

Accessible Publishing

Best Practice Guidelines for Publishers



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Towards Accessibility

10% of people in the developed world and 15% in the developing world have some degree of print impairment. These are people with visual impairments, with dyslexia, with motor disabilities or with age related macular degeneration which can seriously affect their ability to read. The publishing landscape is becoming much more user-oriented; ensuring your published content is accessible by all your potential readers is more and more important. Today's readership needs to be able to consume technology in a variety of different ways and publishing's metamorphosis from a print-dominated into a mixed and inexorably into a digitally-led industry presents an unprecedented opportunity for publishers to extend their products to the widest possible audience.

Making sure that your products are accessible makes good business sense, commercially, legally and ethically (see "[Guidelines for Senior Executives](#)"). With the right people, processes and practices in place you can increase the size of your market while at the same time enhancing your Corporate Social Responsibility profile at the same time. The aim of this publication is to supply publishers with clear and concise guidance to assist them in these endeavours.

Providing "access" to content for people with print impairments is a challenge that all publishers can and should be tackling; your efforts can make a discernible difference to your readers. Our guidelines encourage publishers to make their mainstream publications as accessible as possible so that full access becomes the norm rather than being "special". There is no need for accessibility features to be excluding or intrusive—they will assist all of your readers. Ensuring that your publications incorporate accessibility features may also allow readers to customise their own version to maximise their experience while at the same time respecting the copyright holder's rights. Technology that is adaptive to the individual will allow everyone to access content according to their choice whether they have a print impairment or not—there is no typical "customer". Today's mobile environment means that everyone can benefit from the same choices of access.

These guidelines provide guidance, allow you to explore your options and help you to manage many of the issues that you may encounter as you strive to make your products more accessible. There are experts in the field for you to work with and who will assist in the production of accessible content. All of these options are explained to give you a complete understanding of all the routes to accessibility available to you. We recommend that you make use of the glossary at the back which is designed to help you navigate your way through this publication and accessibility issues in general.

What is an Accessible Product?

A title that is accessible for one person may not be accessible for another; there are many different requirements depending on an individual's capabilities, skills and preferences. Broadly speaking, a completely "accessible product" is one which offers the maximum flexibility of user experience for all readers and allows the content to be accessed and manipulated with ease by those with or without disabilities

For some readers their need can be fulfilled very simply, with Large Print or an existing PDF version whereas others find a fully navigable structured file (such as a DAISY file or an HTML based e-book) that they can use with text to speech software essential. Other readers prefer Braille (either using a conventional Braille edition or a digital Braille reader).

For those with print impairment, difficulties can range from issues with font size right through to a complete inability to interact with any part of the page. For many, the inflexibility of print based material has meant that any form of access has been difficult in the past. As a publisher, you are now in a position to change this with your digital content and in some cases you are in a position to offer synchronised perception channels to your readers. An accessible title allows everyone to have "access" to your content in the way that suits them. For a title to be accessible it involves a combination of four interacting strands:

- The technical nature of the product, which we are addressing in this document.
- The technical ability of assistive technologies (screen readers, magnifiers, e-book readers, DAISY players, playback software etc.)
- The skills of the users and their familiarity with using their assistive technologies to interact with the "accessible" title.
- Simple, well designed interfaces tested with users.

Reading experiences can be improved with some or all of the following options being made available within a file:

- **Structurally-tagged content**—Many issues can be solved by including some level of “tagging” in your digital files—see the section entitled “[How to add Structure to your documents](#)”. The use of XML may imply some change in your workflow in-house but this is rapidly becoming necessary for your digital publishing in general.
- **“Text to speech” (TTS)** capability is a vital aid for many print impaired users. In the absence of a commercial audio book, digital text can easily be converted to synthetic speech using appropriate (and easily available) software. Users who can see the screen simply select the text they need and have it read aloud by text to speech tools. Users who cannot see a screen need screen reader tools which both read the content and provide audio navigation. For these users, the usability of text-to-speech is improved greatly by ensuring that the text is “tagged” with structural and semantic mark up, and by providing clear navigation within the document. The experience of reading with a screen reader is nothing like having a publication read to you, or listening to a recording. For example, screen readers allow navigation within the page, announce bulleted lists and tables, spell words on command, and can be set to read at rapid speeds and change voices and pitch for different types of content. However, you may find that decisions taken concerning Digital Rights Management (DRM) may have closed off the TTS option even though the rest of the file is accessible. The UK rightsholder community has endorsed the recommendation to enable TTS but even if it is not enabled, there are software plug-ins that enable accessibility.
- Including a detailed **hierarchical table of contents** within the document, and providing a defined reading order (including, for example, appropriate links between the main flow of the text and any sidebar or box out text) helps those with visual impairments navigate their way through the book—and can be equally useful to those without visual impairment.
- **“Alternative text”** descriptions can explain illustrations for readers with reduced access to graphic information. The key points of images, graphs and diagrams can be described

in captions, the body text or an ALT Text description of the purpose of the illustration will benefit all users, even those who can see the image.

- **Font size, style and colour** can have a huge impact on the reading experience. The ability to change these according to need is very beneficial. For example, being able to choose a larger point size, a simple sans serif style or even a typeface specially designed for readers with visual impairment, to heighten the contrast between type and page, can immediately help those with common problems like age-related macular degeneration or dyslexia.
- Alternative **background colours** and **variable line spacing** can help those with dyslexia to fully engage with the material and also benefit readers accessing text online in different lighting conditions.
- Make sure that any **DRM** that may be attached to a particular title does not inhibit the accessibility of that title. In many cases it affects it greatly and even though a title may be very accessible, that can be negated by the DRM. Many screen reader manufacturers cannot afford the annual licensing fees that are required to become interoperable with industry standard DRMs. Supplying a file with DRM can therefore render the content completely inaccessible.

Structure, Content and Appearance

Any document can be thought of as a combination of **Structure** (the sequence of Chapters, Sections, A-heads, B-heads, body paragraphs and so on), **Content** (the words, spaces and images) and **Appearance** (the typographical style and geometric layout of the page and its contents).

Traditional print based publishing concentrates on Content and Appearance, and these two items are usually closely linked throughout the publishing process. More modern workflows concentrate initially on Structure and Content, and the Appearance (of text, at least) is determined from the Structure at a relatively late stage in the process. For the purposes of accessibility, all three elements are required but the most accessible files are ones where

they can be separated and manipulated individually according to user requirements. For example, by disengaging the appearance from structure and content, and making it malleable, there is greater flexibility in delivery and any number of “designs”, tailored to each individual reader’s needs, can be applied to the text.

A master XML file which has structure and content can be used to feed any number of different delivery formats. An “XML-first” workflow is a challenge for many publishers, but it is increasingly the best way forward for your digital content creation. It will also help you to build in all the “accessibility features” at the beginning of your workflows and it will become second nature during the creation of your products. Correctly implemented, having a production process that provides an accessible document can expand the customer set and enrich the document with additional content with little additional production cost.

