World Wide Web Consortium Web Accessibility Initiative)

see: W3C (World Wide Web Consortium)

see categories: Organizations and Initiatives; Standards, Recommendations, and Guidelines; Training Resources

http://www.w3.org/standards/webdesign/accessibility

An indispensable introduction to web accessibility. Of particular note is its invaluable presentation of the business case for adopting accessibility from the social, technical, financial, legal, and policy perspectives.

WAI Accessibility Principles (Web Accessibility Initiative)

see: W3C (World Wide Web Consortium)

see category: Standards, Recommendations, and Guidelines

http://www.w3.org/WAI/intro/people-use-web/principles

This resource provides web accessibility requirements for websites, web applications, browsers, and other tools. It also provides references to the international standards from the W3C's Web Accessibility Initiative (WAI), which include considerations for the broad diversity of web users and ways people use the web.

WebAIM (Web Accessibility in Mind)

see category: Training Resources

https://webaim.org/

Based at the Center for Persons with Disabilities at Utah State University, WebAIM offers training, technical assistance, site evaluation and reporting, and a variety of useful tools, including the WAVE tool, a color-contrast checker, and WCAG and Section 508 checklists.

Web Content Accessibility Guidelines (WCAG) 2.1

see: W3C (World Wide Web Consortium)

see category: Standards, Recommendations, and Guidelines

https://www.w3.org/TR/WCAG21/

Web Content Accessibility Guidelines (WCAG) 2.1 covers a wide range of recommendations for making web content more accessible on desktops, laptops, tablets, and mobile devices. Following these guidelines will make content more accessible to a wider range of people with disabilities as well as to users in general.

WCAG 2 at a Glance

see: W3C (World Wide Web Consortium)

see category: Standards, Recommendations, and Guidelines

http://www.w3.org/WAI/WCAG20/glance/

A paraphrased summary of Web Content Accessibility Guidelines (WCAG) 2.0.

WGBH National Center for Accessible Materials (NCAM)

see: WGBH National Center for Accessible Media (NCAM) Guidelines; CADET (Caption and Description Editor); DIAGRAM Center

see categories: Organizations and Initiatives; Standards, Recommendations, and Guidelines

http://ncam.wgbh.org/

NCAM works to increase access to media for people with disabilities. It provides image description training and guidelines, CADET (a free, online tool for creating and editing captions and audio description), and accessibility services for organizations.

WGBH National Center for Accessible Media (NCAM) Guidelines

see: WGBH National Center for Accessible Materials (NCAM); Poet Image Description Training Module (DIAGRAM Center)

see category: Standards, Recommendations, and Guidelines

http://ncam.wgbh.org/invent_build/web_multimedia/accessible-digital-media-guide

This document presents solutions to accessibility obstacles in a format designed to educate and assist digital publishers as well as web and content developers.

Wikipedia Accessible Publishing

see category: Books, Articles, Newsletters

https://en.wikipedia.org/wiki/Accessible_publishing

The Wikipedia entry for Accessible Publishing describes the aim of accessible publishing, its history, and recent developments in the field.

World Blind Union (WBU)

see category: Organizations and Initiatives

http://www.worldblindunion.org/

The World Blind Union (WBU) is a global organization representing the estimated 253 million people worldwide who are blind or partially sighted. Members are organizations of and for the blind in 190 countries, as well as international organizations working in the field of vision impairment.

World Intellectual Property Organization (WIPO)

see: Accessible Books Consortium (ABC) (WIPO), Geneva, Switzerland; Accessible Publishing: Best Practice Guidelines for Publishers

see category: Organizations and Initiatives

http://www.wipo.int/portal/en/index.html

The World Intellectual Property Organization (WIPO) is a specialized agency of the United Nations. It is dedicated to developing a balanced and accessible international intellectual property system, which rewards creativity, stimulates innovation, and contributes to economic development while safeguarding the public interest.

World Wide Web Consortium (W3C)

see: W3C Web Accessibility Initiative; W3C, The Business Case for Accessibility; WAI Accessibility Principles; How People with Disabilities Use the Web: Overview

see categories: Organizations and Initiatives; Standards, Recommendations, and Guidelines

http://www.w3.org/dpub/IG/wiki/Main_Page

The World Wide Web Consortium (W3C) is an international community in which member organizations, a full-time staff, and the public work together to develop web standards. Led by web inventor and director Tim Berners-Lee and CEO Jeffrey Jaffe, W3C's mission is to lead the web to its full potential. The W3C has absorbed the IDPF and is now the standards organization responsible for EPUB.

Cheat Sheet: Accessibility

(What it is and who it affects)

What is accessibility?

- Accessibility means that a product works for everyone, right away, right off the shelf.
- Accessibility is about access for people with any level of ability.
- Publications should be able to be read by people with vision, hearing, cognitive, or physical impairments.
- Just as curb cuts, designed for people with physical disabilities, are useful for all of us, accessible publications are better for everybody.

What are the standards for making a publication accessible?

