# Accessible Publishing Best Practices: Guidelines for Common EPUB Issues in Plain Language

By the [National Network for Equitable Library Service (NNELS)](https://nnels.ca/)

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# Introduction

Readers with print disabilities, such as visual or mobility impairments or dyslexia, read ebooks on computers or mobile devices using various assistive technologies including screen readers, refreshable Braille displays, or screen magnification software. Readers who cannot access print materials in a conventional way have different accessibility requirements: blind readers should be able to navigate books like their fully sighted counterparts can, including moving between pages and chapter or section headings, and navigating to a particular section of interest from the table of contents; people with low vision or reading disabilities need to be able to adjust the presentation of content on a screen by, for example, enlarging the font size or changing font and background colours; and people with mobility impairments may need to be able to read and navigate digital books using voice commands or other assistive technology.

Making books available in the EPUB format is the best choice, and represents a quantum leap forward in standardizing accessibility. Version 3 EPUBs are far more scalable than their version 2 predecessors. The version 3 specification for EPUB was released in October of 2011, and encompasses much richer navigation, presentation and accessibility features.

An accessible EPUB file allows everyone to have access to its content in the way that they need. A file that is completely accessible offers the maximum flexibility of user experience for all readers, and ensuring that publications incorporate accessibility features will allow all readers to customize their own individual reading experience to suit their needs. Having a digital product that can be used by a variety of reading applications and programs, and can adjust to a wide variety of screen sizes ensures that anyone can read the content, regardless of the device they choose or need to use.

This document provides information for publishers who wish to enhance the accessibility of their publications, in a born accessible paradigm, rather than treating it as something to be added later. It describes the most important features that make an EPUB file accessible, describes the barriers posed by incorrectly coded EPUBs, and provides best practices as well as links to further information.

# Reflowable content

Keeping inline styling out of the markup is a first principle of accessibility. Nevertheless, fixed layout books are often used to preserve the appearance of a print book, and this approach sacrifices accessibility.

Consider making your books reflowable. Doing so allows readers to adjust font size, style, and colour. The ability to change these according to need is crucial; for instance, being able to choose a larger font, a simple sans serif style, or to heighten the contrast between type and page, is very helpful for people with low vision or dyslexia. When the publisher sets a specific font colour, it causes rendering issues in some reading systems when users switch to night mode, i.e. the text will stay black and thus disappear.

It is common to find books in which each individual word in the text is enclosed within its own <span> tags, which contain visual style rules. Excessive use of span elements, however, makes it very difficult for screen reader users to navigate and read through the books, and understand the content. This either leads to every word being displayed as a separate line in some reading applications, or other applications will read each word separated by an extremely lengthy pause; even if the display shows the words on the same line. When reading with a Braille display this will also cause many instances of broken or hyphenated words, which is highly distracting. With so many words that are split up, it is very difficult for a reader to manually locate their reading position if they lose their place.

## Best practice

Whenever possible, EPUBs should have reflowable content. This ensures that people with print disabilities will have the highest quality reading experience. However, it is understood that the content of many image-heavy publications must still rely on a fixed-layout; this includes children’s books, photography and coffee table books, comics, manga, magazines, etc.

# Structure

Using visual style rules to provide structure and organization to the content instead of relying on modern semantic HTML elements makes it impossible for readers relying on assistive technologies to navigate the content efficiently. We use the term “semantic” to specify elements that give meaning to content. Examples of missing semantic elements include: headings, <section>, <aside>, <blockquote> and <figure>.

The lack of heading elements makes it difficult to find chapter and section titles easily. Visual cues which can be used to indicate section and chapter titles to sighted readers (such as bolded text or a larger font) cannot be interpreted by screen readers, although they would stand out to a sighted person who was skimming the text. The lack of these semantic HTML elements means that if readers with print disabilities need to find a particular section, they must continuously scroll through the book’s pages, manually searching for a keyword or phrase on each page to find a new section.

## Best practice

Use appropriate markup with headings, and other relevant elements, to enable screen readers to find the important navigational information, as well as to allow shortcut keys to quickly find chapters, sections, and other elements.

It is also important not to exclude any frontmatter and backmatter materials – notes, indexes, glossaries etc. – from a semantically sound structure. This will ensure that a non-traditional reader will be able to fully experience the ebook.

