CHAPTER

23

Creating Accessibility and Tagging PDF Files

Adobe Acrobat is compliant with U.S. federal code regulating document accessibility for vision- and motion-challenged persons. This means that screen readers can intelligently interpret the PDFs you create; in other words, PDF files can be read aloud in a reading order as a sighted person would read a document. Through an extensive set of keyboard shortcuts available in Acrobat, almost anyone with vision or motion challenges can share your documents and read them.

In order for a document to be accessible, you must use authoring applications capable of delivering a document's structure to Acrobat. Hence, you need to know something about the internal structure of documents and what programs to use to create the structure required by Acrobat to make a document accessible. Not all the content in a document travels through the PDF creation process with information necessary to make a document completely accessible. Therefore, you need to perform some work in Acrobat to either add accessibility or to polish up a document for delivery to a screen reader in a form that makes sense to the user. In this chapter, I cover how to make documents accessible from authoring programs, as well as how to use Acrobat tools to make existing documents accessible.

IN THIS CHAPTER

Making documents accessible

Working with tags

Changing views for accessible documents

Creating Accessible Documents

The terms "document accessibility," "structure," and "tagged PDFs" may be a mystery to you. If the term "accessibility" is new, then you need to begin with an understanding of what accessible documents are before working with them. After you know more about document accessibility,

you can move forward to look at how to create an accessible document, and then look at how you can edit accessible documents. Therefore, the three areas to work with are understanding accessibility, creating accessible documents from authoring programs, and finally, working with accessible documents in Acrobat.

Understanding accessibility

Sighted people can view a document on the computer or read a printed page and easily discern the difference between titles, subtitles, columns, graphic images, graphic elements, and so on. With regard to Acrobat PDFs, you can easily see the difference between background designs, button links, bookmarks, animation, and form fields, and you typically see visual clues to know where buttons and fields exist.

With regard to screen-reading devices, which depend on software to generate audio output from an Acrobat PDF file, the software readers aren't intelligent enough to distinguish differences based on visual clues. For example, a screen reader may interpret a three-columned document as one continuous column and read the text from left to right across all three columns row by row. Obviously the output is useless to the end user working with a screen reader. Screen readers interpret headings, subheadings, and tables the same as body copy, and they offer no distinction in the structure unless the screen reader software has some clue that these items are different from the body text.

Screen Readers

I use the term "screen reader" extensively in this chapter. When I use this term, I'm referring to tools created by third parties to read open documents aloud in Acrobat and other programs or from files in various formats saved to disk.

Screen readers range in price from $99 to over $1,000. The advantage of using third-party products with Acrobat PDF files is that they can read aloud single words as well as spell out words character by character. Through keyboard controls, users choose reading rates, audio output levels, voices, and navigation.

Screen readers are typically software programs installed on either Mac OS or Windows. More programs support Windows than Mac operating systems, but developers have been increasing their support for both platforms. The most popular screen reader used today is Freedom Scientific JAWS for Windows. Version 4.5 and later is also compatible with Flash Player 6 and later. In past years, PDF documents were not supported by many developers. Today, much more support exists for reading PDF documents with the Adobe Reader software.

For a complete list of screen readers that have been tested with Acrobat, log on to Adobe's Web site at `www.adobe.com/accessibility`. From Adobe's Web page you'll find URL links to vendor sites as well as general information about accessibility.

Some authoring programs provide you with an opportunity when creating the PDF file to retain the underlying structure of a document in the resulting PDF file. With a series of tags and retention of the document structure, screen readers use alternate text to make distinctions in the document much like the visual user would interpret a page. The document flow, alternate text for graphic elements, distinctions between headings, and so on can all be managed in Acrobat when the internal document structural tree is included in the PDF export. When files are not exported with the document structure, you can use Acrobat commands to add structure to PDFs. In order to make it possible for people with screen readers to navigate your PDF documents correctly, the underlying structure must be present.

