



# **Accessible PDF Documents with Adobe Acrobat 8 Professional**



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# Accessible PDF Documents with Adobe Acrobat 8

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## Application

Adobe Acrobat 8 Professional

<http://www.adobe.com/products/acrobatpro/>

## Terminology

### Accessible

Content and/or materials that are functional and usable to individuals with disabilities. With respect to this document, “accessible” and “accessibility” do not relate to the availability of the materials, but rather if it is functional/usable to individuals with disabilities.

### Assistive computer technology

Computer applications that improve the experience for individuals with disabilities to use, maintain, interact, or develop computer-based content. Assistive computer technologies compose a broad spectrum of applications that can include speech recognition, screen-enlargement/magnification, screen-readers, etc.

### Screen-reader

A screen-reader is a type of assistive computer technology used by individuals who are blind or visually-impaired. A screen-reader “reads” the information on the screen to the user, who can control the on-screen focus by various keyboard commands.

### Speech recognition

Speech recognition is a type of assistive computer technology commonly used by individuals who have a mobility impairment or repetitive stress injury. The individual speaks commands or dictation into a microphone, whereby the speech recognition system carries out the command or enters the spoken text.

### Text-to-Speech

Text-to-speech technology allows for the communication of text-based information into audible speech. Text-to-speech technology is a core element within screen-reader applications, but may also be used separately by non-disabled individuals who wish to listen as opposed to visually interacting with content.

## Introduction

Adobe Acrobat provides users with the capability of manipulating, enhancing, and securing PDF documents. With respect to accessibility, Adobe Acrobat includes several tools and options that allow for the creation of accessible PDF

documents from word processing applications (e.g., Microsoft Office, etc.) as well as adding accessibility information to existing PDF documents. Adobe Acrobat 8 now provides improvements to zoning and marking text, adding relevant accessibility information to data tables, and adding tags to existing PDF documents.

## **Word Processing Applications**

Creating accessible PDF documents from word processing applications requires that content authors include the relevant accessibility information during the document authoring process. Upon conversion to a PDF version of the document, the appropriate accessibility information is then added to the file and can be utilized by assistive computer technologies. This is often the easiest method for insuring access is provided in the PDF version of the document in that it does not require the author to examine the PDF document separately and make additional accessibility changes in the PDF version.

Documents that are visually rich in formatting and layout, however, may require the use of specialized layout and design programs as opposed to word processing applications. While it is possible to accomplish some basic layout and formatting in word processing applications, these documents do not always result in accessible PDF versions automatically. If using word processing applications to visually layout and design document content, it will be necessary to assess the PDF version of the document for any accessibility errors.

### ***Strategies for Word Processing Applications***

#### *Headings*

When possible, it is recommended that headings are used to differentiate between sections of text. For example, the title or name of the document may be classified as a Heading 1, whereas a section of content may be classified as a Heading 2. Adding headings results in a structured document that provides several advantages to users. Individuals using assistive computer technology (e.g., screen-readers), would be able to “jump” from heading to heading in the document as opposed to listening to every single passage of text in order to get to the desired content. Similar to a visual user “scanning” the content for the desired information, the use of headings in a document improves accessibility by allowing for non-linear navigation.

#### *Images*

Images provide an opportunity to communicate information in a non-verbal manner. For individuals who are unable to see or visually process such images, this can be a barrier to interacting with the document content. Adding a text description to images is one method to improving the accessibility of the document content such that all users can interact with the materials. One challenge with providing a text description for images is what information should be included so as to communicate the relevant content and/or purpose of the image.

Two resources that can provide guidance and direction to creating usable image descriptions can be found at:

Text Alternatives for Images

<http://jimthatcher.com/webcourse2.htm>

Creating Accessible Images

<http://www.webaim.org/techniques/images/>

## **PDF Accessibility with Acrobat 8**

Documents created from word processing applications, layout and design programs, or other applications that do not create accessible PDF versions, will require additional review and editing of the PDF version in Adobe Acrobat. The additional time to review and integrate accessibility into the PDF version is dependent on a variety of factors, including the application used to create the PDF, the visual formatting and layout complexity of the document itself, and/or the presence of any interactive features in the PDF version. It is generally easier to utilize an authoring application that supports the generation of accessible PDF documents as opposed to making accessibility changes within the PDF document. However, if the original document is not available or the authoring tool does not support PDF accessibility, then it is possible to use Adobe Acrobat to address most accessibility issues in the PDF document.

