



T·BASE
COMMUNICATIONS

Accessible PDF Creation Guide CSUN 2016

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Purpose

The purpose of this document is to guide persons responsible for content and document generation in creating accessible PDFs.

Terms and Definitions

Term	Definition
Accessible PDF	A PDF document that makes use of accessibility features built into the document. These features allow users with disabilities to navigate and use the document by means of assistive technology.
Alternative Text	Descriptive text for graphics (see Figure): invisible to the sighted user and discoverable by screen readers.
Assistive Technologies	A family of hardware and software tools that assist people with disabilities to navigate, read, and understand applications and documents. For example, screen readers are software applications that read text as speech for people who are blind or have low vision.
Figure	A tag name, used to describe all kinds of graphics, including charts, graphs, photographs, logos, designs, and illustrations.
Form	Any document with one or more fields in which the user can enter information. Forms in PDFs are usually not submitted directly to a database, but the PDF may allow the user to save and print out the completed form.
Heading	Any form of title within a document: often visually distinguished by color, being off-set from other text, a larger font size or bold font weight. Headings and sub-headings divide and organize content.
List	A form of content organization, prefaced by points ("bullets") or numbers.
Paragraph	Any discrete body of text with one or more sentences.

Term	Definition
Table	A form of content organization in rows and columns, in which header cells describe their subsequent data cells.
Tag	A unit of accessibility markup that semantically describes content for screen readers.

Introduction

The goal of this document is to guide persons responsible for content creation—for example, City and Municipal staff, Communications/ Marketing specialists—in creating accessible PDFs for their customers as well as the general public. Many people from the public and private sectors approach T-Base Communications with a requirement or desire to provide accessible documents, but they lack the knowledge or capacity to do so themselves. There is confusion regarding what an accessible PDF is and what makes it "accessible". In this guide, T-Base intends to clear up these misconceptions and help people create PDFs that are consistent and accessible.

Understanding Accessible PDF

Accessible HTML Webpage vs Accessible PDF

First, we must distinguish between an accessible HTML webpage and an accessible PDF. Both are essentially documents, and they share an important quality. Each can be considered accessible if it is compatible with assistive technologies and can be comprehensibly read and navigated by people with disabilities. Assistive technologies come in different forms and help people with disabilities understand and navigate within applications and documents. A screen reader, for example, is an example of an assistive technology that reads text as speech for people with visual disabilities.

Accessible HTML Webpage

A webpage is primarily coded in HTML. Each object is described using "tags", which are the basic unit of HTML. Tags are used to define document objects: regions of content, lines of text, and individual words; tables; images; multi-media; navigation; and others. A major part

of creating an accessible webpage is deciding how to choose the correct tags in order to assign meaning, structure and location within a document.

Accessible PDF

PDFs are fundamentally different from HTML webpages. Though there is an underlying object structure similar to HTML tagging, for the most part content creators do not have to worry about tags in PDFs. Because most creators are working in an application, such as Microsoft Word or Adobe InDesign, they do not work directly in this underlying structure. When we talk about "tags" in PDF, we are specifically talking about tags that are added *after* the document has been created so that a screen reader can read its elements. In fact, tags are added to a PDF solely so that people using screen readers can understand the document. Without these tags, the document visually appears the same to sighted users, but its content won't be available to people using screen readers.

The bottom line: Choosing the correct tags while building an HTML webpage and adding meaningful tags to a PDF are crucial in creating accessible documents. They just mean different things.

WCAG 2.0 vs PDF/UA

Many of our public and private sector clients ask if it is possible to make their PDFs "compliant with WCAG 2.0". Because there is not a straightforward answer, it is important to understand what kind of compliance to work toward.

The [Web Content Accessibility Guidelines](#) (WCAG) 2.0 is a set of recommendations for improving and measuring the accessibility of online content. They were created by an international organization called the World Wide Web Consortium (W3C), which creates technical standards for internet technologies. WCAG 2.0 is a recognized standard for online accessibility worldwide. It is important to note that PDFs are mentioned in WCAG 2.0 in the context of "web content"; however, there is also a separate document of [PDF Techniques for WCAG 2.0](#), highlighting that there is a difference between PDF and other web content. PDFs were originally created to be delivered in a self-contained document format (not for web presentation). In the words of the Association for Information and Image Management (AIIM), a global community of information professionals, PDFs are sometimes described as "[not essentially of the Web](#)". WCAG 2.0 includes PDFs as web content, but overall these guidelines focus on HTML-based webpages.

Recently there has been emphasis on a separate recommendation called PDF/UA, an ISO standard (ISO 14289-1) that defines the requirements for PDF accessibility exclusively and has led to the creation of subsidiary documents.

The PDF Association used PDF/UA to create the [Matterhorn Protocol](#) (along with other educational resources) to produce testable criteria. The Protocol is a set of 31 checkpoints and 136 failure-based sub-checkpoints to test the accessibility of PDF documents. Most criteria can be tested automatically using software, primarily the [PAC 2 Accessibility Checker](#), while others require human/user testing.

The more specific goal of this guide is to drive the conversion of documents into PDFs that pass the PAC 2 Checker and are compliant with PDF/UA. Within PDF/UA there is latitude when it comes to interpreting how to accomplish this goal and how to interpret the results of the PAC 2 Checker. This is important considering the wide variety of PDF documents created. Keep in mind that a PDF may be compliant with a standard yet not capture the meaning its creators intended. Therefore, do not assume that each PDF can be rendered accessible in the same manner.

There are two final recommendations regarding creating an accessible PDF. First, always examine a PDF before attempting to modify it for accessibility. Before starting the process, look at the task and determine what logical steps are needed to make the document accessible. Finally, before declaring the document accessible, perform a test read with a screen reader. Doing so will demonstrate how the document performs with an assistive technology, which is more useful than simply relying on an automated checking tool.

Assumptions and Requirements

Since PDFs can be created from a wide variety of sources, this guide makes certain assumptions and requirements when it comes to creating and editing documents. For the purpose of this guide, we assume the original document is created in Microsoft Word (MS Word). MS Word is the most common software for generating content, and of all Microsoft Office applications, it has the largest number of accessibility options.

When the MS Word document is complete, you must use conversion software to render it as a PDF. Simply saving an MS Word document as a PDF will not make it accessible. What is needed is an application that will recognize the accessibility features you have added to the document. Adobe FrameMaker®, Adobe InDesign®, Adobe PDFMaker®, CommonLook Office, and OpenOffice Writer are common applications used to create tagged PDF documents.

Adobe Acrobat is required in order to review and manipulate the tags in an existing PDF document, and it has a useful Accessibility Checker. The next section in this guide looks at a more powerful testing tool, the PAC 2 Checker.

Document Creation in MS Word

MS Word contains several features that can enhance the accessibility of a final document. Using them while working on the source document will probably save time and create better structure and accessibility for the final PDF. It means adding accessibility from the beginning of the project, and less remediation at the end.

Styles

When creating or editing a block of text, many people will directly manipulate the visual properties to make text look how they wish—when creating headings and subheadings, lists, or block quotes, among other components. Unfortunately these visual changes do not help create structure within the document, are not necessarily accessible to ATs, and will need to be repeated or edited manually every time they occur. Instead of manipulating the visual elements directly, content authors should use the document styles and style sheets.

In MS Word, styles are declared categories of content, which store determined properties for specific kinds of text content, such as font weight, font size, and decoration. The author, or his or her organization, determines the style properties and can then assign a style one or more times to a given block of text content.

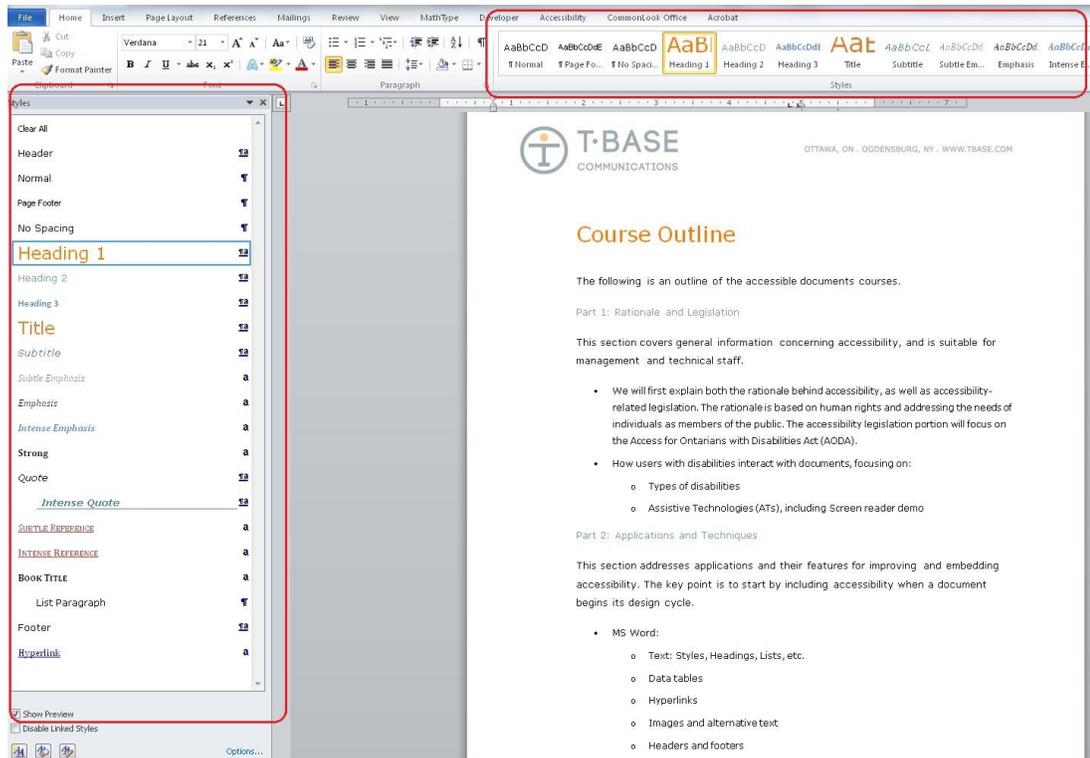
Styles permit easier content administration. The content author has to change the properties of a style only once, as the change will propagate to every piece of content using each particular style. More importantly, styles help create structure in the document, identifying the organization and major areas of content by establishing headings. This makes it easier for ATs to interpret, present, and navigate the document.