- There are international accessibility standards, such as the Web Content Accessibility Guidelines (WCAG) from the World Wide Web Consortium (W3C), that ensure a consistent experience and are the basis for most accessibility specifications and laws.
- These W3C standards are the foundation of the EPUB Accessibility 1.0 specification, the standard for accessible publications.
- There are two aspects to ebook accessibility: the interface and the content.
    - Interface: Platforms and e-readers offer various levels of support for accessibility—keyboard support, screen reader support, adjustable font size and contrast, etc.
    - Content: Proper markup and structure, consistent navigation, and other requirements for accessible content are essential for use by assistive technologies (AT).

Who is affected?

Q: How many people need accessible content, and why?
A: Way more than you think!

- Worldwide, way more people than you think have print disabilities:
    - 253 million people (19 million of them children) have a vision impairment.

    - 375 million people worldwide (more than the US population of 324 million) have severe dyslexia.
    - One in eight people in the United States struggles to read conventional print.
- There are more people with print disabilities globally than the total print sales for the Twilight and Harry Potter series combined.
- 54 million Americans have a disability.
- Over 34% of the world's population will be over 60 by 2050—and 21% of those will have reading impairments.
- Only 10% of children with disabilities in developing countries attend primary school, and only 50% of them complete primary school.

Q: How many publications are accessible—or not?
A: Hardly any are!

- Fewer than 5% of books published in the United States are available to people with print disabilities, and the number is closer to zero in the developing world. This is referred to in the disability world as the "book famine."
- This is a missed opportunity. The disposable spending power of that population (including family and friends) is $220 billion.

Q: I'm not disabled. How would I benefit from accessibility?
A: Lots of ways!

- 15% of the world's population has a disability, but accessibility benefits the other 85% as well.
- Everyone can benefit from accessibility: an accessible product is inherently more usable. Remember that curb cuts were intended for wheelchairs but help anyone with a stroller or wheeled suitcase. And then there's closed captioning, voice recognition, and read aloud.
- These accommodations are useful for people with "situational disabilities":
    - You can listen to a book while you're driving a car.
    - You can watch the news in a noisy airport or bar.
- At any moment, any one of us can become a person with a disability. A broken arm from a skiing accident, age-related vision loss, even simple arthritis can make it difficult to access traditional print content.

Cheat Sheet: What It's Like to Read with a Print Disability

These four videos bring home the experience of reading if you're blind, dyslexic, or mobility-impaired.

Juna Gjata is legally blind and cannot use standard print materials. In this video, she is a high school senior about to enter Harvard University. This video provides a good overview of the variety of assistive technologies blind/low-vision students use to access their educational materials. (From National Center on Accessible Educational Materials)

https://www.youtube.com/watch?v=Dldad06KpJ0

"Students Speak Out" introduces a group of high school students with a variety of learning disabilities who have become more independent and successful learners by using text-to-speech technology. More and more students want to take their AT to college with them rather than learning a new AT if the college doesn't have what they are used to.

https://www.youtube.com/watch?v=HlExTwjD_yo

From the University of Washington's DO-IT Center's "Working Together" series: Computers and People with Mobility Impairments. This one is quite long, but try to watch at least a bit of it. Mobility impairments are often overlooked, and the AT is quite interesting. Also, the link is to the audio-described version so that you get a sense of how audio description works!

https://www.youtube.com/watch?v=l_8uw-tX7M0&feature=youtu.be

The team at WebAim, which is based at Utah State University, has interviewed students with disabilities about their experiences in and out of the classroom. Hear their input in this video:

https://webaim.org/intro/index#experiences

Cheat Sheet: Making the Social Case

Access to information is a fundamental human right affecting education, employment, social inclusion, and democracy. Additionally, the consequences of the book famine include unintended censorship: without accessibility, you're inadvertently preventing people from accessing your content.

The statistics are staggering

- The potential market for K–12 is as high as 15%—or 7.5 million students—throughout the country when you include English language learners and people with "invisible" disabilities (the kid who reads a little bit more slowly than his or her peers and may never have been diagnosed).
- 24% of adults with visual impairments do not finish high school, compared to 10% of adults without a disability.
- 7% to 23% of secondary students with learning disabilities received very below-average scores on academic performance, compared to only 2% of students in the general population.
- In the United States, only 35.9% of people with disabilities (ages 18–64) are employed, compared with 76.8% of people without disabilities.
- US data shows the striking disparity between students with disabilities and those without. According to the 2013 Disability Status Report, 24% of adults with visual disabilities did not finish high school, compared with only 10% of adults without a disability.
- Similarly, according to a 2014 report by the National Center on Learning Disabilities, 7% to 23% of secondary students with learning disabilities received very below-average scores on academic performance, compared to only 2% of students in the general population.
- These disparities in educational outcomes have major impacts on post-education employment. Over 75% of adults who are legally blind are unemployed, and underemployment of people with learning disabilities is rampant.

Accessibility isn't just the right thing to do. It's the smart thing to do.

- Accessibility isn't a barrier to innovation. Accessibility *is* innovation! It helps you get your content across more clearly to more students who learn in more ways.
- Making content accessible means that more people have access to education, paying tuition, offering a diversity of perspectives, and graduating to become employable citizens who work, pay

taxes, and contribute to their communities.

