

Guide to the essentials of creating accessible PDFs with Microsoft Word and Acrobat Professional 8

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Introduction

This is a quick guide to the essentials of creating accessible PDFs for publication on the web. It focuses on text and image based documents created with Microsoft Word. It does not include topics such as PDF forms, multimedia, etc. More details on these topics and on all PDF accessibility issues can be found in Adobe's [Create Accessible PDF Documents with Adobe Acrobat \(pdf 10.3M\)](#)

This guide is divided into two parts. The first is aimed at content creators working in Microsoft Word. It outlines techniques for creating Word documents that will convert well into accessible PDFs. The second part covers the tools and techniques needed to fix any problems that may arise during conversion from Word to PDF, or for repairing PDFs that have not been authored using the techniques described in part one.

Required software

Part one requires only access to Microsoft Word. Part two requires Adobe Acrobat Professional 8. In addition, access to, and a working knowledge of a screen reader such as JAWS would be helpful but is not essential.

What makes a PDF accessible?

- PDFs must be properly tagged. Tags are usually generated during conversion from Word to PDF.
- The reading order of the content must be clear, logical and easy to follow (including, for example, the position of footnotes).
- Images that convey useful information (as opposed to purely decorative images) must have text alternatives (or "Alt text").
- Decorative images and repeated headers and footers should be removed from the reading order so that screen readers and other "assistive technologies" ignore them.
- The document should include correctly formatted structural elements such as headings, a table of contents, links and bookmarks.
- Text should be formatted in such a way that it will be readable by people with vision impairments or cognitive disabilities (including dyslexia).
- The natural language of the document must be specified.
- There must be sufficient contrast between foreground and background colours.
- The document's security settings (if any) must not exclude users of assistive technologies.

Part 1: working in Microsoft Word

Styles and Formatting

Always use *structural* formatting for headings, body text, bulleted lists, numbered lists etc. These are applied using the Styles and Formatting panel (Format → Styles and Formatting). It is important to note that text simply set in bold, for example, is *not* a heading. Such formatting is purely presentational and not structural. Structural elements, which are vital for accessibility, can only be added via the Styles and Formatting panel.

Table of Contents

Nearly all users will benefit from a properly formatted Table of Contents (TOC) providing active links to the various sections of a document. It is particularly important in large documents to include a TOC. To do so, select Insert → Reference → Index and Tables. Select the Table of Contents tab. Click OK to create a TOC, based on the document's heading structure.

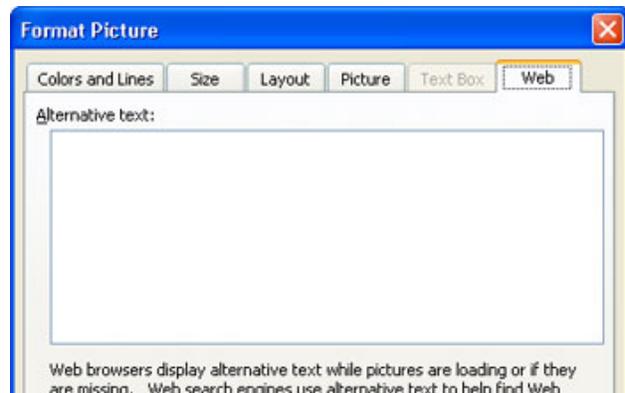
Text formatting

- Never justify text. Always left-align when working in languages that are read left to right.
- Avoid using blocks of italicised text.
- Do not underline text that is not a link.
- Avoid double spaces between sentences.

Alt text

Always add "Alt text" to describe content-bearing (as opposed to purely decorative) images. To do so, click the image to select it, right-click and select Format Picture. Select the Web tab and type or paste the required text (see figure).

Important: for scanned documents, charts and graphs etc, it is *essential* to provide a comprehensive text alternative that *fully* conveys **all** of the information contained within or conveyed by the image.