Accessible file formats—which ones are accessible?

There are many different file formats being used in the publishing industry and these vary in the degree to which they can be seen as being “accessible”. For most purposes, the file formats that you are likely to use are:

- **Microsoft Word**—for many print-impaired readers (particularly in the education sector) this file format offers the easiest route to accessible information as the text content of the file is easily mutable and it can contain all three elements of structure, content and appearance. Unfortunately these files can be problematic to supply as your content will have gone through many cycles of revision since its first creation in Word and the original Word file often bears no relation to the finished version. Creating a useful file in Word may mean creating a new Word file at the end of your production process.
- **Print ready PDFs**—these are often the *least accessible* of all file formats as these particular PDFs contain content and appearance, but only minimally reflect structure—there is no reading order and no structural or semantic tagging. If these are used, they should be edited in Adobe Acrobat to add tagging. Note that while there are tools to

automatically add tagging, human review and editing of the tags is nearly always essential.

- **PDFs** optimised for **digital use**—these files tend to be more navigable and include structure so for many users they are a reasonable option as they can include a reading order, ALT tags etc. These files have all three elements of structure, content and appearance. However, they are not necessarily as malleable as some other formats, and should not be seen as the first choice in most circumstances.
- **DAISY**—Digital Accessible Information Systems. This has become the foremost specialist standard format for use in the creation of accessible versions for the print impaired, but is not widely used (or known) by publishers. It can, however, be the most accessible file format available. It is essentially an XML based e-book (both text and audio) format created by the DAISY Consortium, an organisation which represents libraries for people with print disabilities. A DAISY book can be explained as a package of digital files that may include: one or more digital audio files containing a human or synthesised (text-to-speech) narration of part or all of the source text; a marked-up file containing some or all of the text; a synchronization file to relate markings in the text file with time points in the audio file; and a navigation control file which enables the user to move smoothly between files while synchronization between text and audio is maintained. The DAISY Standard allows the producer full flexibility regarding the mix of text and audio ranging from audio-only, to full text and audio, to text-only. The DAISY Consortium also offers an open suite of software tools—“The DAISY Pipeline”—designed to assist in the creation of DAISY files.
- **EPUB**—This is rapidly becoming the universal “e-book” format for commercial publishers, and as version 3 becomes available is likely to be increasingly seen as the format that is most suitable for both commercial exploitation and meeting accessibility needs. It is an open standard for e-book creation and distribution and is the most common file format for commercially-available e-books and can be “read” on almost all e-reader devices (with the exception of Amazon’s Kindle). The upcoming EPUB v3.0 will offer even greater scope for accessibility as the intention is that the new standard will converge with the delivery capabilities of the DAISY standard. It is the intention that

EPUB v3.0 will provide the industry with an enhanced e-book standard that can be used widely across different platforms with a variety of content

- **HTML-based e-books**—These files can be among the most accessible on the market. By using the predominant Web technology, you ensure that your customers with disabilities will be well-practiced in using the file type with their assistive technology. Customization within Web browsers is simple and well-known. As these books are played in Web browsers, your work to make the files highly flexible will benefit a wide audience, including users without disabilities. Also, customizations that users have already set up to access the Web will likely carry over this type of eBook directly. Some versions of HTML can include MathML, providing access to maths and sciences to people with disabilities.
- **XML files**—More specifically all types of XML files that logically tag book files (using a proprietary or a standard DTD or schema, such as DOCBOOK) have the potential to be extremely accessible. They contain structure and content but not appearance; however, end users (and those who support them) are unlikely to have generalised XML skills, so these files are likely only to be suitable when dealing with people with an unusually advanced technical capability, with technically skilled commercial organisations or intermediary organisations that support people with print disabilities.
- **Layout Application files**—These files can contain structure, content and appearance, in a mutable form and they are the final versions, as no editing takes place afterwards so they could be useful for provision of content in a “professional” or mediated context. However, typical print-impaired readers (and those who support them) have no access to, or skill in the use of applications such as InDesign, Illustrator or Quark; in general application files are not suitable for provision to those seeking accessible formats.
- **Custom/Proprietary e-books**—You may wish to use an e-book vendor that offers a proprietary e-book format and, perhaps, a proprietary delivery system. Unfortunately, many vendors present their products as “accessible”, when in fact the level of accessibility is very low. As a publisher, you must do your own evaluation of the product to ensure a quality product and accurate marketing (see “[How to conduct an Accessibility Audit](#)”). In this case, you’ll want to evaluate the vendor’s product against

real world accessibility. You may also need to give explicit instructions to the vendor about their own DRM settings (*eg* to switch on text to speech functionality).

It is worth noting that even the most “accessible” formats can be misused to create books that are wholly inaccessible. The potential for accessibility is built into the format, but must be correctly and sensitively used to produce an accessible product. It is hugely beneficial to conduct user testing on your “accessible” content so that you can be sure that these files have been correctly produced. In addition a title may only be partially accessible and it is still worth supplying as much content as you can in the format required. There may be an opportunity at a later date when you are able to supply the balance.

Guidelines for Senior Executives

There is an unprecedented opportunity to be had in this key time for digital publishing to reach the widest possible audience. In reshaping your company and your products to meet the challenges of industry-wide digital change, you can at the same time meet the needs of print-impaired consumers, who make up a significant proportion of the population. Your company could put in place an approach to its digital publishing that benefits all consumers. By making publications available in ways where a print-impaired customer might select a different font size, style or colour, use voice synthesis to read the text aloud, or change the text into Braille, you are allowing your readers the opportunity to maximise their engagement with your content.

To achieve this, publishing houses need to consider putting in place a company policy that demands the very best of its employees in its endeavours toward accessible publishing; this represents a benefit for both the company and for society at large. By providing the appropriate lead, you are ensuring that your commitment to the accessibility agenda makes this a top priority for everyone in the company.

Providing your publications in ways that optimise accessibility need not be technically challenging. Recent research has shown that many publishing houses hold all of the technical ingredients but simply lack clear knowledge of the requirements of the accessibility community. With your personal commitment, and for little or no incremental cost, this barrier can be overcome. For many companies the technology is already available but there is a lack of awareness regarding how best to apply it.

What are the benefits to your business?

- **Commercial**—More people will be willing and able to buy, borrow, read and experience your books. You will be extending the reach of your publishing efforts as accessible content improves the reading experience for all your customers.
- **Ethical**—Accessible publishing makes a huge difference to those with print impairments. When you are unable to provide accessible products yourself, you can facilitate the creation of accessible products by collaborating with external suppliers.
- **Legal**—Accessible publishing helps you to meet the relevant legal obligations in your markets.