ATs use the document structure to quickly analyze the document, identifying the headings, links, tables, and lists within each page. With ATs, the user can review and understand the major areas in the document as well as jump to their section of choice rather than scroll laboriously through all preceding content.

Figure 1 shows two areas in MS Word where styles can be found and used: in the ribbon at the top of the document and in the expandable panel on the left side of the screen. Styles can be selected, modified, created, or organized into stylesheets using the controls in these areas.

If you work for a large organization, the organization likely has pre-defined stylesheets you can use. Ensure you become familiar with and utilize your organization's styles.

Figure 1: Styles are available in the ribbon and from the expandable panel.



Headings

Establishing headings is probably the most important use of styles. In this sense, headings refer to the following:

- document title (could use Heading 1, or a style called Title);
- major headings (Heading 1s or 2s, usually); and all
- sub-headings (Heading 3s, 4s, etc.).

As mentioned, many content authors will represent the above by changing individual visual properties. Document title, headings and sub-headings are crucial to creating an organized document structure, as ATs both identify these styles and use them to facilitate document navigation.

There are a few rules for applying headings properly:

1. The document should have one Title to identify it.
2. The Title is very similar to or the same as the document name.
3. Throughout the rest of the document, generally Headings 1 through 6 are used.
4. Chapters/major sections are identified by Heading 1s.
5. Sub-sections within main sections are divided into Heading 2s, then Heading 3s, etc.
6. Levels should not be skipped and should properly "nest" within each other:
 - Heading 1
 - Heading 2
 - Heading 3

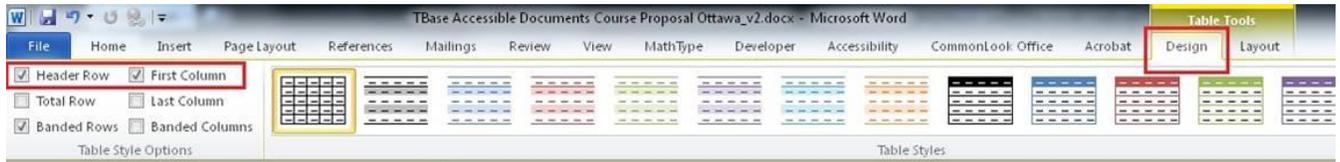
Tables

Tables, also called "data tables", are a widely misused element. Tables are for storing information with common traits or descriptions: contact lists, events, weather information, etc. They are also called "data tables" and should be used for that purpose. The intent of tables is the presentation of information, not the layout of content. Tables should not be used for layout; this isn't their semantic purpose, and such use might cause confusion for users who rely on ATs.

Tables have special navigation options in ATs. Header cells can be identified by ATs and provide both a basis for navigation and an index for the values in the ordinary data cells. Header cells can be in the first row or column, or both. Simple tables can have one of either a header row or a header column, though complex tables may have several tiers. To assist ATs in explaining tables, include a caption either above or below the table. These attributes—properly-made tables, captions, and values indexed to header cells—carry over to PDF when the document is converted, and they are screen reader-accessible.

In **Figure 2** below, the MS Word ribbon controls for tables are shown. The Design tab for the Table Tools contains two checkboxes: "Header Row" and "First Column". These specify if the respective table areas will be marked as header cells—categories of information that the data cells within are organized by. These attributes can carry over to the PDF upon conversion.

Figure 2: Controls in the ribbon for the table design, including defining the header cells.



Lists

The topic of lists includes both ordered ("numbered") and unordered ("bullet point") lists. Often ATs can identify lists in documents and help the user navigate them, so it is important not to substitute hyphens, bullet characters, or manually type in numbers. Always use the MS Word controls to create ordered and unordered lists.

Figure 3: List controls in the ribbon control the list type and structure.

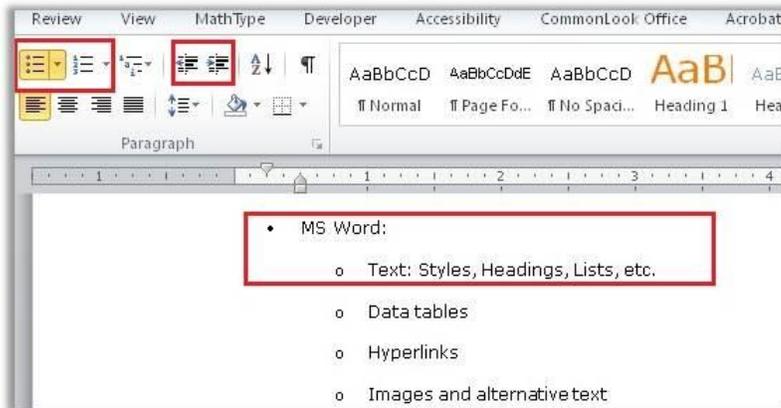


Figure 3 shows the list controls in the ribbon: here a bullet list, or un-ordered list, is being used. Lists can also be "nested": this means child lists may be placed within parent lists. These are controlled with the indent buttons, which determine where child lists start and end under a parent. You can also assign styles to lists in the same manner as headings.

Hyperlinks

Hyperlinks are classically distinguished as blue, underlined text, and they are quite accessible to begin with. Users with color blindness or low vision may not be able to see the blue, but, because hyperlinks are underlined as well, they are set apart from surrounding text. As a general rule, hyperlinks should be distinguished from regular text by more than one visual property.

Natural language or a proper name, not the URL, should be used as anchor text. For example, "Access the [Accessibility Advisory Committee's agendas and minutes](#)" uses human-comprehensible text as an anchor, making it much easier for users who depend on text-to-speech to access than "Access the Accessibility Advisory Committee's agendas and minutes at <http://www.example.com/>." Moreover, it is much more explicit than links that use "[click here](#)".

Color and contrast in text

Text needs to have sufficient color contrast from its background in order to be legible to users with low vision. Users with color blindness, or using monochrome technologies, may not be able to see information conveyed solely with color. Pages with color should be designed so that all information conveyed with color is also available without color.

PDF/UA does not specify a value for what constitutes sufficient color contrast. We will reference an equivalent drawn from the web standard, the Web Content Accessibility Guidelines (WCAG) 2.0. For text, aim for a contrast ratio of at least 4.5:1. An example is:

- Black text (with an RGB color value of "0 0 0"),
- on a white background (with an RGB color value of "255 255 255"),
- has a contrast ratio of 21.0:1, far above 4.5:1.

Images

Photos, technical diagrams, and graphics (e.g. pie charts) are examples of images. They are considered "non-text" content; as such, they require some form of descriptive text. This alternative text ("alt text") is accessible to screen readers and allows the content and function of the image to be accessible to users with visual or cognitive impairments. Alternative text should be brief, meaningful and as informative as possible.

In **Figure 4** below, the process of adding alt text is illustrated. First, open the shortcut menu by right-clicking on an image, and choose "Format Picture". Next choose "Alt Text" from the options, and enter a brief explanation in the Description field.

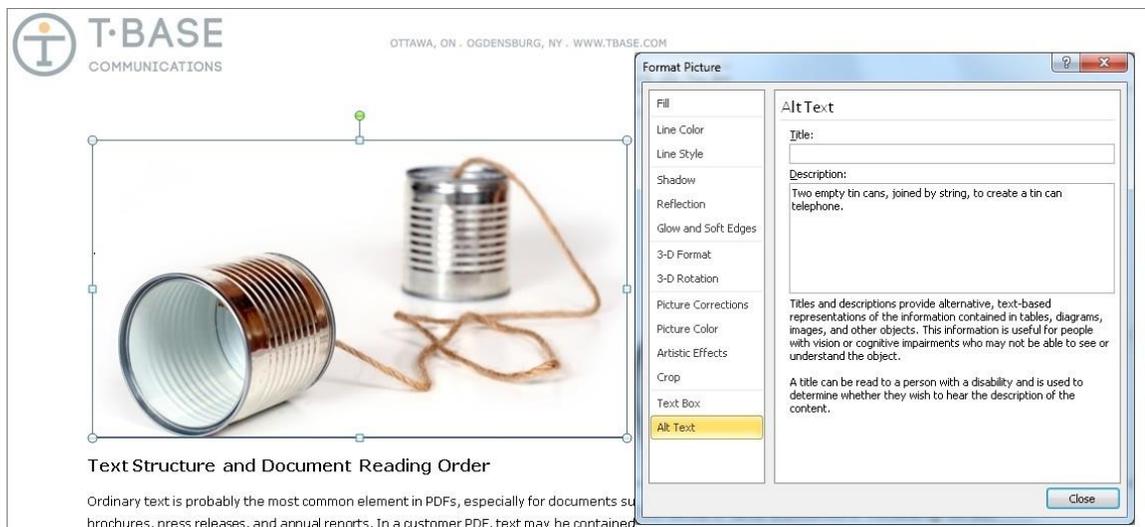
In MS Word, images should be placed "in line" with text, meaning the text does not wrap around it because it is essentially part of the paragraph. Images that are not in line with text may not be detected by screen readers.

