



INCLUSIVE PUBLISHING IN AUSTRALIA

An Introductory Guide



Published May 2019 by the Australian Inclusive Publishing Initiative (AIPI)
www.aipi.com.au

The Australian Inclusive Publishing Initiative (AIPI) was launched in 2016 to foster a collaborative, consultative and consensus-based approach to tackling accessibility problems in Australia. Its members include representatives of the publishing industry, authors, agents, editors, designers, indexers, libraries, copyright organisations, disability associations, government and accessible-format providers. The aim of the AIPI is to increase access to published material for people living with print disabilities in Australia.

This guide is a resource that supports this aim.

The authors, Greg Alchin ([All Equal](#)) and Julie Ganner AE ([Institute of Professional Editors](#)), are indebted to the following people for their advice, encouragement, and contributions to writing this guide:

Glenda Browne – Australian and New Zealand Society of Indexers

Neil Jarvis – Round Table on Information Access for People with Print Disabilities

Sonali Marathe – Round Table on Information Access for People with Print Disabilities

Agata Mrva Montoya – Sydney University Press

Sarah Runcie – Australian Publishers Association

Our thanks also to copy editor Lilla Wendoloski AE and designer Hugh Ford, and to Tarna Cosgrove of the Royal Institute for Deaf and Blind Children for transcribing the text into braille.

This project is supported by the Copyright Agency's Cultural Fund



Inclusive Publishing in Australia: An Introductory Guide by the [Australian Inclusive Publishing Initiative](#) is licensed under a [Creative Commons Attribution 4.0 International License](#). You are free to copy, share and adapt it, as long as you credit the Australian Inclusive Publishing Initiative as the original source. For the full licence terms see <https://creativecommons.org/licenses/by/4.0>

Table of Contents

| | |
|---|----|
| Foreword | iv |
| Introduction | 1 |
| A note on 'accessibility' and 'inclusion' | 1 |
| Why are accessibility and inclusion so important? | 3 |
| Understanding the legal obligations of accessibility | 4 |
| What does this mean for publishers? | 5 |
| The social benefits of inclusive publishing | 7 |
| What does this mean for publishers? | 9 |
| The business case for inclusive publishing | 10 |
| The untapped market | 10 |
| How can these barriers be overcome? | 12 |
| What does this mean for publishers? | 13 |
| Which design features can cause barriers to reading? | 15 |
| Content that can't be clearly perceived or understood | 15 |
| Structure that can't be navigated | 16 |
| Strategies for embedding accessibility into the publishing workflow | 17 |
| 1. Plan your strategy | 17 |
| 2. Ensure content is perceivable | 19 |
| 3. Create a flexible, well-structured source file | 22 |
| 4. Create an accessible ebook file | 23 |
| 5. Finish accessible | 25 |
| A note about screen readers and reading systems | 26 |
| Resources and further reading | 27 |
| Videos on how design decisions can enable or disable | 27 |
| Inclusive design | 27 |
| Accessible content and structure | 27 |
| Accessibility guidelines | 29 |
| Alternative text | 29 |
| EPUB | 30 |
| Useful tools | 31 |
| Sources | 32 |

Foreword

The Australian Publishing Association (APA) established the Australian Inclusive Publishing Initiative (AIPI, formerly the Marrakesh Treaty Forum) in 2016. The aim was to better understand the challenges of accessibility and how they may be solved. It is an initiative of which we are very proud.

Since our initial meeting, we have learnt from one another, built a diverse and robust cross-sector coalition and a consensus understanding of the challenges, and agreed on how we can solve those challenges together. One key lesson to emerge from the exchanges between AIPI participants is that you can't solve a problem of inclusion in a silo: collaboration is critical.

From that cross-sector understanding, we have embarked on several joint projects, one of which is this guide. Many people and organisations have contributed their knowledge and perspectives to help develop the information it offers, and we hope this will provide the right balance of general approach, detail and expert advice to help make embedding accessibility requirements into publishing practice as easy as possible.

Inclusive design is a strategic investment for the publishing industry, allowing publishers to service a growing market. It also provides publishers with the opportunity to create clever, more efficient and more cost-effective workflows by opening out to new ways of thinking about content, format and user experience.

The APA proudly supports the aims of the Marrakesh Treaty and Australian Inclusive Publishing Initiative to help ensure that, in the future, content can be born accessible.

Lee Walker
President, Australian Publishers Association

Introduction

We create and publish books to change how others feel, think and act. When we create content, we want it to be engaging and useful for all, not just some, of our readers. We also want to make sure our books can be found and read by the widest audience possible.

Creating and publishing inclusive content benefits everyone: the individual, the community and the businesses that service them. This guide is intended for anyone who contributes to the book publishing process, from authors and publishers to editors, proofreaders, designers, typesetters and indexers. Its purpose is to:

- outline the legislative framework for inclusive publishing
- explain how inclusive publishing is good for both the community and business
- identify the international standards for creating an accessible digital book
- offer a set of workflow strategies for creating accessible digital books that are inclusive by design.

A note on 'accessibility' and 'inclusion'

The terms 'accessible' and 'inclusive' are sometimes used interchangeably. However, although they are linked concepts, they mean different things.

In design terms, accessibility refers to the qualities that make an experience (in this case, reading) open to and usable by all. Inclusive (or 'universal') design, on the other hand, means a design methodology used to create something with no barriers in the first place. An inclusive product is 'born accessible' when it is designed to work for as many people as possible right from the start, without modification. Existing products that are not accessible can be retrofitted to include those attributes.

To make books available to everyone who wishes to read them, most publishers will need to use a combination of both approaches: building

accessibility into existing publishing formats and workflows, and creating content that is designed to be inclusive from the beginning.

For publishers, inclusive design is the strategic and sustainable process for all digital content. It is the new default process because it:

- opens content to unrepresented and untapped markets
- significantly mitigates the risk related to obligations under the *Disability Discrimination Act 1992* (Cth)
- enables publishers to maintain control of content while complying with the *Copyright Act 1968* (Cth), including the requirements related to the Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired or Otherwise Print Disabled (2013) (Marrakesh Treaty).