Call to Action

- Include a commitment to accessible publishing in your company policy and make sure that this is advertised in company literature and on your website. Provide prominent contact information for anyone who may need to contact the company with enquiries relating to accessibility.
- Appoint a person or team responsible for your accessibility agenda. An internal advocate is essential to provide a focal point for all communication and activity in-house. Unless you choose to take up this role yourself, you will need to delegate this core responsibility to someone who will document and champion company policy and facilitate its adoption across all departments. They should feel passionately about the subject and have a strong influencing style. Give this appointment real power within the business to allow them to operate effectively. This will help you to set the company tone. We suggest you should be looking for someone who can display the following:
 - A real commitment to the issue of accessibility
 - An understanding of your business as a whole
 - A great communicator with an ability to influence all departments
 - Confidence with digital technology

- A good understanding of all the products you publish with a view to advising on how accessible your products could be and how best to make them so.
- Take some time to personally understand the issues and the options for accessibility that are available to you in the digital environment. If you choose to offer alternative products and support for those delivering these products you need to be able to show and communicate your understanding. The first 4 sections of these guidelines are designed to help you do this.

Internal Accessibility Lead

You are the lynchpin: the internal advocate for your company's accessibility policy and you are responsible for ensuring that all departments and individuals within the company collaborate to implement that policy fully. A thorough understanding of the issues surrounding accessibility will be vital, alongside a real passion to see through the necessary changes within your organisation on behalf of the print impaired community.

The key tasks necessary to this role include:

- Responsibility for documenting, communicating and promoting the implementation of the accessibility policies established at the highest level within your company.
- Promoting general internal awareness of accessibility issues and communicating industry change.
- Responsibility for influencing decision-making at all levels of seniority and in all departments, the aim being to align everybody's efforts so that your accessibility policies are applied consistently and efficiently.

Where to start

Before you begin, decide on your tone and philosophy. How you present the topic will make a world of difference in the quality of the resulting accessibility. If you make sure that people know that you feel this is important, your accessibility initiative will gain momentum from the enthusiasm that employees show when given the chance to make a difference.

In the first instance you should get to know all of the departments within your company and "make some friends". It is impossible for everyone to be an "expert" in all of the topics related to accessibility so cultivating key contacts within each area could be a confidence-inspiring place to start. It may be appropriate to hold regular meetings and where no obvious contact appears you can often find someone who takes naturally to the subject.

You should establish your current capabilities as a company. The publishing industry has many types and degrees of capability and it is important for you to gauge where you, as a company, fit in. To make a start you will need to:

- Perform an accessibility audit—this is covered in much greater detail in the section entitled “[How to conduct an accessibility audit](#)”. This will give you a proper understanding of your company’s capabilities and attitudes and show you what you could be doing immediately to improve your response to the print impaired.
- You will also need to understand the legal position in your own markets—there are different legal obligations in different countries, and you will need to make sure (at a minimum) that your policies are sufficient to keep you on the right side of the law.
- Where this is available in your markets, ensure your company is registered in Publisher Lookup and make sure that your permissions / sales teams are fully versed in all matters surrounding accessibility. Publisher Lookup is a collaborative database providing contact information to educationalists who are trying to source electronic versions of titles for print impaired learners. Publishers who register make it simpler for educationalists to find the right contacts within their company, set expectations for what can be supplied, and can set up a standard internal process for dealing with those requests. If Publisher Lookup is not available in your markets it may be worth lobbying your trade association to create this simple and effective service.
- Make an effort to understand the workflows used within your company. How does the content reach its final incarnation and what workflows are being used or developed in-house in your digital publishing? Talk to your production and IT departments (if this is outside your usual work remit) and make sure you understand the publishing workflow within your own environment.
- Understand the types of digital files that are being used to create your products both in-house and by your suppliers. There are a large number of options and you need to understand exactly what files are currently available and how accessible these might be—see the section entitled “What is an Accessible Product”.

- Understand how and where your digital files are being stored, so that you are able to influence this in the future. To provide an accessible file you need to be able to find it and get a copy easily; how your titles are archived plays a crucial role here.

How to proceed

There are three routes to accessibility open to you and in most cases you will need to employ at least two to start with. Firstly you may be in a position to supply accessible files yourself when you receive a request from a specific reader (or more likely a support person on behalf of that specific reader). Secondly, you may wish to utilise some out of house help and there are various organisations which can help you. There are a number of intermediary services, particularly in the US, who can help you to produce accessible files from a variety of different media. These organizations support people with print disabilities and many have established accessible publishing programmes themselves. Thirdly, and ideally, your commercial products will increasingly come to have accessibility built in as a matter of course. This third option is the ultimate goal but may not be achievable immediately. Whichever routes you wish to follow, you will need to establish working groups in-house to improve corporate awareness and to resolve any workflow issues. Questions around content structure and file management will need to be discussed and decisions taken to implement the company policy that you are advocating.

You will need to be influential across all levels of seniority within the business. When presenting the topic to more senior members of your executive it would be useful for them to understand how your suggestions may make good business sense. It is quite possible that you may have to acknowledge any costs involved and present these to them as part of the business case. You may have to work hard to persuade them to follow your suggested course of action but if there is a company policy in place you will find it much easier to gain their support. It can also be useful for them to hear about other success stories—much confidence is placed in action that has worked elsewhere.

Many of your colleagues, who do not understand the details of accessibility and cannot perceive the level of accessibility in the products, will be making decisions about accessibility. It falls to you to explain the technology and user experience issues as much as possible. Ultimately, you are not responsible for producing accessible content but you are responsible for ensuring that your company policy is adhered to and for understanding the issues surrounding that policy.

Guidelines for Editorial & Design

Your company's success in increasing the accessibility of your products can have a significant effect on growing the potential readership. As the departments responsible for the content and the appearance of that content you have a central role to play in how accessible your titles are.

Research has shown that many publishing companies now consider the potential for digital re-use when commissioning titles and preparing them for publication. A variety of publishing formats and media may be appropriate for a title, rather than just a traditional print based approach—so the content needs to be prepared in a way that makes it simple to create these different formats, rather than treating each as a unique product. Given this requirement and the workflows that are typically used to meet it, there is no reason why accessibility cannot be “built in” from the start of the publishing process—and if it is, in many cases it implies little or no additional effort on your part, just some minimal changes in approach.

What you can do now:

Receiving enquiries from sales or permissions

Often your department will be the expected to deal with requests for the supply of accessible content and you need to be able to respond to that enquiry quickly and with the correct information for that title. In order to do this you need to be able to:

- Understand your in-house process and who is responsible for supplying the technical information concerning the particular title in question.
- Have a thorough understanding of the various types of files that are being used in-house and the level of accessibility they may have (see “[What is an Accessible Product](#)”).

- Make sure that everyone is aware of the issues surrounding accessibility and appreciates that enquiries should be dealt with in a timely and professional manner.