Note that images containing text ("graphical text") should have sufficient foreground-to-background color contrast, as discussed in the previous section. This helps users who have low

vision perceive and understand the image. There are exceptions to this guideline: logos and brand marks may have specific colors that should not be changed.

Adjusting the contrast within a photo can be difficult, and doing so generally requires dedicated graphics software and attention.

Figure 4: Right-click on an image and choose "Alt Text" from the options to add alternative text.



Converting an MS Word Document to PDF

If you simply save/print a Word document as a PDF, many steps we have looked at in MS Word may not automatically carry over to the PDF document. Your organization will require a conversion plug-in, such as CommonLook Office or Adobe PDFMaker®, or a stand-alone application, such as Adobe FrameMaker®, Adobe InDesign®, or OpenOffice Writer. This software can use the improvements to accessibility you have made to create a properly tagged, accessible PDF.

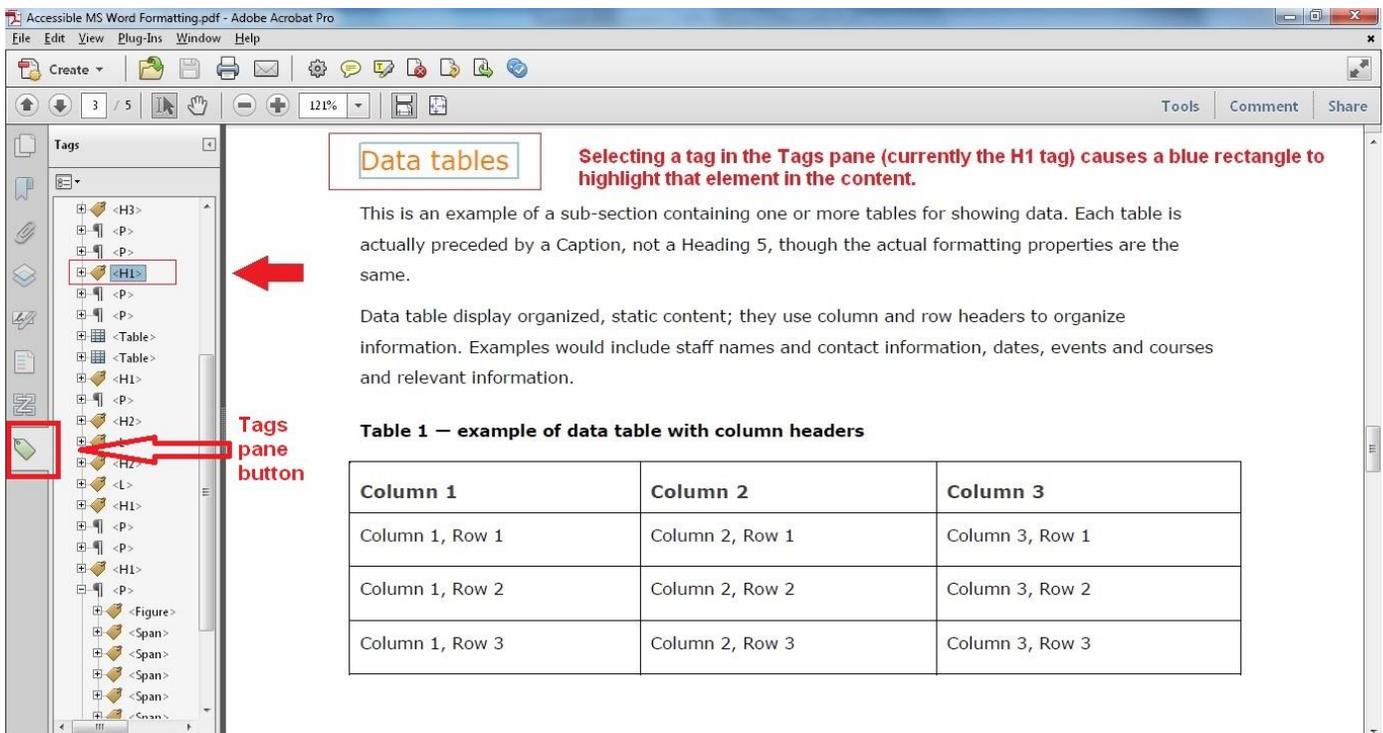
Modifying a PDF in Adobe Acrobat

Once you have created a PDF, or if you have received one, you can open it to see how accessibility features have been implemented. Adobe Acrobat has the ability to open PDFs created in other applications and immediately identify whether a document has been tagged accessibly. Furthermore, Acrobat will take any document that has not been tagged and offer to attempt to add tags to it. It will do this before allowing you to open the document to read it. This can be useful, but do not rely on it to create an accessible PDF for you: Acrobat has to estimate the meaning and value of what it finds, and it may not do so suitably.

PDF Tags and the Tags Pane

Tags are visible in the Acrobat interface. A tagged PDF, as seen in **Figure 5**, will display tags in the Tags pane on the left-hand side of the Acrobat window. Open the pane by clicking the **Tags pane** button or by using the **View menu > Show/Hide > Navigation Pane** option.

Figure 5: The PDF displays its accessibility tagging structure in the "Tags" pane.



Tags resemble their namesake in HTML: in this example, "Data Tables" is contained in the highlighted <H1> and is followed by two paragraphs of text, represented in the Tags pane by <P> tags, and then a data table, shown as <Table>.

Edit a tag by right-clicking it, selecting "Properties" and then changing the "Type". Tags can be expanded to show their respective components or collapsed for ease of review. For example, lists can be expanded to see each of their list items.

Text Structure

Ordinary text is probably the most common element in PDFs, especially for brochures, press releases, annual reports and similar documents. In a customer PDF, text may be contained within a wide variety of tags, including "Paragraph" and "Span".

The entire document may be structured through the use of tags, in a fashion similar to the following:

- Document
 - Story or Article
 - Paragraph (and other content)

To simplify this guide and focus on accessibility, we will examine only Paragraph tags, in the event that text has not been captured in the tagging structure. Paragraph tags may contain other tags, including one or more Span () tags.

As much as possible, work with the tags that come with a customer PDF: it isn't necessary to redefine existing tags, which already provide structure to content. It is also usually not necessary to remove tags, such as the Document, Story, and Article tags.

All content is organized under headings: there will be major headings for main content areas, which are in turn sub-divided under sub-headings. All headings are numbered to provide different levels: they start at Heading 1 (<H1>) for the document title or most significant sections; subordinate sections are split into Heading 2s (<H2>), Heading 3s (<H3>), and so on. Headings are both an important structural component and a navigation landmark. They are all screen reader-accessible, helping users understand the document structure and quickly navigate the contents to find what they need.

Each level of heading can be used multiple times throughout a given document. For example, there is no rule that H1 can be used only once, but the different levels should "nest" inside each other properly, and levels should not be skipped. Therefore, H1 will precede H2, which

can have multiple H3 and then H4 sub-sections inside it, but the document should never jump from H1 to H3, or H2 to H4.

Adding or Modifying Tags

There are two major ways to add or modify tags in a PDF:

- Open the **Tags** pane and access tags already in the document.
- Open the **Tools** pane on the right-hand side, expand the **Accessibility** tab, and use the **Touch-Up Reading Order Tool**.

The Tags pane allows you to manipulate existing tags in a variety of ways, whereas the Touch-Up Reading Order Tool allows you to visually outline areas and define them with tags. The latter is useful when a document is inaccurately tagged or completely untagged.

Despite its name, the Touch-Up Reading Order Tool allows you to work with a "broad swath" of a page, while the Tags pane provides fine control over individual tags.