### **Basic Workflow - AARP**

PDF documents that are not tagged are not necessarily inaccessible. However, if there are any accessibility changes that are needed by the document (e.g., change reading order, identify content headings, add descriptions to images, etc.), then it is necessary to add tags to the PDF document. The following is a sample workflow to consider when addressing PDF accessibility:

1. Add Tags to the PDF
2. Assess Logical Reading Order
3. Repair Content where necessary.
4. Perform Assessment process again

After assessing the logical reading order of the document, the author can utilize the tools available in Adobe Acrobat to manipulate the reading order of text, add or remove content from the reading order, add descriptions to images, reclassify headings, and add accessibility information to data tables. After making the appropriate accessibility modifications to the PDF document, save the PDF file and perform the assessment process again to verify the changes are correct. This is just one sample workflow that can be used to assess and correct the accessibility of PDF documents, and should be modified depending on the needs and organization of the institution.

## ***Adding Tags to a PDF***

A tagged PDF document assists accessibility by providing a mechanism to specify a logical content order. Adding tags to a document allows for additional accessibility retrofitting and content manipulation to occur.

1. Check to ensure the PDF document is not already tagged by checking the document properties (File > Properties) or the Tags panel (View > Navigation Panels > Tags).
2. Choose Advanced from the menu bar.
3. Choose Accessibility > Add Tags to Document. This may take a few minutes depending on the document size.
4. Once tags have been added to the PDF, save a copy of the document to retain the changes.

## ***Assessing Reading Order***

One of the challenges to PDF document accessibility is the presentation of information to the user, or more specifically, the logical order in which the information is presented. It is not enough that the content can simply be read by assistive computer technologies; rather, the focus should be on what order the information is communicated to the user. For example, let a PDF document have two columns of text. Using a screen-reader is one method to assess the logical reading order of the document and the intent would be to verify that the text in the first column is read before the text in the second column. If the individual using the screen-reader is not aware of differences between the spoken text versus the on-screen text, it is possible that the individual would mistake the reading of any text as an indication that the document has readable content. It is necessary for the individual to distinguish between the capability of the assistive computer technology to communicate the text information as opposed to communicating the text information in its proper reading order.

### *Use Assistive Computer Technology*

There are a number of different assistive computer technologies that could be used to review the logical reading order of a PDF document. However, this does make the assumption that the document author has both the assistive computer technologies installed and configured on their computer as well as the skills to use such applications for review.

### *Use Adobe Read Out Loud*

This is a feature that is part of Adobe Acrobat as well as Adobe Reader. It will process one page at a time and, depending on the length of the document, may take a long time to speak the document contents. The Read Out Loud tool can be found under View > Read Out Loud. Once you have activated the Read Out Loud feature, move to the document content to review and choose “Read this Page” or “Read to End of Document”.

## Save As Text (Accessible)

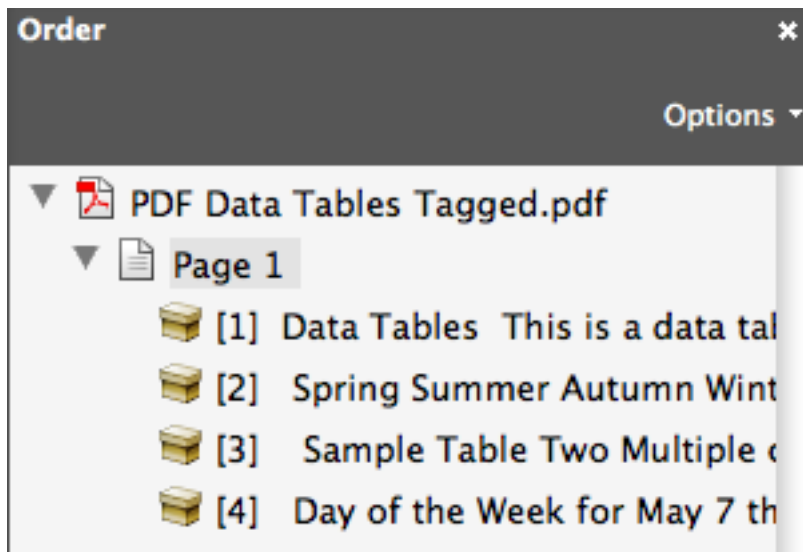
Another method that can be used to assess the reading order of a PDF document is to save the document as a different file type. This will export the text content of the PDF document such that a visual review of the logical reading order may be performed. Instead of “listening” to the document content, this allows an author to visually scan the resulting text file and see if there are any inconsistencies in how the information would be presented auditorily to the user.