Colour contrast

Use sufficiently contrasting foreground and background colours and **never** rely on colour alone to convey information or meaning. Non-technical document producers may find the following tool useful for understanding colour contrasts as perceived by those with different forms of colour blindness: <http://gmazzocato.altervista.org/colorwheel/wheel.php>. Those with an understanding of hexadecimal colour codes may also find the following useful http://www.snook.ca/technical/colour_contrast/colour.html.

Note: if you create a text box in Word (for example for a pull-out quote) do not give it a background colour. It is common for people with vision

impairments to change the colour scheme of a PDF for higher contrast. However, although PDF readers are able to change the foreground colour of text, they are unable to change the background colour. This can lead to some poor foreground/background colour combinations.

Footnotes

Footnotes should be used sparingly, if at all. As a general rule, effective web copy is short, snappy and to the point; footnotes are the opposite – they provide fine detail. Also, repairing PDFs so that footnotes appear in the right place in the reading order is essential for the content to make sense to a screen reader user. However, it is very time consuming to do. Lastly, be aware of the rapid growth in demand for access to web content via mobile phones. Footnotes work even less well on mobile phone screens than they do on PCs, for obvious reasons. They should be used with caution outside the environment for which they were designed: the printed page.

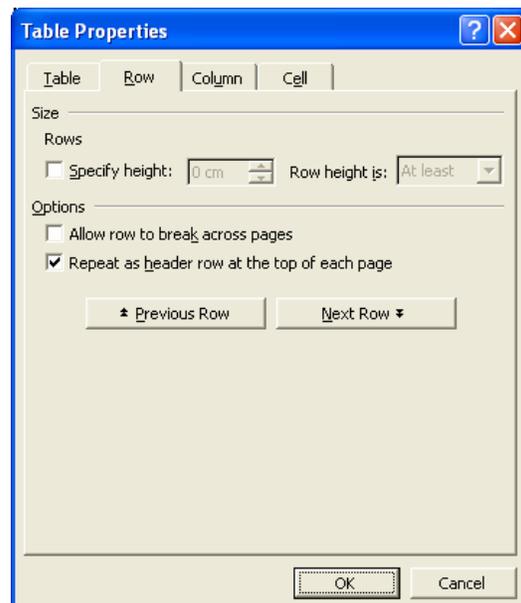
Columns

Select Format → Columns to lay out text in columns. **Never** use tables to simulate multicolumn text.

Tables

Tables should be used only for the purpose of setting out tabular data and not for general page layout. They should always have meaningful column headings. If you do use them:

- Avoid tables that break across pages. If you cannot, then ensure that column headings repeat at the top of each page — select Table → Table Properties and under the Rows tab check Repeat As Header Row At The Top Of Each Page.
- Never allow rows to break across pages. To prevent them from doing so, select Table → Table Properties, and under the Rows tab, uncheck Allow Row To Break Across Pages option for that row (see figure).
- Avoid using complex tables. Complex tables include those with more than one level of headings. These are very difficult to make accessible. Consider breaking complex tables into a number of smaller tables.



White space

- To create a new paragraph, press the Return key once and once only. Do not use the Return key to add extra space between paragraphs or

to otherwise position copy on a page. Instead, use the "Spacing Before" and "Spacing After" paragraph properties, defined in the Styles and Formatting panel. Examples in this document are: the heading on the title page which uses Spacing Before of 198pt; and the space between paragraphs which is set with Space After of 6pt on Body Text.

- Similarly, the Tab key or the space bar should never be used to position copy on a page. Doing so is liable to render your copy as gobbledygook when read with a screen reader or when converted to plain text format.

Links

Include live hyperlinks in the original document. These will convert well into live links in the finished PDF and are useful navigational aids.

Converting from Word to a tagged PDF

Tagging is at the heart of PDF accessibility. During the conversion process from Word to PDF, Acrobat will add a tag tree to the PDF that reflects the structure of the source document (see example on page 9). It is this structure that allows screen reader users and others to navigate the document. Incidentally, it also enables search engines to index the document properly.

To convert a document to a tagged PDF, select Adobe PDF → Convert to PDF or select the Convert to PDF button on the toolbar (in Word).

Generating the tag tree during the conversion of the document to PDF, rather than afterwards, almost always produces the best results.