Tags Pane

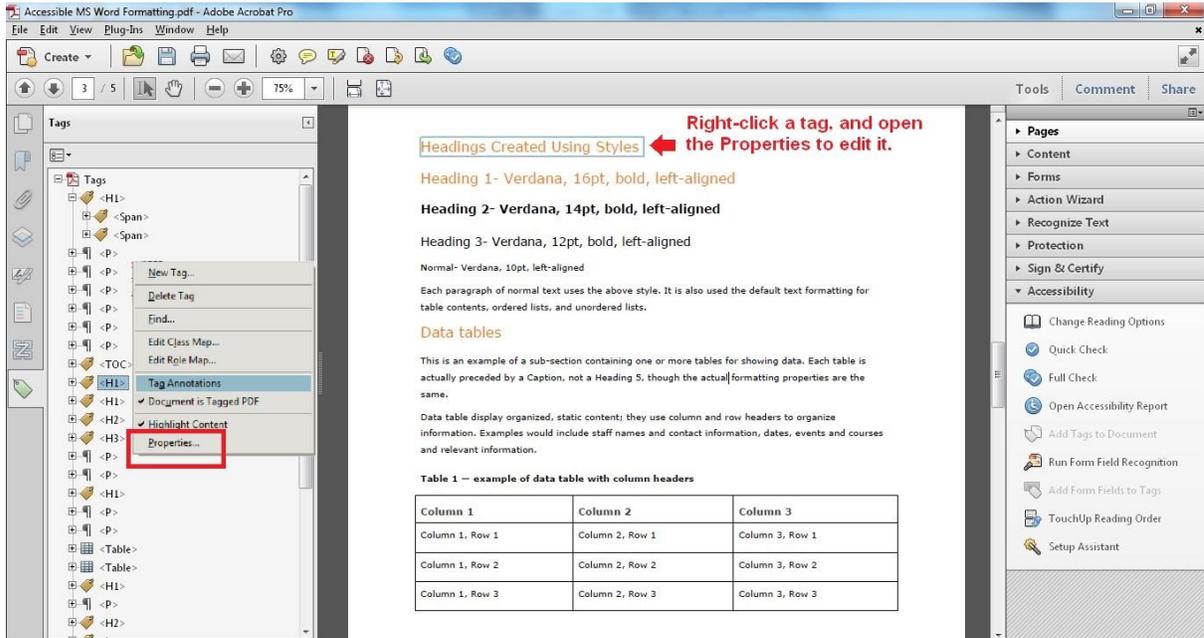
The Tags pane allows you to do the following:

- move tags within the document order;
- modify individual tag properties;
- change an existing tag's type; and
- add, delete, cut and paste individual tags within the order.

One of its most useful features is to simply drag-and-drop individual tags to move them around in the document order. If the tags do not follow the visual order, simply select and drag them to the appropriate location.

Right-click to open the shortcut menu and see a variety of options to add, edit, or cut and paste tags as shown in **Figure 6** below.

Figure 6: From the Tags pane, you can open the shortcut menu to edit tags.



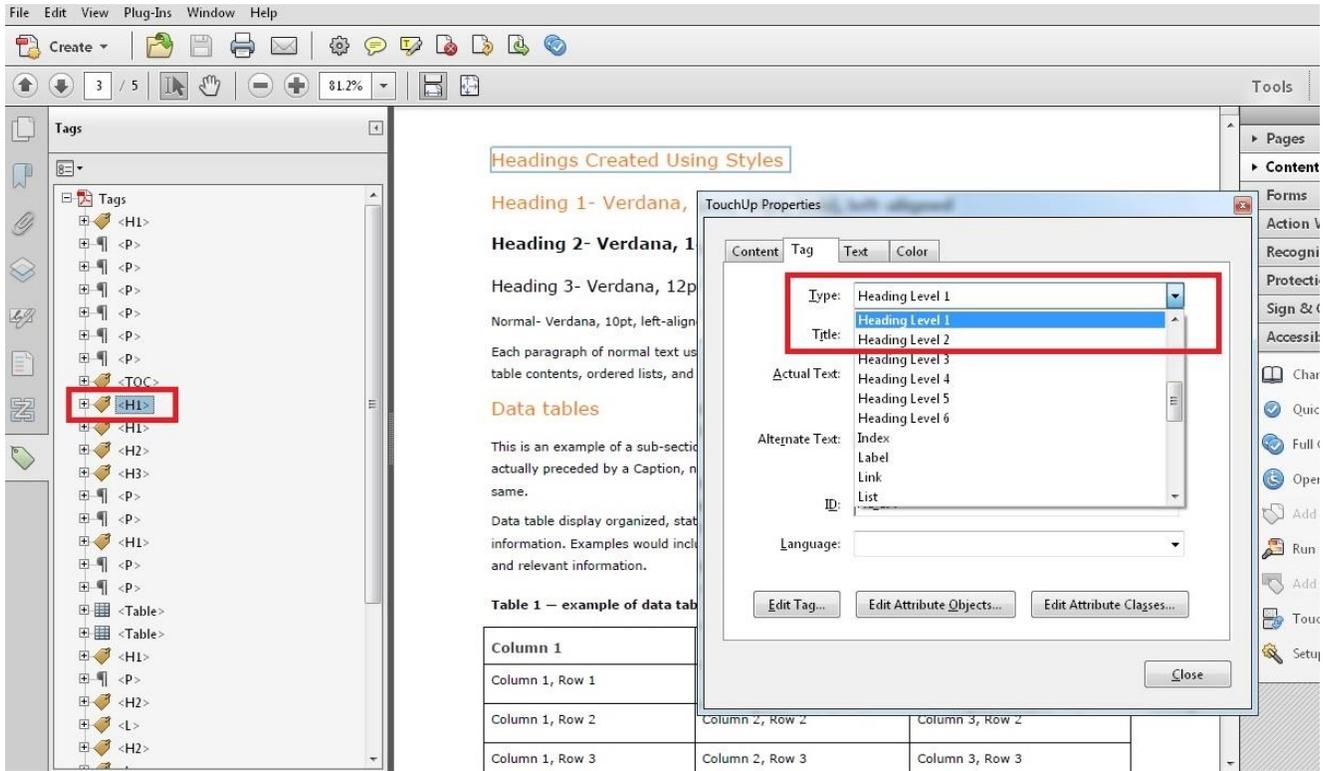
There are options to add a New Tag as well as Delete existing tags. It is helpful to keep the Highlight Content option checked, as this highlights the content element in the center pane when its associated tag is selected.

If you need to change the properties of an individual tag, open the Properties dialog box through the shortcut menu. This is useful if an element is tagged incorrectly. Simply select a tag, open the shortcut menu, and click the Properties option. From here, click the Tag tab; you can use the Type drop-down menu to select the appropriate tag, as shown in **Figure 7** below. On this tab, the kind of tag is determined by the Type dropdown menu. You can select a more correct Type for a given tag here.

You can type directly into the Type dropdown menu field; however, ensure that your entry is capitalized.

If you are handling an image, the Tag tab is also where the Alternate Text field is located. Ensure that all images have appropriate alternative text.

Figure 7: From the shortcut menu, open the Properties dialog box to choose a different tag Type.



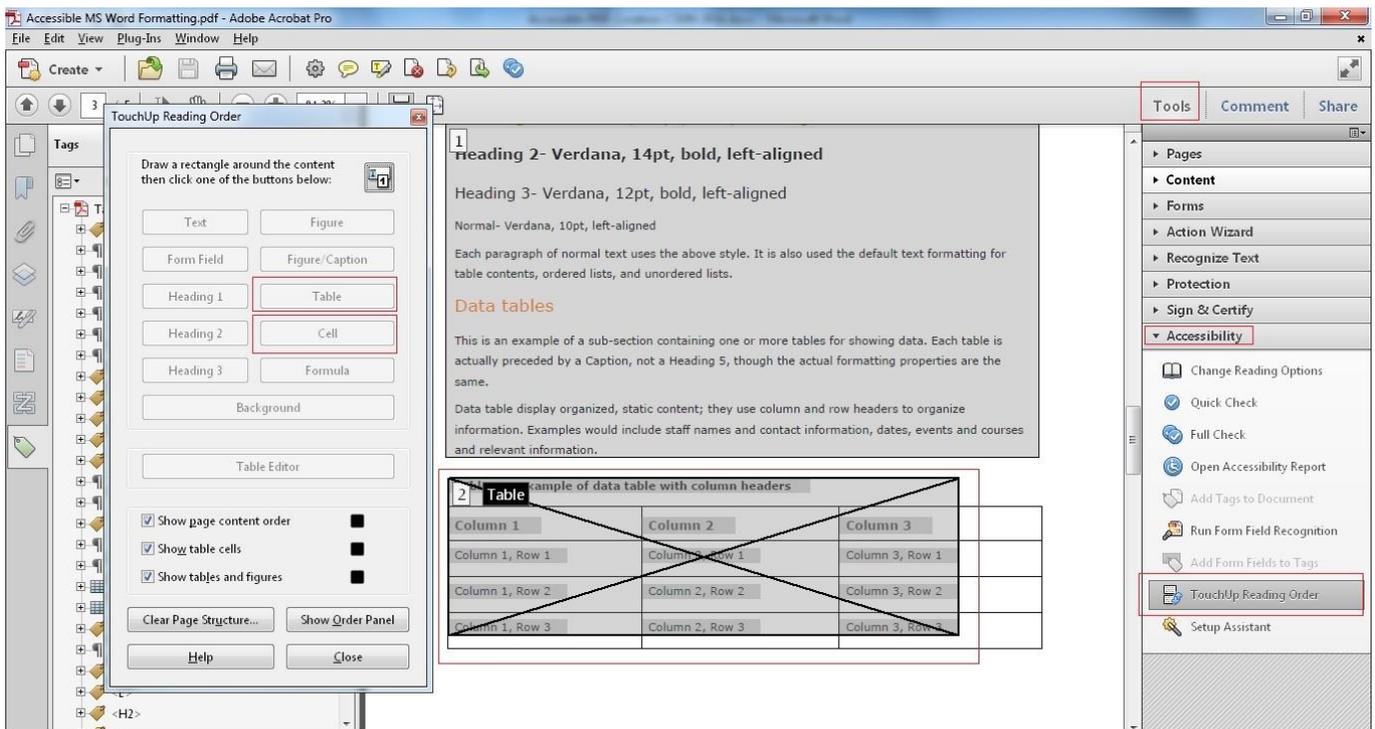
TouchUp Reading Order Tool

If the document is untagged, or if the existing tag structure is obviously incorrect, it may be necessary to use the "broad swath" approach of the TouchUp Reading Order Tool. Open the right-hand **Tools** pane, expand the **Accessibility** tab and click the **TouchUp Reading Order Tool** button. **Figure 8** demonstrates this process. Once the Tool is open, any areas containing tags are highlighted with a grey, numbered box. These boxes contain one or multiple tags. Any untagged content will not be displayed in a box. To use the Tool, simply click-and-drag over an area to create the grey highlighting box and select an appropriate button to create a tag.