Preparation of your files

In preparing your files you may wish to consider a number of areas which could considerably affect the accessibility of the material you are producing. Whilst it is desirable that any file should be malleable and allow the reader to customize their own version you may wish to ensure that you think about their needs from the outset. The Royal National Institute of Blind People (RNIB) has a number of clear print guidelines (see "[Further Resources](#)") about factors that affect readability by the print-impaired:

- Document text size should be 12—14 pt, preferably 14 pt.
- The font you choose should be clear and open, avoiding anything stylised
- All body text should be left aligned
- Keep the text layout clear, simple and consistent
- Use emphasis like bold, italic or all caps very sparingly
- Text shouldn't be overlaid on images
- The contrast between the text and background should be carefully considered
- All text should be the same orientation on the page
- Space between columns and lines of text should be large enough to be distinct
- Any information conveyed in colour or through images should also be described (see below)

Preparing and editing images

Your publications may include images and illustrations and it is beneficial if you are able to supply alternative descriptions for them (often known as ALT Text). In many instances an image provided for sighted people is not the best way to communicate a piece of information for a blind person. A description is a much better option. Make sure that you include the title or reference number of the image if it had one: text can then be cross-referenced to the source image if necessary.

When preparing ALT Text you should need to think about the image that is being described:

- Is the image just an ornament? If so, a simple caption may suffice as no referencing may be required.
- Does the image reflect information that is contained in the surrounding text? It may be relevant for understanding the page or the book but your description may be aided by the main body of the text already.
- Does the image reflect information relevant for understanding the page or book that is not contained in the surrounding text? If so, you need to make sure that the image does include all relevant information. This is the most challenging task for those editing and preparing ALT Text.

The following ALT Text shows how greatly image description can vary and how important it is to include all the necessary information to describe the image within a given context.



Helpful **geographical** description: The estuary scenery is a mix of salt marsh and tidal creeks flanked by industrial complexes.

Less helpful: Power lines in the morning sun.

Helpful **environmental** description: The large pylon lines tower over woodland and pasture and are visible for many miles around

Less helpful: Pylons in a field.

What to aim for:

Workflow options

The challenge of digital publishing has already compelled many forward-thinking companies to review their internal workflows and create innovative new ways of producing and selling their content. Time-hallowed workflows designed for the efficient creation of print based products are no longer always the answer in today's digital arena. If your company is not already looking at your editorial and design processes, this is an ideal time to begin looking at the ways you work and whether these suit the many different types of products you may now be taking to market. Traditionally, departments have worked towards arriving at files that are suitable for your printers; now it might be better for you to consider preparing a file from which the printer's file could be just one of many outputs, alongside those for different digital platforms.

Take a little time to gain a basic understanding of the various different file formats you already work with in-house, those you might support in the future and the level of accessibility that they can provide—see the section entitled [“What is an Accessible Product”](#). It is essential that you have an understanding of the concepts of Content, Structure and Appearance which this section also covers. By disengaging the appearance and making it malleable, there is greater flexibility in delivery and any number of “appearances”, tailored to each individual reader's needs, can be applied to the text.

This can be achieved by ensuring the Structure of your documents is captured and retained through the publishing process (rather than any initial Structure being replaced by Appearance at an early stage). The section entitled “How to add Structure to your documents” looks at this in more detail. The “XML-first” workflow style described in that section aims to produce a master XML file which has Structure and Content, and can be used to feed any number of different delivery formats, where the Appearance of each format can be created automatically from the Structure. Introducing an “XML-first”

workflow is a challenge for many publishers, but it is increasingly the best way forward for your digital content creation—in other words, *all* your content creation. Almost as a “side-effect”, such a workflow will enable you to build-in features required to maximise the accessibility of those delivery formats.

Some publishers have demonstrated how an XML workflow can empower the editorial department and free up the design departments enormously. For editors, for example, there may no longer be the need to constantly ask the design departments to make small alterations for you; as a result you can be much more in control of the content.

For the purposes of accessibility, a well-structured document produced in an XML workflow can be the first step towards success.

Guidelines for Production & IT

For many people with a visual impairment, a mainstream e-book solves many, if not all, of the challenges they experience. Reading devices allow them to choose font, size, text-to-speech, sometimes even background colour, and the physical nature of a reader or PC may be more suitable than a large book. There will, however, be circumstances when you are asked to supply additional materials and how you do this is largely dependent on the way that you work and the workflows you may have in place.

How do you work?

The type of workflow you have can affect the way you are able to respond to requests for accessible material. Some publishers have changed their workflows to cope with their digital publishing lists and some are working to tried and tested traditional workflows and “retrofitting” their files to suit the digital market.

- If you are already running an “XML-first” workflow you may wish to refer to the section “How to add structure to your documents” for further information and advice. As you are aware this allows you enormous flexibility and you should be able to supply a variety of different formats depending on the type of request, providing you have an efficient archiving system in place.
- You may be running a traditional workflow and converting your content to XML at a later stage—an “XML-last” workflow. This can also provide you with the flexibility to supply various types of accessible file. You may be outsourcing the conversion from your printer’s PDF files and receiving back base XML from which you can generate a variety of formats.
- You may not be utilising XML at all and if this is the case, there are still plenty of ways to be able to supply accessible files. You may be able to supply a PDF file (see “[What is an Accessible Product](#)”) and you could look at ways to make your PDFs more accessible. Ideally your source file will be as accessible as possible, prior to conversion to PDF. This

can save a lot of time later. The template styles for headings and paragraphs should be set up, alternative text for images should be inserted and any links in the document should be checked. When you actually convert the source file—for example a Microsoft Word file—to PDF format there are a number of items in the conversion process that you can make sure are checked under the different tabs:

- Settings tab: Fully Functional PDF
- Add Bookmarks
- Enable Accessibility
- Reflow with tagged Adobe PDF
- Security tab: Enable text access for screen reader devices
- Word tab: Convert cross references and table of contents to links
- Convert footnote and endnote links
- Enable advanced tagging
- Bookmarks tab: Convert Word headings to bookmarks

Once you have converted to PDF you can run Adobe's accessibility checker and use Acrobat tools to fix any problems (if your version of Acrobat allows). This won't check everything and you will still need to check the PDF for ALT text content etc. You can also use the Adobe Read Out Loud function to check the reading order and to get a sense of how the document will appear to those people using screen readers.

- You may be sending your PDF files to a conversion house which is converting it into XML in order for you to produce your e-books. This XML may be useful where accessibility requests come from technically-skilled intermediaries such as academic support services. For non-mainstream requests (for example, a physical copy in Braille) a Trusted Intermediary would be able to convert it into a specialised accessible format (see "[What is an Accessible Product](#)").
- You may also be in a position to supply a Word file which is highly accessible and in fact is often the format of choice for many students as they are often able to manipulate

these to meet their own requirements. But it can be problematic to supply these files as your final version of the content may not match your original Word file due to editing during the production process. However, you can often export the final content back into Word in order to be able to supply this extremely accessible format.

