Accessibility: Are *UX*-perienced?

Understanding User Needs for an Accessible User Experience

18F Accessibility Hackathon

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Hey, **groovy people!**

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#a11yHack

What we're going to talk about

☺ We'll briefly review the basics of accessible user experiences.

☺ We'll discuss how disabilities or conditions relate to what people need for an accessible, usable experience, and our responsibility to our users.

☺ Enjoy some '6os culture while we're at it.
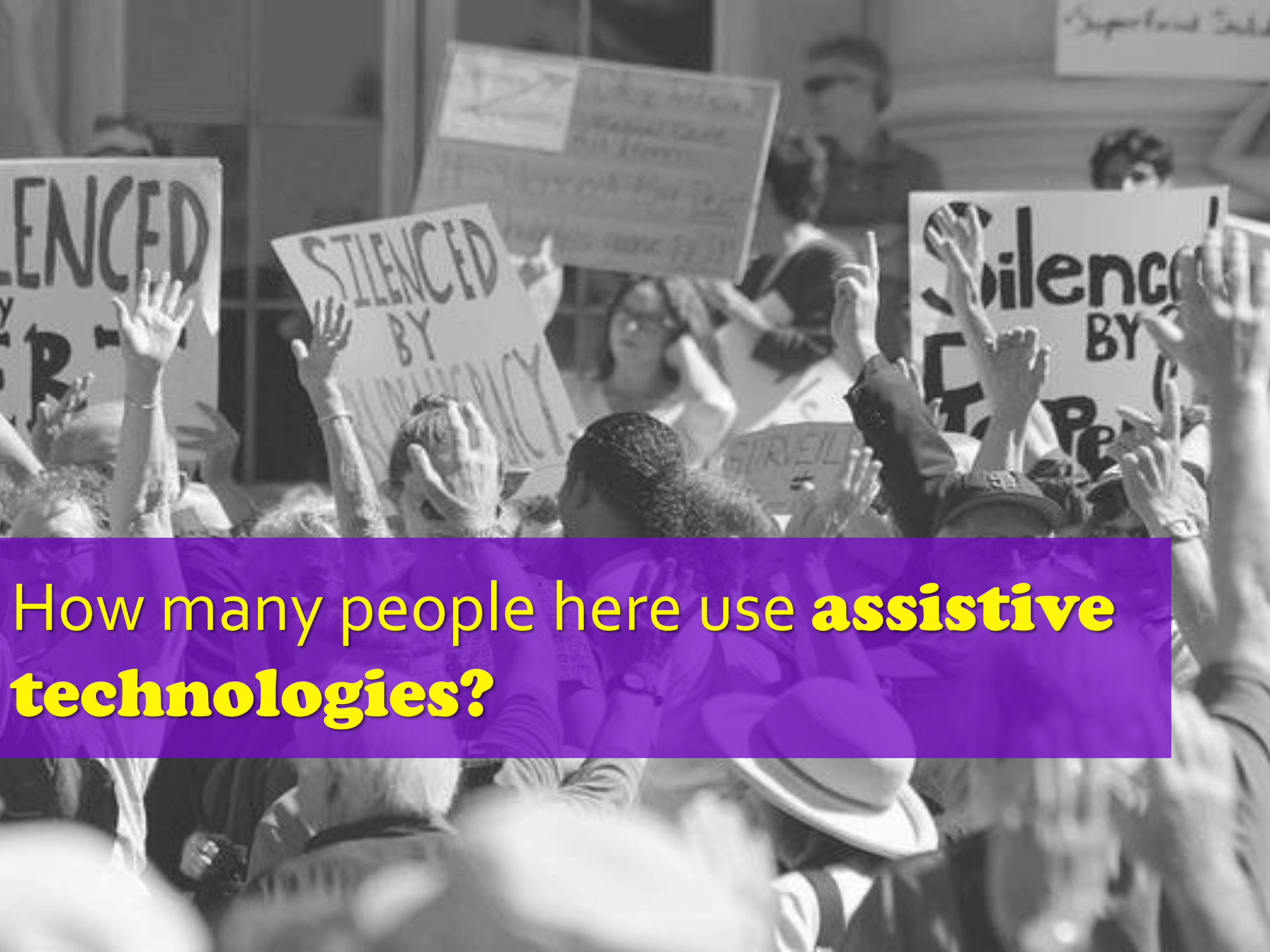
How many people here use **assistive technologies?**