Sometimes the boxes do not accurately represent the tag structure visually. Also note that, in Figure 8, the lower box does not cover the complete table. In fact, the table is correctly and completely tagged, but only by visually examining the Tags pane or running an accessibility checker can we confirm this.

When marking a data table, take care to capture not only the table exterior, but also each of the regular cells and the header cells. This will be discussed in more detail below.

Figure 8: From the Tools panel, open the TouchUp Reading Order Tool.



Data Tables

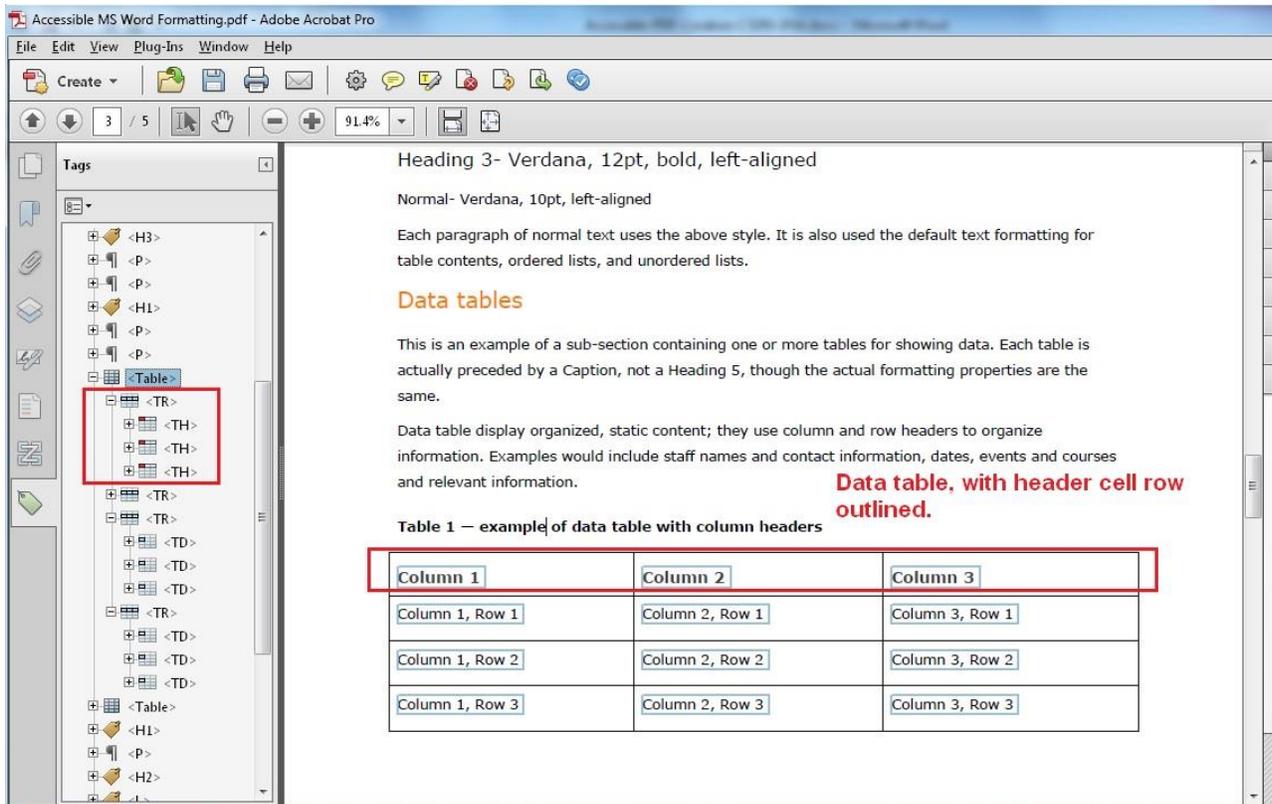
Data tables need to be organized by type of cell so that screen readers can navigate them.

- **Data cells** contain the actual data, which as described earlier in this guide, is the purpose of the table.
- **Header cells** (or "headers") are usually the first cells at the top of columns or the start of rows and define and categorize the data in regular cells. Some tables may have more than one row or column of header cells. Screen readers will read every header that applies to a given cell before reading the cell data itself.

Table formatting usually informs us what the headers are and where they are located. Acrobat organizes cells into Table Rows (TR). Ensure that each row contains the correct headers and data cells by comparing the tags pane to the visual reading order.

1. Ensure that all header cells are identified with the Table Header (TH) tag.
2. All remaining non-header cells should be marked with the Table Data (TD) cell tag.

Figure 9: A data table split into rows (TR) containing header cells (TH) and data cells (TD).



Lists

As with MS Word, lists in PDFs include both the ordered ("numbered") and unordered ("bullet point") types. If lists were created correctly in the initial document, the list should already be properly structured upon conversion to PDF. If not, they will need remediation in the Tags pane in accordance with the following structure.

- All lists reside in an L tag in the Tags pane.
 - The L tag is a parent to one or more LI (list item) tags nesting inside.
 - Each LI tag itself contains two child tags:
 - A label tag (Lbl), containing the list bullet or number.
 - A body tag (LBody) containing the text content of the item.

Lists can be tricky to work with. Often they require changing the tag type in the Properties window or manually dragging and dropping to get the order correct.

Figures (Graphics)

The term used in Adobe Acrobat for all graphic elements is *Figures*. Figures are considered either “meaningful” or “decorative”.

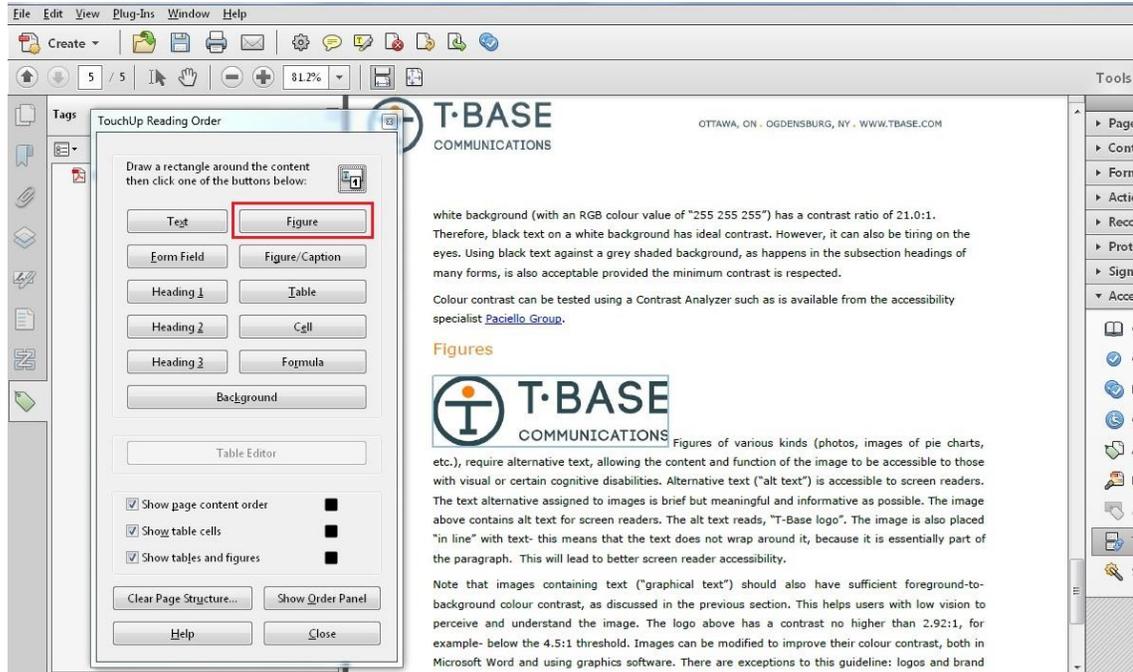
- Meaningful graphics provide information, and this information can be expressed as text (“alternative text” or “alt text”), which screen readers can read. Generally, maps, charts, graphs, photos and logos are examples of meaningful graphics.
- Decorative graphics are simply aesthetic elements, which lack meaningful textual interpretation. They do not have alternative text and will be ignored by screen readers.

This distinction is often subjective. Make the best determination possible as to which category a graphic falls into and assign alternative text based on the surrounding content, the text in the graphic or relevant captions. Shorter alt text is best because older screen readers may skip over long alt text, and there is less of a break from the surrounding content.