PDF files fall into three categories when you are talking about a document's structure:

- **Unstructured PDF files.** Unstructured PDF documents could not be interpreted by screen readers with complete document integrity in earlier versions of Acrobat. For example, when you exported the PDF to other formats such as a Rich Text Format (RTF), the basic paragraph structure was preserved, but tables, lists, and some text formatting were lost. In Acrobat 8 and above, unstructured documents can be interpreted by screen readers with accuracy. What remains as an unstructured document when using Acrobat 8 and 9 are image files converted to PDF such as scanned documents. These files clearly are not structured.
- **Structured PDF files.** Structured PDF files can be read by screen readers, but the reliability is much less than the next category of tagged PDF documents. When you export structured PDF files to other formats, more structural content is preserved, but tables and lists can be lost. Additionally, structured documents, such as the unstructured documents discussed previously, do not support text reflows for different-sized devices.
- **Tagged PDF files.** Tagged PDFs contain both the document structure and a hierarchical structure tree where all the internal structure about the document's content is interpreted. Tagged PDFs have the highest reliability when you're repurposing files for screen reader output and saving files in other formats such as RTF, HTML, XHTML, and XML. In addition, tagged PDF files support text reflow for viewing on different-sized screens and devices and accommodate any zoom level on a monitor.

Cross-Reference

For more information on exporting PDF content, see Chapter 9. For more on document structure, see "Understanding Structure" in this chapter. ■

Note

Structured documents were introduced with Acrobat 4 (PDF 1.3) and tagged documents were introduced with Acrobat 5 (PDF 1.4). PDFs created prior to version 1.3 had no document structure, and PDFs created before version 1.4 could not be tagged. With later versions of Acrobat, document structure and tagging could be added to these PDFs from within Acrobat. ■

The goal for you when creating PDF documents for accessibility is to be certain you use PDF documents that are not only structured but also tagged. After you create tagged PDFs, you can work with the structure tree and modify the contents for optimum use. In terms of making Acrobat PDFs accessible, you must consider several criteria to optimize files for effective handling by screen readers:

- **Assessing accessibility.** Fortunately, Acrobat provides tools for determining whether a PDF file is an accessible document. As a first order of business you should plan on assessing a file for accessibility. If you work with legacy files or files that are created from authoring programs that don't support the export of the document structure, be certain to make the document accessible before beginning an editing session.

Cross-Reference

For adding accessibility to PDF files from within Acrobat, see the section "Making existing PDFs accessible" later in this chapter. ■

- **Logical reading order.** The text should follow a logical flow. You need to properly define column text in terms of the path that a screen reader follows (that is, down one column, then begin at the top of the second column, and so on). You should also mark headings and subheadings for distinction.
- **Alternative text descriptions for image and graphic elements.** Those familiar with HTML know that you can code an HTML document with alternate tags so users with text-only browsers can understand the structure of Web pages. The same principle for accessible documents applies. Alternate text needs to be inserted so the screen reader can interpret graphic elements.
- **Form field descriptions.** Form fields need to be described with text to inform a user with a screen reader that a form field is present.
- **Field tab order.** Setting the logical tab order for fields on a form is important for the visual user. With screen readers it is essential. The logical tab order for fields should be strictly followed.
- **Document security.** If documents are secured with Acrobat security, you must use 128-bit encryption compatible with Acrobat 5 and above. If you use compatibility less than Acrobat 5 or 40-bit encryption, the PDF is rendered inaccessible.
- **Links and interactivity.** Use form fields for link buttons with descriptions so the user knows that another destination or a link action is invoked if he or she selects the field.
- **Document language.** Screen readers typically deliver accessible documents in only one language. To protect your documents against inoperability with new releases, specify a document language when creating accessible PDFs. Document language specification is also important when using tools in Acrobat for checking accessibility.

Cross-Reference

For more information on field tab order, see Chapter 31. For more information on document security, see Chapter 24. For more information on links and interactivity, see Chapter 21. ■

Adding accessibility in authoring applications

Not all authoring programs currently support accessibility. This phenomenon may change with new upgrades to software, so what is said today may change tomorrow. As of this writing the programs offering the best support for document accessibility include Microsoft Word version 2000 or higher, Adobe PageMaker 7.0 or higher, Adobe FrameMaker, Adobe LiveCycle Designer, and Adobe InDesign 2.0 or higher. If you use other authoring applications, you do have the option to make documents accessible with Acrobat Standard and Acrobat Pro, or Acrobat Pro Extended.

When converting Microsoft Word files to PDF, be certain to use the PDFMaker in the Word toolbar or from the Adobe PDF menu in Word. Set up the conversion settings for enabling accessibility and reflow with tagged PDF documents. This option is available in the Settings tab in the Acrobat PDFMaker dialog box. Select the "Enable Accessibility and Reflow with tagged Adobe PDF" check box.