A print disability is any visual, perceptual or physical condition that creates an inability to read, or a difficulty in reading, printed material. As we will discuss in this guide, your design decisions will determine how usable and accessible your content is to all your readers, both those who have a print disability and those who do not. Inclusive design is good design, and a well-designed book benefits everyone, not just those with a print disability.

Through the use of modern devices and properly formatted content, the barriers to print can be removed. Poor design excludes and disables, while good design includes and enables.

Why are accessibility and inclusion so important?

Vision 2020 Australia estimates that there are over 575,000 people who are blind or vision impaired living in Australia. And according to the Australian Dyslexia Association, 10% of the population has dyslexia – that's more than 2 million Australians. Furthermore, the Australian Bureau of Statistics estimates that:

- over 4 million people in Australia have some form of permanent disability
- 2.1 million Australians of working age (15–64 years) have a disability
- 13.7% of Australians have low or very low levels of reading literacy (proficiency level 1 or below, as defined in the 2013 OECD *Survey of Adult Skills*)
- a further 30% have insufficient reading skills to be able to understand or evaluate more than fairly simple written text (proficiency level 2 in the OECD survey).

Meanwhile, according to the World Blind Union, less than 10% of all materials published worldwide are accessible to readers with a print disability, leading to what the organisation calls a global 'book famine'.

These statistics represent both issues and opportunities for publishers. As the Australian Human Rights Commission (AHRC) makes clear, improving accessibility for consumers with a disability 'will not only reduce the likelihood of discrimination complaints against your business, but will also increase your access to the market, and benefit the community, through greater economic participation of people with disability' ('Access for all', 2016).

On the one hand, failing to provide equal access to services, facilities or goods – including books – is considered a form of discrimination under Australian laws and regulations. On the other, there are substantial benefits to be gained by both the publishing industry and society at large if books are designed from the outset to be readable by everyone, no matter how they access them.

Let's examine these points in turn, before looking at how they can be addressed.

Understanding the legal obligations of accessibility

In 2014, the Australian Government signed the World Intellectual Property Organization (WIPO) Marrakesh Treaty to Facilitate Access to Published Works for Persons Who Are Blind, Visually Impaired, or Otherwise Print Disabled (Marrakesh Treaty). To date, the treaty has been ratified by 70 countries, including the member states of the European Union and the United States. Although primarily aimed at copyright provisions, the issues raised by the treaty have acted as a catalyst for Australian publishers to consider their potential obligations under the existing legislative framework, such as the Disability Discrimination Act 1992 and the United Nations Convention on the Rights of Persons with Disabilities (CRPD), which Australia ratified in 2008.

The Disability Discrimination Act makes it against the law to discriminate against someone on the grounds of the person's disability, including in the provision of goods, services and facilities. The Act states that disability discrimination occurs when a person is treated less favourably because of their disability, or is not given the same opportunities as others in similar circumstances. The Act makes it unlawful to discriminate against a person because of their disability:

- by refusing to provide them with goods or services, or to make facilities available to them, or
- because of the terms or conditions on which, or the way in which, the goods, services or facilities are provided (s. 24).

The Act requires businesses to make adjustments that enable a person with a disability to access their goods, services or facilities where equal access can reasonably be provided. The AHRC notes that this requirement applies to the provision of information, including to 'any individual or organisation ... placing or maintaining a web resource on an Australian server', including resources related to the provision of 'education; ... entertainment or recreation'.

In addition, the CRPD states that signatories must undertake 'all appropriate measures to ensure that persons with disabilities can

exercise the right to freedom of expression and opinion, including the freedom to seek, receive and impart information and ideas on an equal basis with others and through all forms of communication of their choice' (Article 21). The AHRC notes that, 'Accordingly, any failure to provide full access to the web and other internet-based technologies for people with a disability may be seen as a violation of human rights'.

The rights of people living with a print disability have more recently been strengthened by the Marrakesh Treaty. The treaty is an international agreement designed to help give people with a print disability greater access to books published in accessible formats such as large print, braille or audio. The treaty requires signatory states to:

- provide an exception to domestic copyright law for people living with print disability
- allow for the import and export of accessible versions of books and other copyrighted works, again without copyright-holder permission.

What does this mean for publishers?

For people living with a print disability such as blindness or low vision, printed books present a barrier to accessing information. However, a range of assistive technologies, such as screen readers and braille displays, are available to ensure that people with print disabilities can buy and read digital books just like anyone else, as long as those books are designed to known technical standards.

Consistent with Australia's legislative requirements and international obligations, Australian publishers are advised to make their ebooks and other digital products available to readers in an accessible format that complies with international standards. The AHRC notes that digital content providers should ensure their systems and content comply with the Web Content Accessibility Guidelines (WCAG) created by the

World Wide Web Consortium (W3C). Digital content must conform to at least Level AA of the WCAG success criteria in order to be considered capable of providing equal access.

The WCAG are technology-neutral. They provide a technical framework and a set of strategies for creating content that is usable by and accessible to all users and that meets the legislative requirements. While the WCAG appear complex to those unfamiliar with them, this guide distils them into simple workflow strategies for creating inclusive digital publications that provide equal access to all.

The social benefits of inclusive publishing

Imagine what it would be like if you suddenly found you couldn't read the majority of the books in the world because of the way they were produced. This is the experience of many people living with a print disability, for whom printed books constitute an insurmountable barrier to reading.

Removing this barrier by offering books in a digital format that can be accessed by all readers is valuable not only to each individual but also to society as a whole. WIPO anticipates significant benefits for the countries in which books and other print materials are made universally accessible:

- greater and more equal access to education through the provision of educational materials in accessible formats
- the alleviation of poverty for people living with a print disability as a result of improved access to education and employment opportunities
- improved awareness by society of the challenges faced by people living with disability
- improved social inclusion and cultural participation of people with print disabilities
- an increase in the contribution that people living with a disability are able to make to the national economy.

These benefits align with the aims of the Commonwealth *National Disability Insurance Scheme Act 2013*. The Act reminds us that people living with a disability have the same rights as everyone else in Australian society to realise their potential for intellectual and emotional development, including receiving the necessary support to:

- pursue their own goals
- participate and be included in the mainstream community
- contribute to Australian social and economic life
- live independently
- participate in employment.

Publishing digital books that are inclusive by design can help to remove social and economic barriers for people living with a print disability by giving them the same access to information, educational materials, literary culture and leisure reading as their peers.