Use the **Touch-Up Reading Order Tool** to

1. Click-and-drag to outline each graphic.
2. Click the button for **Figure**.
3. Open the **Properties** panel in the shortcut menu and assign the Alternative Text.

Figure 10: Outline the graphic element then click the Figure button.



Complex graphics (pie charts, flow charts, technical diagrams) may be split into multiple figures.

Any "decorative-only" graphics can be outlined with the **Touch-Up Reading Order Tool** and declared as Background: this renders it as an Artifact, which will be ignored by screen readers (more about Artifacts below).

Artifacts

It is sometimes easy to determine which graphics are decorative and to mark them as Artifacts. However, PDF accessibility checkers, such as PAC2, will often find other surprising elements of a document and notify you that elements have not been tagged as Artifacts. These may include graphic elements in table design as well as solid-colored bars used in page headers and footers. Often these are graphics that have been added as part of the Adobe InDesign process.

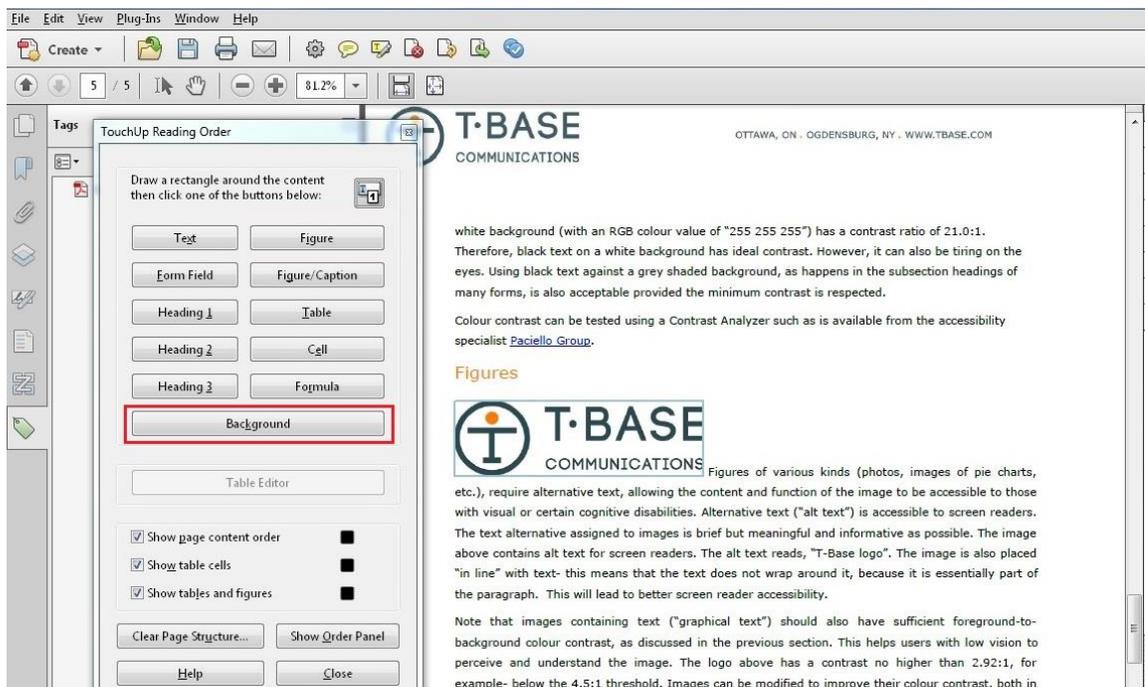
Therefore, tag a document as thoroughly as possible, identifying decorative graphics, and then run an accessibility checker to find less obvious elements. You can then mark these as Artifacts using the Background button on the Touch-Up Reading Order Tool.

As with Figures, use the **Touch-Up Reading Order Tool** to

1. Click-and-drag to outline each graphic.
2. Click the button for **Background** (see **Figure 11** below).

Doing so will remove any tag associated with the graphic in the Tags pane and will ensure that the Content view (more on this below) considers the graphic as an Artifact.

Figure 11: If the graphic is decorative-only, click the Background button in the TouchUp Reading Order Tool.



After Tagging: Content Order and Tab Order

What can be confusing about PDFs is the relationship between the tag order, the content order, and the tab order. Unlike HTML, tags in PDFs only apply to screen readers. By contrast, content order refers to the sequence in which content objects will fall if the document is "reflowed". A "reflowed" document is one with a linearized, one-column view that is beneficial for users who have low vision. Tab order refers to the sequence in which interactive elements, including hyperlinks and form elements, receive browser focus if the user is performing keyboard (or "tab") navigation. Users with vision or mobility disabilities may not be able to use

a mouse to navigation through documents and applications. They will instead rely on keyboard commands, particularly the Tab key to jump to interactive elements such as hyperlinks, form fields and controls. But Tabbing through the document may be difficult and confusing if the tab order is not set to follow the document reading structure.

So aside from adding tags and ensuring they fall into the correct sequence in the Tags pane, ensure that the content order and the tab order are congruent. This way, the screen reader-accessible tags, the content objects, and the tabbing navigation throughout the document will be consistent with each other, ensuring the document has the same sequence regardless of who is reading it—people who are blind or have low vision using screen readers or people who have low vision using screen magnification.

After the document has been tagged, review the content order by following these steps:

1. Open the **Content** pane.
2. Expand all the content sections, and step through them using the arrow keys.
3. Ensure they follow the same logical progression as in the Tags pane.
4. If anything needs to be changed, the same options as in the Tags pane are available: drag-and-drop and the shortcut menu options to cut, paste, and alter properties.

See **Figure 12** below for an illustration.

Note: For this step, we recommend saving your document often, and, to be extra careful, save a new version before following the instructions below, as the measures described herein cannot be undone. Be sure of the step you want to take *before* you take it, and check that any content you want to see has not disappeared once you've taken a step. If this occurs, you may need to close the document **without** saving and re-open it from the last save point.

Now, set the tab order so that it uses the document structure as follows:

1. Open the **Page Thumbnails** pane.
2. Click on each page in turn.
3. After selecting the page by clicking, open the **Options** menu and click **Page Properties**.
4. Set the **Tab Order** to the **Use Document Structure** radio button.

See **Figure 13** below for an illustration.

Figure 12: In the Content pane, object order must be the same as the Tag order.

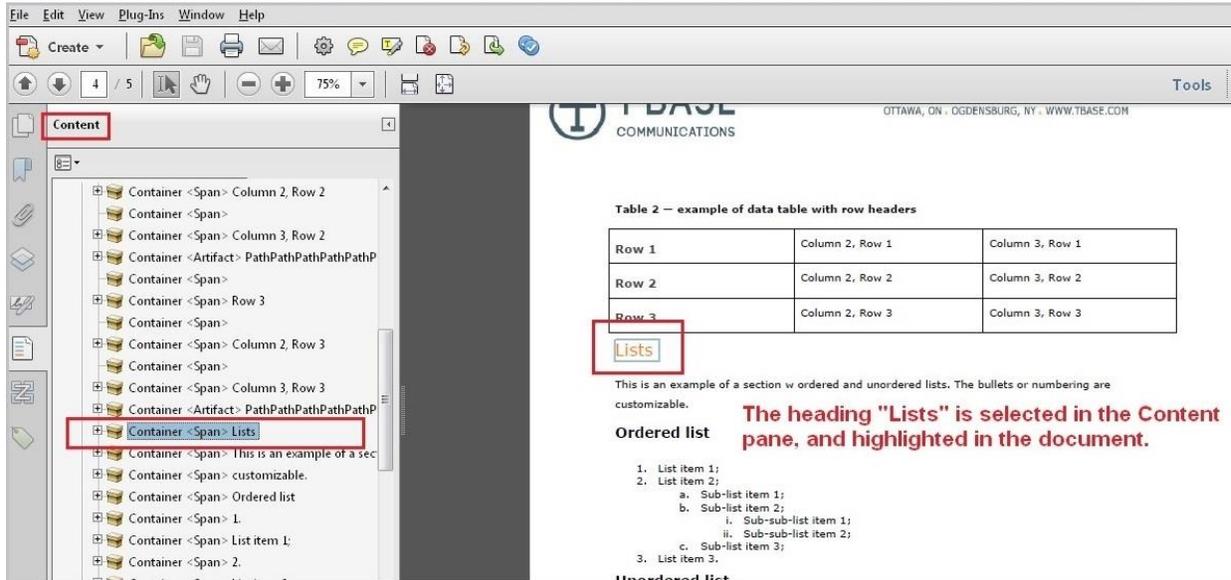
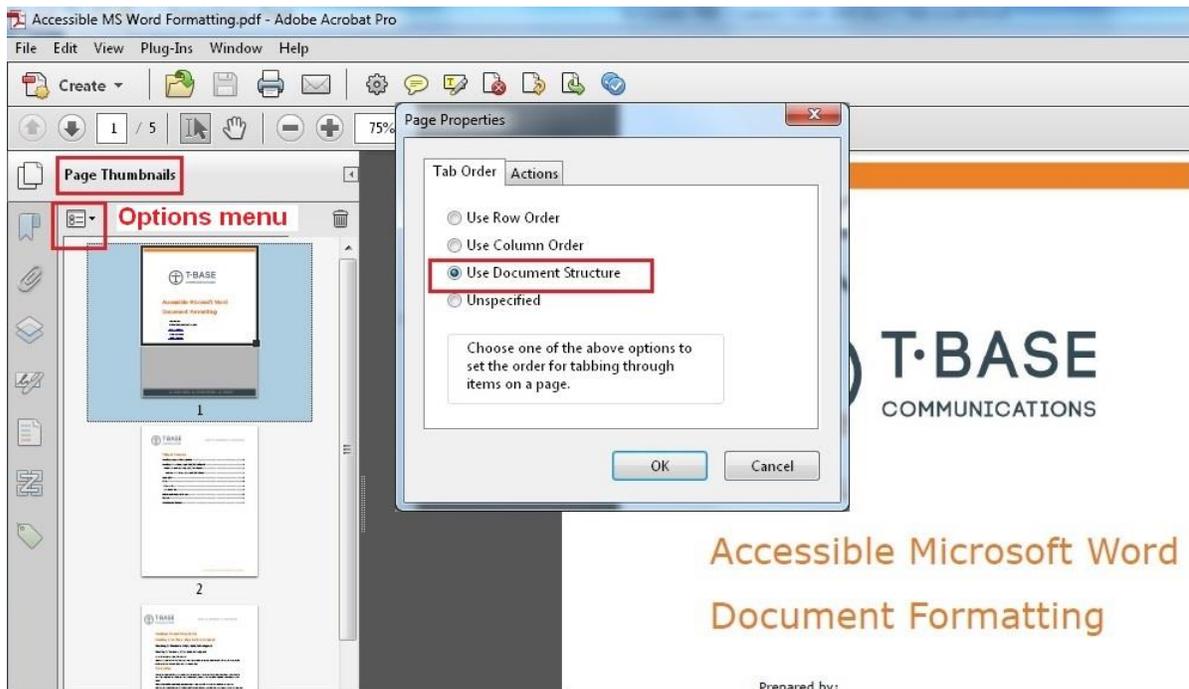