Whichever methods you use to produce your e-books you can supply some form of digital material that will allow greater access than the printed page.

The DAISY Pipeline

The DAISY Consortium (See [“What is an Accessible Product”](#) for information on DAISY files) has developed a cross platform, open source framework for document and digital talking books transformations—the DAISY Pipeline. This suite of tools can greatly assist you in your endeavours to produce accessible files that may be required in addition to your mainstream products. See [“Further Resources”](#) for details of the tools and services included in the Pipeline and links to installation guides.

The “e-book” package

Whichever workflow you are operating there are ways to improve the accessibility of your e-books. The more accessible your mainstream e-books, the greater the number of print-impaired people will find that your products meet their needs, and fewer people will have to request specific accessible files. These action points should be applied by whoever is putting together your e-book package. This may indeed be someone from production or IT but it may also be an out of house supplier and it is your responsibility to make sure that this is part of their brief. An in-house commercial decision may be required in the first instance as some of these action points may affect any DRM.

- Unlock settings so that appearance of text can be customized.
- Enable Text to Speech (TTS).
- Include metadata as a standard operation.

- Add structure and navigational tools (see “[How to add structure to your documents](#)”).
- Request that all graphics should be accompanied by alternative text
- File checking—have any obvious errors been made that could easily be avoided.

Archiving

Thorough archiving is good practice: in all likelihood, your organization cares for its digital assets, and tries to ensure that they are stored safely and are easy to find for future repurposing. A good digital archiving strategy is increasingly vital as your products themselves become increasingly digital.

- Try to archive your titles in as many formats as you can to give you greater flexibility when responding to requests *eg* Word file, application files, XML based format, PDF for digital supply, print ready PDF etc.
- You may already have a digital asset management system set up in-house or you may be archiving your titles in an ad hoc manner depending on where they are produced. The size of your company can greatly affect this but it is worth ensuring that whatever system you have is organised, efficient and easily understood and, most importantly, that it is used consistently.
- Ensure that the people tasked with responding to requests for accessible material have a good grasp of what is available in the archive or asset management system, as well as of the “What is an Accessible Product” section of this document, so that they can match the needs of the print-impaired person with the types of document available.

Good archiving and consistent communication with the relevant departments will assist you in your endeavours to supply all of your content in the most accessible manner possible.

How to conduct an Accessibility Audit

An essential preliminary to success in improving accessibility is to gain a full understanding of where you are as a company and how capable you are as a team in supplying the needs of those who have some form of print impairment. Find ways in which you can measure the effectiveness of your current approach to accessibility in a systematic and reproducible way, so that the audit can regularly be re-visited (perhaps annually), giving you the opportunity to observe progress and to set targets for improvement in future year—and to design the specific actions necessary to achieve these improvements.

Recommended actions:

- Conduct an in-house survey to assess company awareness about accessibility issues and how much your publishing staff understand what it means to create “accessible products”. You can conduct this on an informal sample basis or set up an on-line questionnaire for wider circulation. Ideally you will get explicit backing for this from the most senior management in the company, and can ask all members of staff at every level to participate.

Questions may include:

- Are you aware of the challenges faced by people with print disabilities?
- Are you aware of which of your file formats are more accessible than others?
- How would you react to enquiry for an accessible title?
- What is an EPUB file and how does it relate to a DAISY file?
- Does your commissioning process involve consideration of digital re-use?
- To what extent do you consider accessibility for people with reading disabilities in your publishing practices?
- Are you happy for users to customise the way they view their text in e-books?

The answers to these and other similar questions could give you great insight into the level of awareness in-house and where your initial efforts should be directed.

- Test the reality of the customer experience with the team or person responsible for answering customer enquiries, by submitting a request yourself. This will demonstrate to you how well equipped you are as a company to respond to enquiries about accessible content from print-impaired individuals or from institutional support staff.
- Conduct an assessment of your products overall—make sure you have a full understanding of your product type and the various formats that you offer as a company, both yourselves and through others (including for example large-print specialists). What proportion of your titles are ever published in large print, and how soon after initial publication? What proportion of your e-books are text-to-speech enabled? Have any of your publications ever been converted to Braille? Does anybody know? See the section entitled “[What is an Accessible Product](#)” to help you if you are unfamiliar with the various file formats on offer.
- Look at your archiving—are the right files readily available and who is responsible for managing them and delivering them when they are requested? You may indeed have accessible formats available but are the teams who answer enquiries from customers able to access them or know who to approach to access them?
- Assess your production workflows in and out of house. Do you already have an “XML-first” workflow or are you still operating a more traditional approach? By having an understanding of the type of workflow (or workflows) you are operating, you can immediately assess your current capability for supplying some types of digital file.

Technical Audit of your product

Test the practical experience of a print-impaired reader using your files. Just how accessible are your files? Even the most “accessible” of formats can be used in ways that create text that is partly or wholly inaccessible. The potential for accessibility may be built into a format, but it must be implemented to produce an accessible product.

You will need to do your own evaluation of the product to ensure its quality. You may wish to enlist the help of your IT department to conduct this more technical audit, and it might also be helpful to ask for assistance from members of staff who have print impairments. Or look for third party assistance—especially if this is provided by people who themselves are print impaired. When assessing the capability of your digital files you should think about the following points:

Text Access

- Can all of the text be read by screen readers?
- Is there a logical reading order?
- Are all headings marked as headings so that screen readers can navigate by heading?
- Can text style, line spacing, size, colour and contrast be customized?

Image Access

- Do images have alternative text that screen readers will read in-line with the text?
- Do images have long description text that screen readers will announce as available, so that screen reader users can choose when to access this information?
- Are long descriptions for complex images, charts and graphs structured with headings, tables and lists that are recognizable by screen readers?
- Are decorative images marked as decorative, so that they can be silent in screen readers?

Access to Special Types of Data

- Are tables, table header cells and table data cells marked semantically, so that screen readers can announce table headers as the user moves between data cells?
- Are sections in different human languages marked with a language code, so that screen readers can automatically switch pronunciation schemes?
- How are math equations and music notation represented?
- If there is embedded multimedia, does it meet any established accessibility standards (see "[Further resources](#)").

Supported Screen Readers

- On which screen readers have the features described in previous questions been tested?
- Is it possible for a third party to further edit the files adding any accessibility features that are missing (such as alt-text)?

Other

- Are there any other accessibility features included in the files (*eg* zoom, zoom with text-reflow, synchronized recorded human audio)?
- Are page numbers kept in sync with the page numbers in the print version of the book, so that it can be used as an accessible alternative in classes where many students are using the print book?
- What source materials are used in the production of your files? Have you chosen the correct workflow in-house to suit the various formats you may be working with?