Cross-Reference

For more on creating PDF files with accessibility and tags from Microsoft Office applications, see Chapter 8. ■

When creating documents with text, images, charts, diagrams, and so on, using a professional layout program often works better than a word processor. Adobe InDesign CS is an ideal tool for creating layouts that you need to make accessible. When you design a document for accessibility, be precise about how you add elements on each page. The order in which you lay out documents can have an effect on the order of the exported structure. For example, adding a block of text, and then importing an image, may result in the text appearing first in the structure tree and the image following the text even if you move the elements so the image appears first on the page. The only way to observe the results of how the document structure ultimately converts to PDF is to practice and examine the tags structure tree in Acrobat versus your layouts. You can develop a workflow that minimizes the work in Acrobat to properly create the structure needed for optimum performance when read by a screen reader.

Tip

If you arrange objects in an authoring program like Adobe InDesign and the reading order is not following the viewing order, you can cut either text or images and paste them back into the document. If, for example, an image should be first in the structure tree followed by text, but the order is reversed when you examine the tags in Acrobat, cut the text block and paste it back into the document in InDesign. Recreate the PDF and you'll find the order changed according to the order that the elements were last placed on the page. This method is not always a precise solution for reordering elements, but it can often be used to resolve problems. ■

Making existing PDFs accessible

If you have PDF documents either from legacy files or from files converted from authoring applications that do not support exports to PDF with tags, you can use Acrobat commands to add structure to the document and make the files accessible. The first step is checking a document for accessibility. If the document contains no tags, then you can add tags in Acrobat Standard or Acrobat Pro, or Pro Extended.

Performing a Quick Check

To determine whether a document is accessible, you can perform a Quick Check. In Acrobat Standard or Acrobat Pro, open the Accessibility panel and click Quick Check (or press Shift+Ctrl/⌘+6). In Adobe Reader, click Quick Check in the Accessibility panel (or press Shift+Ctrl/⌘+6). This method of checking the PDF is a quick analysis to determine whether tags exist in the file. When the check is completed, a dialog box opens informing you of the accessibility status. If the document is not accessible, the dialog box message states that the document is not structured and reading problems may occur.

Note

Document accessibility can be checked in Adobe Reader. Making a document accessible, however, requires Acrobat Standard or Acrobat Pro. ■

Performing a Full Check (Acrobat Pro only)

Acrobat Pro offers you a more sophisticated analysis, where more file attributes are checked and a report is created either in a file or by adding comments to the open PDF document, or both. To use the Full Check option, follow these steps.

STEPS: Checking Accessibility in Acrobat Pro

1. **Click Full Check in the Accessibility panel.** The Accessibility Full Check dialog box opens, as shown in Figure 23.1.
2. **Check the box for Create Accessibility Report and Create comments in document.** Checking these boxes creates a report and adds comment notes in the document pertaining to the results of the analysis. All errors found during the check are reported in comment notes.
3. **Select the Checking Options for the items you want to check.** Enable the check boxes in this section for items you want to check. In this example I selected all the check boxes.
4. **When you set all the attributes, click Start Checking**. Acrobat opens a dialog box similar to Figure 23.2, reporting errors if encountered. Click OK to complete the task.

FIGURE 23.1

When you run a Full Check in Acrobat Pro, you can choose options for what content to check.

