SC 2.5.8 - Level AA - Pointer Target Spacing

SC text (1st Nov 2020)

For each target, the distance to the furthest side of each adjacent target is at least 24 CSS pixels, except when:

- **Inline:** The target is in a sentence or block of text;
- **User Agent Control:** The size or spacing of targets is determined by the user agent and is not modified by the author;
- **Essential:** A particular presentation of the target is essential to the information being conveyed;
- **Nested:** Where one target is entirely enclosed within another target, each provides a unique target area of at least 24 by 24 CSS pixels.

Note: The User Agent Control exception would not apply as soon as styling properties such as font size have been modified by the author

SC 2.5.8 - Level AA - Pointer Target Spacing

SC text (22nd Oct 2020)

For each target, the horizontal and vertical distance between the center of the target and the closest edge of the nearest target is at least 12 CSS pixels except when:

- **Inline:** The target is in a sentence or block of text;
- **User Agent Control:** The size of the target is determined by the user agent and is not modified by the author;
- **Essential:** A particular presentation of the target is essential to the information being conveyed.

Note: The User Agent Control exception would not apply as soon as styling properties such as font size - and in the case of mobile/tablet browsers, viewport meta - has been modified by the author

target

region of the display that will accept a pointer action, such as the interactive area of a user interface component

NOTE

If two or more touch targets are overlapping, the overlapping area should not be included in the measurement of the target size, except when the overlapping targets perform the same action or open the same page.

Proposal as of October 20

2.5.8 Target Size (AA)

The size of the target including the space around target, where space around the target cannot overlap, is at least 24 by 24 CSS pixels except when:

- Inline: The target is in a sentence or block of text;
- User Agent Control: The size of the target is determined by the user agent and is not modified by the author;
- Essential: A particular presentation of the target is essential to the information being conveyed.

Note: This exemption would not apply as soon as anything like font size - and in the case of mobile/tablet browsers, viewport meta - has been modified by the author

Notes to the group:

- 24 CSS pixels based on the research that Sukriti sent which is based on the MIT research (see graph below) and error rate
- Small targets would not be incentivized since the size has to be 24 by 24 CSS pixels regardless of the size of the target
- Amazon, Microsoft, IBM, Adobe, New York Times, Hindustan Times all pass
- CNN almost passes but the bulleted lists of links that do not wrap to another line fail
- Financial Times fails at 22px
- W3C fails in the footer links and would need to have additional spacing or the text size would need to be increased

MIT Research

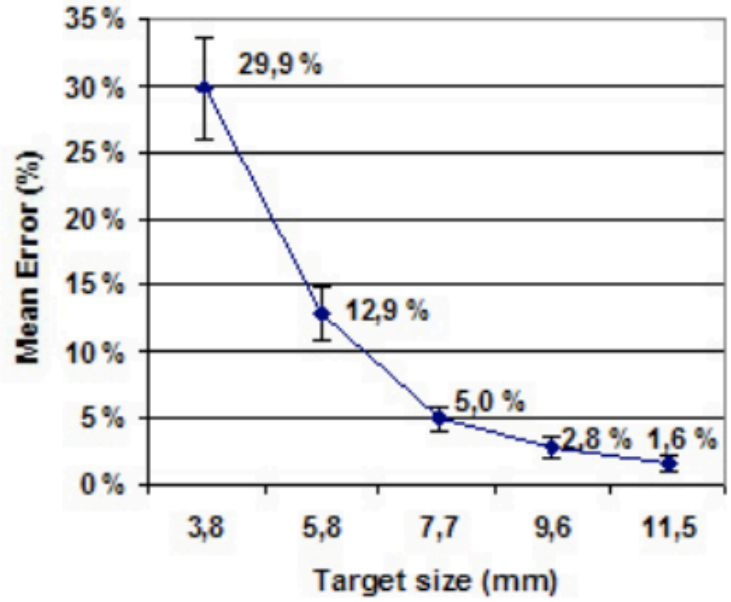

Figure 4. (a) Mean percentage of erroneous trials for each target size in discrete target study phase.

Source : MIT Target Size Study for One-Handed Thumb Use on Small Touchscreen Devices - ACM

Target size study for one-handed thumb use on small touchscreen devices.
Publication:MobileHCI '06: Proceedings of the 8th conference on Human-computer interaction with mobile devices and services September 2006 Pages 203–210

Authors : Pekka Parhi, University of Oulu, Finland

Amy Kathleen Karlson, University of Maryland, College Park, MD
Ben Bederson, University of Maryland, College Park, MD

HISTORY

For each target, there is an area with a width and height of at least 44 CSS pixels that includes it, and no other targets, except when:

- **Enlarge:** A mechanism is available to change the CSS pixel size of each target, or its spacing, so there is an area with a width and height of at least 44 CSS pixels that includes it, and no other targets;
- **Inline:** The target is in a sentence or block of text;
- **User agent:** The size of the target is controlled by the user agent and is not modified by the author;
- **Essential:** A particular presentation of the target is essential to the information being conveyed.