Once you have conducted this assessment you can publish the results in-house, cross referenced to your newly-minted company policy on accessibility. No doubt, you will find you have a number of action points from this audit which will help you establish your priorities and your longer range actions. In this way, the process begins.

Set a plan, regularly visit it and your products and so the process continues.

How to add Structure to your documents

Without inbuilt structure it can be very difficult for anyone to navigate content (whether or not they have a print impairment). It can be harder for readers to get an overview of the content and it can be difficult to render digital content on smaller screens. Well structured content brings benefits to all readers and disproportionate benefits to print impaired readers. This includes:

- easy navigation using built in tools in Adobe Reader, DAISY players and screen readers. This can reduce keystrokes, search time, eyestrain and repetitive strain injury (rsi).
- easier overview of content meaning—this benefits all readers, especially those with literacy difficulties.
- a level of interpretation for the reader, helping to clarify the relationships of key ideas.

Structured information is the first step in the accessible information process (see “[What is an Accessible Product](#)”).

Structure to be included

When thinking about the structure of your books take care to think about the following areas. The level of structure will greatly depend upon the type of publishing you are involved in. Clear navigational structure should include:

- **Metadata.** This makes the book more easily discoverable before it is opened, in retail systems, and in the personal library on the reader’s reading device.
- A hierarchy of named **headings, parts, chapters, sections** and **subsections**. This allows various assistive technologies to provide a way to navigate quickly around the document.
- **ALT Text** (see “[Guidelines for Editorial and Design](#)”) attached to each illustration which provides a description of the content of an image, for those who cannot view the image.

- **Footnotes** and **references** where appropriate.
- A **logical flow** to provide a reading order for the content.
- **Running heads** and **page numbers**. This allows print-impaired readers to compare their position in the document with conventional book readers.
- **Index** and **contents** with active hyperlinks.
- Wherever possible—depending on the mark up grammar you choose—include **semantic tagging** (because it aids screen readers).

When to include Structure in your workflow

The earlier you can include structure, the easier it will be for you to transfer that structure across formats.

- **Author.** In ideal circumstances all structure would be included at the authorial stage. For the concepts included in the content to be correctly nested within a coherent structure a good understanding of that content is essential. Your author may need some instruction about the importance of effective structure and how to follow in-house styles that may already be established. It would be a good idea to put together a generic instruction and explanation sheet that can help you to brief your authors if you think you want them to add structure.
- **Editor.** Much of the structure that is inherent in content is actually included at the editorial stage of the workflow. Most of the tagging that is required within an “XML first” workflow occurs here.
- **Typesetting** and **page layout.** Alternatively you can insert a level of structure at the mark-up stage; programs such as Adobe Acrobat or InDesign incorporate features that will assist you.
- **Post production tagging.** For some publishers it makes sense to include XML tags once you have finalised the printer’s PDF. By “retrofitting” a PDF file with structural tags you are still able to gain much of the flexibility that a structured document can offer.

Wherever in your workflow you are including structure it is good practice to maintain and archive your source documents.

XML

Structure is not necessarily all about XML. You can add a level of structure to your files without using an XML workflow. However, XML DTDs and schemas used in book publishing (whether proprietary to your company, or standards such as DocBook, DTBook, or even XHTML) do provide a standard way to identify various types of information and content hierarchies in a document. XML allows identification of various components in a structured document and tags are used to identify elements and attributes within the structure.

As long as the various tag rules are followed, then an XML document is said to be “well-formed”. Whilst being well-formed is good, it isn’t enough, as a reading system such as a screen reader would not know what each tag meant. In order to be truly meaningful, an XML document should be “valid”. A valid document follows not only the XML tag rules, but also follows the rules established in a specific Document Type Definition (DTD) or schema. A DTD or schema defines the rules for the document and describes the structural elements and attributes to be used for that document. To be valid, you need a DTD or schema and a well formed XML document. This is content (the XML doc) and structure (the XML doc plus the DTD) being used to generate the appearance. It is recommended that you include a validation step in your XML workflow which you can set up with validation software.

This is structure in its “ideal form” and if you are working within an “XML-first” environment you will already be experiencing the flexibility that this type of workflow can offer you. By implementing an XML first-workflow, you are able to create and supply a variety of different file formats from your valid and well formed XML documents. This may include files conforming to the new EPUB 3 standard which would include many accessibility features. (See “[What is an Accessible Product](#)”).

Supplying files to Intermediary Organisations

If you are supplying files to an organisation for assistance in conversion to an accessible

format then the following points may help you to supply structured information in the correct way:

- You can supply various types of files to special format producers and you should check with the relevant organisation which files they accept and which they find most useful.
- Try to supply your document as one file. By splitting your title into files for chapters and sections you are creating more work during the conversion process.
- Ensure that your files are constructed well and contain as much structure as possible.
- All the metadata should be complete and up to date. Missing information can slow the process of conversion
- Make sure that that the reading order is coherent.
- It is extremely helpful if you can supply the alt text yourself rather than relying on them to write it. See “[Guidelines for Editorial and Design](#)”.

Some intermediary organisations can supply *Content Submission Guides*—a very useful tool for the publisher if you need further assistance.

How to respond to enquiries

Your company may already have a policy in place covering how you should respond to enquiries from people with a print impairment (or more likely those supporting them in an institutional context like a school or university). You may already have a specific person or team responsible for handling these enquiries; if not, it is a good idea to locate this responsibility very clearly and to make sure everyone in the company who might find themselves answering a call knows who has that responsibility and how to contact them. Clarity of responsibility will ensure that the person dealing with the enquiry has the necessary skills and knowledge. Consistency of response will enable you to provide an efficient and reliable service to your readers.

This section is aimed primarily at that person who has the frontline responsibility. You need to be able to:

- ensure it is straightforward for print-impaired people (or those acting on their behalf) to contact you—for example by ensuring contact details are available via Publisher Lookup, on your company website etc.
- respond promptly to enquiries, and facilitate the most effective and speedy process for fulfilling requests; a common complaint is that contacts go completely unanswered or can take a very long time, which is particularly unhelpful in an educational context where teaching materials may be needed more-or-less instantly. You may find it useful to monitor response times for these enquiries so that you are able to improve these if necessary.
- clarify exactly what is being requested. What counts as “accessible” is different for different people and it is important to understand exactly what the need is. Sometimes your standard, commercial e-book version may be sufficient for the enquirer and it is potentially straightforward for you to supply this. For other readers you may need to organise something rather more specialised. See “[What is an Accessible Product](#)”. On occasion you will find that you need to question the terms of the enquiry carefully; it

may be that you are capable of supplying a format that is more accessible than is being requested; enquirers don't necessarily know or immediately feel comfortable using the range of what might be available to them.