# Heading: Hierarchy

Headings represent a key way for readers who use assistive technology to get a feel for how the book is laid out, know when a new section begins, and navigate efficiently between sections. For this reason, a predictable structure of cascading headings is crucial to understanding any content. In many books, however, little or no consideration goes into the levels chosen for headings.

## Best practice

In a book, level 1 headings should be used for major sections, such as chapters. Titles of subsections within chapters should be marked up with level 2 headings, and minor areas within a subsection should be highlighted with a level 3 heading.

The heading level structure of the ebook should follow the hierarchy of the table of contents. In general, each HTML file should have a top-level <h1> heading tag from which other headings cascade, or are nested. The basic structure of the book should start with the chapter titles as <h1> heading tags, and the subheadings as <h2> heading tags. If the book is structured in parts, and the chapters are divided between each part, then the part section should be formatted with the <h1> heading tags, followed with the chapter titles formatted with <h2> heading tags. The chapter number, dingbat, and title should all be wrapped in one <h1> tag with a <span> tag to separate any of the styling of these pieces.

It is common to see books that have <p> tags as the top-level element. This HTML is not semantically correct, and therefore does not contain the proper hierarchical structure to create navigation within the ebook.

By employing this hierarchical markup scheme in the HTML, assistive technology will announce the heading levels to readers to help them navigate and understand the ebook’s structure and content. Conversely, the lack of this type of structure results in assistive technology not being able to render the content as logically divided sections within a hierarchical structure. This creates barriers in reading comprehension.

For more information, please see: [DAISY Knowledge Base: Headings](http://kb.daisy.org/publishing/docs/html/headings.html)

# Single headings

When books are being read with assistive technology, readers will often use headings to skip to a desired section or chapter. However, when more than one heading is used to style a chapter number and title, it adds a confusing element to the navigational experience. In this case, it is necessary to skip two headings in order to advance a single chapter or section.

## Best practice

When laying out titles, take care to set up a single heading for the complete title of a section. Line breaks (<br />) can be inserted between a chapter number and its title, for example, but all text relating to one heading should be enclosed in a single set of heading tags.

For more information, please see: [W3C: Subheadings, subtitles, alternative titles and taglines](https://www.w3.org/TR/html/common-idioms.html#sub-head) (specifically, Example 3).

# Images and alt-text

For readers with print disabilities to get the full and complete experience of reading, image descriptions are important, even if images and photographs are not used to convey information that is critical to comprehend the content. The lack of accessible descriptions means that such content is completely unavailable to anyone reading books in non-traditional ways. This also includes description of cover images, logos, and author photos. Even if an image comes with a caption, that is not enough to provide the same reading experience. The inclusion of informative and descriptive alt-text will enrich the experience and help increase reading comprehension.

## Best practice

Provide descriptions in the alternative text HTML tag (alt=“ ”) attached to all images to allow everyone to benefit from this content. It should be an objective description of the image that takes audience and context into account by utilizing a neutral tone and language while first describing the image generally and then going into more specifics.

For more information, see: [DAISY Knowledge Base: Images](http://kb.daisy.org/publishing/docs/html/images.html)

Also check the Diagram Center, which has an excellent tool for teaching how to write image descriptions, here: [Diagram Center: Poet Image Description Tool](http://diagramcenter.org/poet.html)

In the case of images that are purely decorative (e.g., the curlicues at the start or end of chapters) should have empty alt text (alt= “”) and role=“presentation” in the markup. This is because meaningless Alt text “descriptions” break up the flow of the narrative. If preparing a version 3 EPUB, ARIA roles (which provide more information about the structure of a document for users of assistive technologies) should be used to mark decorative images with the presentation style. When tagged correctly, screen readers will skip right over the image; the “presentation” role tells the assistive technology that there is nothing to see here. This means that there will be no disruption in the flow of narration for the reader.

For more information about the “presentation” ARIA role, see: [W3C – Web Accessibility Initiative: ARIA – Presentation](https://www.w3.org/TR/wai-aria-1.1/#presentation).

# Non-Textual/Image-based Title Pages

The title pages of many books are set as an image. Because assistive technology can only read text, readers who rely on a screen reader or Braille display are unable to access publication information.