Poll: If you use a screen reader, like JAWS or NVDA, to test for accessibility, **will that tell you if your digital project is accessible to all users?**

There's no **silver bullet...**

"No tool exists that you can run against your web site (or web page for that matter) in order to assert that it is accessible and/or complies with the Section 508 provisions or the

Web Content Accessibility

Guidelines [WCAG], however much

you are willing to pay … (continued)
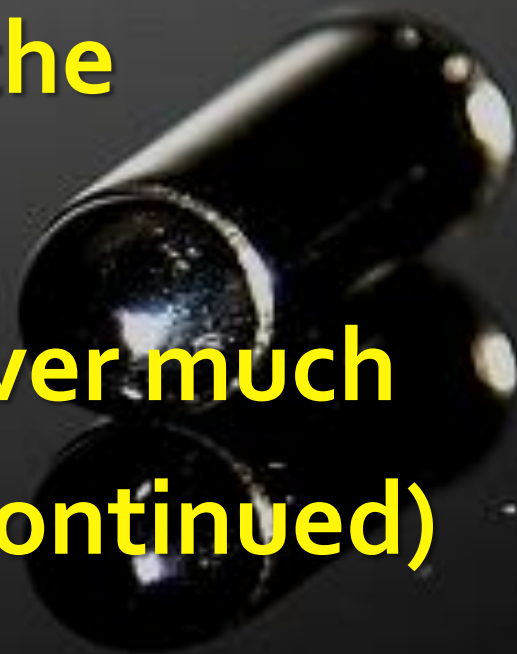
And **furthermore...**

"**When a web site claims Section 508 Conformance or WCAG Conformance from some tool or other (and many do it), the most it can mean is that the site (or page) passed all of the *automatic* Section 508 or WCAG tests.**"

– Jim Thatcher, **Web Accessibility Testing**

"Oh, one of us tested it with a **screen reader...**"

But what have you done to **ensure your project is accessible?**

<Crickets>

Assistive technologies are not the starting point for ensuring accessibility.

THE DEADLIEST GAME IN THE WORLD... **ESPIONAGE!** PLAYED AGAINST IMPOSSIBLE ODDS AND **NO RULES!**

PETER LUPUS

Mission: **Good UX**

Example: **What do drivers need** when they're on the road?

Craft a delightful, **accessible user experience:**

Consider accessibility at the **beginning of your project**.

Design for accessibility.

Choose accessible platforms and technologies.

Use **good development practices**.

Write content in **plain language.**

Include people with disabilities in user research.

You'll do this by **considering the conditions and needs** of your current and prospective audience.

Sue, age 67

"Everyone says technology is easy to use, but I find it frustrating."

About her:
- Retired florist
- Not very tech savvy
- Uses e-mail and Skype to talk with her grandkids
- New Facebook user
- Her daughter, Amelia (a web developer), set up her browser.

Accessibility consideration: Tunnel vision (loss of peripheral vision) due to glaucoma

Technology use:
Galaxy S5
Asus VivoBook
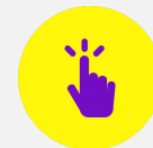
Accommodations or assistive technologies used: Using Stylish, a Firefox and Chrome add-on, Amelia created custom style sheets to override font sizes that are too large on websites (also see UserStyles.org).

Needs for a good experience:
- Very small text (while neither intentional nor a best practice, some sites almost meet her needs because they use small text)
- Ability to resize text based on her personal style sheets, or through her browser or devices

How to test for Sue's considerations

Tools and/or how to test:
- Ensure text is set in percentages (preferable) or ems
- Use ems for container divs; set up some custom styles and see if they work with your project; if they don't, you'll need to adjust your code to fix the conflicts
- Turn off styles and see if the content makes sense—make sure there's no hidden content, that becomes visible with styles overriden or disabled, and doesn't make sense when it's visible

Applicable WCAG 2.0 standards and verification techniques:
- Distinguishable Content: Guideline 1.4
- Resize text: Success Criterion 1.4.4
- Contrast (Enhanced): Success Criterion 1.4.6
- Visual Presentation: Success Criterion 1.4.8
- Images of Text: Success Criterion 1.4.9

Jason Becker, age 45
(real person example)

"I can't live or work easily without technology!"