Access to well-structured, accessible content would also be a boon to Australian disability support agencies. These organisations currently spend a great deal of time and money each year converting textbooks into braille and other tactile formats for their students. Educational publishers usually provide disability agencies with the PDF versions of their textbooks; however, because they are not structured documents, PDFs can't automatically be interpreted by screen readers. A braille transcriber therefore has to determine how to most accurately present information from a print textbook and then transcribe it into braille so that a student who is blind or has low vision gets the same benefits from the information as their sighted peers.

Braille transcription is a time-consuming and expensive process. Modern print textbooks are highly visual and rich in graphics. The more colours, boxes, maps, diagrams, images and artwork printed on the page, the longer it takes to format a book for the braille user. For example, the Royal Institute for Deaf and Blind Children estimates it can take up to 2200 working hours to convert a single high-school science textbook from the PDF provided by a publisher into a format that is appropriate for its students. The conversion process includes using an optical character recognition (OCR) scanner to extract the text, checking and correcting the resulting files, redrawing all the diagrams, formatting the text using Unified English Braille guidelines, proofreading and making final corrections before binding. This painstaking process is a huge drain on the resources of disability agencies each academic year.

What does this mean for publishers?

All publishers can help support people living with a print disability by offering their content in an accessible digital format that follows the standards set out in the *WC3 EPUB Accessibility 1.0* guidelines.

Educational publishers can also significantly decrease the workload and costs borne by disability agencies by providing accessible EPUB files (or InDesign files if the agency can use them) for each textbook, rather than PDFs, and ensuring the book's layout and formatting follow the principles of inclusive design. PDFs are no longer the recommended digital format. The AHRC advises that, when displayed on tablets and mobile phones, PDFs are not sufficiently accessible to provide a user experience for a person with a disability that is equivalent to the experience of a person without a disability.

The business case for inclusive publishing

Inclusive publishing also makes good business sense, as it increases the number of readers who are able to access – and therefore are more likely to buy – your books. These readers include not only people living with a disability but also those living in rural or remote areas, who may find it much easier, quicker and cheaper to download digital content than to wait for delivery of a physical product. Offering your content only in printed form, on the other hand, means you miss out on a great opportunity to cater for a substantial market segment that is currently under-serviced.

The untapped market

It might surprise you to know that pretty much everyone will experience a disability of some form or another, whether permanent or temporary, during their lifetime. In fact, based on our current understanding, disability is the norm rather than the exception. Consider the following examples:

- Someone with an eye infection may experience a temporary visual disability.
- Someone with a broken arm has a temporary physical disability.
- Someone trying to read a printed book under poor lighting may experience what is known as a 'situational disability'.

All of these conditions are temporary, but they can still affect the individual's ability to read printed text at that time. Being mindful of the continuum from permanent disabilities through to temporary and situational impairments helps us to reconsider the number of people who experience disability on a daily basis. It indicates that there are large numbers of people who may benefit from content being made available in an alternative format to print, beyond those we might normally think of when considering readers with disabilities.

Similarly, when imagining a person with a print disability, you may immediately think of someone who is blind or who has low vision.

However, print disability can also be experienced in other forms. Some people have little or no sensitivity to certain colours ('colour blindness'), for instance, or increased sensitivity to excessive brightness in colours. Both of these variations in perception of colours and brightness can cause a print disability, even though they can be independent of the person's visual acuity.

Moreover, many adults in their early-to-mid 40s start to experience age-related vision problems that affect their ability to read as easily as they did when they were younger. These problems can result in a need for more light, difficulty reading and doing close-up work, problems with glare, changes in colour perception and reduced tear production. According to the Australian Institute of Health and Welfare, 9.4% of those aged over 55 have some form of vision impairment, while presbyopia (considered a natural effect of ageing) alone affects the eyesight of 1.3 million older Australians.

Print can also be a barrier for people who are not blind or vision impaired. The Copyright Act defines a 'person with a disability' as a person with a disability that 'causes the person difficulty in reading, viewing, hearing or comprehending copyright material in a particular form' (s. 10(1)). This definition underpins the provisions in the Act permitting the making of accessible copies of books and other copyright material.

Consistent with this definition, print may be a barrier for:

- people with severe arthritis who may have difficulty holding a book or turning pages
- people suffering from multiple sclerosis or neuromuscular disorders such as muscular dystrophy, who may have functional eyesight but are unable to read due to symptoms of the disease such as muscle weakness or shaking
- people with other types of physical disability or injuries that limit finger dexterity or mobility, inhibiting the easy use of reading materials
- people with a perceptual disability such as dyslexia.

Other people for whom print may create a barrier include students who are not visual learners, people with low literacy or learning difficulties, and readers whose first language is not English, including many migrants and Indigenous Australians. Inclusive design facilitates an alternative way of accessing content (via audio) which may help with understanding and learning.

It should also be noted that print is not the only format that can create barriers to inclusion. Older digital book formats such as PDF may also fail to deliver an engaging and equivalent reading experience for readers who require large print or text-to-speech output. While some readers may choose to listen to the text using Adobe Acrobat's 'read aloud' feature, others may choose to read the PDF using the zoom magnification, which they will need to set at a zoom level of 200–600, depending on the device and the reader's vision. The reading experience this provides is best described as painful, even for a single page.

How can these barriers be overcome?

Irrespective of whether a person fits any particular definition, the key point is that providing content in an accessible digital format removes barriers to perception, comprehension and learning for all.

People with print disabilities use a range of assistive technologies to access digital text. Typical reading methods include:

- synthetic speech – using screen reader software (e.g. JAWS, VoiceOver, NVDA, Window-Eyes, ChromeVox, TalkBack), or built-in screen readers in mainstream software (e.g. Read Out Loud in Adobe Acrobat) or within portable devices (e.g. Victor Reader Stream)
- refreshable braille – using a portable braille display connected to a desktop computer, laptop or tablet device, or within a standalone braille note-taker

-
- viewing on-screen – using specialised screen-magnification software, tools that customise colour combinations, tools that aid in tracking when reading, and built-in zoom functions within software and operating systems. These tools may be available on mainstream technology or can be accessed through specialised devices such as desktop or handheld video magnifiers.