## Best practice

Offering alternative text to the image on the title page would allow assistive technology to read this information. The preferred solution, however, is to simply provide publication pages, like the rest of the book, in text. A lot of important information is presented here, and it can be difficult to understand all of it from a single Alt tag.

# Table of contents: What to Include

Most reading applications have a Table of Contents feature, which allows readers to skip to different sections of the book. The list of readable sections is taken from the book’s navigation file, and presented as a list to the reader. When some sections do not appear in a book’s navigation file, it is difficult to access them easily. In addition, failing to offer navigation to every section makes it extremely challenging to get a feel for how the book is laid out.

## Best practice

Reference all text sections, even front and back matter, directly from the navigation file. If an HTML document is referenced in the spine, it should be referenced in the navigation file as well. Comprehensive navigation points to all parts of the book’s content ensure that all readers will be able to access the desired information efficiently.

For more information, see: [DAISY Knowledge Base: Table of Contents](http://kb.daisy.org/publishing/docs/navigation/toc.html)

# Table of Contents: Linking Entries

When a “Table of Contents” page is provided in the front-matter an ebook, it allows readers to get a feel for how the content is laid out, without having to use application features to browse the different sections. Being unable to click on an entry in the Table of Contents in order to jump to that section, however, detracts sharply from the usefulness of this feature.

## Best practice

When setting up a Table of Contents within a book, enclose each entry in <a href …>…</a> tags that point to anchors at the beginning of each chapter, to make each item active and clickable.

Some EPUB 3 publishers simply link to the navigation file to serve as the book's textual table of contents, which may be a workable solution for titles without complex content. Regardless, please include the chapter number and title in the link text, where appropriate, but exclude the page number.

For more information, see: [DAISY Knowledge Base: Table of Contents](http://kb.daisy.org/publishing/docs/navigation/toc.html)

# Footnotes and Endnotes: “Return to Text” Links

Each note in an ebook should be set up with an internal hyperlink, so the reader can jump to the Notes section simply by clicking the appropriate number from the main narrative. After reading the note, a link back to the point of reading should also be provided. It is important to not rely solely on the reading application’s implementation of a “Go Back” feature, because if the reading system does not have the ability to return to the place of reading on the previous page, the reader is left stranded at the end of the chapter or book.

## Best practice

Insert a “Return to Text” hyperlink at the end of every note in the notes section that returns to the main narrative. This can represent a large number of extra links and anchors, but it is important to do it in order to eliminate readers’ frustration of constantly losing their place in a large body of text.

Footnotes, endnotes, and pop-up footnotes need both epub:type and ARIA role semantic inflection in order to behave appropriately with assistive technologies.

For more information, see: [DAISY Knowledge Base: Notes](http://kb.daisy.org/publishing/docs/html/notes.html)

# Tables: Column Headings

If not carefully coded, tables can be quite challenging to understand when rendered by assistive technology. When reading a book with voice or Braille, only one block of text is read at a time. In the case of tables, this is usually a single column from the current row. Imagine asking the computer for the next element, and hearing simply “3 million”. Without a heading telling you that this number comes from the “Population” column, it will mean very little on its own. When tables lack structured headings, they will present very similarly to the above example.

## Best practice

When laying out a table in HTML, make full use of the optional <tHead> element. This block of code is placed between the <Table> and <tBody> tags, and enables the use of <Th> tags to specify headings for each column in your table. This coding style is highly recommended for all users, as it allows reading applications to caption the columns of tables that reflow onto multiple pages.

For more information, see: [DAISY Knowledge Base: Tables](http://kb.daisy.org/publishing/docs/html/tables.html)

Additionally, consider adding a caption or summary to complex tables. For more information about accessibly built tables, see: [W3C: Techniques for Describing Tables](https://www.w3.org/TR/html/tabular-data.html#sec-techniques-for-describing-tables)

# Styling Content

Headings are like waypoints on a map, they mark points of interest in a book, and should be used carefully to reflect the book’s structure (see above for information on structuring headings). However, they are sometimes used to style text, rather than as structural elements, which creates a confusing number of meaningless navigation points.

## Best practice

When setting up a page with lots of stylized text, such as a title page, you should never use headings to style the text. Instead, the preferred method is to use a <span> element, classed with a style noted in the book’s cascading stylesheet. When coded in this way, the content will still visually look like it was marked up with a heading, but it will no longer pose a barrier to readers navigating it with assistive technology.

