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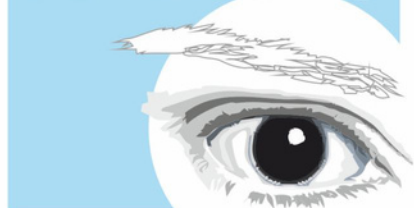
GENERATING ACCESSIBLE PRINTED DOCUMENTS

INCLUSIVE DESIGN FOR DOCUMENT AND MATERIAL DESIGN AND PRINTING

OERS ADAPTED TO STUDENTS WITH LOW VISION.



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This result has been developed by Redtree Making Projects Coop. V. in collaboration with GRETA du Velay, Smallcodes, Aniridia Europe, Alba Asociación, Aniridia Norway and Aniridia Italiana within the project “SEEING THE INVISIBLE: Inclusive digitalization of low vision students in school education”, cofinanced by the ERASMUS+ PROGRAMME of the EUROPEAN UNION.

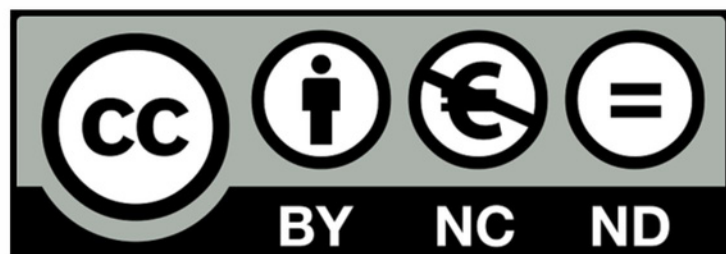
This project has been funded with the support of the European Commission. The author is exclusively responsible for this publication.

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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.

At the time of the design and creation of the materials, these are made for a specific purpose or public. However, you must be aware that the final recipients of your work can be very diverse people who, for different reasons, will also have different ways of accessing information. The easiness in access included in a design can greatly benefit people in circumstances you hadn't initially thought of.

When designing a document, the various reading formats it can have must be considered: on screen, printed, online, read using generic or specific software, translated... In any of these formats, accessibility involves providing a series of alternatives and variables that make it possible to adapt the presentations to the needs of any end user. So when printing a document you have to pay attention to the type and size of letter, its spacing, line spacing, adjustment and margins, the colors used, and the type of paper on which it is printed.

When thinking about what information is important and the best way to present it in an accessible way for anyone, it is a question of justice that also doesn't imply a considerable increase in cost or effort, while allowing the access to the information to other people that wasn't initially planned, as Universal Design defends.



II. USING TEMPLATES AND TOOLS

It is convenient to use document templates with built-in accessibility features rather than manually adapting each document. It is also advisable to always use the tools provided by the software you use normally to title documents and their chapters or sections, since this way they will all keep the same characteristics, and it will make tables and indexes of contents easier.





III. CONTRAST AND COLORS

Good contrast is an essential element of accessibility for people with low vision, as well as avoiding glare (because it can easily dazzle) or colors that can cause confusion.

We recommend using light letters on a dark background or vice versa. Regarding the colors, black, blue, yellow, and white are suitable so there's always contrast between background and text. If colors are used in titles or headings, they should maintain that same rule of high contrast with the background. Effects like shading or gradients shouldn't be used, nor should the use of colors be abused. Keep in mind that some visual conditions have issues with the perception of color, it shouldn't be decisive for the information to be transmitted (as in the case of graphics).

Many people with Aniridia or Albinism, since they are easily dazzled, prefer light text over dark background.

IV. LETTERS: FONT, SIZE, AND STYLE

The font used must be easily readable, being sans serif (without the so-called serifs or ornaments). Don't use elaborate fonts, serif, or other decorative fonts. Italic, oblique, or condensed fonts are especially not recommended, nor should you resort to those with too fine lines or that combine fine and thick strokes.

The use of italics, underlining, and capitalization in the body of text should be minimized. In citations you can resort to the use of quotation marks (which can be reinforced with the use of parentheses). You can use uppercase in titles and headings, but not so much within a paragraph, since it is easier to read lowercase text. It is also not advisable to abuse bold letter by having all text in it; it should be reserved for highlighting words and for headings or titles.

Regarding font size, use a range between 14 and 18 points, although an even larger size should be used in certain cases. A size smaller than 10 points should never be used, since it isn't easily visible.

It is recommended to always write horizontally.



V. LETTER SPACING AND LINE SPACING

Letter spacing shouldn't be excessive, as it makes it difficult to read and can be confused with the space between words; nor should it be too compressed, because it makes reading more difficult, the same as proportional spaces (with forced justification). A letter spacing of $\frac{1}{4}$ of the letter height is recommended.