- Outside the United States, the problems are far worse. Along with the 253 million blind or partially sighted individuals, there are an estimated 375 million people who have severe dyslexia, which prevents them from reading printed material. And yet identification of learning disabilities such as dyslexia are far higher in higher-income countries where parents can actually demand services for their kids who can't read.
- According to the World Bank, 115 million children worldwide are not in school, and of those, an estimated 40 million children who are not in school have disabilities (including blindness).
- Only 10% of children with disabilities in developing countries attend primary school, and of that number, only about 50% complete primary school.

Cheat Sheet: Making the Business Case

(. . . to your organization, your authors, your vendors, your colleagues in the business, your professional associations, and everyone who needs to get on the bandwagon)

Accessible content yields value for your business

- The potential market for accessible content is only going to continue to grow. Over 30% of the population in 64 countries will be over the age of 60 by 2050 (Gartner.com) and 21% will have reading impairments.
- The number of people 65 and older worldwide is projected to triple by mid-century, from 531 million in 2010 to 1.5 billion in 2050.
- Many people do not self-identify as having a disability but, for example, do find large text easier to read. It makes great business sense to make the most of this market.
- Many institutions give purchasing preference to content that is accessible over non-accessible content.

Reach an untapped market

- Publishers and content creators are leaving money on the table by not making their content accessible to all users, such as aging baby boomers, foreign language learners, struggling readers, and learners with ADHD and autism—individuals with "invisible" disabilities. Together with those who are blind and vision-impaired, dyslexic, or mobility-impaired, they create a huge market opportunity.
- Well-designed, flexible content allowing multimodal learning offers users with different learning styles a variety of effective ways to engage with content.

Make content more discoverable

- Adding accessibility metadata directly in the EPUB with Schema.org properties, or externally with ONIX or the Learning Registry, makes content more discoverable on the web and in online repositories. Simple adjustments to metadata can yield great returns for discoverability and reusability.

Streamline the production workflow

- EPUB 3 is flexible. Publishers should create each title as one well-styled and accessible EPUB 3 file that can be delivered to all distribution channels. The resulting cost savings will make more resources available for innovation.

Avoid the cost of "retrofitting" content; appeal to all learners

- Most educational content today is not accessible upon publication, requiring that publishers either create a separate product with some degree of accessibility or that schools, disability services offices at post-secondary schools, or special accessibility service providers transform that content into an accessible form. The enormous cost and hassle of retrofitting complex educational content is an ongoing challenge in the educational publishing world. Publishers should leverage the education profile of EPUB 3 to build educational content that is "born accessible" (accessible from the ground up).
- Digital accessibility litigation reached an all-time high in 2017, with a significant number of cases filed against universities, according to the advocacy group Level Access.

What can you do?

- Start a movement from the top down and the ground up. Engage your executive team in conversation about how accessibility aligns with your business goals and corporate values. Engage your developers, editors, project managers, assistants, and the rest of your colleagues in discussing basic methods for checking and applying accessibility.
- The issue is personal—everyone knows someone with an accessibility need, whether it's a friend, colleague, student, parent, child, or other relative. Find the connection that your audience can make to the everyday life of these people and discuss the impact in terms of personal needs.
- Give accessibility a face. Bring in assistive technology users to demonstrate what happens when they try to interact with your product. Use this experience to help build road maps for improvement and personas around your target customers.
- Don't put accessibility in a silo. Make sure that you are working across multiple departments within the organization and that you pull in external resources to help coordinate and educate.

Cheat Sheet: Accessibility Standards

- **EPUB Accessibility 1.0 Specification (W3C Member Submission)**
  https://www.w3.org/Submission/epub-a11y/
  This is the "baseline specification" for publication accessibility. It's based on EPUB, which in turn is based on web accessibility standards, with additions specifically for publishing. It's the basis for most accessibility conformance testing and certification.
- **EPUB Accessibility Techniques 1.0**
  http://www.idpf.org/epub/a11y/techniques/techniques.html
  This document on techniques provides guidance on how to meet the EPUB Accessibility and Discovery requirements for EPUB publications.
- **WCAG (Web Content Accessibility Guidelines, pronounced "WickAg")**
  https://www.w3.org/TR/WCAG20/
  From the World Wide Web Consortium (W3C). A broadly applied standard, WCAG is fundamental to many more specialized standards, including legal requirements, worldwide.

  There are three levels of WCAG compliance: single A (WCAG-A), double A (WCAG-AA), and triple A (WCAG-AAA), each progressively requiring stricter accessibility implementation. The EPUB Accessibility 1.0 specification requires WCAG-A compliance, and publishers are highly encouraged to meet WCAG-AA as this is becoming the accepted minimum standard.