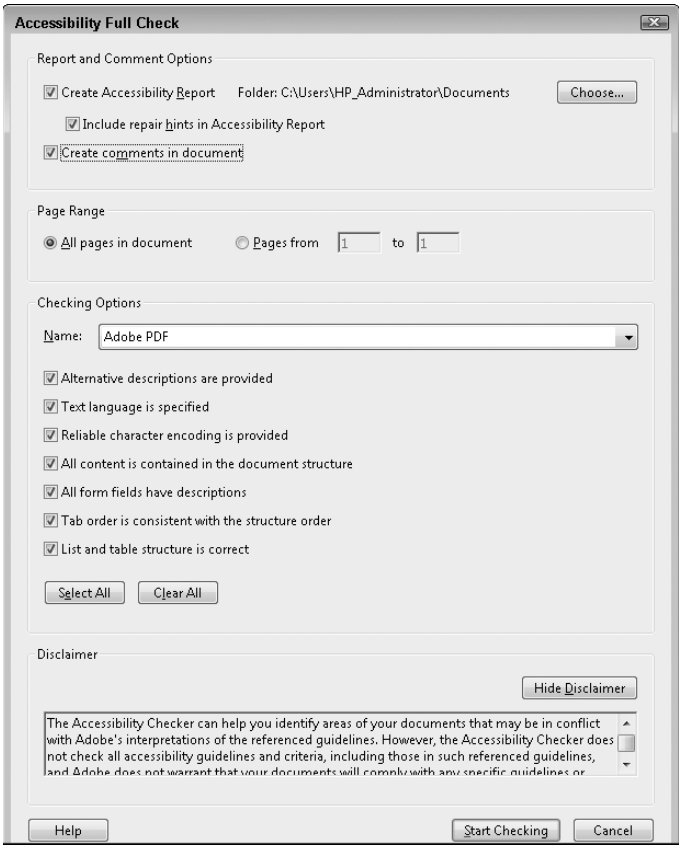
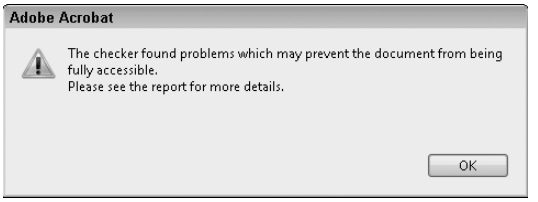


FIGURE 23.2

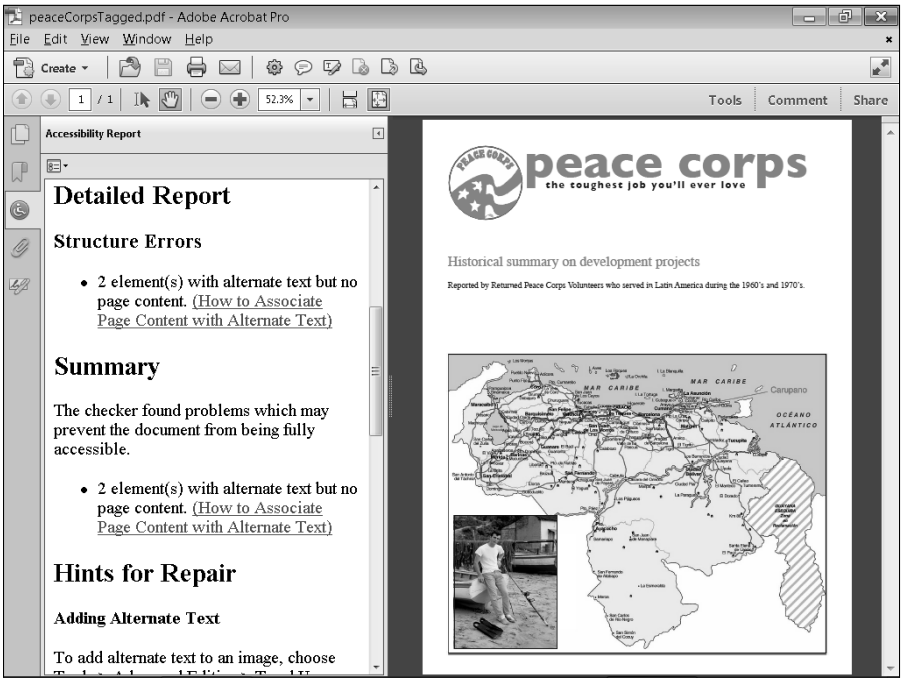
After running the Full Check, the findings are reported in a dialog box.



After completing the check, the Accessibility Report pane opens and displays a more detailed report as shown in Figure 23.3. If you selected Create comments in document, comment notes may appear, reporting problems in untagged documents.

FIGURE 23.3

The Accessibility Report panel (left side of the Acrobat window) shows you a detailed report of the full accessibility check findings.

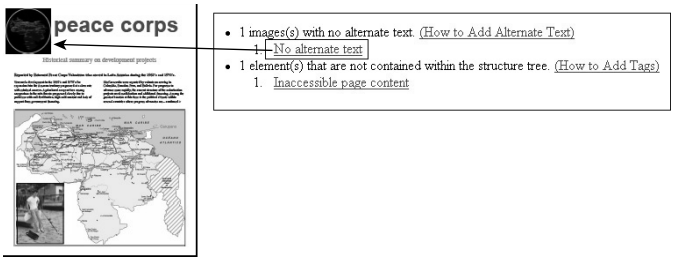


An Accessibility report is also saved to your hard drive in HTML format. If you click the Browse button in the Accessibility Full Check dialog box, you can target a location for the saved report. By default, the report is saved to your My Documents folder (Windows) or your Documents folder (Mac). Open your Web browser and select File Open. Navigate to the folder where the report is found and open the file. The report is displayed in the browser window.

