

ACCESSIBLE E-books Resource Guide Adapted from research and guides published by

Accessible Publishing.ca, Book Industry Study Group (BISG),

Accessible Books Consortium, Experimentation Project for

Accessible Publishing: Publisher Workflows and E-book Accessibility

Report, DAISY Accessible Publishing Knowledge Base, and others,
this guide is a broad overview that briefly outlines current and
developing practices in accessible e-book publishing. It explores
recommendations and guidelines for creating accessible e-books
and digital content, tips for writing alt text, image descriptions, and
captions, and includes a Quality Assurance Checklist for accessibility.
A glossary of terms related to accessible e-books is included, as well
as list of further resources.

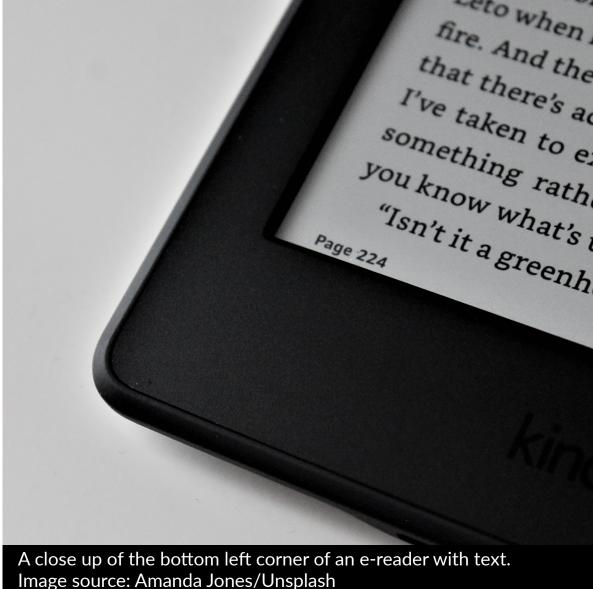


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People with print disabilities should have an equal opportunity to participate fully in society, including equal access to content at the same time and for the same price as everyone else. Creating accessible content is the first step toward publishing an accessible product, beginning with making informed decisions about which tools to use and how to use them.

Some people with print disabilities read e-books on computers or mobile devices and they may also use assistive technologies including screen readers, refreshable braille displays, or screen magnification software.



Other readers who cannot access print materials may have different accessibility requirements. People who are blind should be able to navigate books in the same way their 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 must be able to adjust the content on a screen by 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.

There is considerable research and information available about accessible publishing including guidelines to describing images, evaluating EPUB accessibility, tips for creating accessible EPUB3 files, and more. The following are examples of guides that build on the work and experience of many publishers, individuals with print disabilities and lived experience, and organizations and include developing practices in creating 'born accessible' e-books and digital content.





An overhead back view of a person sitting crosslegged on the floor reading a tablet.

Image source: Pexels/RFStudio

Accessible Publishing.ca has developed a best practices guideline in plain language on accessibility for EPUB issues in both English and French. This resource provides information for publishers who want to create 'born accessible' publications, describing the most important features that make an EPUB file accessible, the barriers posed by incorrectly coded EPUBs, and provides suggestions for best practices with links to more information. Accessible Publishing.ca recommends the following guidelines that apply to all electronic publications.

- Choose reflowable format. Fixed layout books can be challenging to navigate, difficult to understand and impossible to customize, creating a barrier for readers with print disabilities. Choose reflowable, whenever possible.
- Publish in EPUB 3. Because EPUB is based on the language of the web (HTML 5), it is more accessible than any other format. The best experience comes from the latest version as it includes rich navigation, presentation, and accessibility features.



- **Describe and mark-up images.** Alternative text tells readers with print disabilities what is happening in an image. Without descriptions, people who cannot see images will have no access to their content.
- **Use text.** While it may be tempting to set the title page up as an image, even well-described images are less accessible than text.
- Include headings. Every section title in the book should be set up as a heading, including sections in the front and back matter. Headings tell readers that a new section has begun and specify its title.
- Cascade headings. Heading levels should be used to indicate the importance of a section. The titles of top-level sections should be assigned a level-one heading. Content under a main section should be introduced with a level-two heading, and child sections should be headed with a level-three heading.
- Link to all sections from the table of contents. Reading systems use the book's navigation file to move efficiently through the content. Sections that are excluded from the navigation file, therefore, are difficult or impossible to access.
- Include a textual table of contents. Readers use a Table of Contents to familiarize themselves with the content of a book. This page should be set up as a list, with active links to each section.