Do not print the document to PDF using Adobe PDF Printer as this produces an untagged document. A possible exception is when you know you are dealing with a corrupted source document which Acrobat might struggle to tag properly. In such a case tagging after conversion may be the better (or only) option.

Conversion settings

Before generating a tagged PDF for the first time, in Word, select Adobe PDF → Change Conversion Settings. Select the Settings tab and ensure that the following check boxes are checked:

- Add Bookmarks to Adobe PDF.
- Add Links to Adobe PDF.
- Enable Accessibility and Reflow With Tagged PDF.

Once set, these settings will persist.

Part 2: working in Acrobat Professional 8

The amount of editing a document will require after conversion to PDF will depend to a large extent on how closely the techniques outlined above have been followed in its creation. If they have been followed closely, very little editing is likely to be required. If the document has not been authored along the lines described above it is likely to need extensive manual repair work using the techniques set out in the remainder of this document.

As stated previously, this document is intended to be a quick guide only. For more details on all of the following topics, as well as on PDF accessibility issues not covered by this guide (such as those relating to PDF forms and multimedia), see Adobe's (108-page) [Create Accessible PDF Documents with Adobe Acrobat \(pdf 10.3M\)](#).

The next sections briefly describe the main tools available for identifying and fixing accessibility problems in Acrobat Professional 8. In the following sections, the basic methods and techniques for fixing these problems are outlined.

Note: the visual appearance of a document remains unchanged when editing with any of the tools below.

Tip: there is no Back or Undo button in Acrobat Professional and, although version 8 is more stable than previous versions, it can crash from time to time. You are strongly advised to save your work frequently.

Checking for accessibility problems

Acrobat has some useful tools for identifying accessibility problems:

- The accessibility Full Check report produces a detailed list of potential problems together with suggestions for fixing them. To run the report, select Advanced → Accessibility → Full Check.
- Reflow view reorganizes the content into a single column. This is useful for visually checking for reading order problems. To use Reflow, select View → Zoom → Reflow.
- You can also listen to the document to check that the reading order makes sense by selecting View → Read Out Loud. This works fine for short documents, but a more sophisticated screen reader is recommended for more complex documents. This is because with Read Out Loud you can only start, pause or continue. There is no means to move around a document, making longer documents hard to use.

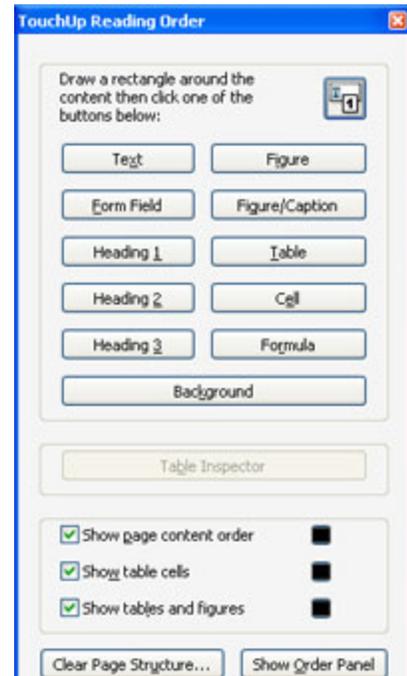
Tools available in Acrobat Professional

The TouchUp Reading Order Tool

To open the TouchUp Reading Order tool select **Advanced** → **Accessibility** → **TouchUp Reading Order**, or **Tools** → **Advanced Editing** → **TouchUp Reading Order Tool**.

Use the TouchUp Reading Order Tool to add or edit headings or other structural elements as necessary.

With the TouchUp Reading Order Tool dialogue box open, any part of the document can be selected by clicking and dragging a box around it. It can then be tagged as a heading, text, figure (for an image), or background (to remove it from the reading order) etc, by clicking on the corresponding button in the TouchUp Reading Order panel (see figure).