- organise a licence for use where this is necessary. A carefully worded standard licence outlining the terms and conditions under which material is being supplied will help to ensure the security of your files.
- find, check and deliver the appropriate files or a complete accessible version of the requested title. You may also be able to accommodate personal preferences where possible. For example, sighted readers may have a preference about whether they read an e-book on a laptop in PDF or HTML or whether they prefer to read it on an e-book reader in EPUB. People with print disabilities are the same, and even if you can supply a really accessible EPUB version the person may feel most comfortable with a PDF.
- seek advice from any other individual in-house who may be able to help you. You should be aware of who is responsible for the archive in-house and what type of file formats are kept in the archive. If the format you require is not currently being archived it may be useful for you to be able to speak to production or IT about what might be achievable.

You need to liaise carefully with the person who has overall responsibility in-house for accessibility (if it isn't you!) and make sure that you are fully aware of the various options that you are allowed to offer under company policy. See "[What is an Accessible Product](#)" to understand the differences between the various file formats that you may be working with and how exactly your files might be able to fulfil the various requirements of the enquiry you are dealing with.

Understand the Legal Framework

You need to understand what you are mandated to supply by the legal framework of your markets including, for example, exactly what exceptions are allowed for people with disabilities and for those individuals or institutions serving their needs. There may be specific legislation covering single copies for personal use and multiple copies for collective use in different ways.

You should make sure that you are aware of the licensing issues that are involved. For example, the enquiry may come from an organisation that is in possession of a Print Disability Licence which gives them a wide set of permissions to make copies of a title for use by those with print impairment. This is a licence they would have obtained from a licensing agency recognised within your markets.

There may be a collective licence which would offer security to rightsholders and ease the administrative burden that individual licensing can entail. The Copyright Licensing Agency in the UK, for instance, issues collective licenses on behalf of rightsholders and has agreements with Reproduction Rights Organisations (RROs) for similar rights in 30 other countries.

You may also be applying Digital Rights Management (DRM) to your files which will control the access to your digital content. This can greatly decrease the accessibility of your material and you need to consider its effects. If you are supplying files without any DRM attached you can still ensure the security of your material by applying password protection or by including a simple licence.

Problems with supplying Accessible materials

Once you have established exactly what is required, you may find that there is some difficulty in supplying all of it to the specification requested. With heavily illustrated material or a title involving a large volume of graphic or numeric information it can be very difficult sometimes to supply all of it in a fully accessible format. However, it is still worth exploring how much can be supplied and what you might be able to do to help.

- Suggest that there may be parts of the work which can be supplied in an accessible format—something is always better than nothing. By focusing on what can be done you may actually be able to supply a large proportion of what is needed.
- Make sure that the channels of dialogue are left open so that if you are able to supply something in the future which you cannot do today, the user knows about it. There is so

much ongoing research to find ways to improve accessibility that you may be able to help in the future in ways you cannot predict today. By working with technology providers and with teachers you can ensure that you are exploring all options for future assistance.

This kind of pro-active approach can be extremely helpful to people trying to access your titles and demonstrates that you, as a publisher, have a positive commitment to the issue of accessibility.

Further Resources

Accessibility Action Group

The UK based Accessibility Action Group publishes the *Publisher's Accessibility Newsletter* which gives an overview of UK and international developments. To access the newsletter visit: <http://www.pls.org.uk/services/accessibility1/default.aspx?PageView=Shared>

Accessibility Standards

BS8878 web accessibility—this code of practice is the first British Standard to address the growing challenge of digital inclusion and is available from:

<http://shop.bsigroup.com/en/ProductDetail/?pid=000000000030180388>

NIMAS—a standard developed in the United States to assist with the production of accessible content in the Higher Education sector. The NIMAS standard is based on the DAISY standard and is available at <http://nimas.cast.org/>

Section 508 of the US Rehabilitation Act requires Federal agencies to make their electronic and information technology (EIT) accessible to people with disabilities. To view this standard, see <http://www.section508.gov/index.cfm?fuseAction=stds>

AFB-Tech

The American Foundation for the Blind's technical centre—AFB TECH—publishes *AccessWorld*, a journal that tests and provides comment on assistive technology in the marketplace—see <http://www.afb.org/aw/main.asp> for more information.

BTAT—The Business Taskforce on Accessible Technology

For information on this taskforce and other work conducted by the Employer's Forum on Disability see www.btat.org. In particular, you can view the taskforce's charter which may provide you with some guidance on putting together your own charter or company policy on accessibility.

CNIB—Canadian National Institute for the Blind

www.cnib.ca provides services and information for blind people in Canada and also offers consultancy services to businesses in their endeavours to provide accessible digital content. See <http://www.accesscontent.ca> for further information.

DAISY Pipeline Tools and Installation Guide

The tools and services available within the DAISY Pipeline are:

- [a2digital](#)
- [AEL Data](#)
- [Coral Hub Ltd](#)
- [DAISY 2.02 Regenerator](#)
- [DAISY Mark-up Service \(DMS\)](#)
- [DAISY Pipeline](#)
- [EasyConverter](#)
- [EasyProducer: Text to Digital Talking Book software](#)
- [gh, LLC](#)
- [MathDaisy from Design Science](#)
- [Net Systems Informatics—BarrierBreak Technologies](#)
- [RoboBraille](#)
- [Save as DAISY add-in for Microsoft Word](#)
- [Save as DTBook \(DAISY XML\) option in Adobe InDesign](#)

For full installation guides and download instructions please visit <http://www.daisy.org/pipeline/download>

International Digital Publishing Forum - IDPF

For further information on EPUB 3.0 visit: <http://idpf.org/epub/30>

International Dyslexia Association (IDA)

Based in the US, the IDA is dedicated to the study and treatment of dyslexia as well as related language-based learning difficulties. See www.interdys.org/GlobalPartnersList.htm for a list of global partners and organisations around the world.

JISC TechDis

JISC TechDis is the UK's leading advisory service on technology and inclusion. The service specialises in supporting organisations within the education sectors and has numerous resources and a wealth of expertise that can be transferred immediately to the business and community sectors. For access to guidelines produced by JISC TechDis please visit: <http://www.jisctechdis.ac.uk>

NFB—National Federation of the Blind

The largest and most influential membership organisation of blind people in the United States. See www.nfb.org for further information.

NVDA—Non Visual Desktop Access

This new piece of software is free to users and would provide you with a useful screen reader tool that can enable user testing. This is open source, Windows-based software that is available in over twenty languages. See <http://www.nvda-project.org/> for download details and further information

Publisher LookUp

By making your details available on Publisher Lookup you provide a way to give easy access information to your customers. Visit <http://www.publisherlookup.org.uk> to add your details in the UK and <http://www.publisherlookup.com/> in the US.

Publishers Association

The Publishers Association in the UK provides guidelines for publishers on meeting the permissions needs of people with disabilities. For this and other accessibility advice please visit <http://www.publishers.org>.