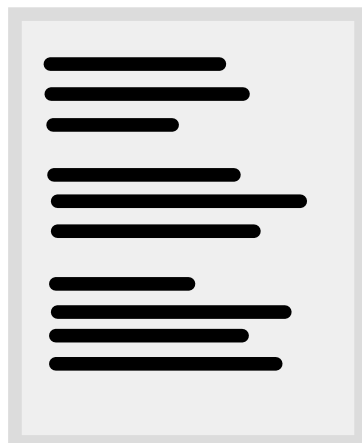
Line spacing, meaning the space between text lines, must be between 25 and 30% of the font size, favoring eye movement between the end of one line and the beginning of the next.

We don't recommended neither a smaller line spacing nor a larger one.

VI. ALIGNMENT, MARGINS, COLUMNS, AND LINE LENGTH

It is convenient to align the text to the left, because it facilitates reading. However, it is not always advisable to align it also to the right, because this modifies the spaces between words, making reading difficult. It's better to avoid using indents, because they don't make it easy to find the beginning of the next line.

Wide margins are recommended, because they facilitate reading.



Lines should be between 70 and 90 characters long. If they are too long, they will end up causing eye fatigue in people with low vision.

When writing in columns, use shorter lines for easier reading. However, it is not convenient to abuse the number of columns, making them too narrow, with very short lines. When writing in columns, pay special attention to the space between them, which should be enough to avoid confusion without being excessive either. Also consider the issues arising from the justification to the right, which easily causes large spaces between words. Don't use columns in brochures or in small print formats.

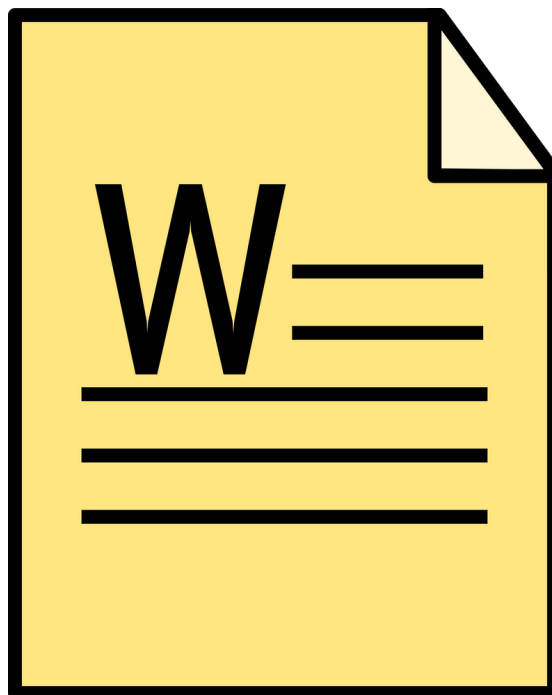
Paragraphs shouldn't be too long and should be separated by an empty line.

VII. PAGE HEADERS AND NUMBERS

Headings should have a larger font size, with capital letters or bold letters also possible. You can use colors if they contrast well, or even text on a dark background with white or very light font.

This format is best suited for page numbers, which should preferably be in the header rather than the footer, to identify them when turning pages.

This way page number can be quickly identified by highlighting it with a dark box or circle, and a clear, contrasted, and large font.





VIII. INDEXES AND TABLES

It is always good to include an index or table of contents at the beginning of the document. In its digital version, this helps when going directly to the part needed, as long as this option is active.