- **Emphasize text properly.** The tags that are present within the e-book offer semantic meaning to assistive technology. As a result, it's important to mark words that should be vocally emphasized, so synthesizers can pick up on this inflection.
- 10 Avoid drop caps. Whenever a screen reader encounters a change in text style, it treats it as a new sentence.
- Use title case instead of all caps. Because text-to-speech engines are trained to spell out acronyms, many systems will spell out all uppercase words, one letter at a time. Important words in titles should only have the first letter capitalized.
- Include accessibility metadata. Metadata can tell potential buyers and readers what accessibility features the book offers. These features range from basic text access to full semantic markup and described images.
- Title the documents. Some e-readers will announce a document's title when a new section is opened, or on command as a kind of "Where am I" feature. As such, the title tag should always hold the name of the chapter or section contained in that document.
- Specify a language in the HTML header of each document. HTML and WCAG guidelines require that the language be noted in each text document in an EPUB, as well as in the Open Package Format (OPF).
 - Adapted from Accessible Publishing.ca



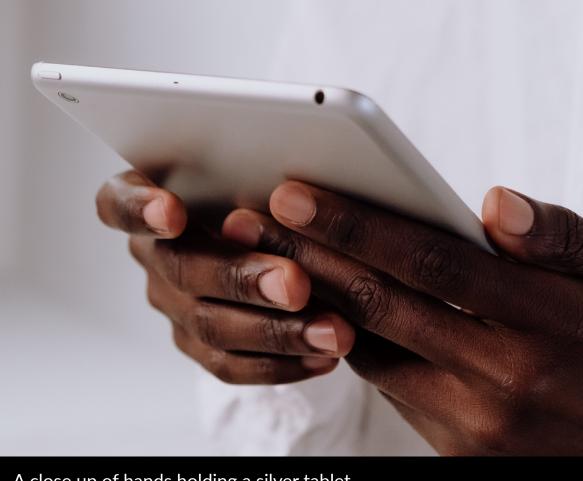
The Book Industry Study Group (BISG) Quick Start Guide to Accessible Publishing offers publishers a brief introduction to accessible publishing, details the advantages of accessible publishing, and has tips on how to create accessible digital content. Here are some key points from this robust guide which can be downloaded from the BISG website.

- 1 HTML tags key elements and identifies them by name. Assistive Technology users will know to listen for these.
- 2 Enable navigation through a book by tagging every important section of the book including chapters, sections, etc. Blind and low vision users can't move to different sections of a book if they don't know where they are.
- 3 Provide content in a logical reading order. Text can have sidebars or callouts and when that content is tagged, a screen reader knows when in the text to read it.
- 4 Separate the presentation from the content. Relying only on colour to present information means graphics will be unusable to low-vision or color-blind readers.
- Do not use images to represent tables. Tables presented as images can't be navigated by a screen reader, so readers are unable to access and manage all the content.
- 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 description cannot be read by a reader who is blind or has low vision.



- Use page numbers when there is a print equivalent. As an example, in a classroom where print and digital textbooks are in use, all students need to be "on the same page."
- Befine the language(s). If you use a word in another language and don't tag it as such, the screen reader will read it as if it's English.
- 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 makes the math navigable, which is critical for complex equations.
- Provide alternative access to all media content with captioning and described video. Captions make videos more accessible for users who are d/Deaf or hard of hearing and video with audio descriptions are accessible to people who are blind or have low vision.
- Use accessibility metadata otherwise your readers don't know the content is accessible.
- Make sure that accessibility is embedded in your workflow. If content isn't 'born accessible' and added as an afterthought, accessibility is often incomplete and an expensive fix.
 - Adapted from The Book Industry Study Group (BISG)





