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**Future Proofing Your Software:  
Don't Make Yourself Obsolete**

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Future Proofing? Really?

Not future proofing of technology

Future Proofing for US

If we are lucky enough, all of us will deal with the effects of AGING

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## The High Cost of “Living”

Baby Boomers first reached standard retirement age in 2011. Roughly 10,000 Baby Boomers retire every day and will continue to do so for another 11 years.

Generation X will see their first age 65 retirees in 10 years.

A large number of active digital users will find interacting with their devices more challenging if they are not already having issues.

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## Common Aging-Related Issues

**VISION** — general need for reading around age 45, reduced ability to determine contrast and distinguish colors.

**MOBILITY** — arthritis and other physical conditions (Parkinson's disease, etc.) can diminish the ability to perform fine motor control tasks

**HEARING** — loss of perception of higher frequencies, midrange and lower frequency sounds at lower decibel levels. Tinnitus and Meniere's Disease

**COGNITIVE** — Alzheimer's Disease, diminished short-term memory, distractions, and a difficulty focusing on complex tasks.

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## Accessibility vs Inclusive Design

### Accessibility:

“The design of products, devices, services, or environments for people with disabilities. Accessibility allows for design compatibility with a person’s assistive technology”.

### Inclusive Design:

“The design of mainstream products and/or services that are accessible to, and usable by, as many people as reasonably possible... without the need for special adaptation or specialized design”

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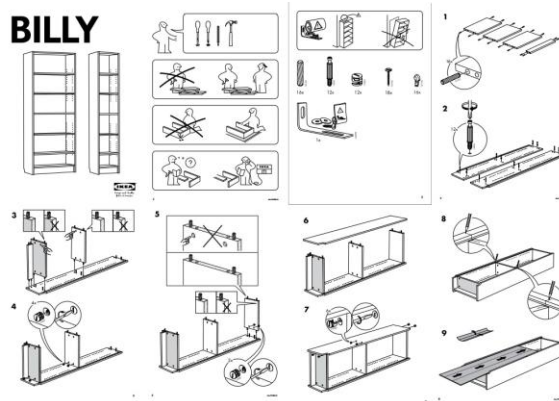
## Situational Disabilities

**Primary Disability:** When a user has a persistent issue (low vision, low hearing, limited mobility, cognitive disability)

**Situational Disability:** Where a situation may make a person without a primary disability have an issue that is a near equivalent

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???

**BILLY**

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## Ten Principles of Accessibility

1. Avoid making assumptions about the physical, mental, and sensory abilities of your users whenever possible.
2. Your users' technologies are capable of sending and receiving text. That's about all you'll ever be able to assume.
3. Users' time and technology belong to them, not to us. You should never take control of either without a really good reason.

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## Ten Principles of Accessibility

4. Provide good text alternatives for any non-text content.
5. Use widely available technologies to reach your audience.
6. Use clear language to communicate your message.

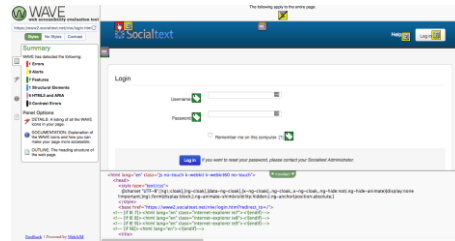
## Ten Principles of Accessibility

7. Make your sites usable, searchable, and navigable.
8. Design your content for semantic meaning and maintain separation between content and presentation.
9. Progressively enhance your basic content by adding extra features. Allow it to degrade gracefully for users who can't or don't wish to use them.
10. As you encounter new web technologies, apply these same principles when making them accessible.

# Accessibility and Inclusive Design Tools

**WAVE:**

**Web  
Accessibility  
Evaluation  
Tool**



<http://wave.webaim.org/>

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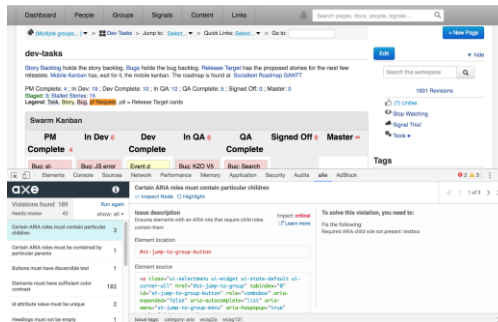
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# Accessibility and Inclusive Design Tools