The links in the HTML document link directly to the PDF file and highlight the item associated with the link. Click a link in your Web browser and the PDF file opens in the foreground with the respective item highlighted, as shown in Figure 23.4. You can correct problems by clicking links in the Web browser and correcting the problems in the PDF document.

FIGURE 23.4

Click a link in the Web browser and the referenced item in the PDF is highlighted.



Adding accessibility

Keep in mind you are always best served by adding accessibility at the time a PDF document is created from authoring programs supporting exports to PDF with accessibility and tags. If you have files for which either returning to the authoring program is impractical or the authoring program is incapable of exporting to PDF as tagged files, click Add Tags to Document in the Accessibility panel. Or from the Tags panel in the Navigation pane, select Add Tags to Document from the Options pull-down menu. Immediately after you select the menu command from either Acrobat Standard or Acrobat Professional, a slider bar opens displaying Acrobat's progress in adding tags to the document. After completion, no confirmation dialog box opens to report the status. If problems were encountered while adding the tags, a dialog box opens, reporting the problems found.

After adding the tags, you can return to the Quick Check or Full Check menu command and check the document for accessibility.

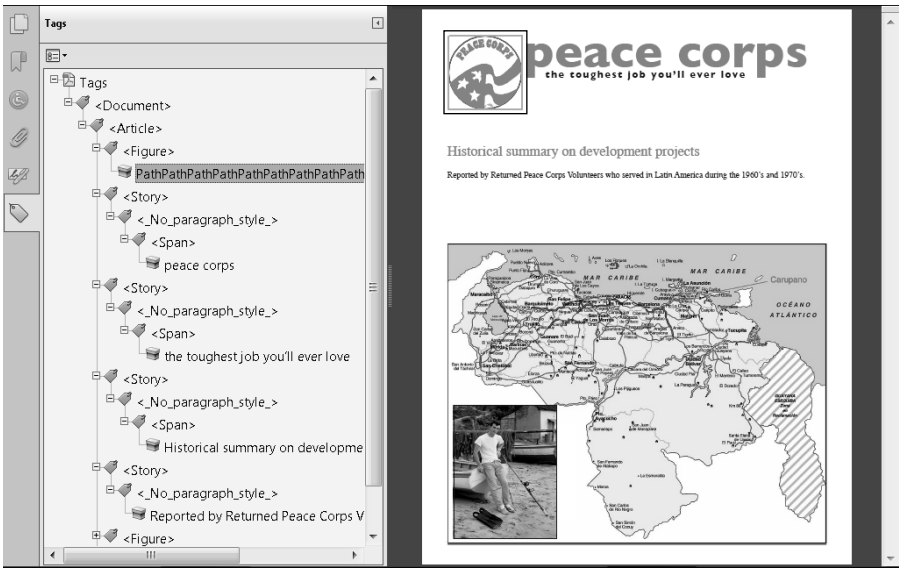
If a file has tags and you click Add Tags to Document in the Accessibility panel, Acrobat opens a dialog box informing you that the file already has tags. Adding tags is not permitted using the menu command. If you are unhappy with the current tagging, you can remove all tags from the document, and then reapply with this method. To remove all tags, open the Tags panel in the Navigation pane. Select the topmost tag (typically labeled "Tags") and select Delete Tag from the Options drop-down menu.

Understanding Structure

To understand more clearly the need for creating accessibility and adding tags to a document, look at Figure 23.5 as an example. This document contains several items that need attention to make the file accessible and comprehensible when read by a screen reader.

FIGURE 23.5

A document with images, illustrations, and text in multiple columns needs to have the structure modified for proper reading by a screen reader.



In Figure 23.5, the items of importance in terms of accessibility include the following:

- **The first element on the page is a logo.** A screen reader won't interpret the logo unless you add some alternate text to the document describing the object. Adjacent to the logo on the right side is text that a screen reader can read after you make the document accessible. If the text does not read properly, the two lines of text need to be modified for the proper interpretation by the screen reader.
- **The two lines of text are in a single column.** These lines should be read in logical order without any problems. They are shown here to illustrate the difference between the two lines and the two columns following.
- **The text is blocked in two columns.** Unless the structure is established for the screen reader to read down one column before moving to the second column, the screen reader defaults at a left-to-right reading order, reading across both columns.
- **Item four is a large map.** Alternate text for the illustration is needed for the screen reader to explain what graphic appears on the page.
- **Item five is an inset photo.** The alternate text for the map can describe the photo, or the photo can have an alternate text description. Either way, you need to create the alternate text for the screen reader to fully interpret the graphics.