A close up of hands holding a silver tablet. Image source: Pexels/Cottonbro

Experimentation Project for Accessible Publishing: Publisher Workflows and E-book Accessibility Report was produced by National Network for Equitable Library Service (NNELS) in partnership with eBOUND Canada and L'Association national des editeurs de livres (ANEL). For this project, NNELS worked closely with Canadian independent publishers to learn about their production processes and workflows. The resulting report reviews publisher workflows and provides detailed recommendations for publishers on how they can improve e-book accessibly. Key recommendations include the following:

- 1 By building accessibility into the publishing workflow right from the start, publishers will produce born accessible e-books.
- Internal documentation should include accessibility requirements including instructions for authors; editing and design workflows, processes, and templates; requirements for conversion houses/e-book producers; and checklists for final versions of files.

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- 3 Best practices should be communicated to authors, editors, designers, e-book producers, and participants in e-book production and distribution supply chains.
- 4 Consider making accessibility a core value in the production and dissemination of content, including developing a company policy statement that stresses the commitment to accessibility.
- Reach out to experts working on accessible publishing who can support publishers by helping solve workflow problems, answer questions, and provide advice on accessibility standards, and test accessibility features.
 - Adapted from Experimentation Project for Accessible Publishing:
 Publisher Workflows and E-book Accessibility Report





White iPad displaying a recipe, in a stand on a kitchen counter. Image source: Jeff Sheldon/Unsplash

There is plenty of research, information, and guidelines about accessible publishing and creating 'born accessible' books. In this section, we consider writing image descriptions as a first step for publishers who want to make their e-books more accessible. Image description is a general term referring to any description of an image in text form,including one found in the body of the text or in the caption field of an image. An image description conveys to someone who is blind or has low vision the same or equivalent information a sighted reader would get when they look at an image. Image descriptions are typically included in digital content in three forms – alt text, long description, and captions – and are read out loud by a screen reader or screen-reading software.



Alt text also known as alternative text, offers a textual description of an image. Alt-text descriptions are visually hidden but when someone uses a screen reader, the alt-text will be read aloud. Alt-text descriptions are generally concise, usually a short phrase or, at most, a couple of sentences. Well-written alt text in e-books tends to be slightly longer and more detailed compared to alt text in images on websites.

Long or Extended description is a detailed text description of an image that can be longer than alt text, sometimes up to a few paragraphs. If long descriptions are used, they are visible because they are inserted in the text surrounding an image. Long descriptions are sometimes required for complex visuals like maps, charts, infographics, etc.

Captions provide additional information about an image, including a brief description and contextual information. Captions or figure titles are never a replacement for alternative text. Alternative text should always be included, but keep in mind that screen reader users are reading the captions, titles, and any surrounding text related to the image in addition to the alternative text. So, write alternative text that expands on the caption, not repeats it.





Alt text

Christopher Robin attaches Eeyore's tail with a hammer.

Long Description

A black line illustration of Winnie-the-Pooh watching Christopher Robin attach Eeyore's tail with a hammer. Winnie-the-Pooh is on the left and is bent over with their hands on their knees. Eeyore is in the center and is looking over their shoulder toward Christopher Robin. On the right, Christopher Robin is kneeling and attaching Eeyore's tail with a hammer.

Caption

Eeyore has lost his tail. Winnie-the-Pooh finds a bell rope that Owl had been using as a bell pull. Christopher Robin attaches the bell pull with a hammer and nail and creates a new tail for Eeyore.



Decorative Images are images and graphics that enhance the visual appearance but do not convey any meaningful information. As such, they do not need to be described, except on the cover of a book.

Logos are not considered decorative and require alt text.



Decorative Image

Description not needed. Image source: Sebastian Muller/ Unsplash



Logo Alt Text

Humber College logo.

Image source: Humber College



Following is a list of image description guidelines from AccessiblePublishing.ca - Guide to Image Descriptions, written by accessibility testers from National Network for Equitable Library Service (NNELS).