1. Press the Export button below the menu bar
2. Choose “More Formats” and then “Text (Accessible)”.
3. Specify where you wish to save the resulting text file.
4. Open the text file and review the document content flow. This provides a close visual approximation as to what an individual using assistive computer technology would hear.
5. Review the text file and PDF document and make the appropriate changes where necessary.

## Repairing Content

### Controlling Reading Order

After adding tags to a PDF document, it is important to verify if the reading order of the document follows a logical progression. This is particularly true if the document contains multi-column layouts, sidebars, footnotes or other content areas that deviate from the general page layout. After adding tags to a PDF, enable the Order panel (View > Navigation Tabs > Order Panel) to view each page’s reading order. Reading order is determined on a page-by-page basis. Content on the page will be “zoned” in gray boxes with a numerical value in the upper left corner of each “zone”. These numerical values and “zones” in the PDF view are the same as those identified in the Order panel.



1. To manipulate the reading order, open the Order panel (View > Navigation Tabs > Order Panel).
2. Click on the box to the left of the numbered content you wish to reorder. Move the selected content higher or lower in the Order panel hierarchy.
3. Content should be read in the numerical order in which it appears in the Order panel.

You may encounter situations where the tagging process was unable to distinguish between multiple columns or other page layout designs. As a result, content may become intermixed resulting in an illogical reading order. It may be necessary to first separate out content areas into distinct zones (e.g., create multiple zones from one large zone) before altering the reading order. While this does increase the number of zones on the page, this will allow the author more control over the actual reading order of the document. Zoning and marking text is explained in the next section.

### *Zoning and Marking Text*

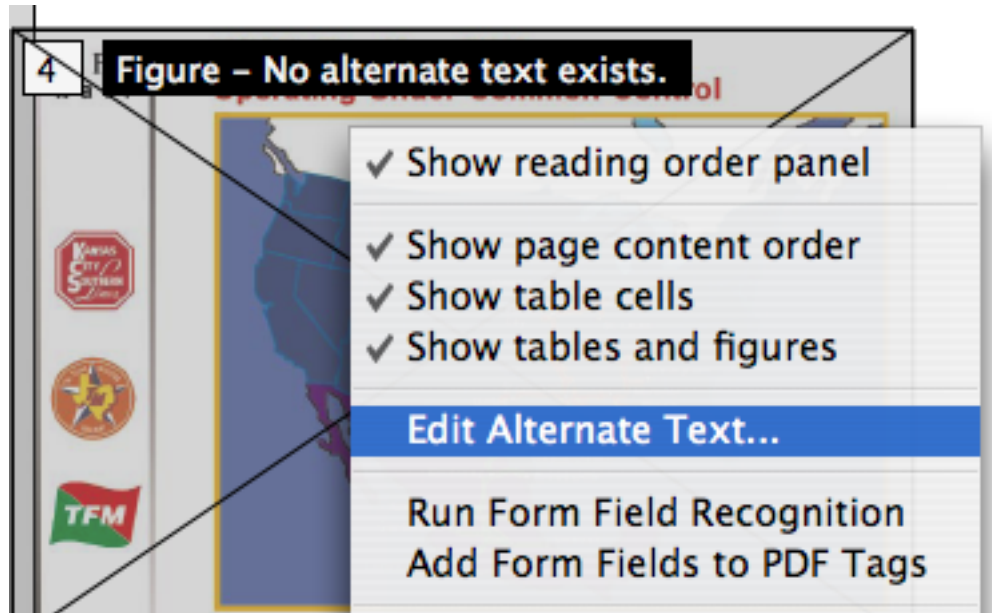
After running the Add Tags to Document function, it may be necessary to manually modify the document content. For example, a two-column document may be recognized incorrectly as one single content zone when in fact it is actually two separate content zones. Additionally, information that may be relevant to the page content may not have been recognized during the tagging process, resulting in relevant content that is not part of the document's logical reading order. It is also possible that content was added to the document reading order, when in fact it does not belong.