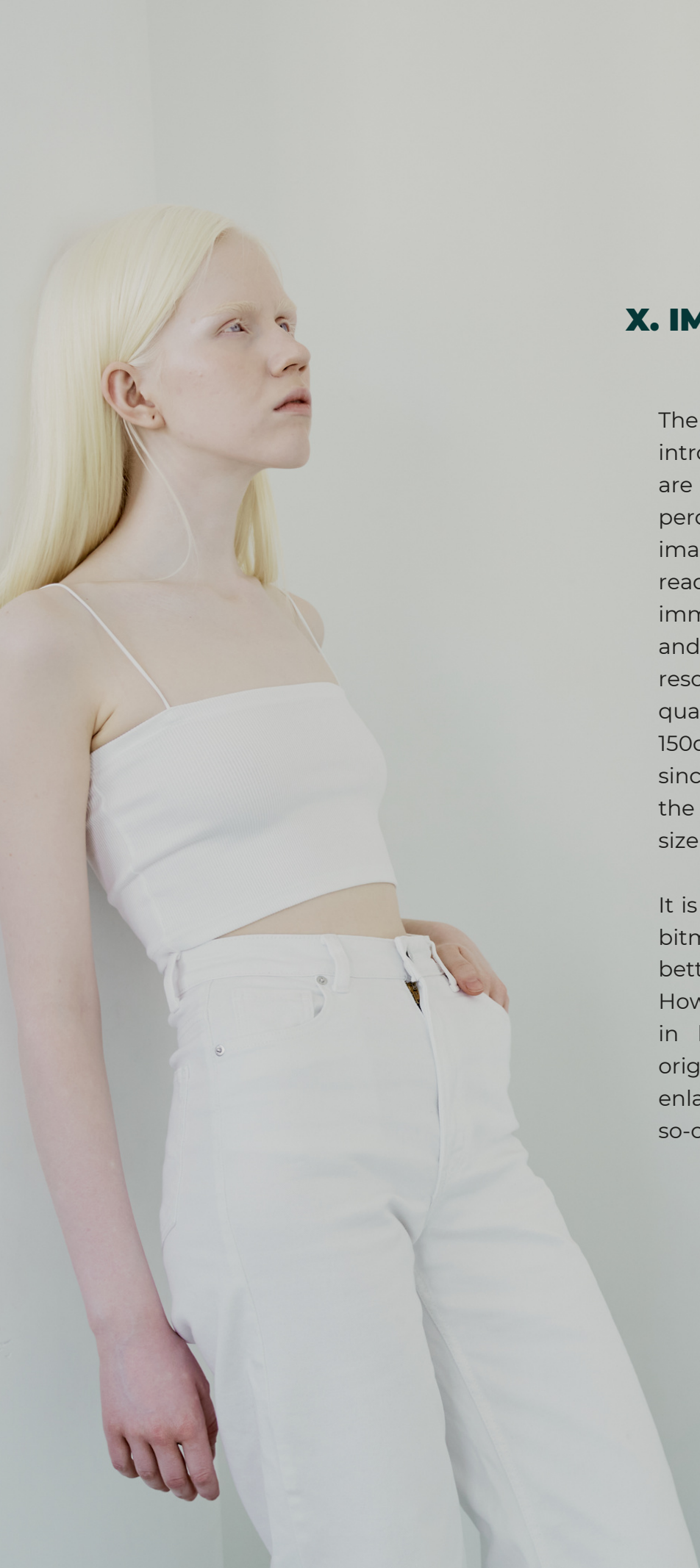
On the other hand, rows and columns in tables should not be too thin, so their cells are clearly delimited, and there should be enough space between the written contents of the cells and its borders to avoid confusion.

IX. PAPER

It is essential to use matte (non-glossy) paper for printing, to avoid reflections and glare to people with low vision. A too-white paper is also not recommended. Colored paper can be used as long as printing is done with a sufficiently contrasted ink, for example a very light-colored paper (blue or yellow) and black ink.

When printing on both sides, paper thickness (grade) must be enough for the backside to not see through. For this, a minimum grade of 80g/m² is required.





X. IMAGES

The necessary images should be introduced bearing in mind that they are only useful if they can be clearly perceived and understood. A good image should get the attention of the reader and convey information immediately. They should be simple and without many details. Size and resolution must be adequate for good quality (use a minimum resolution of 150dpi, without exceeding 300dpi, since from that point on the quality of the image doesn't increase, only its size in bytes does).

It is better to use vector graphics than bitmap images, as the former are better scalable than the latter. However, photos have a better quality in bitmap format, as long as the original picture isn't too small and is enlarged excessively, which causes the so-called "pixelation".

Images with good contrast between its objects and background are recommended. It is better to resort to clear drawings and graphics, with simple and thick strokes, fewer details, and on a contrasted background, without more images that can cause confusion.

They are preferably introduced to the right of the text, not in the middle of the writing box, and in no case should they break the reading line. Since they must be large to be recognizable in some cases, it may be advisable to just have them in a separate page.

Avoid placing text over the image. If absolutely necessary, have a background for the text so it has enough contrasts. For diagrams or images that incorporate text, it must contrast with the background and be large enough to be read (not smaller than 12 points).

It is recommended to include a description of the support image, to inform about its content and why it was included in the document.



XI. REFERENCES

Álvarez Lacambra, A.; Moreno López, L.; “Publicar documentos accesibles en PDF: disponibilidad no es lo mismo que accesibilidad”, SEDIC, working document nº10, December 2021, 1st review.

“Making information accessible for all”, European Blind Union (euroblind.org).

Moreno, L.; Martínez, P.; González, Y.; “Guía para elaborar documentación digital accesible: Recomendaciones para Word, PowerPoint y Excel de Microsoft OFFICE 2010”; CENTAC, 2014.

“Recomendaciones para presentar textos impresos accesibles a personas con deficiencia visual”, ONCE.

Sánchez Hípola, M.P. (headmistress), “Enseñanza accesible en la universidad; guía didáctica para el profesorado”, Universidad Complutense de Madrid, 2007.

Tafur Peral, A.; “Manual práctico para hacer textos accesibles para estudiantes con diversidad funcional”, Universidad Complutense de Madrid, 2011.

Zubillaga del Rio, A. (headmistress); “Guía docente para una enseñanza virtual accesible”, Cátedra de Accesibilidad UCM, Madrid, 2006.



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