When you export to PDF from authoring programs with tags, the structure of the document for the blocks of text in logical reading orders is preserved. In the example in Figure 23.5, the

single and double-column text is typically not a problem when the file is read by a screen reader. Images, however, need some form of manual editing. Even the best source exporting with tags wouldn't be able to describe the visual elements in the layout. These are subjective items that need a description.

If using a program such as Microsoft Word, you can add alternate text in Word before the file is exported to PDF. In other applications you need to create the alternate text in Acrobat.

Using the Tags panel

When you export a document from an authoring program with tags or use the Add Tags to Document menu command, a *structure tree* is created in the PDF file. The structure tree is a hierarchical order of the elements contained in the file. Elements may be in the form of heads, subheads, body text, figures, tables, annotations, and other items identified as separate individual structural elements. The hierarchy contains a nested order of the elements with parent/child relationships. A heading, for example, may have a subhead. The heading in this case is a parent element with the subheading a child element.

When a document contains tags, you view the tag elements and the structure tree in the Tags panel. Open the Tags panel and click the top item. By default, you see an icon labeled Tags with a plus (+) (Windows) or right-pointing arrow (Mac) symbol adjacent to it. Click the symbol and you open the tree at one level. Other child elements are nested below.

The Tags panel may have an extensive list of elements depending on your document length and complexity. If you want to edit an element or find it in the document, you need some help from Acrobat to find out exactly what tag in the Tags panel is related to what element on a given page. The help comes in the form of a menu command in the Tags panel. Click the down-pointing arrow adjacent to Options in the Tags panel and select Highlight Content. The content is highlighted as shown earlier in Figure 23.5.

When you return to the structure tree, the items you select are highlighted on the respective elements on pages in the Document pane. Click an element and Acrobat navigates to the page where the content is located. The object is highlighted with a keyline border, as shown in Figure 23.5.

Adding alternate text

In the example in Figure 23.5, the logo appearing at the top of the page is an image file. When a screen reader reads the document, no specific instructions are contained in the document to interpret this image. As an option, you can create alternate text so a visually challenged person knows a graphic element exists on the page. To add alternate text in a tagged PDF document, follow these steps.

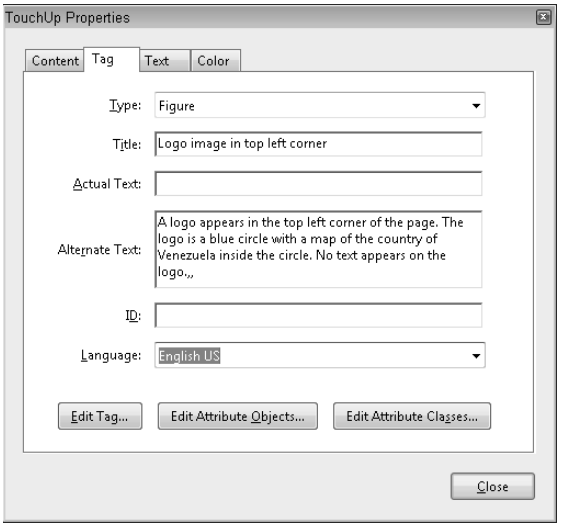
STEPS: Adding Alternate Text to Tagged Elements

1. **Open a tagged PDF file.** Or add tags to a document. Open the Tags panel in the Navigation pane. Note: If the Tags panel is not available in the Navigation pane, choose View➪Show/Hide➪Navigation Panes➪Tags to open the Tags panel.