Adobe Acrobat's TouchUp Reading Order tool allows authors to manually zone page content and either add or remove this information to the document's reading order. The TouchUp Reading Order tool also allows authors to classify content as various heading levels (i.e., Heading 1, Heading 2, Heading 3) as well as Figures, Tables, or other structural markup. Content that does not belong as part of the document's reading order can be marked as "Background". Be cautious of this option as it will result in content be removed from the document reading order and not communicated to the end-user.

1. To zone and mark text, enable the TouchUp Reading Order tool (Advanced > Accessibility > TouchUp Reading Order...). It is recommended to add tags to the document before using the TouchUp Reading Order tool.
2. The mouse pointer will turn into a set of cross-hairs. Click and drag a box around the content you wish to zone. Draw the zoning region larger than the actual region of the content (in some cases, you may have to overlap into other content regions to zone correct content).



1. To add a text description to an image, enable the TouchUp Reading Order tool (Advanced > Accessibility > TouchUp Reading Order...).
2. If the image contains the text “Figure - No alternative text”, right-click on the image and choose Edit Alternate Text.
3. Add the appropriate alternative text content to the image and press OK.
4. Save the document in order to retain the changes.



If the image does not contain the text “Figure - No alternative text”, then it is necessary to zone the image and mark it as a “Figure” using the TouchUp Reading Order tool. Please refer to the section Zoning and Marking Text for more information on adding content to the document structure. After zoning and marking the image as a “Figure”, follow the instructions for adding alternative text.

## **Tables**

There are two types of tables that may be used in documents - data tables and layout tables. When authoring documents, particularly from word processing applications, it is not recommended to use layout tables to organize and visually arrange content. If there is a need to create rich visual layouts, then the use of layout and design tools that support accessibility are necessary (e.g., Adobe InDesign). Data tables, on the other hand, are a functional method to organize and relate various pieces of information into a coherent display. Data tables may be used where appropriate and are an acceptable method to present content.

One challenge with data tables and accessibility is verifying how the information will be presented to the actual user if assistive computer technology is being utilized. For instance, it is fairly easy to determine the logical reading order of a document, but it is not as easy to determine if a data table contains all the relevant code to communicate the appropriate row and column information. Testing with assistive computer technology is one method, however, this assumes that the assistive computer technology supports the included tag information to accurately communicate the data table to the user.

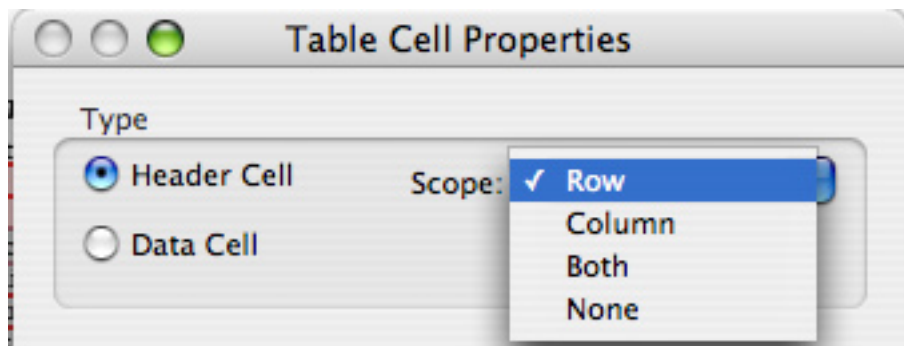
With respect to PDF, the recommendation is to include the appropriate code information and test (when necessary) with the understanding that not all assistive computer technology will support the PDF data table content.

In order to specify row and column headers, as well as a table summary, it is necessary to begin with a tagged PDF document with the data table marked as “Table”. It is possible that if tags are added using the “Add Tags to Document” function that tables may be marked as “Figure” or other text content. Use the TouchUp Reading Order tool to zone and mark data table content as “Table” before proceeding below.

### *Row and Column Headers*

Row and column headers, as well as their “scope” can be specified using the TouchUp Reading Order tool. This would potentially aid assistive computer technology applications in speaking the relevant row or column information to an individual navigating the data table.