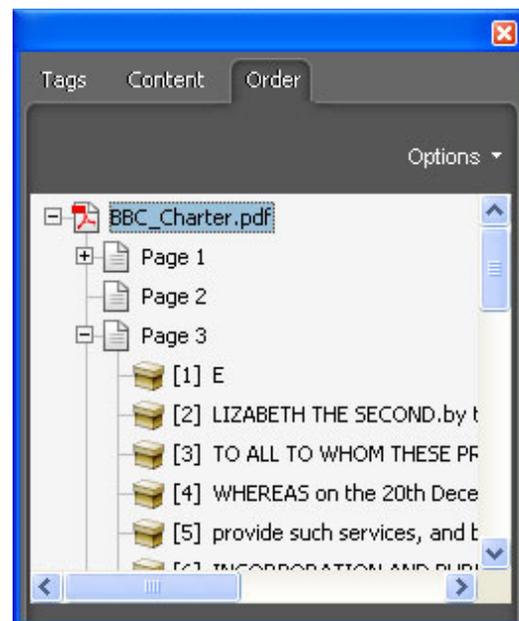


The Order Panel

To open the Order Panel, from the TouchUp Reading Order tool, click the Show Order Panel button.

The Order Panel provides the quickest and easiest way to adjust the reading order. Items can be cut, copied, pasted, dragged, or created (right-click and select New Tag). Each region of a page has a corresponding numbered entry in the Order Panel. The sequence of the numbering indicates the reading order of the content in the page.

You can also use the Order Panel as an alternative to the TouchUp Reading Order tool to format elements. To do so, right-click an item in the Order Panel and from the drop down select Tag as heading 1, Tag as text, Tag as background etc.



The Tags Panel

The Tags Panel shows the document's tag tree. To view the tag tree select the Tags tab on the navigation panel or select View → Navigation Panels → Tags.

Right-click on any tag to view a number of options for deleting, inserting or editing tags. You can also drag and drop tags to change the reading order, or delete them to remove them from the reading order.

Finding a section of content

To find a section of content in a PDF from its corresponding tag, with the Tags tab selected, click Options → Highlight Content. Alternatively, right-click a tag and select Highlight Content. The content will be highlighted on the page

Finding a tag

To find a tag from its corresponding content, select the content with the Select tool. With the Tags tab selected, click Options → Find Tag From Selection. The corresponding tag will be highlighted in the tag tree.



Methods for repairing common problems

Checking for the presence of tags

As stated previously, tags are vital for PDF accessibility, and tagging during the conversion process rather than afterwards almost always produces the best results. To check if a PDF has been tagged select File → Properties. Select the Description tab and look for a Yes or a No next to the Tagged PDF label.

Note: it is possible for a PDF to have a tag tree but for the Description tab to show a “No”. Such a document should be treated as if it were untagged. In such a case, if you have access to the original document, re-convert to PDF as described on page 6 above. If not, or if there is a problem with tagging during conversion, delete the tag tree and generate a new one.

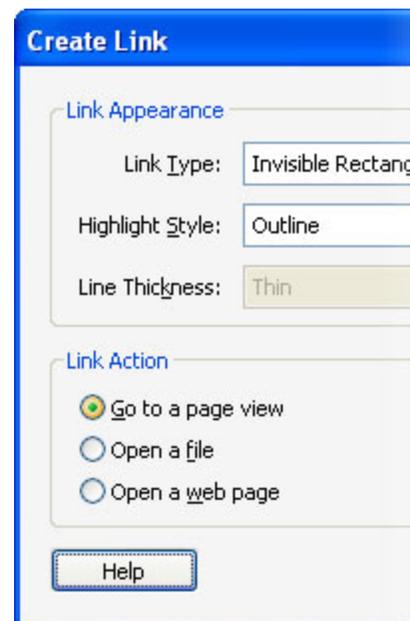
To generate a tag tree after conversion to PDF, select Advanced → Accessibility → Add Tags to Document.

Table of Contents

Because of widespread support for links across technologies, platforms and devices, a Table of Contents (TOC), that provides active links to the various sections of a document, represents an important navigational aid for most users, for most kinds of document. A TOC properly formatted in Word converts well into its counterpart in PDF without further editing work.