# Titling Links

Internal hyperlinks harness the full power of electronic publishing, as they allow readers to effortlessly jump to different areas of interest. The text of such a link, however, is crucial for informing non-visual readers of destination of the link. When a link is highlighted through assistive technology, its text is spoken, but when the link text does not identify the purpose of the link, readers are left unsure of the purpose of the link and where it will take them.

## Best practice

Make sure that every link has a title. Ensure that this crucial element is not left blank, but rather is populated with a short text string describing where the link points to.

For more information, including options for where a link title can be included, see: [DAISY Knowledge Base: Links](http://kb.daisy.org/publishing/docs/html/links.html)

# Active URLs

It is common to find ebooks that contain websites referenced in the content, such as those for the author, publisher or additional resources, but which are not coded as links. This presents a challenge beyond the obvious annoyance of having to copy and paste the URL into a browser’s address bar. In order to find other resources on a page, readers using assistive technology use keystrokes or gestures to move through the different elements that are available. URLs that are not clickable are also not discoverable by this method, meaning they could be easily missed by those skimming quickly through the narrative.

## Best practice

Any URLs in an ebook should be marked up as Hyperlinks (with logical and clear link text) with the <a href …> … </a> tag. This will make online resources more accessible to everyone, and their addresses will stand out to both visual and non-visual readers.

For more information, see: [DAISY Knowledge Base: Links](http://kb.daisy.org/publishing/docs/html/links.html)

# Emphasis and Strong

One of the hallmarks of a book that uses correct semantic code is the way it treats emphasis text. It is common to see books with one or more of the following incorrect ways of emphasizing text: offsetting special text with inline styling, using elements to emphasize text that should not be vocally emphasized, or placing text that should have vocal emphasis in italic or bold elements. These errors lead to important text being ignored, or unimportant text being highlighted, which can detract sharply from the reading experience.

All emphasized content should be delineated with <i>/<em> or <b>/<strong> tags unless it is stylized purely for presentational purposes. This is because CSS formatting carries no semantics, so the emphasis will not be noted by assistive technologies.

It is common to see EPUB files with the tag <span class= “body-italic”>. In the markup language, however, this has no semantic meaning.

In addition, any ebook/journal titles and other bibliographic or foot/endnote-style content should use the <cite> tag to achieve italicization.

## Best practice

Choose the correct element when highlighting text in a narrative. All emphasized content should be delineated with <i>/<em>, <b>/<strong> tags. Use the tags <i> and <b> to make text, such as names or places, stand out. The alternate tags of <em> and <strong> should only be used in a context where the words would be vocally emphasized in some way. Finally, any bibliographic or foot/endnote-style content should use the <cite> tag to achieve italicization.

For more information, see: [DAISY Knowledge Base: Emphasis](http://kb.daisy.org/publishing/docs/html/emphasis.html)

# Quotations and Dialogue

Some authors make the stylistic choice of having dialogue or quotes appear without quotation marks. This can pose a significant challenge to Braille readers, as making sense of the content is much harder when it is not immediately clear that someone is speaking. This can also be a challenge for people with and without print disabilities, as it can make it more challenging to distinguish dialogue from narrative.

## Best practice

Content should use standard quotation rules around narrated passages of text. Additionally, stylized text that may offset quotes and/or dialogue from the main narrative should not take the place of quotation marks, as this presentation style is non-standard and will not be picked up by assistive technology.

# Context Breaks

Context breaks are visual indicators that denote a break in the continuity of the narrative, representing a shift in thought, time, location, or similar in a work of fiction or non-fiction. They are typically represented by a large blank space between paragraphs, a small decorative image, a dingbat, or a horizontal line. Without the <hr/> tag, a screen reader will read right through that context break without pause, and this will create reading comprehension issues for non-traditional readers. The reader won’t know that there was a break at that point in the text and this will inevitably cause confusion.

## Best practice

The semantically correct way of marking editorial spaces or context breaks is with an <hr/> tag. It is possible to assign a class and some styling behaviour to that element in order to call a dingbat or other decorative motif images; those definitions should come from the CSS.