However, while these technologies help people with print disabilities to engage and interact with content, they do not provide the complete solution. They still rely on the publisher to ensure that the content is properly formatted and tagged. For example, it is important to apply an appropriate heading structure to every publication (heading levels 1, 2, 3 etc.). This will allow a person using a screen reader to gain a sense of the document's scope and hierarchy, as well as to navigate the content.

What does this mean for publishers?

Learning to design and publish inclusive content as a standard part of the workflow makes great business sense. Being aware of how content and design may create barriers to reading also helps us generate new ideas and designs. It highlights opportunities to create solutions with utility and elegance that will create better books for everyone.

It is also worth noting that equal access to digital information became the subject of an Australian procurement standard under AS EN 301 549:2016 in December 2016. This standard relates to accessibility requirements suitable for public procurement of information and communications technology (ICT) products and services. Digital books and content are examples of ICT products and services. This has implications for publishers of digital books because the government procurement rules require public libraries and educational institutions to procure only those ICT products and services that meet the accessibility requirements defined in the standard.

The digital book format best able to meet the WCAG criteria is EPUB. PDFs may be digital, but this does not mean they provide an equal reading experience for all readers. Because PDFs focus on reproducing the visual layout of the printed page rather than on the structure of the text, they can still create many of the same barriers to inclusion that are inherent in the print format. Digital books based on the EPUB format, on the other hand, focus on the semantic structure of the document – the cornerstone of inclusive publishing.

Which design features can cause barriers to reading?

It is a common misconception that all digital content is automatically accessible and therefore provides equal access to people with print disabilities. Nothing could be further from the truth. When considering how to make reading your book an inclusive experience for all readers, it is useful to be aware of some of the issues that those with a print disability may experience when accessing inappropriately prepared content.

Content that can't be perceived or clearly understood

Information needs to be presented in a way that can be perceived and understood by all readers in the target audience, irrespective of how they access it. Examples of content that can exclude readers with a print disability are:

- illustrative examples that can't be perceived by all readers, such as an alphabet book for kindergarten children that uses a visual example ('R is for red') rather than a tangible one ('R is for rabbit')
- references to graphics that are purely visual, such as 'the image on the right' or 'see the figure on the next page'
- images or illustrations that are provided without a text alternative to describe what they depict
- gaps in information, such as empty cells in tables or spaces used instead of commas to separate thousands, which a screen reader may not be able to interpret (e.g. for 125 000 the user hears 'one hundred and twenty-five zero zero zero' rather than 'one hundred and twenty-five thousand')
- text or characters used as an image, such as dropped caps at the beginning of a chapter, which screen readers can't interpret
- words that are mispronounced by the screen reader because the interpretations have not been differentiated – for example, where the reader hears 'tear' (to pull apart) rather than 'tear' (a drop of fluid from the eye)

- information cues that are purely visual, such as using colour to highlight key words
- margin notes that are difficult to understand without visual reference to the accompanying text
- interactive content and controls with labels that do not provide useful information and/or are duplicated
- content elements that do not provide enough difference between the relative luminance (or brightness) of the element's colour in relation to its surroundings, such as between the text and the paper colour. The WCAG 2.0 recommend minimum contrast ratios of 4.5:1 between the text (and images of text) and the background behind the text, and 3:1 for graphics and user interface components. (The only elements that have no contrast requirements are any purely decorative elements and company logos.)

Structure that can't be navigated

All content needs to be designed and structured so that readers can find their way around the book easily. Some examples of where an unstructured digital book can exclude readers with a print disability are:

- no reading order being provided in the metadata for a text that contains elements such as graphic material; items are therefore read by the screen reader in the exact order in which they appear (which won't make sense if, say, a figure appears mid paragraph at the bottom of a page)
- incorrect or missing tagging, which means the user can't search the text, distinguish the different elements (body copy, headings etc.) from each other, skip parts they don't want to read, or jump from one part of the book to another
- shortcuts made during text layout that work visually (such as using tabs to create two columns instead of using the table creation tool) but don't make sense when they are read aloud.

Strategies for embedding accessibility into the publishing workflow

The most efficient way to create an inclusive publication is to build accessibility into the publishing workflow right from the start.

Publications nowadays can appear in a range of formats. The final source file therefore needs to be planned and built in a way that will allow it to generate multiple formats, not just the traditional file for the printer, without too much extra work being needed at the point of conversion.

Irrespective of factors such as the intended audience type, format and publication purpose (e.g. leisure, practical instruction, general information, education, academic research), all elements within a source file need to be accessible so that all readers are given the same opportunity to perceive, understand and respond to the content. Which techniques you use to achieve the accessibility criteria will depend upon the type of elements you have in your source file.

Different publishers use a variety of workflow processes, depending on the kind of publishing they engage in and the formats they work with. While it is not possible to create a generic workflow template that covers every type of publication, the following steps offer five principles for best practice. What is implicit in these principles is that all those involved in the production process, both in-house staff and contractors, need to be aware of the accessibility standards and recommendations, and equipped to address them. Everyone has a part to play in making inclusion 'business as usual' as this becomes the new default way of operating.

1. Plan your strategy

When considering how to embed accessibility in your workflow processes, it can be helpful to start with some core questions:

- a. When considering the target market for your book, have you factored in the needs of readers with a print disability?

-
- b. Is there anything in the content of the manuscript or in your design template/s that may exclude some users or otherwise limit their ability to perceive, understand and respond to the text?
 - c. What strategies will you use to remove those barriers, in order to ensure all readers can engage fully with your content, irrespective of how they access it?
 - d. What techniques and tools will you use to check that your book meets the accessibility standards?
 - e. Who will be responsible at each stage of the workflow for implementing these strategies and techniques? And how will you ensure they are aware of the accessibility standards and recommendations, and know how to address them?

You will therefore also need to consider how you involve your contributors at each stage of the publishing process. Not only your in-house staff, but also your authors, editors, designers, typesetters, proofreaders, indexers and other external contributors will all need to be briefed on what they must do to ensure the final source files are capable of generating accessible formats.