- Decorative images do not have to be described because they don't provide the reader with any useful information.
- Write image descriptions with a clear structure, working from the general to the more specific.
- Context is key. Descriptions should be written based on context including the surrounding text, audience, and related images.
- Consider and write for the audience. Children's books should be written in clear and plain language.
- Write concise descriptions and don't include phrases such as 'image of' or 'picture of' as screen readers will announce if an image is present.
- Use present tense and active verbs for engagement in describing what is happening in the image.
- Avoid writing abbreviations as some screen readers will read them as a word.



- Unless there is context, avoid making assumptions such as race, age, gender, body size and shape, facial expression, or mood. A smiling person is not always happy. You don't know a person's gender based on what they are wearing, and 'short', 'tall', and 'old' are subjective.
- Don't censor the descriptions. People with print disabilities should have equal access to the images.
- If there is text in an image, it must be included in an image description.
 - From Accessible Publishing.ca Guide to Image Descriptions



Accessible E-books Quality Assurance Checklist

Is the book reflowable?
Is the book in EPUB 3 format?
Does the book have both an NCX and a nav file?
Are all images, including cover page, author photo, and logos, described?
Are all non-decorative images marked with ARIA roles of presentation?
Is the title page set as text?
If tables are present, are they properly formatted?
Are headings semantically coded, hierarchical, and correct?
Is a textual table of contents included, and presented in a list format?
Does the table of contents link to all sections?
Are the correct styles used for emphasizing text?
If drop caps are used, are they coded so they will be read naturally?
Is title case used instead of all-cap text?
Is accessibility metadata included in the OPF?
Is an ONIX metadate file included?
Is useful information included in the <title> tag of each document?</th></tr></tbody></table></title>



Accessible E-books Quality Assurance Checklist

Is the language specified in the header section of each (X)HTML document?
Are the footnotes/endnotes linked from the text?
Do footnotes/endnotes have return links?
Are URLS captioned?
Is a page list included?
Are page numbers tagged?
Are different semantic elements well used?
For fixed layout: Are phrases/lines wrapped in span tags, instead of individual words?
For fixed layout: Have all navigation points been fully tested and checked from accuracy?



Accessibility Metadata

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

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.

AODA (Accessibility for Ontarians with Disabilities Act)

A law in Ontario that creates an enforcement framework and sets standards requiring accessibility for citizens with disabilities.

Accessible Rich Internet Applications (ARIA)

A set of attributes you can add to HTML elements that define ways to make web content and applications accessible to users with disabilities who use assistive technologies.

Assistive Technology

An encompassing term for software and technological devices that have been developed with features that enable disabled people to access digital content, including alternative input devices (head or foot mouse, puff- and-sip switches, speech recognition), screen magnifiers, screen-reading software, and speech recognition software.



Augmentative/Alternative Communication

A variety of devices, systems, strategies, and tools that people use to communicate without speech. These can include drawing, gesturing, signing, picture books, and technological solutions such as speechgenerating devices and interactive touch screens.

Born Accessible

Content that is accessible upon publication and requires no further modification. The goal of most accessibility initiatives is to be able to create workflows that produce 'born accessible' e-books and digital products.

Braille Display

A hardware device that can be attached to a computer or mobile device that interprets text into braille in real time. It contains sets of pins that can be raised and lowered to construct the braille encoding that are readable by touch.

CSS (Cascading Style Sheets)

CSS styles define how HTML elements are displayed, for example, is text bolded, is an image centred on a page, etc. Since styles are often not preserved during the conversion process, you can use CSS styles to style your EPUB, preserving or enhancing the way it looks on the printed page.



DAISY (Digital Accessible Information System)

DAISY (Digital Accessible Information System): The DAISY Consortium represents libraries for people with print disabilities and has developed a specialist standard format for use in the creation of accessible versions for people with print disabilities.

Digital Publishing

The publishing of works designed to be read using technology, such as a computer, mobile devices, tablets, e-readers and more.

DRM (Digital Rights Management)

Access-control technologies 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.

E-book

A non-editable book that is converted to a digital format to be read on digital devices such as tablets, e-readers, computer screens or mobile devices.