If a TOC exists but has no active links to the document’s various sections (as is the case if a document is tagged after conversion to PDF), it can be repaired relatively easily using Create Link/Go to page view. To do so:

- highlight a line in the TOC using the Select tool;
- right-click and select Create Link (see figure);
- (if necessary adjust the Link Appearance settings, then) select Go to a page view and click Next;
- the Create Go to View dialogue box appears;
- navigate to the page you want to link to and click Set Link;
- repeat the process for each line in the TOC.



Links

If a document was tagged correctly during conversion from Word, and links were made active in the original document, these should be fully accessible in the PDF.

However, if a document was tagged after conversion to PDF, to activate links, select **Advanced** → **Document Processing** → **Create From URLs In Document**. The links will now be active, but will not yet be identifiable as links by screen readers. To complete the process you will need to manually edit the tag tree. To be accessible, each link needs three tags: a parent **Link** tag which contains a child **Link – OBJR** tag, which in turn is the parent of a content tag, the latter containing the actual link text as it appears on the page. (See figure and also page 9 for more on editing the tag tree).

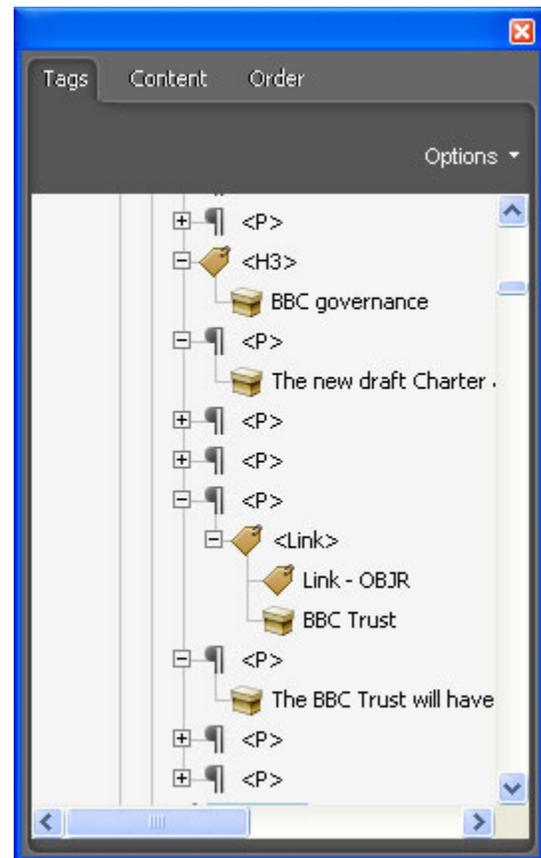
You can, of course, create links from normal text anywhere in a document as outlined in the **Table of Contents** section above.

Finally, you can add **Alt** text to links which some screen readers can read out in preference to the URL. To do so, go to the tag tree and locate the relevant **Link** tag. Select **Options** → **Properties**, or right-click and choose **Properties**. In the **TouchUp Properties** dialogue box select the **Tag** tab and type or paste the appropriate **Alt** text into the **Alternative Text** field.

Correcting the reading order - footnotes

After conversion to PDF, footnotes by their nature almost always appear out of sequence in the reading order. It may be possible to reposition them by dragging and dropping them in the **Order Panel**, but if this proves problematical (for example, if the footnote is referenced from the middle of a sentence or paragraph), the following workaround is available: (Note – strictly speaking this is a hack, but it works)

- Using the **TouchUp Reading Order** tool, click and drag to draw a rectangle around the footnote reference and mark it as a **Figure**.
- Select the text in the footnote using the **Select** tool and copy it to the clipboard (Ctrl + C or right-click → **Copy**).
- Right-click on the **Figure** and **Select Edit Alternative Text**. Paste the text from the clipboard.



- Return to the original footnote and remove it from the reading order by tagging it as a Background element or by deleting its tag from the tag tree.

Language settings

To set the natural language for a whole document select File → Properties and select the Advanced tab. In the Reading options area there is a drop-down for selecting language. If the language you require is not one of those listed you can type the standard two-letter ISO country code (for example, “cy” for Welsh).

