

Summary and Checklist: Microsoft Excel Accessibility Techniques

Summary

The general concepts to keep in mind for creating accessible Excel workbooks are the following: Keep the workbook as simple as possible. Make sure that the workbook is well-organized, flows logically, and has meaningful workbook and worksheet names. Ensure that all aspects of the workbook can be navigated with keyboard only. Do not rely on color or text formatting as the sole means of communicating information. Provide text alternatives for all graphs, charts, and all other meaningful image-based content. Make sure that tables are correctly formatted and include headers. Avoid blank rows and columns, as well as blank cells in tables. We also encourage you to test your workbook with a screen reader after you are finished creating it, so you can check for any potential accessibility issues.

Checklist

Style and Appearance

Color to Convey Meaning

- If color is used to convey information, it **MUST** be accompanied by a text alternative.
- The text alternative for information conveyed by color **MUST** accurately convey the same information without color.
- If color is used to convey information, it **MUST** be accompanied by a visible alternative (text, image, graph, etc.) that does not depend on color for meaning.

Color Contrast

- Small text and images of small text (under 18 point regular font or 14 point bold font) **MUST** have a contrast ratio of at least 4.5 to 1 with the background.
- Large text and images of large text (at or over 18 point or 14 point bold) **MUST** have a contrast ratio of at least 3 to 1 with the background.

Structure and Semantics

Data Flow

- The content of an Excel workbook **SHOULD** follow a logical path that is easily accessible to keyboard-only users.

Worksheet Names

- Each Excel worksheet **MUST** have a unique, clear, and concise name.

Removing and Marking Blanks

- Blank rows, columns, and sheets in an Excel workbook **SHOULD** be avoided.
- Intentionally blank cells within data tables **SHOULD** be marked as such, for example with "No Data."

Cell A1 and Worksheet & Workbook Summaries

- Cell A1 **SHOULD NOT** be blank and **SHOULD** be used to provide orienting information such as worksheet or workbook summaries and the number of sheets present in a workbook, or the title of a table that begins directly below it.

Index Page

- The first sheet of a multi-sheet Excel workbook **SHOULD** be an index sheet with hyperlinks to the other sheets.

Headers and Footers

- Headers and footers **MUST NOT** contain vital information.

Hidden Rows and Columns

- Hidden rows and columns **SHOULD** be avoided.
- If hidden rows and columns are used, they **MUST** be accompanied by an alert.

Text and Font

Font Style and Size

- Font style **MUST** be clear and easy to read.
- The minimum font size **SHOULD** be 11.

Text Formatting

- Critical meaning **MUST NOT** rely on text formatting such as capitalization, bold, italic, underline, strikethrough, etc.

Text Visibility

- All text within cells **SHOULD** be readily visible on screen without having to adjust cell height or width.
- Text **SHOULD NOT** overflow from cells.

Symbols and Special Characters

- If a symbol is an essential part of your message, it **MUST** be communicated in plain text, as well.

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Tables

Table Identification and Placement

- Each table SHOULD have a clear and succinct title that includes the number of the table, displayed directly above the start of the table, as well as a table name placed in the Design Tab on the Ribbon.
- The span of each table SHOULD be stated in the same cell as the title cell.
- Each table SHOULD be placed in a separate worksheet.
- If multiple tables are placed in the same worksheet, a single blank row SHOULD separate them, and they SHOULD all start in column A.

Table Headers

- Table headers MUST be present, designated as such, and meaningful.
- Each table MUST have no more than one header row and/or one header column.
- Complex tables MUST be broken down into simple tables, or a complete description of the complex table MUST be provided.
- Table headers and the data itself MUST NOT be separated by any blank rows or columns.

Cell Formatting

- Tables MUST NOT contain merged cells.
- If conditional formatting is used, the equivalent information MUST be available in text-only format.

Graphs, Charts, Objects, and Other Visuals

Graphs and Charts

- Graphs and charts MUST be fully labeled and include all of the following, as applicable: title, legend, axis labels, and data labels.
- Graphs and charts MUST NOT rely on color as the sole means of communicating information.
- Graphs and charts MUST be accompanied by a complete description in plain text form, placed directly in a cell rather than in the Alt Text section.

Images

- Meaningful images MUST be accompanied by a text alternative placed directly in a cell, as opposed to in the customary Alt Text section.
- Decorative images SHOULD NOT be accompanied by a text alternative.

Embedded Files

- Embedded files SHOULD each be included on a separate worksheet.
- Users MUST be explicitly alerted that embedded files are present.
- Embedded files MUST be accompanied by explicit text instructions on how they can be opened and how a user can return to the cell layer in Excel.
- Embedded files SHOULD be accompanied by an explanatory summary including type of file and contents.

Word Art, SmartArt, Text Boxes, and Other Floating Objects

- If WordArt, SmartArt, Shapes, Text Boxes, or other Floating Objects contain vital information, it MUST also be available in a text alternative placed in the cell layer.

Background Images and Watermarks

- Background images and watermarks MUST be avoided.

Multimedia

Video and Audio

- Videos with dialogue that are part of an Excel workbook MUST contain complete captions and a full transcript.
- Videos without dialogue that are part of an Excel workbook MUST contain a text description.
- Audio-only elements that are part of an Excel workbook MUST include a full transcript.
- If a video or audio element is embedded as an object, all of the same rules for embedded files MUST be followed.
- Media controls for a multimedia element MUST be fully keyboard accessible.