Figure 13: Set Tab Order to Use Document Structure.



Document Properties

Beyond tagging the elements and ensuring the correct tag order, there are steps concerning the document as a whole that you can take to improve accessibility. Among these steps is adding "metadata" to the document, which will help the user search for and identify the document.

Every PDF should have a title. You might find the title in the file name or the first heading of the document. After determining the correct title based on the topic of your document and its content, make it official so it appears in the title bar and will be read by screen readers.

1. Open **File > Properties**.
2. In the **Description** tab, fill out the **Title** field.
3. In the **Initial View** tab, look at the **Window Options** box and set the **Show** field to "Document Title".

Also set the default language so that screen readers will load the correct pronunciation set.

1. Open **File > Properties**.
2. In the **Advanced** tab, look at the **Reading Options** box and set the **Language** field to the appropriate language.

Finally, the PAC2 checker will always register an error unless a PDF/UA identifier is attached to the document, regardless of how well accessibility has been otherwise addressed. Often this identifier is not attached because customers rarely know about it. The identifier can simply be a generic "xmp" file; we have them available for this purpose. How to add the identifier:

1. Open **File > Properties**.
2. In the **Description** tab, click the **Additional Metadata** button, and then select the **Advanced** page on the following screen.
3. Click the **Append All** button, and upload the "xmp" PDF/UA identifier file.

Acrobat Accessibility Check / PAC 2 Checker

At this point, we have taken every proactive step to render the document accessible without actually testing it in the middle of the process. We recommend testing **during** the accessibility process, but for this section we will assume that no checking has happened before the very

end. Even after you have successfully completed all the preceding steps, both checkers may return error messages and state the PDF is not fully accessible. Often this is because there are hidden elements within the document that were not captured by the accessibility conversion process. We have found this to be the case particularly when the document was created in Adobe InDesign—as mentioned in the section on Artifacts.

We will consider two accessibility checking tools:

- the Accessibility Check built into Acrobat; and
- the PDF Accessibility Checker (PAC 2).

The Accessibility Check in Acrobat (earlier versions have both "Quick" and "Full" check options: always choose the "Full" check) is handy because it checks on the criteria discussed previously. It functions quickly, and the resulting reports are easy to interpret and address; however, on its own, it is insufficient for checking PDF/UA compliance.

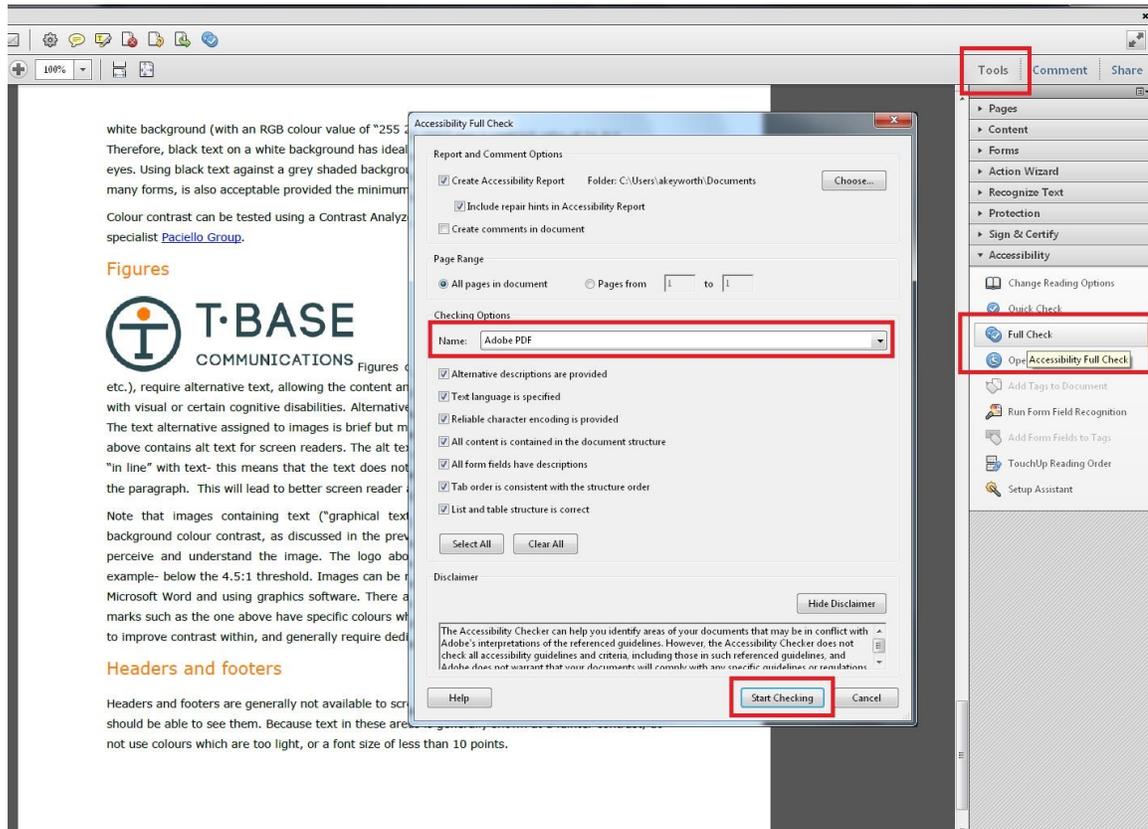
PAC 2 is freely available as a download from the PDF Association and can be downloaded at <http://www.access-for-all.ch/en/pdf-lab/pdf-accessibility-checker-pac.html>. It is a very powerful tool, checking against 31 Checkpoints and 136 Failure Conditions drawn from PDF/UA. It mandates a very high standard of accessibility and can check elements that the Acrobat Check cannot. By contrast, some of the errors it returns are neither easy to understand nor to uncover and remediate.

Acrobat Accessibility Check

Access the Acrobat Accessibility Check and run a report by performing the following steps.

1. Open the **Tools** pane on the right-hand side (see **Figure 14** below).
2. Expand the **Accessibility** tab.
3. Select the option for **Full Check**.
4. Check that the options are correct for your document and click **Start Checking**.

Figure 14: Configure the Accessibility Check and launch the report.