E-book Reader

A specialised handheld device that displays the text of an e-book.

EPUB

An e-book file format that uses the ".epub" file suffix. An EPUB file is a compressed file that contains all the text, images, CSS, HTML, XML, navigation information and more that make up an e-book. EPUB 3 is the most recent version of the EPUB file format and the main commercial publishing format.

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EPUB for Education

A set of specifications that optimize the EPUB 3 standard for educational content.

Fixed Layout

Usually contains images exactly positioned relative to text. Fixed layouts can cause major accessibility issues for readers of alternate formats.

HyperText Markup Language (HTML)

Used to label pieces of content, which the computer reads and uses to render the content of the page.

International Digital Publishing Forum (IDPF)

The IDPF, the organization initially responsible for EPUB, is part of the W3C and no longer functions as an independent organization.

Inclusive Publishing

Refers to the delivery of born-accessible content that is accessible to all readers.

Inline Styles

Styling in the HTML markup that is not separated out in the corresponding Cascading Style Sheets (CSS).

Image Description

Image description: A detailed text explanation of an image



Inclusive Design

Anything that is usable, reachable, or available for all, as well as models of creating that prioritize usability for all. Susan Goltsman says, "Inclusive design doesn't mean you're designing one thing for all people. You're designing a diversity of ways to participate so that everyone has a sense of belonging".

MathML (Mathematical Markup Language)

An XML- based language for describing mathematical notation.

Navigation Control file for XML (NCX)

A file that consists of the hierarchical table of contents for an EPUB file. The specification for NCX was developed for Digital Talking Book (DTB), is maintained by the DAISY Consortium and is not a part of the EPUB specification.

Navigational Information

The elements of markup designed to assist in movement around the content of a digital file.

ONIX for Books

A product metadata standard widely used in commercial book publishing and retailing. Codelists allow publishers and others to describe all aspects of print, braille, e-books, and audiobooks.

OPF (Open Package Format)

An XML file with the file extension .opf instead of .xml. It lists all the contents of your ePUB, and tells the reading system what order to display the files in.



Page List

A simple ordered list of links to the page break locations, particularly important for academic and educational publications.

Page Title

Meaningful titles that are added to a document, which will be read by the assistive technology.

PDF

The main file type provided when accessible files are requested. While PDFs can be made accessible through some manual work, they are often not an ideal format.

Print Disability

A learning, physical or visual disability that prevents a person from reading conventional print. Varying widely in nature, print disabilities include, but not limited to, visual, physical, cognitive, and learning disabilities.

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 hardware device that can be connected to a computer or mobile device and converts text into braille in real time. It contains sets of pins that are raised and lowered to form the braille encoding, which allows users to read by touch.



Screen Magnifier

Increase the ease of reading text on a screen through methods such as magnification, increased contrast, and cursor customization.

Screen Reader

Software that reads aloud the text that is displayed on a computer or mobile screen.

TTS (Text-to-Speech)

A type of assistive technology that reads digital text aloud.

Visual Content

Any content that is graphic in nature, including photographs, drawings, maps, graphs, charts, and more.

The World Wide Web Consortium (W3C)

Is the primary web standards organization. The W3C manages the WCAG 2.0 and EPUB guidelines.

Web Content Accessibility Guidelines (WCAG) 2

Developed through the W3C process in co-operation with individuals and organizations from around the world. The goal is to provide a single shared standard for web content accessibility that meets the needs of individuals, organizations, and governments internationally.

XML (Extensible Markup Language)

While HTML is about how you display things, XML is how you describe things. XML is the base for EPUB container files, and ONIX files.

Learning how to incorporate access into every step of the publishing process can be intimidating. Here are some access guides written by specialists from all over the world and funded by arts and government organizations committed to expanding the reach of published material. From self-published e-books to the management of publishing companies, removing barriers to access benefits everyone.

Guidelines

Top Tips for Creating Accessible EPUB 3 Files: Published by Benetech, this is a guide to how to "unlock" printed matter by creating books that are "born digital" – and including accessibility into the publishing process and design. Offers a concise and comprehensive list with embedded links to software such as MATHML (a way to show math equations written rather than as an image), and links as to how to create different types of accessible interactive content.