This may require adjustment to your standard contracts, statements of work and/or briefs. For example, you may need to:

- decide who is the most suitable person to provide the alternative text descriptions for images or other graphics (e.g. the author, editor, illustrator), or to specify the reading order where there are multiple elements in the text, or to tag the text, and then include these tasks in that person's job description, brief or contract
- update your house style guide to include accessibility requirements (e.g. how to write appropriate descriptions for images, graphs and diagrams)
- adjust any standard design templates you use so that they conform to accessibility standards (e.g. avoid using text as an image and ensure there is a sufficiently strong colour contrast between foreground and background for text and icons)

-
- consider early on how you will manage the lack of page number equivalents (e.g. how index locators – page numbers – will be written and how they will be linked to the text to which they refer)
 - create a standard licence with suitable terms and conditions for providing files to alternative format publishers and disability agencies.

2. Ensure content is perceivable

All readers must be able to perceive the content being presented in the book, irrespective of how they access it. To make this possible for readers with a print disability, it is important to create content that can be presented in different ways, including by assistive technologies, without losing meaning.

Non-textual elements can also present problems for readers with a print disability, as visual information doesn't always work well when offered in non-visual form. The two key problems readers face with non-textual elements are poor colour contrast and the lack of alternative text. These problems create barriers to perception as well as impacting on general usability.

Alternative text ('alt text') provides a textual alternative to non-text content. Visual elements such as photographs and diagrams therefore need to include an alt-text description that both suits the reader's needs and reflects the purpose of the graphic.

Key points

- When writing alt text:
 - consider the reader's needs (e.g. whether the book is intended to be read for recreation, education or practical information) and tailor the degree of detail you offer to those needs

-
- avoid language that involves visual concepts that may not be available to non-sighted readers (e.g. ‘background’ and ‘foreground’, or ‘see the image on the left’)
 - don’t include a description of the visual if it just repeats information that is already in the text, or it is too complicated to explain clearly, or the description won’t help the reader understand the text any better, or the graphic is purely decorative
 - present the caption first, and then the description if needed (i.e. if the caption is not sufficiently detailed to provide all the necessary information)
 - give the most important details first
 - describe what is in the graphic accurately and in a way that allows readers to form their own judgment, rather than offering an interpretation of it
 - for diagrams (e.g. flow charts, graphs and pie charts), give a brief overall description of the graphic before describing the elements in detail.
 - Number figures and tables by chapter (1.1, 1.2 etc.) and cross-reference them by number in the body text.
 - Refer in the text to photographs and illustrations, if possible; otherwise, note them under the paragraph closest to where they appear.
 - Avoid cross-referencing to page numbers within the book, as this information will not be accessible in the digital version if it features reflowable text. Where possible, refer instead to elements such as chapter or section headings (e.g. ‘see the section, “Create an accessible ebook”, later in this chapter’). Locators in indexes (page numbers and so on) should link to the content in the text to which they refer.

-
- Use tables only where necessary. If the content is really just a list of items, present it as a list instead.
 - Ensure that interactive content and controls have labels that are informative and avoid duplication.
 - In educational texts, always double-check any questions that relate to a graphic. Readers should still be able to obtain from the graphic the information they need in order to answer the question, irrespective of how they access it.
 - Consider briefing the author and/or copyeditor to flag heteronyms: words that look the same visually but can be pronounced differently, such as ‘*refuse*’ (to reject) and ‘*refuse*’ (garbage). If these are identified during the writing or editing process, they can be coded before digital publication so that the screen reader can pronounce them appropriately.
 - If the publication is a revised edition that has not previously been edited for accessibility, remember that the whole book will need to be checked by the author and/or editor, not just the new material.
 - In addition to any colour-contrast decisions made within standard design templates, remember to check that the colour contrast within all charts, graphs and diagrams meets the recommended minimum ratios.
 - Most importantly, all content, including images and indexes, that is included in a print document should be included in the electronic version of that document.

Text is also made perceivable when it is semantically structured (tagged). Screen readers communicate the tags to readers. This allows readers to understand the organisation and, where appropriate, the hierarchy of the content, as well as to easily navigate and locate content, as we will discuss.

3. Create a flexible, well-structured source file

The next stage in your inclusive design workflow is to create a structured master file that can be used to generate any format with minimal modification.

Readers with a print disability may not be able to see discrete elements such as headings. The only way they can distinguish them from the body text is if the elements are marked up, using valid tags, so that they can be identified by the user's assistive technology.

Structured (tagged) documents allow readers to find their way around the book easily, skip parts they may not need, and gain a better understanding of the information and ideas the text contains.

Key points

- All elements in the text must be tagged (not just styled), following a recognised schema or document type definition (DTD).
- Add the mark-up tagging as early as possible in the workflow (preferably at the manuscript stage) so that as many contributors as possible have the opportunity to check it is complete and correct before publication.
- Depending on the type of book you are publishing, the mark-up identification may include:
 - an ordered hierarchy of parts, chapters, sections, headings and other elements
 - a logical reading order so that users who are listening to the text rather than looking at it can read around elements such as figures, tables and illustrations in the same way that sighted readers do
 - nested list levels (such as the two levels of bullet points within this list) so that readers can tell which are the main elements and which are secondary

- alt-text captions and descriptions for all graphics
- a table of contents, in-text cross-references and an index, all with active hyperlinks (additional structure in the index such as the provision of linked letter groups – A, B, C and so on – is also helpful)
- auxiliary material such as references (including cross-references in indexes), footnotes and/or endnotes, also hyperlinked if appropriate.
- Minimise the use of unnecessary character formatting (e.g. italics in heading styles), and avoid using it to provide information (e.g. bold for emphasis). Make the targets of index locators specific (e.g. use '35f' to indicate a reference to content in a figure) instead of using bold and italic locators for this task.
- Ensure table headers and data cells are distinguished in the mark-up, so that screen readers can announce them as the user moves between cells in the table. Do not leave any cells empty, as this can cause confusion for the user.
- Mark up different (human) languages with a language code, so that screen readers can identify when to change the pronunciation of the text.

4. Create an accessible ebook file

Despite being digital, ebooks are not automatically accessible. In addition to creating suitable content and a well-designed source file, you also need to use the accessibility features in EPUB 3 to ensure that no-one is excluded from your publication.