About him:
- Jason Becker is a highly respected guitarist who played with David Lee Roth's band when he was diagnosed with ALS.
- He still writes music and has released several albums after he lost the use of his hands and arms.

Accessibility consideration: He's paralyzed, except for his eyes, facial muscles, and lips; he uses a custom eye chart to communicate; he only uses his head and eyes to control his computer system.

Technology use: Speculatively, a MacBook

Needs for a good experience:
- Support for non-mouse/alternate keyboard devices
- Well-designed pages, without many links
- While using his eyes as a keyboard, he can tire easily from exertion before he gets to any info he needs and the task he needs to complete.
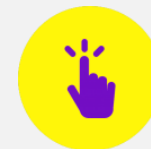
Accommodations or assistive technologies used:
- Custom eye chart
- Eye tracking software
- Writes music using his head and eyes

How to test for Jason's considerations

Tools and/or how to test:
- Ensure keyboard/device independence—unplug your mouse and test with a keyboard!
- See W3C's [keyboard navigation schemes for widgets](#)
- Keep abreast of W3C's [Indie UI Events spec](#) to see what effect it will have eventually
- Use [device independent event handlers](#) in scripts

Applicable WCAG 2.0 standards and verification techniques:
- Keyboard Accessible: [Guideline 2.1](#)

Mica, age 52

"Can you hook me up to an internet IV?"

About her:
- Teacher
- Mega sports fan and avid video gamer
- Computer savvy: ran her middle school's computer lab
- Enjoys watching sports videos on her laptop or on her phone

Needs for a good experience:
- Can't use content that causes the screen to flash more than three times within one second
- This includes videos, animations, and Escher-style graphics that are optical illusions or have strobe-like effects
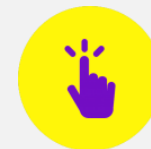- Ability to resize text

Accessibility consideration:
She's had photosensitive epilepsy since age 5. Flashing content can trigger seizures (see London 2012 Olympics Site Withdraws Film). Has aging eyes: needs larger fonts.

Technology use:
Acer Chromebook 13; Dell Inspiron 11; iPhone 5S

Accommodations or assistive technologies used:
- None

How to test for Mica's considerations

Tools and/or how to test:
- Trace Center's [PEAT (Photosensitive Epilepsy Analysis Tool)](#)
- This is one area that is a bit beyond "access"—most people with epilepsy will be able to access your content, and they won't necessarily know if your content can induce a seizure; flashing content is potentially dangerous. This does not test static graphics that can be dangerous.
- **If you must** post content that could cause a seizure, post it with a warning and do not auto-play it or show it automatically.
- See OK.gov's information about [graphics that can cause seizures](#) and WebAIM's guidance on [seizures and neurological conditions](#).
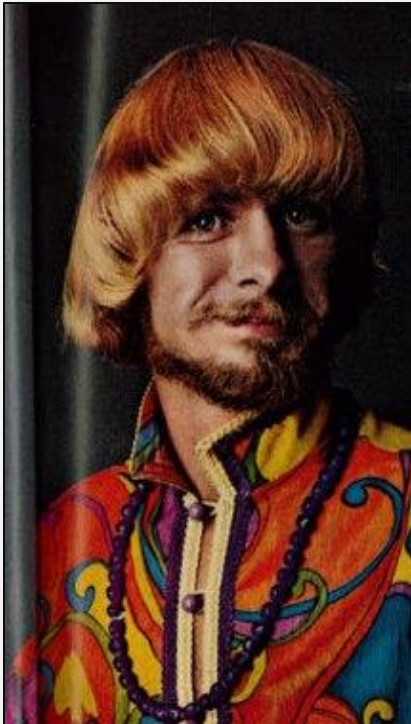- Ensure font sizes are in percentages (preferable) or ems so users can zoom in browsers.

Applicable WCAG 2.0 standards and verification techniques:
- Seizures: [Guideline 2.3](#)
- Resize Text: [Success Criterion 1.4.4](#)
- Contrast (Minimum): [Success Criterion 1.4.3](#)

Greg, age 24

About him:
- Thinks texting is an art
- Blogs about food
- Takes lots of pictures
- Power Yelp user
- Impulsive and will go almost anywhere on the spur of the moment

Accessibility consideration: Has deuteranopia (color blind with green deficiencies)

Technology use: iPhone 6 Plus phone; HP Slate 10 Tablet
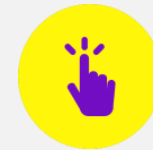
Accommodations or assistive technologies used:
- The HueVue app helps Greg to identify colors when he needs them. It's not always convenient to use.

