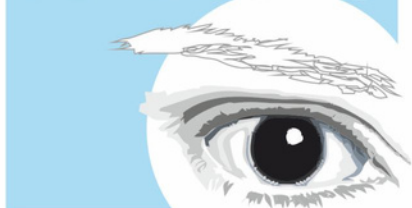seeing the
invisible

GENERATING ACCESSIBLE DIGITAL DOCUMENTS

INCLUSIVE DESIGN FOR THE PRESENTATION AND DISSEMINATION OF DIGITAL DOCUMENTS AND MATERIALS

OERs ADAPTED TO STUDENTS WITH LOW VISION.

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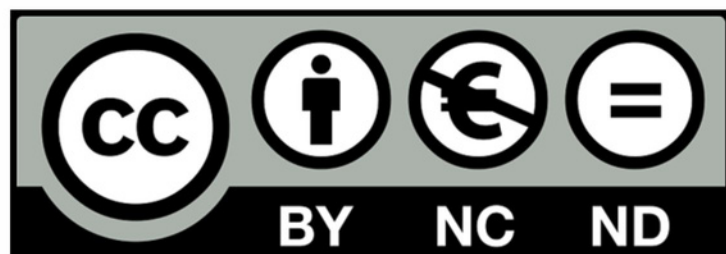
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I. INTRODUCTION

In accordance with the principles of Universal Design and to help eliminate disabling environments, criteria should be incorporated into the processes of design, creation, and dissemination of all types of materials -written, digital, or printed– to make them as accessible as possible. Here are a series of tips and recommendations for the creation of inclusive printed documents.

When designing and creating materials, be aware that the improvements and accessibility measures you are planning to implement for a certain group of people will also end up being useful for other groups you initially didn't foresee. Work with the idea that it is environments that disable people, which is why they must be as adapted and inclusive as possible from the initial stage of design and creation.

Have in mind both the various technological channels for dissemination and the possible specific circumstances of the people interested or users of your product and the information you are designing or creating.

When designing a document, consider the various reading formats it can have: on screen, printed, online, read with generic or specific software, translated, on a PC, on a smartphone, a tablet... In any of these formats, accessibility involves providing a series of alternatives and variables that allow to adapt the presentations to the needs of any end users.

If in a printed document you must pay attention to the type and size of font, text spacing, line spacing, justification and margins, colors used, and the type of paper on which it is printed; texts designed to be accessible on a PC must be able to vary in font size and be editable (not in image format, since they won't be legible for voice software or braille translator). Also keep in mind that you will target people of very different ages, skills, and computer knowledge.

By thinking about what information can be important and the best way to present it in an accessible way for everyone, a question of justice is assumed, which also doesn't involve a considerable increase in cost or effort, while enabling the access to the information to other people besides who those initially planned, as defended by Universal Design.

II. LANGUAGE AND STYLES

The documents to be accessed in digital format must first specify the language in which they are written, since this is a necessary information for the screen reading software used by people with low or no vision, since pronunciation rules are different for each language. This is particularly important when documents in different languages are used in the same area.

A second issue is to benefit from the styles of the software with which you work to organize the composition of a digital document, planning a good structure. That is better than resorting to manually changing fonts and sizes to enhance headings or sections, or ending up with an ill-defined or contradictory structure.

It is easier to modify the overall style than to modify each section, and this also facilitates the accessibility of people with low or no vision who need to resort to a screen reader, since they can navigate more easily from the list of headings the reader creates.

> **It is better to use tables to organize data than to do it through tabs or spaces for the reason already explained: a correct structuring favors inclusive navigation.**

III. FEATURES AND OPTIONS

All functions must be accessible and executable from the keyboard. Keep in mind that not all people have a computer at all times to access digital documents, so it's necessary to provide for accessibility from other types of devices.

The options and links in a virtual document should be clearly signaled, not just relying on visual perception to convey the information. The header and footer areas are also processed by screen readers, and although they are often almost unused, they can be very useful to guide a person with low or no vision throughout a document.

IV. THE TEXT

In actions to edit and review texts it's better to use the change control or comments options, avoiding to use colors not recognized by screen readers. Text size must be zoomable by the end user, so zooming-in to large sizes should be planned for. Texts must always be editable, never in image format.

The font used must be easily readable, being sans serif (without the so-called serifs or ornaments). In any case, the user should be able to change the font in which the text is displayed in their device.

V. IMAGES

Images, drawings, and graphics should always have alternative text telling what they represent and why they are included at that point of the document. Text shouldn't be used over images; Screen readers don't recognize it. If a scheme combines text and graphics, you must foresee the final size of the letter, that it contrasts with the background, and that the image has an adequate size to be perceived by people with low vision, including the explanation of the information written in the image in the alternative text.

Explanatory texts of illustrations can sometimes be quite long, but in any case, the full understanding of the information in the document must be guaranteed by alternative texts without needing to see the image.