  Note: WCAG 2.1 became a W3C recommendation in June 2018.
- **WAI-ARIA**
  https://www.w3.org/TR/wai-aria-1.1/
  For publishers, the most common use of Web Accessibility Initiative-Accessible Rich Internet Applications is to provide semantics that extend the basic structural semantics of HTML to enable assistive technology to distinguish structural features of publications in order to treat them properly.
- **WAI-ARIA DPUB Module**
  https://www.w3.org/TR/dpub-aria-1.0/
  This module of WAI-ARIA, developed for digital publishing, adds publisher-specific semantics.
- **Schema.org Accessibility Metadata**
  https://www.w3.org/wiki/WebSchemas/Accessibility
  This vocabulary for specifying accessibility features, access modes, and other accessibility metadata in websites and other HTML contexts, including EPUBs, makes accessible content

discoverable by those who need it.

- **ONIX Accessibility Metadata**
  http://www.editeur.org/14/Code-Lists
  ONIX Code List 196 is the metadata format used in the book supply chain, coordinated by the UK-based international organization EDItEUR. The accessibility terms and codes provide retailers, aggregators, distributors, and ultimately users with important information about the accessibility of a book.

- **Accessibility Metadata (EPUB <-> ONIX)**
  http://www.a11ymetadata.org/the-specification/metadata-crosswalk/

  This mapping links the accessibility metadata at Schema.org, LRMI, Access for All, Dublin Core Accessibility, and ONIX Code List 196.

- **Section 508 Refresh**
  https://www.access-board.gov/guidelines-and-standards/communications-and-it/about-the-ict-refresh/overview-of-the-final-rule
  This important US legal requirement for accessibility, although it is technically applicable at the federal government level, has a far-reaching effect in education and libraries. It was updated in 2017 (becoming a requirement in 2018) to broaden its applicability and to harmonize with accessibility standards in other countries, especially with WCAG 2.0. The revised 508 Standards incorporate by reference the WCAG 2.0 Level AA success criteria and conformance requirements to both web and non-web digital content.

- **European Commission Accessibility Standard (EN 301 549)**
  http://mandate376.standards.eu/standard
  Accessibility requirements suitable for public procurement of ICT products and services in Europe.

Cheat Sheet: The Legal Landscape

1. I am an educational publisher. How do I avoid a lawsuit?

At this time, you are in a tenuous legal safe zone. Courts have not yet held that publishers' products meet the definition as a place of public accommodation under the Americans with Disabilities Act (ADA). However, inaccessible public-facing websites and non-captioned instructional videos, which are often associated with marketing materials available to the general public, are vulnerable.

2. My customers are insisting that a product be "ADA compliant" or they cannot purchase it. What does "ADA compliant" mean?

Legally, there is no such thing as an "ADA compliant" product. The Americans with Disabilities Act does not contain technical standards for learning products. However, customers must comply with the ADA, and this means they have to provide an accessible and equitable educational experience to students with disabilities, which includes the use of instructional materials. The technical guidelines that are frequently relied on are WCAG 2.0 and Section 508 of the Rehabilitation Act of 1973; these are usually what customers are referring to. These guidelines, as well as guidance from the Office for Civil Rights, a sub-agency of the US Department of Education, contain provisions for providing accessibility when the technical guidelines are not being or cannot be implemented. Many customers are not aware of this.

3. Why are my customers being sued over their purchase and use of technology products?

A typical lawsuit involves a student or an advocacy group alleging that the student cannot equitably access the use of the product and is deprived of the opportunity to acquire the same knowledge that is available to non-disabled students. There have been at least 40 lawsuits, almost all resulting in voluntary settlements or summary judgments. There is no binding law, but there is a lot of fear and misinterpretation.

4. What kind of risks do trade publishers face?

Trade publishers who sell into the educational market do not face legal risks, but they face the same sales risk as educational publishers: a lack of accessibility can result in lost sales.

5. What is the Chafee Amendment?

The Chafee Amendment to the Copyright Act empowers nonprofits and government entities with an educational mission to bypass permission requirements, obtain appropriate content however they can, and produce and distribute accessible formats for use by people with print disabilities. There is nothing in the amendment that prohibits nonprofits from charging disabled users and institutions for the formats provided. As of this writing, the Chafee Amendment is poised for even further expansion in the definition

of beneficiaries and what constitutes a specialized format. Whether schools and colleges are considered authorized entities remains unsettled. One court has ruled that college libraries can be viewed as such.

6. Why do I have to provide unprotected files to colleges?

Between 1999 and 2006, a handful of states passed laws requiring publishers to provide unprotected files to colleges. While you have to provide these files only to colleges in states that have passed "e-text laws," most publishers provide the files to colleges in every state. Unprotected files are needed in some cases because some reading platforms may enforce "protection" (encryption, DRM, etc.) in a way that makes the file inaccessible to assistive technology. These requirements, while well-intentioned during past years, assumed that publishers did not and would not produce born-accessible ebooks, and the laws now undermine publishers' motivation and efforts to publish accessible ebooks.

7. What's "fair use" got to do with it?

There is an unsubstantiated belief held by many advocates that accessibility always trumps copyright law and that fair use will provide a backup protection for scanning and creating accessible formats without permission. The HathiTrust case—Authors Guild, Inc. v. HathiTrust, 755 F.3d 87 (2d Cir. 2014)—concluded that the University of Michigan library was acting as a Chafee "authorized entity" and that the library was further protected by the fair use doctrine when it scanned material for use by students with print disabilities. However, the fair use argument is undercut by the entry of publishers into the "market model," whereby investments are being poured into the production of accessible books and the effort to finally bring purchasers with disabilities into an inclusive market.

