



NASA Best Practices for Section 508, Electronic Documents

Section 508 of the Rehabilitation Act requires that all Electronic and Information Technology (EIT) be accessible to individuals with disabilities including the category of “electronic documents” or “electronic content”. Electronic documents can include various document formats like Portable Document Format (.pdf), Rich Text Format (.rtf), word processing documents, spreadsheets, and simple emails. Any author/developer of electronic documents needs to consider their audience for accessibility when creating and disseminating electronic documents.

This document contains several best practices that should be observed when distributing electronic content to the public and federal employees. [§ 1194.22 \(Web-based intranet and internet information and applications\)](#) of the Access Board’s technical standards applies to any electronic content posted on or disseminated through the intranet or internet. Electronic documents created and stored for individual use are not required to comply with Section 508 accessibility standards. If distributing electronic documents that are not accessible, a text-based disclaimer should be attached to all correspondence stating “For an accessible version of this material, please contact <NASA Civil Servant Document Owner>, <Organization of Document Owner>, <Phone>.”

Best Practices:

- Place content in logical **reading order**. Avoid complex layouts, sidebars and other ornamentation, when possible, as they can make it difficult to maintain a logical reading order.
- Ensure all **images and other non-text elements** (graphs, illustrations, images of data tables, clip-art, audio, video, etc.) have alternate text. Any image of a chart, table, graph, or of text must be fully described. Charts and tables must be described in greater detail, which means including numbers and what those numbers represent. If the picture is of a data table, it is best to recreate the table using the editing software’s functions for creating tables, but a detailed text description would suffice if replacement is not feasible. For basic images, do not overcomplicate the description and only provide the information necessary to explain the main purpose of the image in the context of the document.

Some document editing software, like Microsoft Word and Adobe Acrobat, allow for the addition of “alternate text” to images for web-based electronic documents, but, when this is not possible, images should be text described using captioning immediately following the image. Consistent and unique styling of the associated text (i.e. bold, italics, smaller font, or custom styling) would add further benefit.

Note: Images and other non-text elements that are strictly decorative are not required to have alternate text. And, be sure to group multiple graphic elements (created by drawing tools, charts, etc.) into one image, where possible.

- When possible, define and **use built-in or custom styles** to format structural elements like headings, paragraphs, titles, table headers, captions, etc. to control typography and layout. This allows an assistive technology user to better recognize the significance of specific text in the context of the document.

When feasible, place headings in a logical and consistent or incremental order. For example, a document should not jump from a "Heading 1" style to a "Heading 4" style.

- For **data tables** make sure all column and row headers are clearly identifiable. Some editing software, like Adobe Acrobat, allows for the addition of markup to clearly identify headers; when

this is not possible, use differential styling to indentify headers (i.e. create a unique style called “Table Header”) or at the very least use bold or a larger font. This helps readers to distinguish headers from the data in the table.

Note: There is a technical standard requiring markup to be used to associate data cells with header cells. Most editing software currently does not have this ability, but, as software improves and where possible, use markup to associate the data cells with the header cells.

- Do not use **TAB, Spacebar, or Enter** keys to format tables, columns, lists etc. Instead, use built-in features (i.e. margins, spacing, “Insert Table”) to encode the semantic structures for content like headings, paragraphs, lists, sections, headers/footers, tables (never use the “Draw Table” feature), columns, forms etc.
- Use **standard fonts**. Do not use fonts that do not map to Unicode.
- Avoid placing content in drawing-canvases or **text-boxes** as these are “floating objects” and flow to the bottom of a page's reading-order.
- Ensure that all navigation and interactivity can be performed using the **keyboard**.
- Ensure that **hyperlinked text** makes sense out of context. Hyperlinked phrases such as "click here" can be confusing for people who use assistive technologies. Make each hyperlink descriptive of the content to which it links.
- Ensure that **color** is not the sole means of conveying information. Color and highlighting can be used for markup, but should not be the only way to provide information. For example, you can use red text within a document to highlight specific information, but if you direct a reader to, “follow the instructions in red” this information may not be discernable to an individual with color blindness. In this case, it would be better to enclose the specified text using textual notations such as an asterisk or brackets and direct the user to, “follow the directions enclosed in brackets”.
- If color is used, use a **high contrast** between background colors and text colors. Individuals with low vision or color blindness may not be able to read text that does not have a high degree of contrast between text and background. Use light text on dark backgrounds and dark text on light backgrounds
- Avoid the use of **flashing** images and animations. Flashing images may cause seizures for individuals with photosensitive epilepsy, and may be distracting for those with cognitive disabilities.
- When creating **forms and form elements**, create descriptive text that is clearly associated with each form element in a logical and consistent reading order throughout the entire form. For example, if you create a form element to input a first name, make sure the text “First Name” either immediately follows or precedes the form element and each subsequent form element follows the same consistent reading order. Also, head the form with a brief description of the form including any necessary directions or cues.
- If a **timed response** is required, be sure to alert the user about the requirement and provide a means for the user to extend that time.

More specific information on working with Electronic Documents can be found in the “How To’s” of our website at URL: http://www.nasa.gov/accessibility/resources/res_howtos.html.