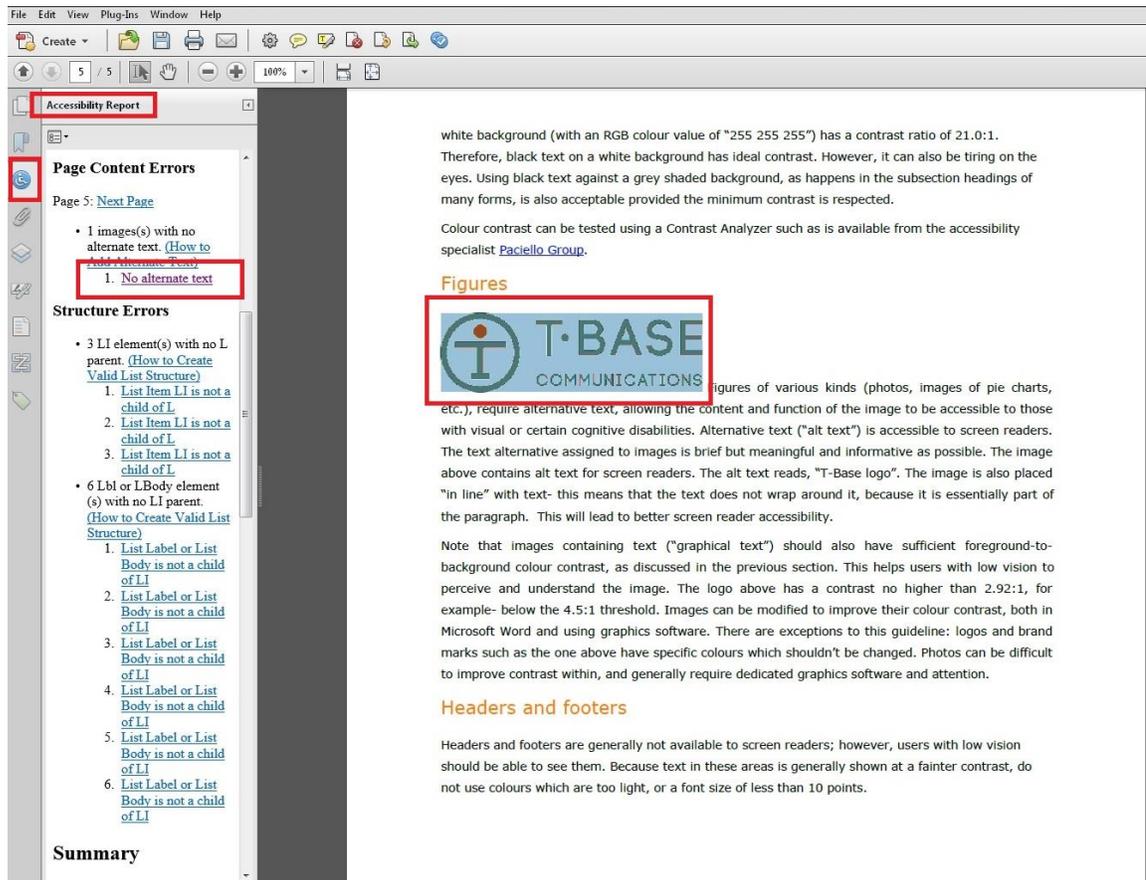
The report will appear to the left of the PDF itself; this is a condensed version, and the actual report is a separate saved file. It organizes the results by page and provides hyperlinks to the specific error. Clicking the hyperlink will highlight the relevant content block (see **Figure 15** overleaf).

You can run the Check as many times as necessary. Often it is best to run it multiple times while creating the PDF and to track as the report gradually clears. **Figure 15** shows several examples of typical Accessibility Check report errors, including the following:

- images without alternate text
- list items (LI tags) without parent lists (L tags)
- list item body tags (LBODY) and labels (Lbl) without parent list items (LI)

Each of these will have to be corrected in the Tags pane.

Figure 15: Clicking a link in the accessibility report will find and highlight the element with an error.

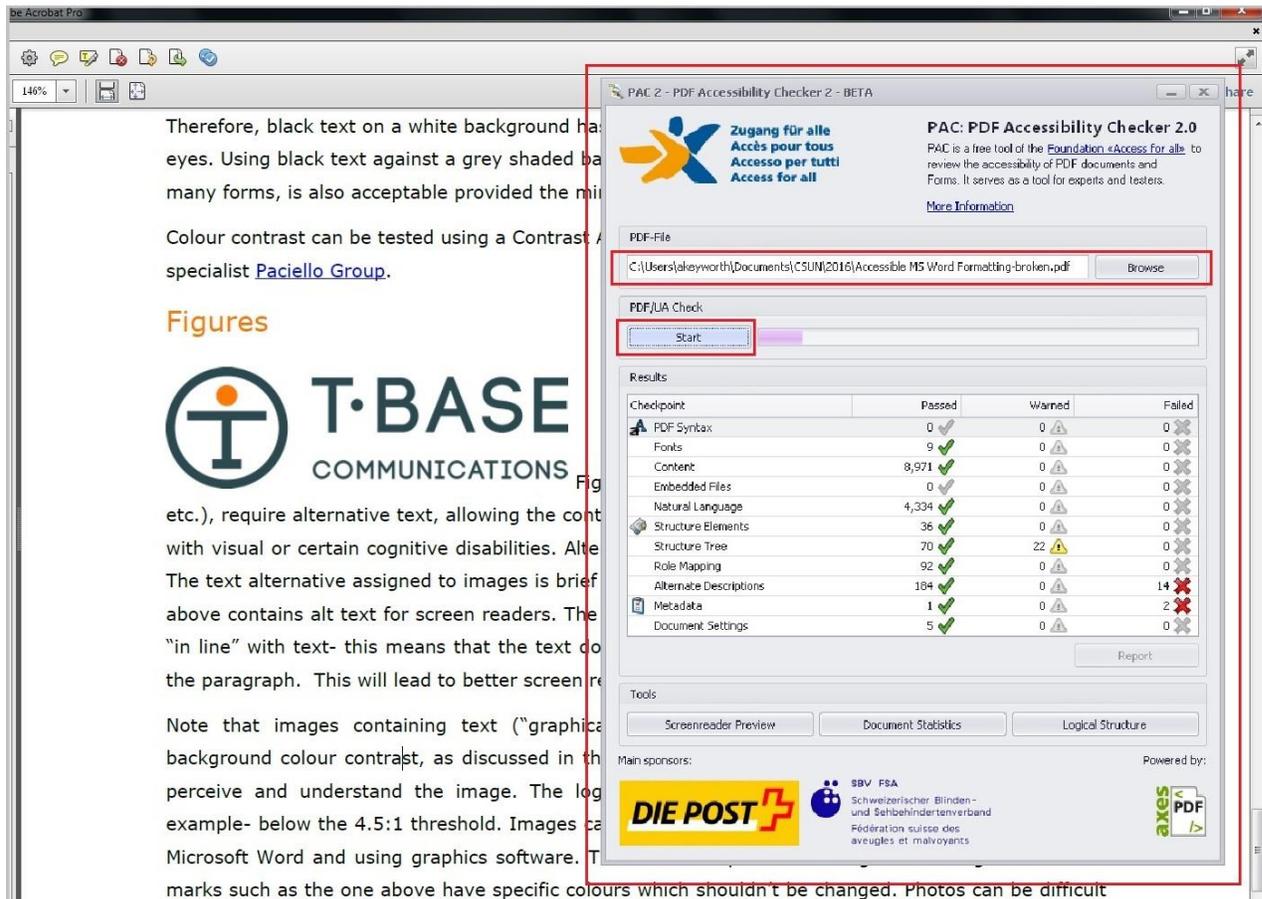


PDF Accessibility Checker (PAC 2)

Once you have downloaded and have access to PAC 2, run a report by performing the following steps.

1. Open the folder it resides in and run the executable.
2. Select the file in the **Browse** box and click the **Start** button.
3. PAC 2 will examine the file; it displays green checkmarks, red x's, and yellow signs for pass, fail, and warnings. **Figure 16** overleaf shows the check in progress.
4. Once the check is complete, click the **Report** button to see the expandable detail view. **Figure 17** below shows how the report displays errors.

Figure 16: The PAC 2 interface: simply select the file to check and click Start.



Tracking down the remaining issues usually involves opening the left-hand Content pane (not the accessibility Tags pane) and finding any elements that have fallen outside of content order.

The checker may return an error message stating that an image was not marked for accessibility, which can be surprising, as you may have already marked images as Artifacts. When an Artifact is created by way of using the Touch-Up Reading Order Tool to draw a box around an element and clicking Background, that object disappears from the Tags pane—it moves into the background, specifically in an Artifact located in the Content pane. But even then the ordering may be askew, as happens with marking up form fields with accessibility tags.

1. Open the Content pane, and cross-reference the error found in the checker with the same location in the Content pane.
2. You may find that pieces of the graphic have fallen outside of the Artifact. By drag-and-drop or cut-and-paste, place these pieces inside the Artifact. Do this and re-check as needed, until the error in the checker disappears.

Alternately, the checker may display a message saying that text content was not marked for accessibility. This usually refers to blank non-breaking spaces, which were accidentally entered into table cells or other structures.

1. Again, open the Content pane, and cross-reference the error found in the checker with the same location in the Content pane.
2. Usually you will find an expandable reference that resembles this: "Text:", and which has no content. Simply delete these, as they have no value. Do this and re-check as needed until the error in the checker disappears.

By alternately running a checker to generate a report, then correcting an error and running the checker again, there will be fewer errors returned and eventually the report will be clean. At this point, the document can be considered compliant with the requirements of PDF/UA.

data) to represent each content part. When the document converts to PDF, it will more likely be accurately tagged automatically.

After the PDF is created pay careful attention to the tagging structure, it is important to ensure that you also consider the document properties, content object order and tag order. A tagged document does not automatically equal a completed document. Ensure the tags themselves are logical and properly ordered. Test the document frequently using the checking tools, and be aware that they are sensitive to different things.

Even with this approach, there is room for interpretation and imagination when it comes to accessible PDFs. If the document has relatively little text but is laid out like an org chart, for example, you may need to be a bit creative so the document makes sense to a screen reader user. This is part of the reason testing with a screen reader is so important.

Lastly, the goal is not abstract compliance, but rather enhancing accessibility where it matters most: for people, customers, and the public. There is a lot to learn about accessible PDFs as the technologies constantly change and evolve. But the goal is to make alternate format documents better and to make them more usable for everyone. Any step toward that goal is worthwhile.