Key points

- Remember to enable the print-to-speech function so that readers can use assistive technology to access your content. The speech

output can be either human voices or digital voices. If you want to use human voices instead of the inbuilt digital voices on the device, you will need to synchronise the text with an audio file. The more common approach is to use the inbuilt print-to-speech functionality of the platform and the reading app, as this doesn't take any effort for publishers to configure. If you use human voices in lists such as indexes, it is important to distinguish the text of index entries from the locators (page numbers) if provided.

- Where possible, provide dynamic 'lookups' such as auto-completing search boxes that don't involve manual navigation.
- If digital rights management (DRM) is applied, the level of content protection set within the DRM should still allow the content to be accessible to screen readers and text-to-speech functionality. Users should be allowed to select text and highlight content so it can be read by the screen reader or defined on lookup, as well as highlighted for annotation purposes.
- Ensure that metadata is included to indicate how accessible your book is (which will also help market your book to readers with a print disability).
- Check that all hyperlinks are active and correctly displayed. A sample of hyperlinks from index entries should be checked (by typesetter, editor and/or indexer) to make sure that they link to the correct part of the text and that the content they refer to is easily found. Hyperlinks should be easily distinguished from the surrounding text, and the link text should describe the content of the link target and make sense on its own. For example, incorrect style would be 'Visit <https://www.publishers.asn.au>' while correct style would be 'Visit [Australian Publishers Association](#)'.
- All major EPUB reading systems (apps) allow readers of reflowable EPUBs to select and personalise typeface and size depending on their needs. It is important that you do not lock readers out of this

functionality, as doing so creates accessibility barriers for some readers, such as those who need to enlarge or change the font, or change the spacing between lines or characters, in order to read the text.

- However, for content that is inherently page based (such as some academic and legal texts), reflowable text may not be appropriate and you may need to use the fixed-layout EPUB format instead. If you must use a fixed layout, it is essential to set a logical reading order and display the page break indicators. If page numbers are printed on a page, they should be visible on every page, not sacrificed to make way for images.

5. Finish accessible

To finish accessible, you need to undertake two quality assurance steps:

- a. Review your content to ensure it is consistent, correct and accessible before exporting it into its final published format. If you are using Microsoft Office to write your content, you can use the inbuilt Accessibility Checker (refer to '[Resources and further reading](#)' at the end of this guide) to assist in this process. However, don't rely solely on any automated checking tools. For example, while such tools can identify if there is an alt-text description (alt tag) embedded in an image, they can't assess whether the alt tag explains the image sufficiently to provide equal access.
- b. Export a local draft copy of your book, then test the content, interaction and navigation of your book using a combination of a screen reader and a reading system (i.e. an app) before publication to confirm that your content is in fact accessible. It is recommended that you undertake this assessment on two separate device platforms.

A note about screen readers and reading systems

All major device platforms either provide an inbuilt screen reader or allow users to download and install their free one. Most platforms also provide an inbuilt reading system. Some 'typical' combinations of screen readers and reading systems are:

- Apple: inbuilt screen reader is [VoiceOver](#) and reading system is [Books](#).
- Microsoft: inbuilt screen reader is [Narrator](#) and reading system is [Edge](#) browser. Alternatively, download the free screen reader, [NVDA](#).
- Google: download [Android Accessibility Suite](#), which includes a screen reader. Download [Google Play Books](#) as the reading system.
- Amazon: inbuilt screen reader is [VoiceView](#) and reading system is [Kindle](#). Spoken feedback from VoiceView is currently only available via the additional support of a Bluetooth audio device.

Except for Kindle, you can also download and install additional reading systems such as Adobe's Digital Editions. Inclusive Publishing provides a very useful review of [accessibility support within popular reading apps](#). Whichever combination of device platform, screen reader and reading system you are using, the testing process is essentially the same: import the book into the reading system, turn on the screen reader, and navigate and test the book using the screen reader. All major platforms provide instructions on how to use the screen reader:

- [Apple VoiceOver](#)
- [Microsoft Narrator](#)
- [NVDA for Windows](#)
- [Google Talkback](#)

Resources and further reading

One of the best international websites to help you keep up to date is [Inclusive Publishing](#), which is run by the DAISY Consortium. It provides information, guidance and news about accessible publishing. Among its supporters are the [International Publishers Association](#) and the [Accessible Books Consortium](#).

To learn more about accessibility, inclusive design and digital publications, the following resources are recommended.

Videos on how design decisions can enable or disable people

The following YouTube videos give practical demonstrations of what someone using assistive technology to read might experience, depending on how the content is prepared.

World Intellectual Property Organization (WIPO), [ABC explains: A digital file is not necessarily accessible](#) (2017)

New South Wales Government, Department of Education, [Accessibility – the importance of properly structured content](#) (2015)

Inclusive design

Microsoft, [Inclusive: Microsoft Design](#). This manual is a comprehensive introduction to inclusive design. It outlines the basics and can help shift your design thinking towards universal solutions.

Vision Australia, [Resources](#). The Vision Australia website offers a range of free tools, information and other resources to support accessibility awareness and implementation.

Accessible content and structure

Book Industry Study Group (BISG), [BISG Quick Start Guide to Accessible Publishing](#) (2016). This guide is designed to give publishers a quick and up-to-date reference tool in clear, non-technical language. Free in EPUB 3.

Accessible Books Consortium (ABC), [Books for All: A Starter Kit for Accessible Publishing in Developing and Least Developed Countries](#), The kit provides information on how to increase the number of books in accessible formats at the national level. It is designed for key stakeholders such as non-government organisations, departments of education and publishers in developing and least developed countries. Available for download in PDF format.

Gunn, D., [Accessible eBook Guidelines for Self-Publishing Authors](#) (2016). Produced by the ABC and the International Authors Forum, these guidelines describe how people with print disabilities use technology to read ebooks, as well as the steps authors can take to ensure their books are compatible with that technology. It provides practical information to help writers ensure their publications are accessible to the broadest range of readers. Available for free download.

Hilderley, S., [Accessible Publishing: Best Practice Guidelines for Publishers, version 4](#) (2013). Produced by EDItEUR in association with WIPO and the DAISY Consortium, this lengthier set of guidelines provides a ready reference for publishers covering non-technical and technical aspects of inclusive publishing. The guidelines can be downloaded for free in Word document format and PDF.