Needs for a good experience:
- Content that doesn't rely on color to provide meaning or content
- Uses maps a lot and finds them difficult to understand when they're color coded without further explanation of color meanings

How to test for Greg's considerations

Tools and/or how to test:
- Wickline Colorfilter
- Vischeck (the online page testing function is down, but you can run images or download it)

Applicable WCAG 2.0 standards and verification techniques:
- Contrast (Enhanced): Success Criterion 1.4.6

Julie, age 15

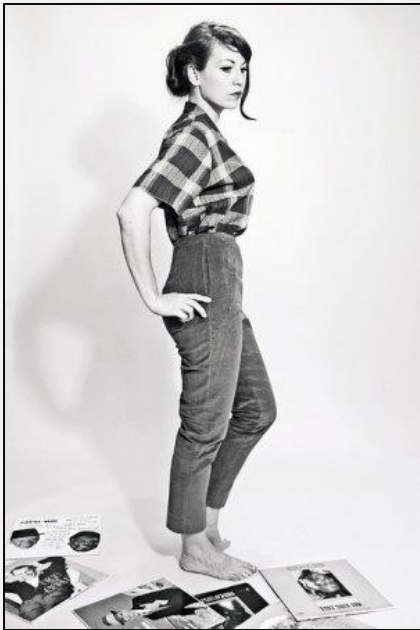## "I love looking at vintage maps and stamps."

About her:
- Average kid—loves games, hates school (especially homework)
- Was in an accident at age 7; injuries resulted in brain damage
- Wants to be a veterinarian
- Collects maps and stamps

Needs for a good experience:
- Simple, clear layout; consistent navigation
- Headings and bullets
- Content written in plain language without slang, irony, and sentence fragments
- Inline definitions for abbreviations, acronyms, and jargon
- Iconography, drawings, animations
- Captions and transcripts for videos

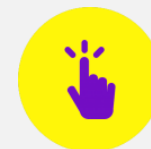**Accessibility consideration**: Has a mild cognitive (intellectual) disability; short-term memory loss

Technology use: Galaxy Note 4 phone (Android), MacBook Pro

Accommodations or assistive technologies used:
- Occasionally uses a screen reader, particularly when she's researching online for homework assignments or when she has a hard time understanding things (narration is easier to understand than reading)

How to test for Julie's considerations

Tools and/or how to test:
- Test your content with users
- Do a hallway test: Set up in a coffee shop close to a high school and ask people what your content means; ask them to complete a task (or how they'd complete a task) based on instructions you provide
- Review the wireframes and initial design against WebAIM's [Accessibility for Designers reference]

Applicable WCAG 2.0 standards and verification techniques:
- Adaptable: [Guideline 1.3]
- Visual Presentation: [Success Criterion 1.4.8]
- Reading Level: [Success Criterion 3.1.5]

Darren, age 38 "I need to find a job—*fast*!"

About him:
- Unemployed—was a general contractor and house flipper in Florida; was hit hard in the housing market crash
- Lives with his parents until his situation improves
- Works odd jobs to pay back his outstanding loans

Needs for a good experience:
- High contrast since his phone doesn't adjust for lighting conditions
- Well-formed code that isn't bloated or too heavy from multiple processes, that will load as quickly as possible

Accessibility consideration: Uses outdated technology because he can't afford to replace his devices

Technology use: iPhone 3GS; Dell Latitude D630. He gets frustrated using both devices because content loads slowly (content weight is heavy).

Accommodations or assistive technologies used:
- None

How to test for Darren's considerations

Tools and/or how to test:
- Check contrast of all foreground and background color combinations: In this mobile first age, make sure color contrast is at least 7:1; if mobile is a priority, make it happen; it's not difficult
- Use Paciello Group's Color Contrast Analyser or WebAIM's Color Contrast Checker

Applicable WCAG 2.0 standards and verification techniques:
- Distinguishable: Guideline 1.4
- Contrast (Enhanced): Success Criterion 1.4.6
- Parsing: Success Criterion 4.1.1

What situations didn't I mention?