**Developer Tools:  
aXe**



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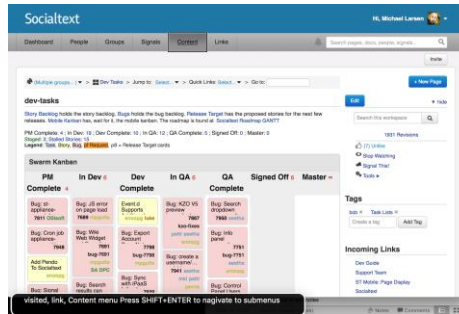
# Accessibility and Inclusive Design Tools

## Screen Readers:

VoiceOver

NVDA

JAWS



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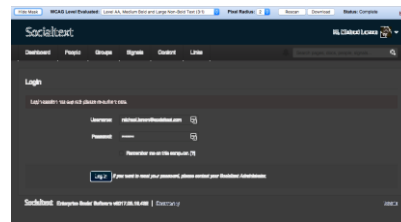
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# Accessibility and Inclusive Design Tools

## Color Contrast:

Color Contrast Analyzer

Colorblind Accessibility  
Extension



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# Accessibility and Inclusive Design Tools

## Cognitive Analysis:

### Hemingway

The screenshot shows the Hemingway app interface. The main text area contains a sample paragraph about the app's features, with various words and phrases highlighted in different colors (purple, red, blue, green, yellow) to indicate writing suggestions. A sidebar on the right displays readability metrics: Grade 6 (Good), Flesch-Kincaid Grade Level 12.9, and a readability score of 72. Below these metrics are several colored boxes with specific suggestions, such as 'Use of passive voice' and 'Phrases that are hard to read'.

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# Accessibility and Inclusive Design Tools

## Example Site:

### W3C Before and After

The screenshot shows a W3C Web Accessibility Initiative report titled 'Accessible News Page Report Before and After Demonstration'. The report is for a page titled 'Accessible News Page' and shows a score of 4. The report is organized into sections: 'Perceivable' and 'Operable'. Each section contains a table of criteria with their descriptions and results. The 'Perceivable' section includes criteria 1.1 (Text Alternatives), 1.2 (Standardizable), 1.3 (Adaptable), and 1.4 (Distinguishable). The 'Operable' section includes criteria 2.1 (Keyboard Accessible). All criteria listed have a 'Pass' result.

#	Title	Description	Result
1.1	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.	Pass
1.2	Standardizable	Provide alternatives for time-based media.	Pass
1.3	Adaptable	Create content that can be presented in different ways (for example simpler layout) without losing the meaning or structure.	Pass
1.4	Distinguishable	Make it easier for users to see and hear content including separating foreground from background.	Pass

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## Thinking Inclusively

- Make sure elements that appear on the screen appear on a printed page, too.
- Simple interfaces are usable interfaces. Do not make navigation or discovery more difficult than necessary.

## Think Inclusively

### **Make Resizing Text Easy**

- WCAG 2.0 (1.4.4 - Resize text, Level AA)
- Users should be able to resize text up to 200 percent without loss of content or functionality.
- Double the text size used and allow for the content and the container to resize without any issues to readability or usability.
- Avoid using definite pixel sizes
- Text scales uniformly and that the spacing and organization of other content on the page remains consistent.

## Think Inclusively

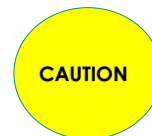
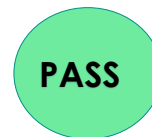
### Increase Line Space and Paragraph Space

- Paragraph spacing that is 1.5 times the line height and paragraphs are proportionally separated.
- Space between paragraphs should also increase so that it is at least 1.5 times as distant as the line spacing.
- By creating an alternating style sheet, with a click of a button, text can be displayed in its normal mode and this more greatly spaced option.

## Think Inclusively

### If using Color to Express Meaning, Also Use Explicit Text

- For many, as they age, color perception diminishes.
- Design systems to also include a clear indication of what colors are actually trying to convey
- Include the word to help make that meaning easier to interpret.

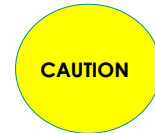
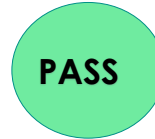


## Think Inclusively

### Where Color is Used, Search for Additional Label Text

- In the case of creating icons, searching for a particular class with a color value should also include searching for a specific label or include text that will make sense with that color.