8. I sell products into K–12 schools. Do I have to provide specially formatted files of print textbooks?

Again, this is a requirement placed on schools that is passed on to publishers. You can choose not to provide files that are constructed according to specific technical standards, but the school will then be at risk of losing federal funding if it purchases from you. This process and the standard are commonly referred to as NIMAS (the National Instructional Materials Accessibility Standard), and it is incorporated into the federal Individuals with Disabilities Education Act. The requirement impacts print textbooks published after August 2006. Files are submitted to a national depository, which in turn permits hundreds of "conversion entities" to modify the file into an accessible format and then provide the finished product to the school. As of this writing, the Department of Education is considering expanding the current restriction on print textbooks and will require publishers to deposit born-digital versions into the depository.

9. What is accessible procurement?

Accessible procurement is a result of educational institutions requiring that learning technology platforms, content, and ebooks can be purchased only if the product is built according to commonly accepted

technical accessibility standards, typically WCAG 2.0, Level AA. It is an example of proactive behavior primarily resulting from terms of settlement agreements between the US Department of Justice and educational institutions. Accessible procurement anticipates that disabled students will eventually need to access the product. Procurement policies vary among customers and often overlook the fact that a product not built according to accessibility standards can still provide an accessible learning experience for the student, *if* work-arounds and accommodations are provided that meet the guidelines established by the Department of Education. Determining who provides the work-arounds and accommodations can be the subject of negotiation during the adoption process.

Cheat Sheet: Creating Accessible EPUB 3

(The Hows and the Whys)

1. Use HTML

- Behind the curtain, HTML tags key elements and identifies them by name (that's what they mean by structural semantics). AT users will know to listen for these.

2. Enable navigation through a book by tagging every important section of the book: chapters, sections, etc.

- Blind users can't jump around in a book if you don't tell them where they are and how to get to the following content or back to something they want to reread.

3. Provide content in a logical reading order

- Text can have sidebars or callouts; if you tag that content, a screen reader knows when in the text to read it.

4. Separate presentation from content

- Relying solely on color to present information means graphics will be unusable to low-vision or color-blind users.

5. Do not use images to represent tables

- Tables presented as images can't be navigated by a screen reader, leaving users unable to access all of the content in a manageable way.

6. Use image descriptions for content-rich images—and tag decorative or redundant images so that they are ignored by a screen reader

- If content isn't described in the surrounding text, a complex image without a sufficiently descriptive caption is useless for a blind reader. An added bonus: A well-described image can add to the pedagogical richness of the experience and also be "discoverable" by search engines.

7. Use page numbers when there is a print equivalent

- In a classroom setting where print and digital textbooks are in use, all students need to be "on the same page." (This gets tricky with multiple digital editions and "digital first" content.)

8. Define the language(s)

- If you use a foreign word and don't tag it as such, the screen reader will read it as if it's English. Try it: Comment allez-vous?

9. Use MathML

- Many publications display a math equation as an image, which can't be read by a screen reader. MathML can be read by a screen reader and also makes the math navigable, which is critical for complex equations.

10. Provide alternative access to media content via captioning and described video

- Closed captions make videos more accessible for users who are deaf or hard of hearing; audio descriptions do the same for those who are blind or visually impaired.

11. Use accessibility metadata

- Otherwise your customers don't know it's accessible—and *how* accessible it is. This is your chance to show off all the work you've done!

12. Make sure that accessibility is embedded in your workflow

- If content isn't born accessible (created for accessibility in the first place), fixing it after the fact costs a fortune.

Cheat Sheet: Accessibility Basics for Developers

- Require developers to consider accessibility from the start, and make testing for accessibility part of their regular testing cycle. Trying to fix problems later is more difficult and expensive.
- In reviewing completed code, review its accessibility. If no accessibility review occurs until late in the process, you will be retrofitting, and there's a chance you will create sub-optimal experiences for users with disabilities.
- Very few kinds of content cannot be made accessible, but for some kinds of visualizations, a non-visual alternative that offers the same information may be needed. Prepare your plan for providing non-visual alternatives, and review it with your development lead early in the project so it is available for repeated iterations as the project unfolds.
- If your content includes multimedia, be sure it is integrated with an accessible player and includes captions and, when needed, audio description. Discuss with your development lead which media player you will use and how to best bring captions, audio descriptions, or transcripts into the player. Have a clear plan for who will create and provide the content that will appear in the player.
- Try to use native controls instead of customized controls for common interactives like date pickers and selectable menus. Native controls typically provide accessibility for free, whereas a lot of extra work will need to be done to make custom controls accessible.
- Consult with the designer if a design decision could be revisited to enable better usability.
- Verify your code as you go to make sure it is valid. This seems obvious, but many accessibility problems in HTML can be avoided by using an HTML validator.
- Employ automated accessibility-testing tools and/or tools that provide guided manual testing to check your work.
- Align to established standards and best practices—the best way to ensure that your code won't break as browsers, operating systems, user agents, and assistive technologies change over time.
- Add an image description; adding "alt" text is really just that. When you add an image to the publication, in order to add an accessible short description, all you need to add is alt="description of image goes here" inside the image tag of the image being added.
- Indicate when an image is simply decorative. Instead of including a short "alt" text description of the image, just add alt="" inside the image tag of the decorative image. Adding role="presentation"

further declares that this image is used only for presentation and does not need any description. This will ensure that assistive technologies will not announce the presence of this image to the user.