2. **Open the structure tree.** Click the Tags Root icon to the left of the text. On Windows a plus (+) symbol appears adjacent to the text. On the Mac, a right-pointing arrow appears next to the text. Clicking the icon opens the tags tree.
3. **Select Highlight Content.** If you haven't selected the menu command for highlighting content, open the Options palette in the Tags panel and select Highlight Content.
4. **Find the element for which the alternate text is to be added.** In this example, the figure below the second paragraph (<P>) was selected. When you click the Figure tag, the logo at the top-left corner of the page is highlighted. Alternately, you can also select the TouchUp Object tool, click an object on the page, and select Find Tag from Selection from the Tags palette Options pull-down menu.
5. **Open the element's properties.** Select the Edit Object tool in the Content panel. Click the element and open a context menu. Select Properties from the menu options.
6. **Add alternate text.** Click the Tags panel. Add a title for the tag by typing a title in the Title field box. The title is not necessary for, nor read by, the screen reader. Add the text you want the screen reader to read out loud in the Alternate Text field. Select the drop-down menu for Language and select a language. The edits made in this example are shown in Figure 23.6.

FIGURE 23.6

Fill in the fields for a title and alternate text, and select a language in the TouchUp Properties dialog box.



7. **Close the TouchUp Properties dialog box.**

Using the Content tab

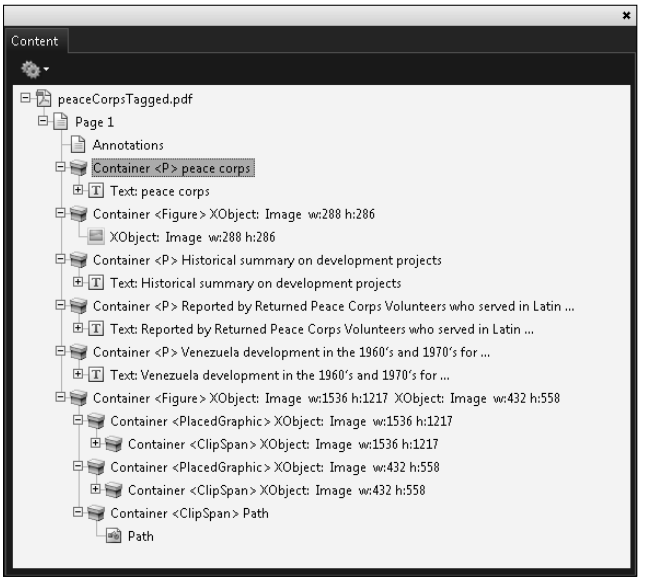
The Content tab contains a hierarchical list of the objects in the PDF file. Objects are listed in the order in which they appear on the page, similar to the logical structure tree in the Tags panel. Choose View➪Show/Hide➪Navigation Panes➪Content and you see a view similar to Figure 23.7. Click an object and move it up or down to change the order of the objects.

The Content tab can be helpful when you want to navigate to and highlight a content item listed in the tab. Click an item such as a text item or figure and the page appears in the Document pane with the respective item selected.

In addition to physically reordering objects, a number of menu commands are available from the Options pull-down menu. Among the menu commands is an option to create a New Container. Notice in Figure 23.5 that all the tags are nested within containers. You can select a tag and select New Container to add alternate text to any area in the document.

FIGURE 23.7

Click objects and drag up or down to reorder the objects in the Content pane.



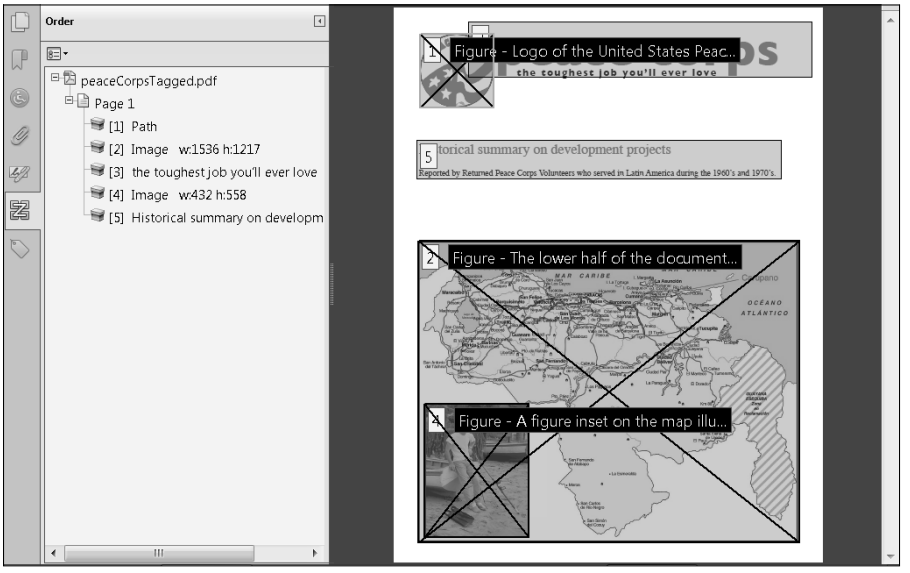
Using the Order tab

You use the Order tab to correct reading order problems. After you create a tagged PDF document, Acrobat infers the reading order from the document structure. You may need to change the order for text and images to create a more logical flow in the document.