Floating images are usually not recommended; it is better to use fixed images or in line with the text at the relevant point.

VI. USE OF COLORS

When using colors in drawings and graphs, keep in mind that certain visual conditions impact color recognition. This is especially important if color coding is used as a way to convey information; you have to think of an alternative way to also convey that information that doesn't depend on color. This must especially be considered in the case of graphs with colors, tables with colored cells, forms, etc. For people with low vision, the contrast between text and background is essential, as much as avoiding bright backgrounds and colors that can cause glare.

It's recommended to use light letters on a dark background or vice versa. Regarding the colors, black, blue, yellow, and white are recommended, always with contrast between the background and text. Effects like shading or gradient shouldn't be used. And the use of multiple colors should also not be abused. Many people with aniridia or albinism are easily dazzled, so they prefer light letters on a dark background. In any case, it's important for the user to be able to change the background and text colors.

VII. MULTIMEDIA CONTENT

Media content should always have alternative text describing it. If possible, the media content will be made accessible by subtitles, with descriptive complement and transcription in text of said subtitles and especially of the audio description in a separate text, so that it can be processed by screen readers.

VIII. FORMS AND INFORMATION COLLECTION

Forms and documents for filling-in and collecting information made with MS Word are easily accessible if a blank space is left to fill in, which may also be marked by dots or underline. It isn't convenient to use the preset commands for forms in this software, because the result will be difficult to fill with a screen reader.

PDF forms can also be created to be filled-in later. In any case, the document, in addition to having all the information in an adequate size for users with low vision, the information requested must be clear to screen readers, along with the order of the spaces to fill the form, and those optional or mandatory.

MS Word has a tool to check the accessibility of a document within the Review tab.

The most inclusive option is to allow to send the requested information in the format most comfortable or operational for the user.

IX.PDF

This is an <u>accessible format</u> that allows to zoom-in the content (as long as it is editable). It can be implemented directly, or documents can be converted to this format from word processors like MSWord. In this case, the document must have been created in an accessible way, and when exporting to PDF, activate the accessibility tags by selecting "include non-printing information" in the save options, and de-selecting the option "bitmap text when fonts are not embedded".

If you have used Open Office to export into PDF, you must check that the "tagged PDF" and "export bookmarks" options are enabled.

To check the accessibility of a document in PDF format, export the document to plain text to check that the reading order and all the information contained is in logical and understandable order. Protected PDFs aren't accessible.

X. DAISY

It is a standardized format of accessible books that incorporate a synthetic voice audio recording of the text (acronym for Digital Accessible Information SYstem). It encodes information to make it more flexible and navigable for visually impaired people, since it has an index and is organized in a clear and simple way. The content of word processors can be exported to this format by installing a free plugin.

A book can come in different formats:

- AudioOnly: only has audio files, with features similar to those of an audiobook. Can be tagged but the content isn't indexed. You can't go to a specific chapter or advance paragraph by paragraph.

- AudioNCX: the most popular format; it has audio and indexing files and allows to jump to a specific chapter or jump paragraphs.

- AudioPartText: it's the same as the previous format, but including an index, bibliographic data, the review as text, and the audio of the entire book, and is fully indexed.

- AudioFullText: it contains the whole book in both audio and text. These are correlated so that they can be displayed in sync. The book is indexed, allowing to access to the section wanted.

- TextPartAudio: it is the least used variant; it has all the text, but only some parts in audio format.

- TextNCX: the book has only text and is indexed; it has no audio. These books are used in special players are able to synthesize audio from text. The audio quality is usually not very good, but they have the advantage of taking up very little space.

XI. OCR

A text scanned as an image is not accessible. In order to make it accessible it must be transformed by OCR (optical character recognition) software, which will turn it into editable - and therefore accessible- text. There is free online software for this. audio from text. The audio quality is usually not very good, but they have the advantage of taking up very little space.

XII. ACCESSIBILITY IN OFFICE DOCUMENTS: WORD, EXCEL, POWERPOINT...

On the Accessible Digital Office Document Project (ADOD) website you can find multiple documents -for each version of each software- disclosing ways and working procedures to achieve accessible and inclusive online documents.

XIII. ACCESSIBILITY IN WEBSITES

Internet accessibility is a complex issue whose standards are adjusted by the WCAG in three categories: A, AA, and AAA.

The most basic grade (A) implies that the minimum essential requirements are met (alternative texts for unwritten contents, subtitles, full adaptation of the contents to various formats, minimizing the use of color, giving enough reading time, navigable spaces, readability, etc.) although it doesn't guarantee full accessibility.

In the intermediate (AA) level, key barriers are eliminated thanks to direct subtitled audios, change of viewing orientation, extraordinary texts enlargement, etc. This is the mandatory legal level in some countries for the websites of public administrations.

In the maximum level (AAA) there are also other requirements such as the use of sign language, extended audio descriptions… there are different applications to check the accessibility of a website, like Taw, Hera, Wave, ARC, Toolkit…

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