- All images must include alt="(something)": either alt="description of image goes here", or alt="" for decorative or redundant images. Also, the short description of an image must be meaningful; alt="image" does not tell a visually impaired person what the image is, and worse yet, the user will hear “image” when the assistive technology encounters the image tag and then will hear “image” again from the alt text description.

Cheat Sheet: The EPUB Ecosystem

What is EPUB?

EPUB has become the key format for distributing digital publications. Unlike a website, it's a .zip package that contains collections of resources: metadata, content documents, images, stylesheets, fonts, media, and more—all the things that constitute a publication, packaged up. And unlike PDF, it is aligned with modern web standards, and as of the EPUB 3 generation, it is designed to enable accessibility.

EPUB Accessibility 1.0 Specification (W3C Member 2Submission)

EPUB is designed to enable accessibility. This EPUB Accessibility 1.0 Specification document is the place to start to make sure you do what you need to do to make an EPUB accessible. It's becoming the authoritative guide— for example, as the basis for DAISY's Ace Accessibility Checker and the nonprofit social enterprise organization Benetech's Global Certified Accessible program.

EPUB Accessibility Techniques

Designed to accompany EPUB Accessibility 1.0, EPUB Accessibility Techniques provides guidance and best practices to help you get it right.

Digital Publishing WAI-ARIA Module

The Digital Publishing WAI-ARIA Module (DPUB-ARIA) adds an additional layer of publishing semantics to the W3C's Accessible Rich Internet Applications (ARIA) specification. These semantics enable reading systems to provide assistive technologies with additional information about the structures being represented, which in turn allows that information to be conveyed to readers to enhance their reading experience.

Ace by DAISY

Ace by DAISY is a free online tool, which can be run online or offline, that will analyze an EPUB and report in detail how well it conforms to EPUB Accessibility 1.0, flagging those issues for which checking can be automated. A caveat: it can tell whether a required feature is present, but it still needs human review to tell whether it's been done well.

SMART — Simple Manual Accessibility Reporting Tool

SMART provides a simple manual counterpart to the more automated and comprehensive Ace by DAISY tool.

Accessible Publishing Knowledge Base

The Accessible Publishing Knowledge Base provides practical, how-to-do-it advice on a myriad of issues with clear examples. An invaluable resource.

Accessibility Testing of EPUB 3 Reading Systems

The EPUB 3 Support Grid is maintained via systematic, structured, crowd-sourced activity that tests and reports on accessibility features of a wide variety of reading systems using various operating systems and in conjunction with specific assistive technologies such as screen readers.

Global Certified Accessible (GCA)

The GCA program, from Benetech, involves comprehensive testing to determine if a publisher's workflow for a particular type of publication is reliably providing accessibility. It involves consulting and re-testing to guide publishers as they address deficiencies. When a workflow successfully provides accessibility, Benetech issues a formal certification (renewed annually) that can be used in purchasing and procurement contexts.

Cheat Sheet: EPUB vs. PDF

A Comparison of Accessibility Features of PDF and EPUB

A Modern Format for Today's Tech

Students with print disabilities have relied on PDF for many years, usually supported by disability specialists who scan, remediate, and tag files that were intended for printing or viewing on a large-display computer. But now there's a new kid on the block, a modern format designed for today's devices and accessible out of the box.

Here's a terrific video summing up the differences:

https://www.youtube.com/watch?v=nECoTmp_qHw&feature=youtu.be

Blindness Features

PDF	EPUB
Reading order needs to be tagged. Tagging can be a time-consuming procedure	No tagging needed
Running headers and footer are read out at the bottom of each page, often mid-sentence	This confusing information does not intrude into the screen reader experience
Text is just text, unless the document is specially prepared with advanced tools	The semantics of the text are provided (heading levels, lists, block quotes, footnotes, etc.), greatly aiding comprehension when using speech or Braille
There are new keystrokes to learn to maximize the accessibility potential	Screen reader keystrokes for navigating EPUB content are the same as those for the web
Selecting text with a screen reader is unreliable	Selecting and copying text works well for students working with screen readers

Screen reading support varies across different platforms	Good screen reader support exists across all major operating systems

Low Vision Features

PDF	EPUB
Above a certain size the page needs to be panned back and forth to read each line of text. Adobe Reader has a reflow function, but this can fail in publisher PDFs	Text reflows automagically to fit the available width, whether reading on a desktop or a mobile device
Fonts are chosen by the designer	The font can be personalized to each reader's needs/preference
Desktop software usually provides the ability to customize colors; apps on tablets and smartphones usually do not	EPUBs and ebook apps are built with reading in mind and thus provide different display modes. Some allow customization of many individual options
Images are part of the page design	Images can be zoomed; support for the SVG image format (see section on terms below) means that these can be scaled up and down without loss of clarity