Inclusive Publishing in Australia: An Introductory Guide: Published by the Australian Inclusive Publishing Initiative, this guide approaches inclusive publishing from both a business standpoint and a social benefits standpoint – emphasizing the untapped market of accessible publishing, as well as how to embed accessibility into every aspect of publishing workflow.



Guidelines (continued)

Accessible Publishing – Best Practice Guidelines for Publishers: Originally published as part of the Enabling Technologies Framework project, this guide, published by Accessible Books Consortium, is regularly updated with new information and is available in several languages. Approaching the publishing of accessible work from commercial, legal, and ethical standpoints, this guide encourages publishers to strive for mainstream access, to normalize born accessible publishing, and emphasizes how ethical publishing can help every reader, regardless of ability.

Accessible Publishing

Accessible Publishing Knowledge Base:

An extensive guide to accessibility in digital publishing is provided by the DAISY Consortium with a section devoted entirely to EPUB files.

Inclusive Publishing is information hub for the creation of accessible digital publications, which includes testing methodology for reading systems.

A webinar on **Describing Images in Publications from Inclusive Publishing** with best practice tips for publishers.



Accessible Publishing (continued)

Access Guide is a robust introduction to WCAG and digital accessibility written in clear language.

Objectives of the Accessible Publishing Summit include strengthening a sense of community for ongoing collaboration among the different stakeholder groups in accessible publishing; increasing awareness of the challenges faced by readers with print disabilities; increasing understanding of recent developments in accessible digital book publishing; advancing work on various strategies to promote accessible publishing; and identifying next steps for ongoing work toward accessible publishing.

Flight Deck provides reports for EPUB files that contain information about validation issues, best practices, retailer support, and general file statistics. Their handbook includes detailed information on how to fix common EPUB issues and example code to use when updating EPUB files.

W3 Schools offers free tutorials on HTML, CSS, JavaScript, and more, as well as website templates, a colour picker, a code game, exercises, and quizzes.



Accessible Publishing (continued)

DAISY Accessible Publishing Knowledge Base includes information on EPUB Accessibility, EPUB 3, and metadata topics that describe the accessibility properties available in digital publishing metadata standards (Evaluation, Schema, and ONIX).

W3C EPUB Accessibility sets formal requirements for certifying accessible content.



Cooper Hewitt Guidelines for Image Description is an excellent introduction to writing image descriptions provided by the Smithsonian Design Museum.

Guide to Image Descriptions from the National Network for Equitable Library Service (NNELS) has provided this introductory guide to writing effective descriptions for images.

Images Tutorial is an instructional guide to making digital images accessible, with a decision tree and separate guidelines for many types of images in a digital document from W3C's Web Accessibility Initiative.

Published by **UX Collective**, **How to write** an image description is a guide to writing image descriptions, written in consultation with people with print disabilities.



Image Description (continued)

Poet Training tool is **Benetech's** opensource resource to help content creators learn when and how to describe images in metadata, with interactive tools to allow for practice on your own images.

The **DIAGRAM Center** image description guideline is written in two sections: best practices concerning style, language, formatting, and layout that apply to a variety of images and best practices specific to image categories and classifications.

Accessibile Publishing.ca guide to image description provides information on the importance of image descriptions, technical guidance and code samples, and image description guidelines with examples.

The American Anthropological Association guidelines to creating image descriptions include a downloadable large print PDF.

Inclusive Publishing article for publishers on writing alt text and getting it right.

A detailed **W3C** tutorial on writing a variety of image descriptions, including tables and forms.

Routledge provides guidelines for authors to writing alt text.





Information in this guide is informed by material and adapted from the following resources:

Accessible Books Consortium Accessible Publishing Best Practice Guidelines for Publishers

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

Book Industry Study Group Guide to Accessible Publishing

DAISY Accessible Publishing Knowledge Base: A guide to accessible production practices for the creation of digital publications.

Experimentation Project for Accessible Publishing: Publisher Workflows and Ebook Accessibility Report