For more information and sample CSS, see: [DAISY Knowledge Base: Context Breaks](http://kb.daisy.org/publishing/docs/html/context.html)

# Page navigation – page list and page breaks

Ink-print page numbers that are referenced throughout an ebook allow EPUB readers to reference passages and find information, and also provide another wonderful layer of navigation.

It is common to find EPUB files in which, although the beginning of each new page is tagged with an appropriate anchor, a structured page-list is not provided. In addition, unless page anchors have epub:type semantics and ARIA roles, they are not useful to readers using assistive technologies. Because of these simple oversights, many E-readers will not announce page numbers, know which page is currently being read, or be able to offer page navigation.

## Best practice

Denote page markers with a <span> element, including appropriate epub:type semantics and ARIA roles within. Add a page-list to the navigation file of the EPUB, so all applications that support page navigation can offer it to their readers: embed a dc:source ISBN in the OPF, in addition to marking the print page breaks. The benefit of including this will allow the reader, or assistive technology being used, to know which book the page breaks correspond to. This is especially important to readers who need to know specific page numbers. For example, students or researchers who need to cite their sources, or people in book clubs who refer to a specific page numbers as part of their discussion.

For more information, as well as some sample code see: [DAISY Knowledge Base: Page Navigation](http://kb.daisy.org/publishing/docs/navigation/pagelist.html)

# Content Language

It is important to mark the language of the file. Doing so ensures that content that is read aloud by assistive technology, like screen readers, will be read accurately – the screen reader will know what pronunciation, or what braille characters to use.

Be cautious when marking language shifts, to ensure that the word(s) or phrase(s) of text in a different language are read accurately, and to avoid an English-speaking synthetic voice reading French or Spanish with an English pronunciation.

## Best practice

The base language of any ebook should be declared in the OPF, and on the root HTML element at the top of each HTML file. It is important that the language of the HTML file is attached to the root HTML, not to the <body> tag.

For more information, see: [DAISY Knowledge Base: Language](http://kb.daisy.org/publishing/docs/html/lang.html)

# Landmarks

A key feature of EPUB 3 is the ability to establish landmarks. Similar to how a page list can add to the richness of an ebook’s navigation, landmarks help a variety of readers by allowing them to easily access major structural sections of the ebook.

It is common to find ebooks that only allow for navigation to some sections that can be included in the landmarks listing, instead of providing a fuller listing of landmarks assembled into the navigation.

## Best practice

Include a full set of landmarks, which includes: bodymatter (i.e., start of main reading content, such as Chapter 1), table of contents, list of illustrations/figures/maps, page list, copyright page, endnotes, index, glossary, etc.

Even if you already have a full Table of Contents, having a landmarks section provides for greater accessibility as different assistive technologies interact with code in different ways, have varying capabilities. The inclusion of a set of landmarks ensures easy navigation for all users.

For more information, see: [DAISY Knowledge Base: Landmarks](http://kb.daisy.org/publishing/docs/navigation/landmarks.html)

# HTML Document <Titles>

It is common to find EPUBs in which the various documents do not correctly make use of the <Title> tag in the head. Populating this element with the title of the book is not helpful, filling it with the filename is far worse: some E-readers will announce this information as the document that is being opened; sighted readers will also see these page titles in browser bookmarks as well as the tab or browser title area. As such, the title element should always hold the name of the chapter or section contained in that document.

## Best practice

Ensure that the Title elements of each document are set to show helpful, accurate information to readers, to distinguish it from other HTML documents in the EPUB. The title at the top of each HTML file should be descriptive of the content that single file contains, and not the name of the ebook: e.g. “Chapter Seventeen: Conclusion” or similar. Some screen readers will announce the <title> tag before it starts to read the content.

For more information, see: [DAISY Knowledge Base: Page Title](http://kb.daisy.org/publishing/docs/html/title.html)

# Colour Contrast

It is common to find EPUBs that do not pass accessibility evaluations related to colour contrast. For example, grey on white can be very difficult for a low-vision reader to see.

## Best practice

There needs to be a minimum ratio contrast of 4.5:1. We recommend using a service like [WebAim’s Color Contrast checker](https://webaim.org/resources/contrastchecker/) to examine the contrast of any backgrounds and type colours.