- People who are blind
- People who are deaf or hard-of-hearing
- People who have autism or Asperger Syndrome, or who are on the autism spectrum
- People who have cerebral palsy
- People who have chronic pain
- People who have low-language proficiency
- People who have migraines
- People who have dyslexia
- People who are DeafBlind
- What about multiple disabilities?
- More mobile situations
- So much more …
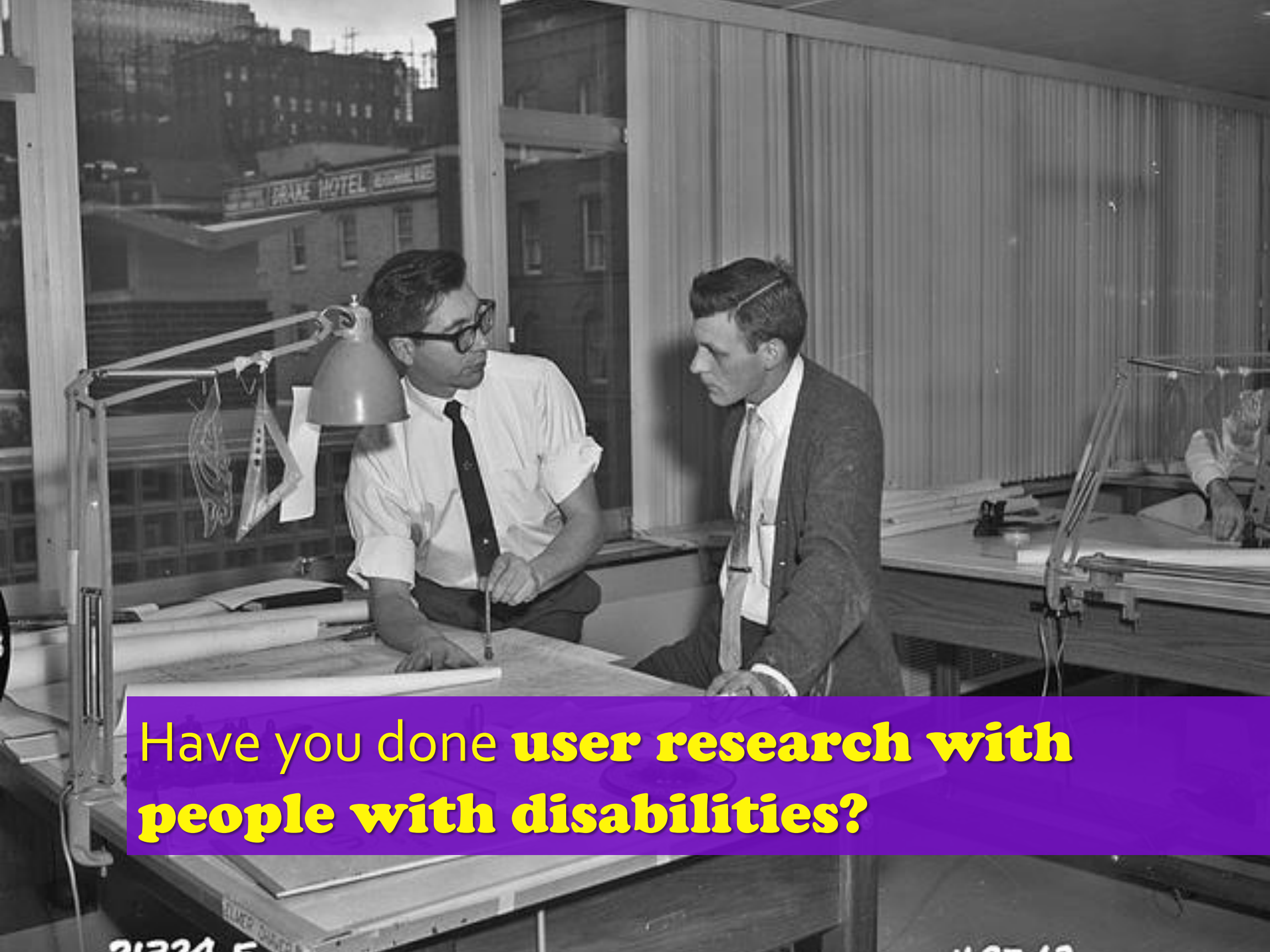
Have you done **user research with people with disabilities?**

Only **you can prevent barriers** to content.