1. To add row and column header information, enable the TouchUp Reading Order tool (Advanced > Accessibility > TouchUp Reading Order...).
2. Click on the number next to the “Table” label in the PDF document.
3. In the TouchUp Reading Order tool, choose the “Table Inspector” button
4. For each row header, right click in the actual table cell and choose “Table Cell Properties”
5. Set the “Type” as Header Cell and the “Scope” property as Row.



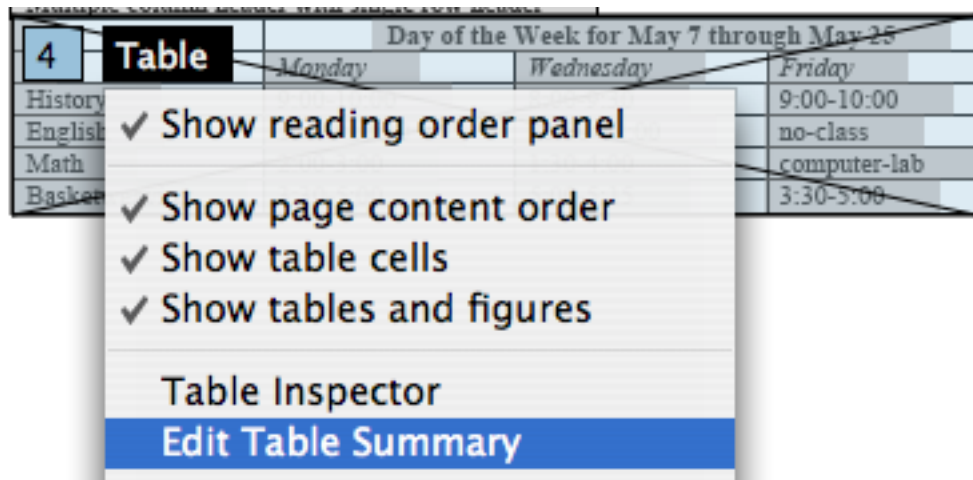
6. Press OK to return to the data table.
7. For each column headers, perform the same steps but set the “Scope” property as Column.
8. Repeat as necessary for the remainder of the row and column header cells.

After adding the relevant information to the data table, click outside of the table region on the page to return back to the TouchUp Reading Order tool interface.

## Table Summary

A table summary can be added that provides the user with a very brief overview of what information is to follow in the data table. It is not necessary to repeat the actual data in the table summary; rather, use the table summary to give the user a preview of what information the table communicates. The table summary is not viewable in the PDF document, but is designed to be spoken to an individual using assistive computer technology.

1. To add a table summary, enable the TouchUp Reading Order tool (Advanced > Accessibility > TouchUp Reading Order...).
2. With the data table marked as a “Table”, right-click anywhere in the data table.
3. Choose the option “Edit Table Summary”.



4. Add an appropriate summary for the table and press OK.
5. Save the document to retain the changes.

The Table Inspector in Adobe Acrobat functions well for basic data tables that do not contain multiple row or column headers. For data tables that contain multiple row and column headers, are visually complex, or contain numerous cells that span rows/columns, it may be necessary to utilize third-party PDF markup tools to fully support PDF accessibility (e.g., the CommonLook for PDF tool from NetCentric).

# Adobe LiveCycle Designer 8

## Application

Adobe LiveCycle Designer (Windows platform only)

[http://www.adobe.com/devnet/livecycle/articles/strategies\\_creating\\_forms\\_lc\\_designer8.html](http://www.adobe.com/devnet/livecycle/articles/strategies_creating_forms_lc_designer8.html)

## Introduction

Adobe LiveCycle Designer is a drag-and-drop form creation tool that allows authors to create interactive form elements using a layout and design interface. LiveCycle Designer comes bundled with Adobe Acrobat 8 Professional and is currently only available for the Windows platform. From an accessibility perspective, LiveCycle Designer provides form authors with the ability to designate content headings, add the appropriate information necessary to support assistive computer technologies, and control the logical reading order/tab order of the form. One advantage to LiveCycle Designer is that the accessibility information can be added during form creation without requiring the author to use a separate application to add the necessary accessibility information. This allows forms that require periodic updating to be changed without returning to the original form document, making the content changes, converting to PDF, and then adding the form fields again.