For more information, see: [DAISY Knowledge Base: Color](http://kb.daisy.org/publishing/docs/css/color.html)

# Accessibility Metadata

A complete set of accessibility metadata is frequently missing from many ebooks. This is one of the most commonly-overlooked pieces to the accessibility puzzle, which is quite unfortunate. Not only is this issue easy to correct, its inclusion represents a substantial benefit to the publisher. Accessibility metadata, found in the package document of an EPUB, tells potential buyers and readers what accessibility features the book offers. These features range from basic text access to full semantic markup and described images, but almost all EPUBs have something to offer in the accessibility arena.

Schema.org has developed a set of accessibility meta tags, which allow the publisher to describe the accessibility features available in their content.

## Best practice

Consider establishing a set of metadata that accurately describes the accessibility of your content, drop it in, and don’t look back. There is metadata from schema.org that relates specifically to accessibility and that should be in the OPF file of your ebooks. Inserting this metadata into your ebooks would multiply your content’s accessibility simply by making it more discoverable. It is also highly recommended that accessibility metadata be included in the ONIX files that are distributed alongside ebooks to retailers and libraries. This data can then be made available to readers allowing them to find and purchase books that meet their needs.

For more information and code examples see: DAISY Knowledge Base: [Schema.org Accessibility Metadata](http://kb.daisy.org/publishing/docs/metadata/schema-org.html) and [ONIX](http://kb.daisy.org/publishing/docs/metadata/onix.html)

# General Best Practices

## Choosing EPUB 3

One of the benefits of EPUB 3 is that it is based on HTML 5, which—like epub:type and ARIA semantics—allows semantic richness to be added to content so that it is machine-readable. HTML 5 elements are especially beneficial for readers who use screen readers.

Publications typically have a primary narrative that users are expected to follow from beginning to end and being able to navigate this dialogue uninterrupted is a key factor in making publications accessible. Rich markup allows secondary material to be automatically excluded from text-to-speech playback or refreshable braille rendering if the user doesn’t want their reading experience interrupted. For example, if any secondary content occurs in the ebook, such as marginalia, notes, sidebars, etc., this should be marked up with the <aside> tag. In this way, non-sighted readers will understand that this is ancillary content. This tag tells the reading system that this content is separate from the main content, so it won’t get mixed in with the main content and create confusion for the reader.

## HTML5 Elements

Any HTML chunk should be in a <section> tag. Subheadings and subsequent content should have a nested <section> tag around it. Each chapter of an ebook, for example, should start with <section epub:type=”chapter” role=”doc-chapter”> and end with </section>. ARIA roles and epub:type can be added to sections for more functionality for screen reader users. These elements will come with auto-formatting in some reading systems, which will be reinforced by CSS attached to class names.

The accessibility of an EPUB’s content depends on using the right markup. Blockquotes, for example, should be wrapped in a <blockquote> tag. The use of generic HTML like <div> tags should be avoided as much as possible, since this can cause issues in the HTML that make it less accessible to the various types of assistive readers. Using the correct elements means that your content is machine-readable and skippable.

## ARIA Roles

The ARIA role attribute allows more precise meanings to be applied to basic HTML elements. ARIA roles provide a quick way for assistive technology users to navigate major areas in the ebook. In every case, epub:type semantic inflection should be complemented by ARIA roles as epub:type doesn’t have full support at this time.

This list may be helpful to better understand the use of ARIA roles: [IDPF: EPUB Type to ARIA Role Authoring Guide](https://idpf.github.io/epub-guides/epub-aria-authoring/)

Sometimes reading systems will use that semantic inflection to prescribe a specific behaviour, like pop-up footnotes. Adding this layer to publications can improve content comprehension for non-traditional readers.

For more information on ARIA roles and how to use them, see: [DAISY Knowledge Base: ARIA Role Attribute](http://kb.daisy.org/publishing/docs/html/roles.html)

# Glossary

**Accessibility metadata:** Metadata that is used specifically to describe the accessibility of content. This specifically refers to the schema.org-developed set of HTML-expressed microdata used to describe the accessible qualities of content.

**Accessible Content:** Content that incorporates accessible formatting standards into its design; i.e., the document is structured for navigation

**Accessible Publishing:** The publishing of works designed in such a way that the product is accessible and compatible with assistive technologies

**Alt-text:** Alternative text, or Alt-text, is text that is used in place of graphic content (e.g., pictures, charts, graphs, etc.) for those who cannot view the non-text content.