Royal National Institute of Blind People

This UK based Institute provides many guidelines on accessibility. In particular their new publication on e-book creation (www.rnib.org.uk/ebookguidance) is a useful tool. RNIB also publish a comprehensive set of clear print guidelines. For this and other accessibility advice: <http://www.rnib.org.uk/professionals/accessibleinformation>

South African National Council for the Blind

For information on work and services offered in South Africa please visit www.sancb.org.za

Vision Australia

Vision Australia is the leading organisation for Australians who are blind or have low vision. For more information on the work and services offered visit www.visionaustralia.org.au

WIPO—World Intellectual Property Organization

WIPO is the sponsor of the *Enabling Technologies Framework* project and further details about this and other WIPO projects can be found at <http://www.wipo.int/portal/index.html.en>

World Blind Union

The WBU is the internationally recognised umbrella organisation, representing blind and partially sighted persons in 190 member countries. Speaking with a universal voice on a global level, WBU brings together major national and international organisations of blind persons and those providing services to them. www.worldblindunion.org

Glossary

Accessible editions

General term for large print, Braille editions, e-books and audio books that can be used by the blind, partially-sighted, dyslexics or others who cannot use a conventional physical book.

ADE (Adobe Digital Editions)

The brand name of proprietary e-book reader software from Adobe Systems. It is used for reading e-books, digital newspapers, and other digital publications on desktop PCs and Macs. The software, which supports **PDF**, **XHTML** (through the **EPUB** file type specification), and Flash-based content, implements a scheme of **DRM** known as 'ACS4' or ADEPT.

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** that allow the user to choose to have it displayed. It is helpful both to blind users who cannot see the image at all and to those who are partially sighted who may be able to read large type but find images hard to interpret.

Assistive Technology

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

Braille Display

A type of **Assistive Technology**, a hardware device which can be attached to a computer or mobile device which interprets text into Braille in real time. It contains sets of pins which can be raised and lowered to construct the Braille encoding which can be read by touch.

DAISY (Digital Accessible Information Systems)

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

DAISY Pipeline

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

DRM (Digital Rights Management)

Access control technologies (also known as Technical Protection Measures) that may be applied to a digital file to automate control over access and use of the file. The content itself is encrypted, and certain types of use may be controlled – for example the number of devices onto which a file can be copied, or the number of pages of a file that can be printed. DRM can hinder interoperability between platforms, and prevent many assistive technologies from working.

DTD

See XML-DTD

E-book reader

A specialized handheld device with a small screen that displays the text of an e-book. Most are able to display **EPUB** files and **PDFs**, but some use proprietary formats tied to a specific retailer. Some devices provide control over type size, font, or provide text-to-speech facilities that make them suitable for use by some print-impaired readers

E-book reader software

A special application that enables a general-purpose device such as a mobile phone or tablet to act like a specialized e-book reader

EPUB

E-book content format standard published by the International Digital Publishing Forum (IDPF). EPUB is based on **HTML/XHTML** and is the native format used by many common commercial e-book platforms; it is rapidly becoming the standard format for e-books. It has a very good range of accessible features, and is probably the best format for mainstream accessible publishing. See also **DAISY**.

HTML/XHTML (HyperText Markup Language)

The markup language for web pages, HTML provides the basic building blocks of web pages. XHTML is a set of **XML** specifications that extend the rather limited capabilities of HTML and make it more disciplined. Both HTML 5.0 and XHTML 5.0 are currently under development by the World Wide Web Consortium.

Navigational Information

The elements of markup which are designed to assist a user to move around the content of a digital file. A detailed table of contents, for example, can enable a reader to navigate to a specific chapter or a subsection within a chapter; they may use a bookmark to find a previously marked location; or use a “Find” facility to locate a particular word or phrase

NIMAS (The National Instructional Materials Accessibility Standard)

A standard developed in the United States to assist with the production of accessible content in the Higher Education sector. The NIMAS standard is based on the **DAISY** standard.

PDF (Portable Document Format)

A file format which enables a document to be used on many different computer platforms but always to maintain the same visual appearance and page layout. Originally developed by Adobe in the early 1990s, PDF is now an ISO standard and is widely used throughout the publishing industry both as part of its process for producing printed products and for some types of electronic product. The specifications of PDF files may vary depending on their intended use; some forms of PDF (particularly those specifically aimed at printing applications) are far from ideal for use in the production of accessible editions.

Performed Speech

See **Synthetic Speech**

Publisher Lookup

A collaborative database providing publisher contact information to educationalists who are trying to source electronic versions of titles for print impaired learners. This type of service has been implemented in both the United States and the UK.

Screen Reader

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

Social DRM

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

Synthetic Speech

Artificial speech generated by a computer. Sounds are based on a dictionary of pronunciation and/or phonetic knowledge. Many different synthetic “voices” are available to cover different languages and frequently offer both male and female voices. Widely used in both mainstream and **Assistive Technologies**. Many audio books use “performed speech” which can be the accessible preference for some.

Tags (or Markup)

The short elements enclosed in “pointy brackets” <> that are used in an **HTML** or **XML** document to identify elements and attributes. For example a second-level heading may be surrounded by tags like this: <h2>Here is the heading</h2>. Each element has a start tag identifying the beginning of an element and an end tag (or an implicit end) identifying the end of that element. Tagging has several benefits: it provides a standard structure, giving clear meaning to each element and allows sharing of data from one system to another.

TTS (Text To Speech)

The capability, available on many e-book reading devices, to render digital text as **Synthetic Speech**, allowing someone who cannot see the text to listen to it instead (see also **Screen Readers**). This capability may be built into the reading device but may need to be enabled specifically for each product as it can be disabled on some platforms by **DRMs**.

XML (Extensible Markup Language)

Provides a set of rules for encoding structured information. XML can be shared across many different audiences/organizations. XML is a standard way to describe different types of information. The different types of information are called document types:

- documents are broken into elements
- elements are arranged in a hierarchy
- the markup delimiting the elements and enclosing the actual data in the document provides a context which makes interpretation of the data clear, making XML ideal for communication between computer systems and for highly-structured documents
- the range and structure of specific elements used in XML documents can be tailored for specific uses through a **DTD**

XML-DTD (Extensible Markup Language – Document Type Definition)

The specific set of **XML** markup rules that are used to define a particular sort of document. May be standard (such as **DOCBOOK** for example) or proprietary; DTDs are costly to develop and manage, and are normally used for many different documents of the same type. In order for an XML document to be valid, you need a DTD and a well formed XML document.

XML–DocBook

An **XML DTD** used for structuring book texts. The text of the book contains XML markup that divides it up into parts, chapters, paragraphs, tables, lists, footnotes and so on. The markup is structural and semantic, rather than having anything to do with how the text content should be presented, and the docbook can be processed automatically to create e-books, large print, conventional print or synthetic audio versions of the book