NOTE

This criterion has been formulated to increase the hit-area of small targets, but the group would like feedback from providers of touch-screen devices if there is another way of forming the criteria to better complement the tap-heuristics used.

NOTE

Are there issues with internationalization when describing inline links?

NOTE

Are there issues with pop-over content overlapping targets triggering failures?

Issues :

https://github.com/w3c/wcag/issues/1456 - need clarification for where the number is coming from, whether applicable to touch screen as well as desktop, pop up content

https://github.com/w3c/wcag/issues/1445 - need more research to back the number. Willing to help with user research.

https://github.com/w3c/wcag/issues/1444 - alternative suggestion *"For each target, the horizontal or vertical distance between the center of the target and the closest edge of the nearest interactive target is at least 22 CSS pixels."*
The same exceptions should apply.

https://github.com/w3c/wcag/issues/1433 - Raised concern on incentivizing smaller targets and proposed minimum target size and minimum spacing.

https://github.com/w3c/wcag/issues/1432 - Should a visible, programatically bound text label count as part of the target?

https://github.com/w3c/wcag/issues/1384 - three scenarios where trying to meet the SC in a list of links would result in a less accessible experience

https://github.com/w3c/wcag/issues/1381 - Page zoom, examples from google docs

Other considerations :

Inline links, dropdown menus, popups,

Proposal 1 :

Target Size (AA)

The size of the target for pointer inputs is at least 26 by 26 CSS pixels except when:

- Inline: The target is in a sentence or block of text;
- User Agent Control: The size of the target is determined by the user agent and is not modified by the author;
- Essential: A particular presentation of the target is essential to the information being conveyed.

- The size of the target is determined by the user agent and is not modified by the author (noting that this exemption would not apply as soon as anything like font size - and in the case of mobile/tablet browsers, viewport meta - has been modified by the author)

Proposal 2 :

For each target that has a width or height less than 44 CSS pixels, the target area has a width and height of at least 24 CSS pixels with a minimum spacing on the height and width of 4 CSS pixels where the spacing cannot overlap.

- Inline: The target is in a sentence or block of text;
- Essential: A particular presentation of the target is essential to the information being conveyed.

Proposal 3 :

Drop the SC

Research on target size :

1. http://touchlab.mit.edu/publications/2003_009.pdf

Human fingertip width 16-20mm in diameter

MIT Target Size Study for One-Handed Thumb Use on Small Touchscreen Devices - ACM

Since holding a device in one hand constraints thumb movement, we varied target positions to determine if performance depended on screen location. The results showed that while speed generally improved as targets grew, there were no significant differences in error rate between target sizes ≥ 9.6 mm in discrete tasks and targets ≥ 7.7 mm in serial tasks. Along with subjective ratings and the findings on hit response variability, we found that target size of 9.2 mm for discrete tasks and targets of 9.6 mm for serial tasks should be sufficiently large for one-handed thumb use on touchscreen-based handhelds without degrading performance and preference.

Considering that if we address the minimum target size for touch screen devices, we will address it for mouse or pointer on the web since the former is less accurate given the size of a finger vs that of a mouse pointer.

The lower bound in research for reducing error rates, which is the purpose of this SC is 9.2 mm and upper bound is 9.6 for two different kinds of tasks. Anything lower has error rates more than 5%. At 5.8 mm, error rate is 15% for serial taps and 12% of discrete taps.

If we take the upper bound to cover both, we're at 9.6 mm
Translating 9.6 mm into pixels gives us 36.28 pixels, which is only 8 pixels smaller than the AAA version.

If we consider a 12% error rate as acceptable for AA, we come to about **20 pixels f**or the minimum target size.

https://material.io/design/layout/spacing-methods.html#spacing

Google material design guidelines have several examples of targets with **24 px** dimensions such as the status bar.

Other rationale :

Default text size on web documents = 16 px. Default line height = 1.2*font size brings us to **19.2 px**. If we count above and below it is **1.2*16 = 22.4 px**

With this rationale and supporting documentation from material guidelines, 24 px seems like a good baseline for avoiding the really bad (small) touch target size for people with motor impairments that will help identify and more confidently hit the intended target on the screen. We do not say anything about spacing given concerns around incentivizing smaller targets due to shared spacing.

If we consider anything lower than 20 px, we might want to drop the SC altogether given the empirical high error rate for sizes below, thereby defeating the purpose of the SC.

Major websites such as eBay, Amazon, Google, Adobe, NYTimes all pass the 24 px target + spacing. In some places such as w3.org and financial times, it fails on bulleted lists and footer items.

OLDER HISTORY
2.2 SC Spacing Between Touch Targets

https://docs.google.com/document/d/1sszSUKB8t3VuRzxHtOjLfQZjNYCw-xr_EbuMwW7WiGc/edit?usp=sharing