Learning Disabilities including Dyslexia Features

PDF	EPUB
Fonts are chosen by the designer	The font can be personalized to the needs/preference of the reader
Spacing between letters, words, and lines, and the size of margins are fixed by the designer	Spacing and margins can be personalized to the needs/preference of the reader

Very limited ability to customize colors	EPUBs and ebook apps are built with reading in mind and thus provide different display modes. Some allow customization of many individual options
Some readers have a read-aloud feature	Most reading apps have a read-aloud feature with visual highlighting

General Features

PDF	EPUB
Bookmarks are sometimes included or can be inferred to mimic a table of contents	EPUB is built with ebooks in mind, so there is proper support for a table of contents in the standard and in reading apps
Go to page is supported	Go to page is supported
There is a wide range of reading apps, including many free ones	There is a wide range of reading apps, including many free ones

Cheat Sheet: Terms (Acronym Decoder)

A11y

A numeronym, or number-based abbreviation, that represents the word accessibility—“a” followed by 11 letters and ending in “y”. Used as #A11y in tweeting, to save characters.

ADA (Americans with Disabilities Act)

This piece of US legislation prohibits discrimination against people with disabilities to ensure that they have equal opportunities to participate in mainstream life.

IDEA (Individuals with Disabilities Education Act)

The Individuals with Disabilities Education Act is a piece of American legislation that ensures that students with a disability are provided with Free Appropriate Public Education (FAPE) that is tailored to their individual needs.

ARIA (Accessible Rich Internet Applications)

Sometimes called WAI-ARIA (Web Accessibility Initiative–Accessible Rich Internet Applications), ARIA is a World Wide Web Consortium (W3C) initiative specifying how to increase the accessibility of web content and recommending ways to prepare dynamic content for greater usability by people with disabilities. If you’re just starting out with accessibility, the place to go first is WAI-ARIA Authoring Practices.

AT (Assistive Technology)

Technological devices that have been developed with features that are specifically helpful for people with disabilities. Publishers may be asked to supply file formats that are compatible with particular types of assistive technology.

CSS (Cascading Style Sheets)

CSS describes how HTML elements are to be displayed on screen, on paper, or in other media. CSS saves a lot of work. It can control the layout of multiple web pages simultaneously. External style sheets are stored in CSS files.

DRM (Digital Rights Management)

DRM exists to control access to copyrighted materials, preventing users from illegally copying and using software and data, such as an ebook. Publishers can secure ebooks with either “hard DRM” or “soft DRM.” Hard DRM creates issues for assistive technology devices, blocking features that make text

accessible. Soft DRM (also called “Social DRM”) usually involves digital watermarking and has proven an effective anti-piracy tool.

EPUB for Education (formerly EDUPUB)

EPUB for Education is a set of specifications that optimize the EPUB 3 standard for educational content. The EPUB for Education Alliance is a confederation of standards bodies and organizations whose primary initiative is to collaboratively develop, maintain, and support the adoption and implementation of the EPUB for Education profile of EPUB 3. Alliance organizations include BISG, DAISY, IMS Global, and the W3C.

EPUB

EPUB is the distribution and interchange format standard developed by the International Digital Publishing Forum (IDPF) and now maintained by the World Wide Web Consortium (W3C) for digital publications and documents based on web standards. It defines a means of representing, packaging, and encoding structured and semantically enhanced content for distribution in a single file format.

HTML

HTML is the W3C specification that defines the core markup language for the World Wide Web. It provides structural semantics—the elements and attributes that define the components of web documents such as sections, headings, lists, etc.—as well as corresponding application programming interfaces (APIs) that guide the processing of documents. It is explicitly designed for accessibility: proper HTML markup is what guides most assistive technology (AT) to navigate and render the content.

IDEA (Individuals with Disabilities Education Act)

This US federal law requires schools to support the educational needs of students with disabilities.

MathML (Mathematics Markup Language)

The principal goal of MathML is to enable mathematics to be served, received, and processed on the web, just as HTML has enabled this functionality for text. MathML can be used to encode both the presentation of mathematical notation for high-quality visual display, and mathematical content for applications where semantics play more of a key role, such as voice synthesis.

NIMAC (National Instructional Materials Access Center)

Created by IDEA 2004, the NIMAC is a federally funded, searchable online file repository of K–12 print textbook content in the XML-based NIMAS (National Instructional Materials Accessibility Standard) format. K–12 educational publishers are required to create NIMAS files for all textbooks; these files are stored in the NIMAC, where they are available to authorized users.

SVG (Scalable Vector Graphics)

SVG is an XML-based vector image format for two-dimensional graphics with support for interactivity and animation. The SVG specification is an open standard developed by the World Wide Web Consortium (W3C) since 1999. It enables graphics to be enlarged or reduced without loss of clarity.