The default file type from LiveCycle Designer is PDF. To ensure compatibility with earlier versions of Adobe Reader (i.e., Reader 6, Reader 7), change the Save As Type option in the Save As... dialog window. Forms created in LiveCycle Designer cannot be edited in Adobe Acrobat, whereas forms created in Adobe Acrobat can be opened and edited in LiveCycle Designer. Once a PDF form has been saved from LiveCycle Designer, the form information cannot be edited in Adobe Acrobat.

## ***Accessibility Panel***

The Accessibility panel allows form authors to add the appropriate accessibility information to document content and form fields in order to improve PDF form accessibility. The Accessibility panel can be accessed by selecting Window from the menu bar and then choosing Accessibility (hotkey = Shift+F6). The Accessibility panel will vary its editable regions depending on the text element or form field selected in the page layout window.

For most form fields, there is a Tool Tip option, Screen-Reader Precedence option and Custom Screen-Reader Text option that can be used in different combinations. The Screen-Reader Precedence option and the Custom Screen-Reader Text region can be used when you wish to specify custom information to individuals using screen-reader technology. The current situation is that if accessibility information is entered into the Tool Tip region AND the Custom

Screen-Reader Text region AND the Screen-Reader Precedence is set to Custom Text, only the information in the Custom Screen-Reader region will be used to communicate with assistive computer technologies. However, the text in the Custom Screen-Reader Text region will ALSO be shown visually on the PDF form when the user hovers the mouse in that specific form field, not the information in the Tool Tip text region.

Screen-readers will currently check for accessibility content in the following order: Custom Text > Tool Tip > Form Caption > Form Name > None. As soon as information is available, the screen-reader will communicate this information to the user and stop checking for additional accessibility content. Thus, by entering information into the Tool Tip field it is not necessary to adjust the Screen-Reader Precedence option for each input field. To develop forms that are usable by all individuals, the recommendation is to add the appropriate accessibility information into the Tool Tip region with the understanding this will also be visually discernible on the PDF form.

## ***Headings***

Headings can be used to identify sections and provide structure to the document content. The advantage of headings from an accessibility perspective is that some assistive computer technologies can identify headings in a document and allow the user to navigate from heading element to heading element. This provides a mechanism to “jump” through the content without having to read each passage of text.

1. To add a heading role to text content, drag a text block to the page (this element is the letter “T” with a plus sign).
2. Add the appropriate text information into this text block
3. Choose Window from the menu bar, and then Accessibility.
4. Under the Accessibility tab, select the Role drop-down menu and choose “Heading”

Only set appropriate content as a heading. For instance, a paragraph of text would not necessarily be a heading in a document. LiveCycle Designer does not differentiate between heading levels like other markup languages; all headings are considered to be the same level in a document.

## ***Text Input Fields***

Text input fields are perhaps the most common form field elements used on documents. For text input fields, the accessibility information should include what information you want the user to enter into the form field. Make sure to identify any specific instructions or relevant information for the user when adding the accessibility information. For example, if the caption of the text input field is “First Name”, then the accessibility information could be “Enter First Name” or even “First Name”.

1. To add a text input field, drag the Text Field icon to the page (this icon has a pencil in it).
2. Add the appropriate caption information and format the field as needed.
3. Choose Window from the menu bar, and then Accessibility.
4. Under the Accessibility tab, enter the appropriate accessibility information in the Tool Tip region.
5. Leave the Screen-Reader Precedence option set to Custom Text (default).

## **Radio Buttons**

Radio buttons are designed to give “either this or that” type responses. There are no multiple selections with radio buttons should only be used if the user is required to identify one of the radio button selections. Radio buttons are a bit different than other form fields in that they belong to an exclusion group. In other words, all the radio buttons “belong” to the same grouping (this allows one button to be deselected if another button is selected). If you wish for radio buttons to all be part of the same exclusion group, it is recommended to add all the radio buttons at the same time. For instance, if a form was to have two radio buttons as part of the same group, do not add a radio button, then add a text field, and then add the second radio button. This will cause the radio buttons to be part of two different exclusion groups (i.e., they will not be “grouped” together).

1. Drag a text block to the page (this element is the letter “T” with a plus sign). This is the question for the radio button group.
2. Drag the appropriate number of radio buttons to the page. A blue outline will surround all the radio buttons regardless of where they are placed on the page.
3. Enter the appropriate response to each radio button caption.
4. In the Binding Tab (in the Object panel), uncheck the box “Specify Item Values”.
5. Select the radio button exclusion group (a blue outline will surround all the radio buttons) and choose the Accessibility panel.
6. In the Tool Tip region, enter the question for the radio button group. This should be the same text as specified in the text block.