Flashing Content

- An Excel workbook MUST NOT contain content that flashes more than 3 times per second, unless that flashing content is sufficiently small, and the flashes are of low contrast and do not exceed general flash thresholds or red flash thresholds.

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Forms

Form Title and Placement

- Each form SHOULD have a clear and meaningful title placed in cell A1.
- Each form SHOULD be placed on a separate worksheet.

Form Design

- The form layout SHOULD be simple and straightforward.
- Cell A1 SHOULD be used to provide helpful instructions on navigating and completing the form.
- Every form input field MUST have a label or instructions visible on the screen.
- Input cells MUST be adjacent to the cell containing the question/description.
- Input cells SHOULD be shaded to make them more visually discernible, using a color other than yellow.

Data Validation

- Input messages SHOULD be used to guide users in filling out the form correctly.
- Validation criteria SHOULD be used where appropriate to help fill out the form correctly.
- Detailed, specific, and clear error alerts SHOULD be used within forms.
- If an input field is required, the user MUST be alerted.

Form Controls and ActiveX Controls

- Form controls and ActiveX controls MUST be avoided unless there is an equivalent and simple keyboard-only option.

Locking and Protecting

- A form, except for the input cells, SHOULD be locked and protected to prevent users from accidentally modifying or deleting information.

Links

Links in General

- All Links MUST be visually distinguishable from the surrounding text.
- If using color change alone to distinguish a link, the color contrast between the link text and the surrounding text MUST be at least 3 to 1 and an additional visual differentiation MUST be provided when the link is hovered.
- All links MUST contain meaningful hyperlink text that makes the link's purpose clear.

Website Links

- URL links MUST lead to the correct, active web destination.
- The complete URL text MAY be displayed in addition to the meaningful link text.

Links within Same Excel Workbook

- Links to content within the same Excel workbook MUST point to the correct cell reference.

Links to Files

- When inserting a link to another file, the workbook and the linked file MUST be on a shared network drive or similar location, and the location of the files MUST remain the same.

E-mail Address Links

- E-mail address links MUST be correct and link to an active address.
- E-mail address links SHOULD include the contact person's full name.

Math, Equations, and Formulas

Inserted Equations and Formulas

- If a formula or equation is inserted as a floating object, it MUST be supplemented with a plain text alternative without symbols, within the cell layer of Excel.

Math in the Cell Layer

- Mathematical expressions in the cell layer of Excel SHOULD be avoided.
- If mathematical expressions in the cell layer of Excel are present, they MUST be supplemented by a plain-text-no-symbol alternative, placed also in the cell layer.

Excel Functions

- Excel functions SHOULD be accompanied by the text name and abbreviation of the function used, placed adjacent to and above the cell containing the value output.

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Macros

- Each macro **MUST** have a clear, succinct, and meaningful name that is indicative of its function.
- Each macro **MUST** include a clear and complete description of what it does.
- A keyboard shortcut **MUST** be assigned to each macro.
- The keyboard shortcut assigned to a macro **MUST NOT** be the same as an existing default shortcut.
- Users **MUST** be alerted within the body of the Excel document that macros are present and how many are present, as well as the name, description, and keyboard shortcut for each macro.

Navigation

Focus Indicator

- A focus indicator add-in **MAY** be suggested and explained to the end user within the Excel document.

Comments

- Comments **MAY** be used as needed to help convey useful information.

Frozen Rows and Columns

- Frozen rows and columns **SHOULD** be avoided whenever possible.
- Users **MUST** be alerted to any frozen rows and columns that are present.

Data Filters

- If data filters are used, the user **MUST** be alerted in the body of the Excel document.

Names

- Names **SHOULD** be used for tables and **MAY** be used for other elements as needed to assist in easier navigation.

Protecting and Locking

- If protecting a worksheet, the options for selecting locked and unlocked cells **MUST** be checked.

Saving

Step to take when saving:

1. Perform spell check.
2. Preview the print layout by clicking File and then Print. You can then view how the sheets will appear when printed.
3. Set the print area.
4. Fill out the metadata/properties.
5. Give the file a clear and succinct name with no special characters.

Exporting

Save Excel as PDF

1. Optimize the Excel file for accessibility.
2. Click File, Save As, and choose the location for saving.
3. In the "Save as type" drop-down menu, select PDF. Fill out the Authors, Tags, Title, and Subject fields.
4. Click Options button and specify the "Page range" and "Publish what" sections. Under Include non-printing information, make sure that the options for "Document properties" and "Document structure tags for accessibility" are both checked.
5. Hit OK.
6. Touch up tags manually as needed.

Save Excel as HTML

1. Follow steps 1 and 2 for exporting to PDF.
2. In the "Save as type" drop-down menu, select Web Page or Single File Web Page.
3. Clean up the HTML as needed.
4. Check your page using a tool such as Deque's free accessibility testing extension [aXe](https://www.deque.com/products/axe/) (<https://www.deque.com/products/axe/>).

Save Excel as CSV

1. Choose CSV format over Excel if the purpose of the worksheet is just to present a basic, raw data set.
2. Click File, Save As, choose the location for saving, and from the drop-down menu for "Save as type," select CSV.