Round Table on Information Access for People with Print Disabilities, [Guidelines for Producing Accessible E-text](#) (2018). These guidelines offer accessibility methods for best practice across a variety of electronic formats in common use.

World Wide Web Consortium (W3C), [Tips for Getting Started Writing for Web Accessibility](#) (2019). This web page introduces some basic considerations for writing web content that is more accessible to people with disabilities and meets WCAG requirements.

World Wide Web Consortium (W3C), [Tips for Getting Started Designing for Web Accessibility](#) (2019). This web page introduces some basic considerations to help you make your user interface design and visual design more accessible to people with disabilities.

Accessibility guidelines

WebAIM, [WCAG 2 Checklist](#). This is a simplified and condensed explanation of the official [WCAG 2.1](#) specification with supporting materials to make it easier to implement and verify content.

World Wide Web Consortium (W3C), [How to Meet WCAG 2 \(Quick Reference\)](#) (2019). This is a customisable quick reference to WCAG requirements (success criteria) and techniques.

W3C, [EPUB Accessibility 1.0](#) (2017). This industry document defines discovery and content accessibility requirements for EPUB publications.

Alternative text

DIAGRAM Center, [Accessible Image Sample Book](#) (2015). This free resource shows some of the many options for creating accessible versions of various types of digital images, from maps to bar charts. Each chapter shows a different image in the context of the book it came from, along with helpful tips and the code used to provide the accessible image in a digital book. You can download the [EPUB](#) version or [read it online](#).

DIAGRAM Center, [Diagrammar: A Framework for Making Images and Graphics Accessible](#). This is a framework that provides a structured, standard way for image description data to be modelled, including different types of descriptions for each image, teacher annotations, and pointers to tactile graphic files.

DIAGRAM Center, [Image Guidelines for EPUB 3](#) (2018). These guidelines provide best practices for marking up images within EPUB 3 files.

Round Table on Information Access for People with Print Disabilities, [Guidelines for Conveying Visual Information](#) (2005). The guidelines offer suggestions and examples of ways in which non-textual information can be presented in a format accessible to people who are blind or vision impaired.

WebAIM, [Alternative Text](#) (2018). This web page contains tips on how to use alternative text correctly.

EPUB

Alchin, G., [ePUB Guide Book: A Primer for Content Creators, Curators and Consumers](#) (2017). Topics include '21st century reading', 'Why PDFs are so last century!', 'What actually is an EPUB 4?', 'How to create, share and read EPUBs', 'Simple inclusive learning design strategies' and 'Professional standards'. Available for free download from Apple Books.

DIAGRAM Center, [Top Tips for Creating Accessible EPUB 3 Files](#). This web page offers straightforward tips on best practice for publishers and other content creators.

Garrish, M., [What is EPUB 3?](#) (2011). This book analyses the EPUB format and outlines the features it offers that are unavailable on the printed page, such as embedded multimedia and scripted interactivity. Available for free download in Kindle format.

Garrish, M., [Accessible EPUB 3](#) (2012). This book offers practical tips and examples for making content easier to access in the EPUB 3 format, demonstrating the link between accessible practices and standard content best practices. Available for free download in Kindle format.

GitHub, [EPUB 3 Samples Project](#). This website provides links to a collection of publications that demonstrate the features of EPUB 3, as well as to sample materials that can be used for testing content. The EPUB 3 Samples Project is coordinated by [WC3's EPUB 3 Community Group](#).

Inclusive Design Research Center, [Inclusive EPUB 3](#), in [Floe: The Inclusive Learning Design Handbook](#). This guide is intended for content creators and educators who are interested in publishing content in EPUB 3 that is broadly usable by a full spectrum of readers.

International Digital Publishing Forum, [EPUB Indexes 1.0: Recommended Specification 26 August 2015](#). This specification defines a consistent and effective way of encoding the structure and content of indexes in EPUB publications, to combine the benefits of a print index with the interactive functionality and features of digital publishing.

[Kotobee](#). This blog offers tips on a range of ebook topics, such as [Applying Global Formatting to Your EPUB Using CSS](#) (on cascading style sheets) and [Best Ebook Layout Format: Reflowable or Fixed?](#)

Useful tools

DAISY Consortium, [Ace by DAISY](#). This free, open-source accessibility checking tool helps evaluate conformance to the [EPUB Accessibility Specification](#).

DAISY Consortium, [EPUBCheck](#). This open-source tool validates the conformance of EPUB publications against the EPUB specifications. It can be run as a standalone command-line tool or be used as a Java library. It is maintained by the DAISY Consortium on behalf of the W3C.

Microsoft, [Accessibility Checker](#). This free tool is built into Office 2007 (Windows), Office 2016 (Mac) and later versions of these programs. It identifies accessibility issues, explains why they might be a problem for someone with a disability and offers suggestions on how to resolve them.

Paciello Group, [Colour Contrast Analyser](#). This is a free, cross-platform app for checking contrast ratios between foreground and background colours.

Rev.com, [Captions](#). Rev offers a cheap, reliable captioning service.

Sources

Alchin, G. (2017), *ePUB Guide Book: A Primer for Content Creators, Curators and Consumers*, <https://itunes.apple.com/au/book/epub-guide-book/id1191699538?mt=11>

Australian Bureau of Statistics (2013), *Programme for the International Assessment of Adult Competencies, Australia, 2011–12*, Cat. No. 4228.0, www.abs.gov.au/ausstats/abs@.nsf/mf/4228.0

Australian Bureau of Statistics (2018), *Disability, Ageing and Carers, Australia: Summary of Findings, 2015*, Cat. No. 4430.0, www.abs.gov.au/ausstats/abs@.nsf/mf/4430.0

Australian Dyslexia Association (2018), 'Dyslexia in Australia', <https://dyslexiaassociation.org.au/dyslexia-in-australia>

Australian Government, Department of Communications and the Arts (n.d.), 'Marrakesh Treaty for people with a print disability', www.communications.gov.au/policy/policy-listing/marrakesh-treaty-people-print-disability

Australian Government (1968), *Copyright Act 1968*, downloaded from the Federal Register of Legislation at 29 January 2019. For the latest information on Australian Government law please go to www.legislation.gov.au

Australian Government (1992), *Disability Discrimination Act 1992*, Federal Register of Legislation, www.legislation.gov.au