-Creating a round circle that is filled with red (as an indicator that something is wrong) should also contain a text string that says "Fail" or at least an "F" or equivalent to help make sure the meaning of the circle is clear.



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## Think Inclusively

### Explicit Link Text

- Make link text as explicit as possible pertaining to what the link is and where it will take you.

- Spelling out that specific purpose will be much more helpful than a generic link text that says "Click here".

- Easy automation win: look for the text "Click here" on any page and determine if there are more than one instance of the phrase.

GOOD:

[View our quarterly report](#)  
[Read our newsletter](#)  
[See the Results of our latest survey](#)

BAD:

[Click Here](#)  
[Click Here](#)  
[Click Here](#)

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Tools cannot make judgment calls

- Tools identify issues, can assert known states
- Tools can confirm presence of tags
- Tools cannot confirm a comparable experience
- Tools cannot determine appropriateness

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Summary

- The farther along a product gets in its development, the more difficult it is to make modifications to its design.
- Inclusive Design early in product development can make a more usable product for everyone.
- Inclusive Design will make last mile modifications for Accessibility much easier to implement.

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## Summary

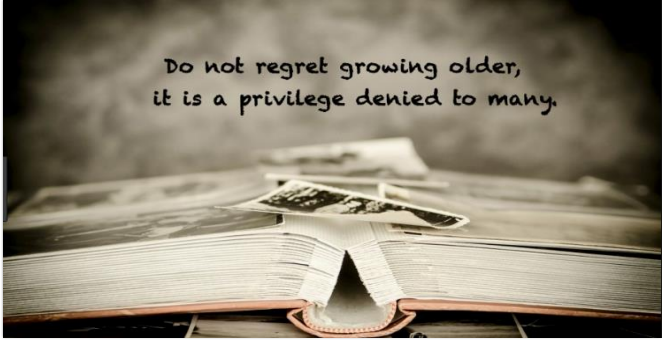
- Practice empathy
- Include these design factors into the process from the beginning
- Think about the future – you may end up benefiting from your own design

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## Summary

- Aging is a part of life that (if we are lucky) we all will face.
- By designing our software up front to take into consideration the issues we face when we age, we effectively "future proof" our software and help ensure that it will be responsive to us and easy to use well into the future.

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Do not regret growing older,  
it is a privilege denied to many.

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## References

- Wikipedia. "Accessibility". <https://en.wikipedia.org/wiki/Accessibility>
- British Standards Institute. 2005. "What is Inclusive Design?". <http://www.inclusivedesign toolkit.com/betterdesign2/whatis/whatis.html#p30>
- Disabled World. "Defining Disability Diversity in Society". <https://www.disabled-world.com/disability/diversity.php>
- Census Bureau Reports. Nearly 1 in 5 People Have a Disability in the U.S. <https://www.census.gov/newsroom/releases/archives/miscellaneous/cb12-134.html>
- World Health Organization. World Report on Disability. [http://www.who.int/disabilities/world\\_report/2011/en/](http://www.who.int/disabilities/world_report/2011/en/)
- North Carolina State University. The Principles of Universal Design. [https://www.ncsu.edu/ncsu/design/cud/about\\_ud/udprinciples.htm](https://www.ncsu.edu/ncsu/design/cud/about_ud/udprinciples.htm)

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## References

- Sydik, Jeremy J. 2007. "Design Accessible Web Sites: Thirty-Six Keys to Creating Content for All Audiences". Pragmatic Publishing
- Gareev, Albert and Larsen, Michael. 2015. "Black Box Accessibility Testing: A Heuristic Approach", <http://www.associationforsoftwaretesting.org/wp-content/uploads/Black-Box-Accessibility-Testing-A-Heuristic-Approach-.pdf>
- WAVE. Web Accessibility Evaluation Tool. <http://wave.webaim.org/>
- W3C. Web Accessibility Initiative. Web Content Accessibility Guidelines (WCAG) Overview. <https://www.w3.org/WAI/intro/wcag>
- W3C. Web Accessibility Initiative. Before and After Demonstration. <https://www.w3.org/WAI/demos/bad/>
- Pickering, Heydon. 2016. Inclusive Design Patterns: Coding Accessibility into Web Design". Smashing Magazine GmbH

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