To set a different language for any particular element within a document, for example for a paragraph of French in an otherwise English document, select its tag in the tag tree, right-click and select Properties. The TouchUp Properties dialog box opens. Select the Tag tab and set the required language for that element.

Adding Alt text to content-bearing images

To add Alt text to an image, first ensure that the image is tagged as a Figure element (using the TouchUp Reading Order tool). Once it is, with the TouchUp Reading Order tool open, select the image, right-click and select Edit Alternative Text. Type or paste the required text and click OK.

Removing non-content-bearing images and headers and footers

Non-content-bearing images, such as logos or decorative images, and repeating headers and footers should be removed from the reading order. To do so, tag them as Background elements using the TouchUp Reading Order tool, or delete the appropriate tag from the tag tree.

Headings

Just as in a web page, a logical heading structure can greatly enhance the navigability and hence the accessibility of a document. The TouchUp Reading Order tool allows quick tagging of heading levels 1 to 3. Headings 4, 5 or 6 can be added by overwriting the relevant tag name in the tag tree.

Tables

Simple data tables, such as those in this document with just one level of column headings, present few problems for screen reader users once the document is converted to PDF. Column headings can be read out before their corresponding cells' contents as the user navigates through the table.

Screen reader support for row headings is somewhat patchy. Avoid if possible.

Complex tables will always cause significant problems and correcting them is immensely demanding and time consuming. Avoid if at all possible. If you really cannot avoid them see Adobe's [Create Accessible PDF Documents with Adobe Acrobat \(pdf 10.3M\)](#), pages 102 to 104, or Acrobat Professional online help for information on repairing complex tables.

Some of the most common problems typical of complex tables are:

- the existence of more than one logical level of column headings;

- table cells that contain long or complex information such as multiple paragraphs, bulleted lists or text that spans more than one page;
- table cells that contain white space (inserted via the Tab key, spacebar or Return key) to organize data;
- table cells that have been merged so that cells span two or more rows or columns.

File size optimisation

It is important to note that tagging increases file size, sometimes dramatically. But file size can be safely reduced, often by as much as 50%, by selecting File → Reduce File Size. When prompted, for backwards compatibility, choose Make compatible with Acrobat version 5.0 and later.

Security settings

If you plan to apply security to your PDF, in the Security tab of the Properties dialogue box, from the Security Method dropdown select Password Security. Ensure that the Enable text access for screen reader... option is checked. If it isn't, check the Restrict editing and printing... check box and make the necessary change.

Screen reader support

Screen reader support for the most important structural elements is improving with each release. The table below gives an indication of the current state of play.

Table 1 – current screen reader support for key elements

Element	JAWS	Window-Eyes	IBM Home Page Reader
Text	Supported	Supported	Supported
Images	Supported	Supported	Supported
Links	Supported	Supported	Supported
Tables	Supported	Supported	Supported
Headings	Supported (JAWS 7)	Not supported	Not supported
Lists	Supported (JAWS 7)	Supported	Not supported
Forms	Supported	Supported	Supported

Source: PDF Accessibility, *Web Accessibility: Web Standards and Regulatory Compliance*. Jim Thatcher et al, 2006. p378.

Quick reference of recommended tools and commands

The following table provides a quick reference of recommended tools and commands available in Acrobat Professional for fixing the most common PDF accessibility problems.

Table 2 – recommended tools and commands

Function	Recommended tools or commands
Tag an untagged PDF	Advanced → Accessibility → Add Tags to Document
Activate table of contents	Right-click → Create Link
Create active links	Right-click → Create Link
Correct reading order	Order Panel (of the navigation panel)
Set language	File → Properties → Advanced tab
Add Alt text	(Tag as Figure) Right-click → Edit Alternative Text
Remove non-information bearing images	TouchUp Reading Order tool (tag as Background)
Add or edit headings	TouchUp Reading Order tool/Tag tree
Fix tables	Tag tree
Optimise file size	Document → Reduce Size