The result will be that screen-readers will enter the radio button grouping and will read the question, the radio button caption, and the radio button status (checked or unchecked) each time the user moves to a new radio button. For information on how to use specific item values, while maintaining support for screen-readers, please review the Help menu under Accessible forms for detailed instructions.

## **Checkboxes**

Checkboxes can be used to allow the user to select more than one option or to choose not to select any option. Checkboxes are individual entities and so require accessibility information to be added for each checkbox (there is no exclusion group like radio buttons for checkbox fields). Because checkboxes are their own “unique” element, it is necessary to combine the question and answer such that the user may choose the appropriate response.

For example, if the question is “What is your favorite ice cream flavor?”, then an appropriate accessibility response may be “Check if your favorite ice cream flavor is Rocky Road”.

1. Drag a text block to the page (this element is the letter “T” with a plus sign) as this is the question for the group of checkboxes.
2. Drag the appropriate number of checkboxes to the page.
3. Enter the appropriate response to each checkbox caption.
4. Select the Accessibility panel and in the Tool Tip region enter the appropriate accessibility response that combines the question with the answer.

## **Drop-Down List**

The drop-down list option allows user to select from a list of options while minimizing space on the form. While there are advantages to using a drop-down list, be cautious if the form is to be printed - users will not have access to all the form field selections

1. Drag the drop-down list icon to a location on the page
2. Enter the caption information. Generally speaking, this would be the question.
3. In the Object panel, under the Field tab, add the appropriate list items for selection
4. Select the Accessibility panel and add the appropriate instructions. This will be the information provided in the caption.

## **Tab Order**

In LiveCycle Designer, the Tab Order does more than just specify how a user would navigate through a PDF form with the keyboard. The Tab Order allows the form author to control the logical reading order of the document including all text regions and form input fields. When setting the tab order in a LiveCycle Designer form, it is important to take note of the various text elements on the page and include those elements along with the form input fields in order to ensure a logical document reading order.

1. To establish a Tab Order, choose View on the menu bar and Tab Order.
2. Specify the first element in the reading order by holding the Shift key and clicking the mouse on that element.
3. Click on the remaining elements on the page in the appropriate reading order.
4. To finalize the logical order, choose View on the menu bar and Tab Order. If you wish to make any changes, simply choose View > Tab Order and repeat the process.

If the Tab Order is correct for half the document, then it is possible to set the tab order from the last “good” element. Instead of using “Shift+Mouse Click” to set the first tab order, press “Ctrl+Mouse Click” at the last “good” element. This will allow you to continue from this element to the end of the form rather than starting again at the beginning of the document.

In Adobe Acrobat, confirm the reading order by saving the document as a text file, using assistive computer technology, or using the Read Out Loud function on the PDF form. If you find any problems with the reading order, return to the Adobe LiveCycle Designer interface and alter the reading order as necessary.

# Resources

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## Websites

*Adobe Acrobat Accessibility Training Resources*

<http://www.adobe.com/enterprise/accessibility/training.html>

*Adobe Accessibility Resource Center*

<http://www.adobe.com/accessibility/>

*CommonLook™ Section 508 for Adobe Acrobat*

[http://www.net-centric.com/products/cl\\_s508\\_adobe.aspx](http://www.net-centric.com/products/cl_s508_adobe.aspx)

*Creating forms using Adobe LiveCycle Designer 8*

[http://www.adobe.com/devnet/livecycle/articles/strategies\\_creating\\_forms\\_lc\\_designer8.html](http://www.adobe.com/devnet/livecycle/articles/strategies_creating_forms_lc_designer8.html)

*Designing LiveCycle Forms*

[http://www.adobe.com/devnet/livecycle/designing\\_forms.html](http://www.adobe.com/devnet/livecycle/designing_forms.html)

## Books

*Web Accessibility: Web Standards and Regulatory Compliance* (Chapter 12: PDF Accessibility). Thatcher, J., et al. ISBN-10: 1590596382, ISBN-13: 978-1590596388.

*Maximum Accessibility: Making Your Web Site More Usable for Everyone*. Slatin, J., Rush, S. ISBN-10: 0201774224, ISBN-13: 978-0201774221.