**ARIA roles (layer of semantic description):** ARIA “role” attributes are used to provide more information about the structure of a document. It helps make a document more accessible by making clear the “logical reading order” to assistive devices.

**Assistive Technology:** An encompassing term for software and technological devices that have been developed with features that enable people with disabilities to access digital content.

Assistive technologies for print-disabled readers include:

* Braille
* Refreshable braille displays
* Screen readers
* Devices that can play DAISY books
* And more!

**Born-accessible Publishing:** A phrase developed in part by [Benetech](https://benetech.org/our-work/born-accessible/) to describe content that is developed with accessibility in mind from the start.

**Colour contrast ratios:** The contrast ratio between foreground and background colours.

**Context break:** Context breaks denote a break in the continuity of the narrative. It represents a shift in thought, time, location, or similar in a work of fiction or non-fiction. These changes are typically represented by a large blank space between paragraphs, which sometimes including asterisms, dingbats, and other decorations.

**Digital Publishing:** The publishing of works designed to be read using technology, such as a computer, mobile devices, eReaders, etc.

**Dingbat:** a typographical device other than a letter or numeral (such as an asterisk), used to signal context breaks or divisions in text.

**EPUB:** An ebook file format that uses the “.epub” file suffix. An EPUB file is a compressed file that contains all of the text, images, CSS, HTML, XML, navigation information, etc. that make up an ebook.

**EPUB 3:** The most recent version of the EPUB file format, released in October of 2011. For a detailed list of the improvements and additions made on EPUB 2, see this webpage: [EDRLab: EPUB 2 vs EPUB 3](https://www.edrlab.org/epub/epub2-vs-epub3/). It is also the main commercial publishing format.

**Fixed layout:** A fixed layout file usually contains images exactly positioned relative to text. Some good examples of fixed-layout publications are photo books, magazines and comics. Fixed-layouts cause major accessibility issues for readers of alternate formats.

**HTML 5:** HTML 5 is the most recent version of HTML, HyperText Markup Language. HTML is used to label pieces of content, which the computer then reads and uses to render the content of the page. For example, there are six levels of Headings, which use the tags <h1> through to <h6>. The computer will render these as different sizes, and it will also be clear to screen readers what level of navigation is being presented.

**Inclusive Publishing:** The publishing of works that takes the needs of every reader into consideration

**Inline styles:** Inline styles refers to styling in the HTML markup, not separated out in the corresponding Cascading Style Sheets (CSS)

**Languages – Content languages and Language shifts:** Setting the language ensures that assistive technologies correctly interpret and render the text, and that reading systems can make language enhancements available for users.

**Link text:** In an HTML link, link text is what is visible on the webpage. The URL wrapped in the <a href=””> tag is the link target, and the text that appears between the<a href=””>…</a> tags is the link text.

**Page List:** The page list is a simple ordered list of links to the page break locations. This is particularly important for academic/educational publications, but can also be important for trade publications, for example if the reader is in a book club and wants to ensure they can easily find what others are referencing.

**Page Title:** These are meaningful titles that are added to a document, which will be read by the assistive technology. If a Page Title is not used, the technology will generally read the document title instead, which may not be meaningful.

**Reflowable:** In a reflowable EPUB, the content is fluid and can be adjusted to fit the size of the screen. Font-size and colour are also adjustable.

**Refreshable braille display:** A refreshable Braille Display is a hardware device which can be connected to a computer or mobile device and converts text into Braille in real time. It contains sets of pins which are raised and lowered to form the Braille encoding, which allows users to read by touch.
A braille display can show up to 80 characters from the screen and is refreshable—that is, it changes continuously as the user moves the cursor around on the screen.

**Screen Reader:** A screen reader is software that runs at the same time as other programs and reads aloud the text that is displayed on the computer or mobile screen, enabling a blind person to use a computer or mobile device such as a phone or tablet to navigate menus and read content within applications. Screen readers allow users to fully navigate web pages and applications using a keyboard. Screen readers output audio based on the underlying code of a page.

**Text-to-Speech (TTS):** Refers to the process of synthesizing speech audibly.

**Visual content:** Any content that is graphic in nature, including: photographs, drawings, maps, graphs, charts, etc.

# Contributors

The following people contributed to this report, including testers and editors.

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