You use the Order tab in the navigation Pane in conjunction with the TouchUp Reading Order tool in the Accessibility panel. Select the tool and open the Order tab by choosing View➪ Show/Hide➪ Navigation Panes➪ Order. Acrobat lists the reading order of the elements according to page as shown in Figure 23.8. To reorder the elements or regions, click and drag a tag up or down to change the reading order. Each tagged object is numbered on a page indicating the order the tags are read. From the Touchup Reading Order dialog box you can change the attributes of tags and renumber them to change the reading order. Figure 23.8 shows the tagged elements and the reading order defined by numbers adjacent to each tagged object.

FIGURE 23.8

To change reading order, click and drag tags up or down in the Order tab.



Checking accessible tags

You can check your work easily in Acrobat by having Acrobat read the document. Choose View➪ Read Out Loud➪ Activate Read Out Loud. Return to the same menu and choose Read This Page Only. The default text-to-speech voice installed on your computer reads the text as a screen reader would interpret it. If you prepare files for screen readers, you can use Acrobat's built-in reading engine to read aloud the text in the document and the alternate tags you add to the file.

Although the Read Out Loud menu command is not intended to replace screen readers, the feature in all Acrobat viewers offers you a good means for checking files that meet accessible standards.

Tip

You can save PDF files as accessible text. Choose File➪Save As➪PDF and select Text (Accessible).txt from the Save as Type (Windows) or Format (Mac) pull-down menu. The saved text is saved in the same reading order as when you read a document aloud. ■

Cross-Reference

For more information on Read Out Loud and controlling voices and reading speeds, see Chapter 5. ■

In addition to using Acrobat's built-in function for reading documents aloud, you can acquire a low-cost plug-in from a third-party developer without purchasing a screen reader. PDFAloud, marketed by textHELP Systems (`www.texthelp.com`), is more robust than Acrobat's Read Out Loud command. With PDFAloud you can read text a word, sentence, or paragraph at a time. The plug-in also offers you synchronized colored highlighting while the text is read.

Viewing Accessible Documents

Some accessibility requirements extend beyond text-to-speech reading. Individuals with assistive devices for visual impairments can view documents when text is zoomed and when text color significantly contrasts with background colors. You can modify the display of documents on your screen by adjusting preferences for Accessibility in the Preferences dialog box, or you can customize viewing by clicking Setup Assistant in the Accessibility panel in Acrobat and Adobe Reader, which opens the Accessibility Setup Assistant dialog box, shown in Figure 23.9.

FIGURE 23.9

The Accessibility Setup Assistant contains options for screen displays and reading orders.

You make attribute choices in a pane and click the Next button to advance through the Accessibility Setup Assistant. You can make choices for color displays, text smoothing, zoom displays, reading orders, and page delivery by moving through the panes. When you finish, these selections will be set in the Accessibility Preferences for you.

Summary

In this chapter, you learned how to check documents for tags and accessibility, add additional tags, and arrange reading orders.

- Screen readers can interpret accessible PDF files and create audio output for people with vision and motion challenges.
- Adobe PDFMaker for Microsoft products, version 2000 or higher, including Word, Excel, Visio, and so on; Adobe PageMaker 7 and higher; and Adobe FrameMaker, Adobe LiveCycle Designer, Adobe InDesign 2.0 and higher are capable of creating tagged and accessible PDF forms.
- You can add tags to PDF documents from a menu command within Acrobat Standard and Acrobat Pro, and Pro Extended.
- You check files for accessibility with the Quick Check command in Adobe Reader, Acrobat Standard, and Acrobat Pro and Pro Extended or with a Full Check in Acrobat Pro and Pro Extended.
- Tagged documents contain a structure tree. Elements in the tree locate respective elements in the document if you enable the Highlight Content menu command.
- You can add alternate text to elements in Acrobat by addressing the element's properties.
- You can make text and background color changes in the Accessibility Preferences dialog box or via the Accessibility Setup Assistant.