Section 508

Section 508 of the US Rehabilitation Act of 1973 requires federal agencies to make their electronic and information technology (EIT) accessible to people with disabilities. The Section 508 "Refresh" of 2017, which went into effect in 2018, broadened the scope of Section 508 and aligned it with today's accessibility standards, most importantly, WCAG.

TTS (Text To Speech)

The capability, available on many ebook reading devices, to render digital text as synthetic speech, allowing someone who cannot see the text to listen to it instead (see also Screen reader). This capability may be built into the reading device, but it may need to be enabled specifically for each product, as it can be disabled on some platforms.

WAI (Web Accessibility Initiative)

The Web Accessibility Initiative within the W3C develops strategies, guidelines, and resources to help make the web accessible to people with disabilities.

W3C (World Wide Web Consortium)

The World Wide Web Consortium is an international community in which member organizations, a full-time staff, and the public work together to develop web standards. Led by web inventor Tim Berners-Lee and CEO Jeffrey Jaffe, W3C's mission is to lead the web to its full potential. The W3C has absorbed the International Digital Publishing Forum (IDPF) and is now the standards organization responsible for EPUB.

WCAG (Web Content Accessibility Guidelines)

These guidelines are a set of technical documents developed by the WCAG Working Group (from the World Wide Web Consortium Web Accessibility Initiative, or W3C WAI). Click here for an overview of the WCAG guidelines.

WIPO (World Intellectual Property Organization)

The World Intellectual Property Organization is a specialized agency of the United Nations. It is dedicated to developing a balanced and accessible international intellectual property system that rewards creativity, stimulates innovation, and contributes to economic development, while safeguarding the public interest.

Cheat Sheet: Resources (The Best of the Best)

Ace by DAISY

https://inclusivepublishing.org/toolbox/accessibility-checker/

A free, open-source accessibility checking tool for EPUB documents, created to assist in the evaluation of conformance to the EPUB Accessibility 1.0 specification.

BISG Guide to Accessible Publishing 2019

First published in 2016 as "The BISG Quick Start Guide to Accessible Publishing," this major revision provides both a brief, high-level overview of the key issues that everybody, from executives to production staff, needs to understand, as well as more detailed guidance and resources for developers, legal staff, and managers in editorial and production roles.

DAISY Consortium

http://www.daisy.org

The DAISY Consortium is a global partnership of organizations committed to creating the best way to read and publish—for everyone. For guidance on how to create an accessible, navigable ebook, see http://www.daisy.org/structure.

DIAGRAM Center

http://diagramcenter.org

The Digital Image and Graphic Resources for Accessible Materials Center, an initiative of the nonprofit social enterprise organization Benetech, is a research and development center whose goal is to change the way images and graphics are produced and accessed.

Inclusive Publishing

https://www.inclusivepublishing.org

The leading site for accessible publishing news, events, resources, and advice.

National Center for Accessible Materials (NCAM) at WGBH

http://ncam.wgbh.org/

NCAM provides image description training and guidelines, CADET (a free, online tool for creating and editing captions and audio description), and accessibility services for organizations.

ONIX Accessibility Metadata

http://www.editeur.org/8/ONIX/

http://www.idpf.org/accessibility/guidelines/content/meta/onix.php

ONIX, the international standard for representing and communicating book product information in electronic form, enables the inclusion of accessibility-compliance metadata in an ONIX message. This information can then travel with the publication through distribution channels so that customers can be made aware of the accessible features the EPUB offers. Here is a crosswalk that shows the accessibility metadata for EPUB, ONIX, Dublin Core, and Schema.org.

World Wide Web Consortium (W3C)

https://www.w3.org/

The W3C is an international community that develops open standards to ensure the long-term growth of the web, including the Web Content Accessibility Guidelines (WCAG). The W3C has merged with the International Digital Publishing Forum (IDPF), becoming the home for the EPUB standard. Many W3C standards, resources, and activities directly support and define accessibility.

W3C — Web Accessibility Initiative (WAI)

http://www.w3.org/standards/webdesign/accessibility

An introduction to web accessibility.

W3C — The Business Case for Accessibility

http://www.w3.org/WAI/bcase/

A presentation of different aspects of web accessibility, along with guidance on developing a customized business case.

W3C — Web Accessibility Initiative (WAI) Accessibility Principles

http://www.w3.org/WAI/intro/people-use-web/principles

A resource on web accessibility requirements for websites, web applications, browsers, and other tools. It also provides references to the international standards from the W3C Web Accessibility Initiative (WAI), which include considerations for the broad diversity of web users and ways people use the web.

W3C — Getting Started in Web Accessibility

https://www.w3.org/WAI/gettingstarted/tips/index

These tips introduce some basic considerations for making your website more accessible to people with disabilities and provide links to additional guidance.

W3C — Web Content Accessibility Guidelines — WCAG 2 at a Glance

http://www.w3.org/WAI/WCAG20/glance/

A paraphrased summary of the Web Content Accessibility Guidelines (WCAG).

WebAIM

https://webaim.org/

Based at the Center for Persons with Disabilities at Utah State University, WebAIM offers training, technical assistance, site evaluation and reporting, and a variety of useful tools, including the WAVE tool,

a color contrast checker, and WCAG and Section 508 checklists.