We are **problem solvers**

design + development + content + project management =

hard work!

What's **your role?**

Use the Accessibility Responsibility Tool to break down the WCAG 2.0 guidelines by **team roles and responsibilities** (see the resources section).

Wrap-up/recap

- Provide a good user experience—that's when everyone can access our information.

- Use the six points for creating an accessible, delightful user experience.

- Prevent any barriers to access—it's in your hands.

- Accessibility isn't a feature.

- Don't get into a rut with Agile—minimum viable product must work for your entire audience.

- People are watching us and our work *hard*!

- User research is the key to good experiences—know your audience's needs and involve them in your testing.

Remember …

"For people without disabilities, technology makes things easier. **For people with disabilities, technology makes things possible**."

– IBM training manual, 1991

Groovy resources

WCAG 2.0 and general *a11y

- [Constructing a POUR Website](#), WebAIM
- BBC's [Future Media Standards and Guidelines](#)
- [A11y Buzz](#)
- [Accessibility Responsibility Tool](#), WET Toolkit

* accessibility

Mobile

- [Mobile Accessibility Guidelines](#), BBC
- [Mobile Accessibility Tests](#), Henny Swan
- [iOS Accessibility – A Useful Guide For Testing](#), Rosie Sherry
- [Setting Up iOS and Android for Accessibility Testing](#), Kathy Wahlbin
- [Why Mobile Accessibility Matters: Best Practices to Make Your Mobile Site Accessible](#), mobiForge

Project management

- [Integrating Accessibility in the Organization's Web Development Life Cycle](#), Denis Boudreau

- [Accessibility for Project Managers](#), Henny Swan

- [Managing Accessibility Compliance in the Enterprise](#), Karl Groves

- [Plan for Accessibility](#), Option Keys

- [Planning Accessibility](#), Government of Canada

- [Just Ask: Integrating Accessibility Throughout Design](#), Shawn Lawton Henry

Design

- [Web Accessibility for Designers](), WebAIM
- [Just Ask: Integrating Accessibility Throughout Design](), Shawn Lawton Henry
- [Design Considerations](), WebAIM
- [Color Contrast Checker](), WebAIM
- [Accessibility Color Wheel]()
- [Trace Photosensitive Epilepsy Analysis Tool]() (PEAT)

Development resources 1

- [Web Accessibility for Developers](#) (videos), BBC
- Build a code library or find one on Github!
- Use code generators (see [Accessify's tools](#)).
- [Web Developer Toolbar](#), Chris Pederick
- [Firebug](#), Mozilla
- [WCAG 2.0 Checklist](#), WebAIM
- [Web Accessibility Gone Wild](#), WebAIM

Development resources 2

- W3C [Mobile Web Best Practices](#)
- [Juicy Studio Accessibility Toolbar](#) —for ARIA, data tables, color contrast
- [aChecker](#), Inclusive Design Institute at OCAD University
- [WAVE Toolbar](#), WebAIM
- [Favelets for Checking Web Accessibility](#), Jim Thatcher

Writing content

- [Accessibility for Web Writers](), by 4 Syllables
- [Content and Usability: Web Writing](), Web Credible
- [Make it Plain: Accessibility and Usability Through Plain Language](), Angela Hooker (*hey*!)
- [Plain Language: Accessibility for Information](), Whitney Quesenbery
- [Plain Language Checklist](), PlainLanguage.gov

Quality assurance 1

- [Template for Accessibility Evaluation Reports](#), W3C-WAI
- [Accessibility Evaluation Resources](#), W3C-Web Accessibility Initiative
- [Evaluation, Testing, and Tools](#), WebAIM
- [WCAG 2.0 Checklist](#), WebAIM
- [Wickline Color Blind Web Page Filter](#)
- [Web Developer Toolbar](#), Chris Pederick

Quality assurance 2

- [Firebug](), Mozilla
- [Favelets for Checking Web Accessibility](), Jim Thatcher
- [Trace Photosensitive Epilepsy Analysis Tool]() (PEAT) – tests flashing content
- [WAVE](), WebAIM
- Web Accessibility Initiative (WAI), [Evaluating Websites for Accessibility]()

Quality assurance 3

- Central Office of Information (COI), [Delivering Inclusive Websites](#)

- [Establishing a Screen Reader Test Plan](#), Henny Swan

- [How to Use NVDA and Firefox to Test for Accessibility](#), Marco Zehe

- [Web Accessibility Gone Wild](#), WebAIM

Usability

- [Usability Testing](#) and [Conducting Usability Testing](#), *Just Ask: Integrating Accessibility Throughout Design*, Shawn Lawton-Henry

- [Usability Testing for People with Disabilities](#), Kathy Wahlbin and Mary Hunter Utt

- Steve Krug, *Rocket Surgery Made Easy*

Yeah, baby, thanks!