Australian Government (2013), *National Disability Insurance Scheme Act 2013*, 'Part 2 – Objects and principles', Federal Register of Legislation, www.legislation.gov.au

Australian Human Rights Commission (AHRC) (2014), 'World Wide Web access: Disability Discrimination Act advisory notes', version 4, www.humanrights.gov.au/world-wide-web-access-disability-discrimination-act-advisory-notes-ver-4-1-2014

Australian Human Rights Commission (AHRC) (2016), 'Access for all: Improving accessibility for consumers with a disability', www.humanrights.gov.au/our-work/disability-rights/publications/access-all-improving-accessibility-consumers-disability-2016

Australian Institute of Health and Welfare (2005), 'Vision problems in older Australians', 22 July, www.aihw.gov.au/reports/australias-health/vision-problems-in-older-australians/contents/summary

Book Industry Study Group (BISG) (2016), *BISG Quick Start Guide to Accessible Publishing*, Book Industry Study Group, New York.

Brandis, G., Bishop, J., Robb, A. and Fifield, M. (2014), 'Australia signs the Marrakesh Treaty', joint media release, 24 June, Australian Government, https://trademinister.gov.au/releases/Pages/2014/ar_mr_140624.aspx?w=O%2F%2FeXE%2BIYc3HpsiRhVIOXA%3D%3D

Browne, G. and Coe, M. (2013), 'Ebook navigation: Browse, search and index', *The Indexer*, 31(1), pp. 26–33, <https://online.liverpooluniversitypress.co.uk/doi/pdf/10.3828/indexer.2013.5>

Browne, G., Wright, J. and Combs, M. (2013), 'EPUB3 indexes and the future of indexing', *The Indexer*, 31(3), pp. 110–121, <https://online.liverpooluniversitypress.co.uk/doi/abs/10.3828/indexer.2013.32>

DAISY Consortium (2018), 'Introduction to inclusive publishing', Inclusive Publishing, <https://inclusivepublishing.org/publisher/introduction-to-inclusive-publishing>

Eone (2017), 'The difference between inclusive design and accessibility', *The New Standard*, 30 May.

Gartner (2013), 'Gartner says companies should deploy technologies to address IT accessibility', press release, 17 December.

Garrish, M. (2012) *Accessible EPUB 3*, O'Reilly, Sebastapol, CA.

Goggin, G., Hollier, S. and Hawkins, W. (2017), 'Internet accessibility and disability policy: Lessons for digital inclusion and equality from Australia', *Internet Policy Review*, 6(1), <http://policyreview.info/articles/analysis/internet-accessibility-and-disability-policy-lessons-digital-inclusion-and>

Gunn, D. (2016), *Accessible eBook Guidelines for Self-Publishing Authors*, Accessible Books Consortium & International Authors Forum, www.accessiblebooksconsortium.org/export/abc/abc_ebook_guidelines_for_self-publishing_authors.pdf

Hilderley, S. (2013), *Accessible Publishing: Best Practice Guidelines for Publishers*, version 4, www.accessiblebooksconsortium.org/publishing/en/accessible_best_practice_guidelines_for_publishers.html

Organisation for Economic Co-operation and Development (OECD) (2013), *The Survey of Adult Skills: Reader's Companion*, OECD Publishing, <http://dx.doi.org/10.1787/9789264204027-en>

Round Table on Information Access for People with Print Disabilities Inc. (2005), *Guidelines on Conveying Visual Information*, <https://printdisability.org/guidelines/guidelines-on-conveying-visual-information-2005>

Royal Institute for Deaf and Blind Children (2018), email communication, 8 January.

Shamma, T. (2017), 'Braille versions of textbooks help blind college students succeed', *Marketplace*, 12 October, www.marketplace.org/2017/09/13/education/braille-versions-textbooks-help-blind-college-students-succeed

Standards Australia (2016), 'Accessibility requirements suitable for public procurement of ICT products and services', Australian Standard AS EN 301 549:2016 (extract), https://infostore.saiglobal.com/preview/315242768146.pdf?sku=100620_SAIG_AS_AS_211428

Standards Australia (2016), 'Standards Australia and Department of Finance combine to provide greater access to technology for Australians living with a disability', media release, 22 May, <http://consumersfederation.org.au/wp-content/uploads/2016/08/Standards-Australia-and-Department-of-Finance-to-provide-greater-access-to-technology-for-Australians-with-a-disability.pdf>

United Nations (2006), *Convention on the Rights of Persons with Disabilities and Optional Protocol*, www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities.html

Vision 2020 Australia (2018), 'A snapshot of blindness and low vision services in Australia', 26 August, www.vision2020australia.org.au/resources/a-snapshot-of-blindness-and-low-vision-services-in-australia

World Blind Union (n.d.), 'European Union votes to ratify Marrakesh Treaty', www.worldblindunion.org/English/news/Pages/European-Union-votes-to-ratify-Marrakesh-treaty.aspx

World Health Organization (2018), 'Blindness and vision impairment', fact sheet, 11 October, www.who.int/en/news-room/fact-sheets/detail/blindness-and-visual-impairment

World Intellectual Property Organization (WIPO) (2016), *Main Provisions and Benefits of the Marrakesh Treaty* (2013), www.wipo.int/publications/en/details.jsp?id=4047

World Intellectual Property Organization (WIPO) (2018), 'European Union joins WIPO's Marrakesh Treaty, greatly expanding coverage', press release, 1 October, www.wipo.int/pressroom/en/articles/2018/article_0008.html

World Wide Web Consortium (W3C) (2019), Publishing@W3C, www.w3.org/publishing

Wright, J., Browne, G., Combs, M., Ream, D. and Wyman, P. (2013). 'The matrix: Creating an active index in all kinds of formats, from all kinds of tools', *The Indexer*, 31(4), pp. 137–41, <https://online.liverpooluniversitypress.co.uk/doi/pdf/10.3828/indexer.2013.46>

Zwar, J. (2016), 'Disruption and innovation in the Australian book industry: Case studies of trade and education publishers', Macquarie Economics Research Papers, 1/2016 (February), <http://apo.org.au/node/68152>

We are the Australian Inclusive Publishing Initiative



Australian Library and
Information Association

Australian Literary
Agents' Association

