Applicable Web Content Accessibility Guidelines (WCAG) 2 and Functional Requirements

Final Project - Accessibility4md

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# Summary

This document summarizes the WCAG2 requirements that the accessibility2md project can support to ensure accessibility in the markdown. The accessiblity4md is a python script that evaluates the accessibility in a markdown file before publication (either in HTML or pdf scenario). While we respect the flexibility and schema-free in a markdown file, which is attractive to many communities, the accessibility4md tool provides the publishers the feedback to decide how much to meet the guideline criteria.

This document lists the applicable criteria and defines the high-level functional requirements in the accessibility4md project.

## Reference

* [How to Meet WCAG (Quickref Reference) (w3.org)](https://www.w3.org/WAI/WCAG21/quickref/?showtechniques=145%2C244&currentsidebar=%23col_overview&technologies=html%2Ccss%2Cjs%2Cserver%2Csmil%2Cpdf%2Cflash%2Csl#text-alternatives)
* [Markdown style guide | styleguide (google.github.io)](https://google.github.io/styleguide/docguide/style.html)
* [GitHub - Python-Markdown/markdown: A Python implementation of John Gruber’s Markdown with Extension support.](https://github.com/Python-Markdown/markdown)

# Applicable Criteria and Functional Requirements

## Perceivable

Text Alternatives - Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language.

### 1.1 Text Alternatives

1.1.1 [Non-Content – Level A](https://www.w3.org/WAI/WCAG21/quickref/?showtechniques=145%2C146%2C149%2C244&currentsidebar=%23col_overview&technologies=html%2Ccss%2Cjs%2Cserver%2Csmil%2Cpdf%2Cflash%2Csl#non-text-content)

The tool iterates any links and checks whether the alternative text is provided.

### 1.3 Adaptable

[1.3.1 Info and Relationships and 1.3.2 Meaningful Sequence – Level A](https://www.w3.org/WAI/WCAG21/quickref/?showtechniques=145%2C146%2C149%2C244&currentsidebar=%23col_overview&technologies=html%2Ccss%2Cjs%2Cserver%2Csmil%2Cpdf%2Cflash%2Csl#info-and-relationships)

The tool checks the structure in the markdown and whether there is a missing sequence.

### 1.4 Distinguishable

[1.4.3 Contrast (Minimum) – Level AA](https://www.w3.org/WAI/WCAG21/quickref/?showtechniques=145%2C146%2C149%2C244&currentsidebar=%23col_overview&technologies=html%2Ccss%2Cjs%2Cserver%2Csmil%2Cpdf%2Cflash%2Csl#contrast-minimum)

The tool checks whether the linked image of text has a contrast ratio of at least 4.5:1.

[1.4.11 Non-text Contrast – Level AA](https://www.w3.org/WAI/WCAG21/quickref/?showtechniques=145%2C146%2C149%2C244&currentsidebar=%23col_overview&technologies=html%2Ccss%2Cjs%2Cserver%2Csmil%2Cpdf%2Cflash%2Csl#non-text-contrast)

The tool checks the image in the file has ta contrast ratio of at least 3:1 against adjacent color(s).

## Operable

User interface components and navigation must be operable.

### 2.4 Navigable

[2.4.2 Page Titled – Level A](https://www.w3.org/WAI/WCAG21/quickref/?showtechniques=143%2C145%2C146%2C149%2C241%2C244&currentsidebar=%23col_overview&technologies=html%2Ccss%2Cjs%2Cserver%2Csmil%2Cpdf%2Cflash%2Csl#page-titled)

The first heading should be a level one heading and should be the same or nearly the same as the file name. The first level on heading is used as the page <title>. Tool warns on missing title.

[2.4.4 Link Purpose (In Context) – Level A](https://www.w3.org/WAI/WCAG21/quickref/?showtechniques=143%2C145%2C146%2C149%2C241%2C244&currentsidebar=%23col_overview&technologies=html%2Ccss%2Cjs%2Cserver%2Csmil%2Cpdf%2Cflash%2Csl#link-purpose-in-context) and [2.4.9 Link Purpose (Link Only)](https://www.w3.org/WAI/WCAG21/quickref/?showtechniques=145,244#link-purpose-link-only)

The purpose of each link can be determined from the link text alone or from the link text together with its programmatically determined link context, except where the purpose of the link would be ambiguous to users in general. The tool should check whether any link provided text has the description of the purpose of a link.

TBD: Use [aria-label](https://www.w3.org/WAI/WCAG21/Techniques/aria/ARIA8.html) for link purposes.

[2.4.10 Section Heading – Level AAA](https://www.w3.org/WAI/WCAG21/quickref/?showtechniques=145%2C244#section-headings)

TBD. This might be little tricky to determine the missing section heading in markdown file.

## Understandable

### 3.1 Readable

[3.1.4 Abbreviations – Level AAA](https://www.w3.org/WAI/WCAG21/quickref/?showtechniques=145%2C244%2C2410%2C253%2C314%2C412%2C413#abbreviations)

TBD: This might be the extended feature if time is allowed. Tool checks the abbreviation in the contents and provides feedback on whether it has the definition in place.

[GitHub - philgooch/abbreviation-extraction: Python3 implementation of the Schwartz-Hearst algorithm for extracting abbreviation-definition pairs](https://github.com/philgooch/abbreviation-extraction)

[GitHub - allenai/scispacy: A full spaCy pipeline and models for scientific/biomedical documents.](https://github.com/allenai/scispacy)

## Robust

Content must be robust enough that it can be interpreted by a wide variety of user agents, including assistive technologies.

Majority of criteria for Robust automatically meet in the markdown scenario. The library ([python-markdown](https://github.com/Python-Markdown/markdown)) should guarantee to produce the valid format of document (either in html or pdf).

# Comment on Non-Applicable Criteria

Although we can embed the video/audio link in the markdown file, we scope out the [1.2 Time-based media](https://www.w3.org/WAI/WCAG21/quickref/?showtechniques=145%2C244%2C2410%2C253%2C314%2C412%2C413#time-based-media) criteria in the project. It often uses captions or alternative description features from the provider, such as YouTube.

The input handling is not a common scenario where people use the markdown, so the project scopes out the criteria in [2.5 Input Modalities](https://www.w3.org/WAI/WCAG21/quickref/?showtechniques=145%2C244%2C2410%2C253%2C314%2C412%2C413#input-modalities),  [3.2 Predictable](https://www.w3.org/WAI/WCAG21/quickref/?showtechniques=145%2C244%2C2410%2C253%2C314%2C412%2C413#predictable), and [3.3 Input Assistance](https://www.w3.org/WAI/WCAG21/quickref/?showtechniques=145%2C244%2C2410%2C253%2C314%2C412%2C413#input-assistance).

The workflow in using markdown allows people to focus on their writing. All converter tools automatically produce a valid file format, especially in HTML ([4.1.1 Parsing](https://www.w3.org/WAI/WCAG21/quickref/?showtechniques=145%2C244%2C2410%2C253%2C314%2C412%2C413#parsing)).