Angela M. Hooker

@[AccessForAll](#)

[SlideShare](#)

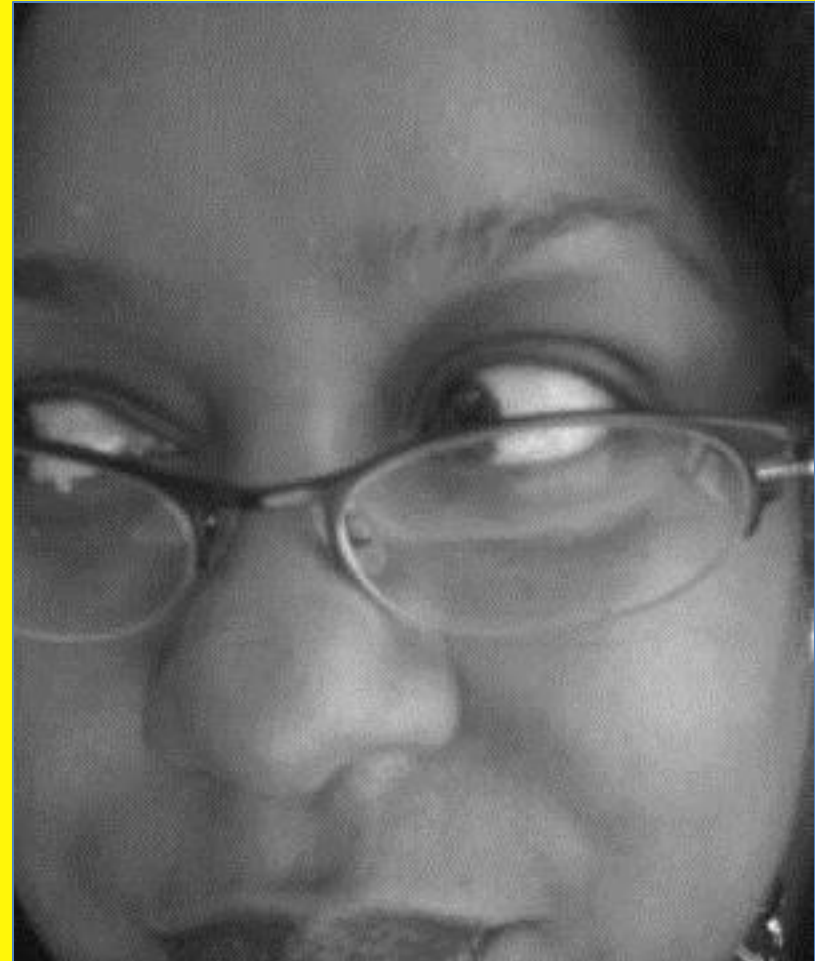[LinkedIn](#)
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- Smokey Bear http://cbldf.org/wp-content/uploads/2012/11/gov-comics024-1024x928.jpg
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- David Prasad, Riveting Speeches by 27 African American Movement Leaders https://www.flickr.com/photos/33671002@N00/5796741989
- Register to Vote, Kheel Center https://www.flickr.com/photos/kheelcenter/5278846477
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- "Councilmember Myrtle Edwards," Seattle Municipal Archives https://www.flickr.com/photos/seattlemunicipalarchives/3617288464

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- "Construction on Montlake Interchange, 1963," Seattle Municipal Archives
  https://www.flickr.com/photos/seattlemunicipalarchives/15041832253
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- "The Mummy," Tom
  https://www.flickr.com/photos/tom1231/5069205181
- "Louis Stulberg looks on as Hubert H. Humphrey gives a speech during his November 15, 1968 presidential campaign," Kheel Center
  https://www.flickr.com/photos/kheelcenter/5278459275