Key concepts to know

Web development I: Front-end engineering

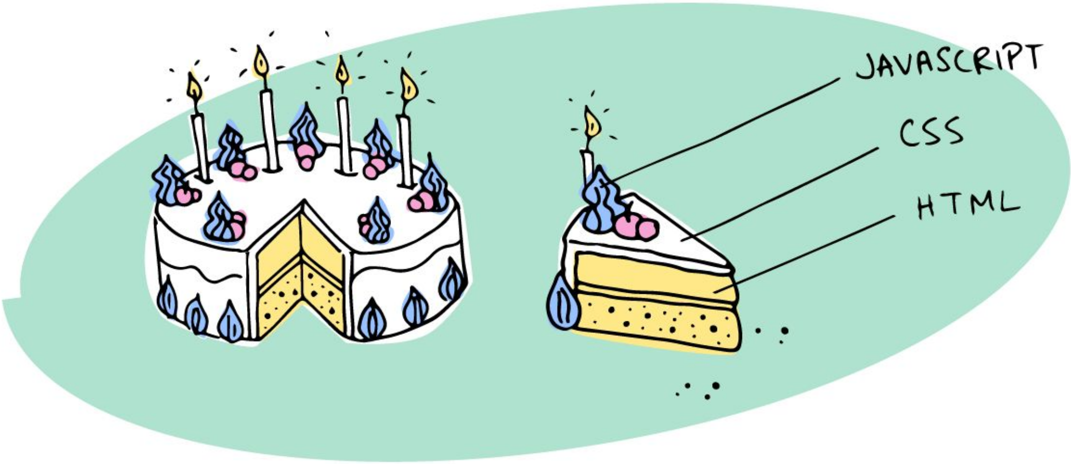
A dizzying multitude of devices

Sticking with the standards

- Are a consensus-based decision process
- Reflect the views of diverse industries and global stakeholders
- Ensure interoperability
- Balance speed, fairness, accountability, and quality
- Are stable and maintained in a predictable fashion
- Consider accessibility, privacy, security, and internationalization
- No patent licensing commitments

Progressive enhancement

Content comes first. Everything else is optional.



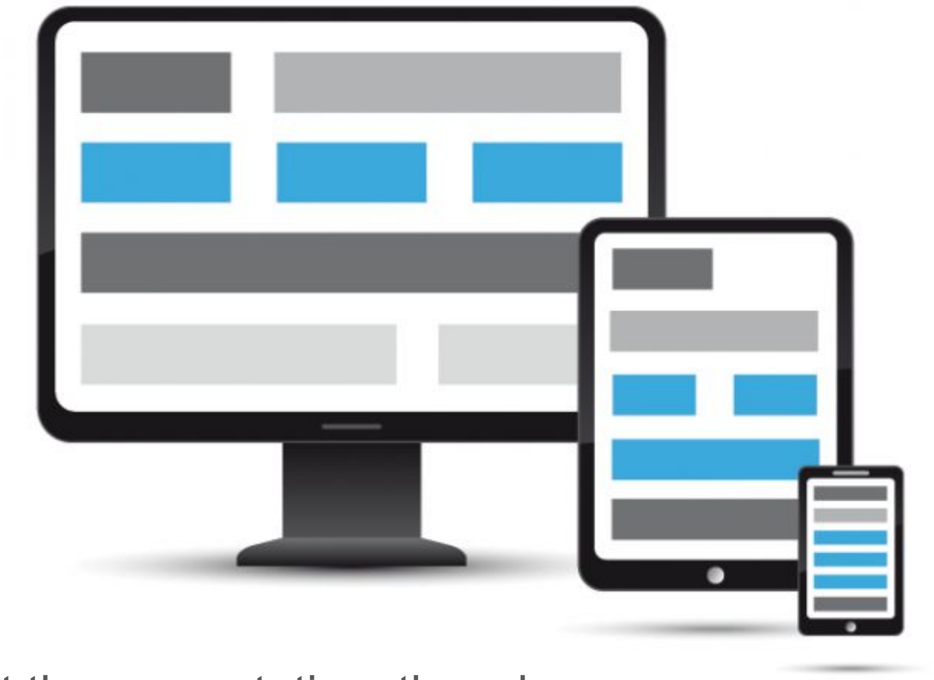
Graceful degradation

Design for failure: non-critical functionality must not impact your users

Common sources of error:

- **Content:** new or deprecated tags, markup validation
- **Presentation:** CSS features support, no renderer available (e.g. WebGL)
- **Behavior:** modern JS methods not available
- **Other:** network latency, server proximity, capacity, workload

Responsive web design



It’s not only about the presentation, though.

Accessibility: One web for all

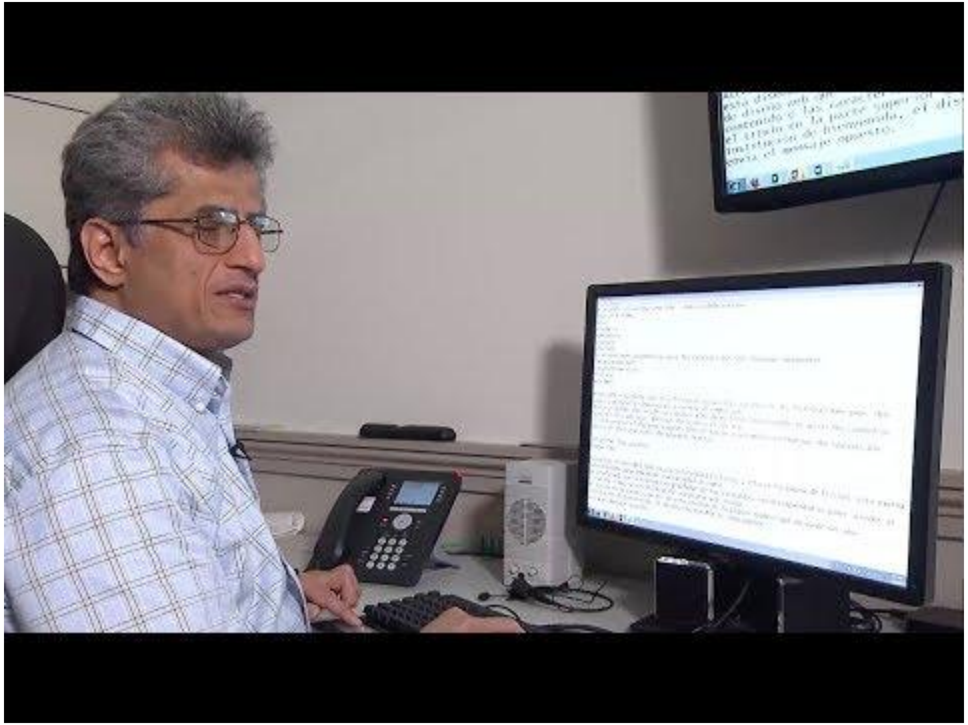
Common impairments:

- Visual
- Auditory
- Motor
- Cognitive

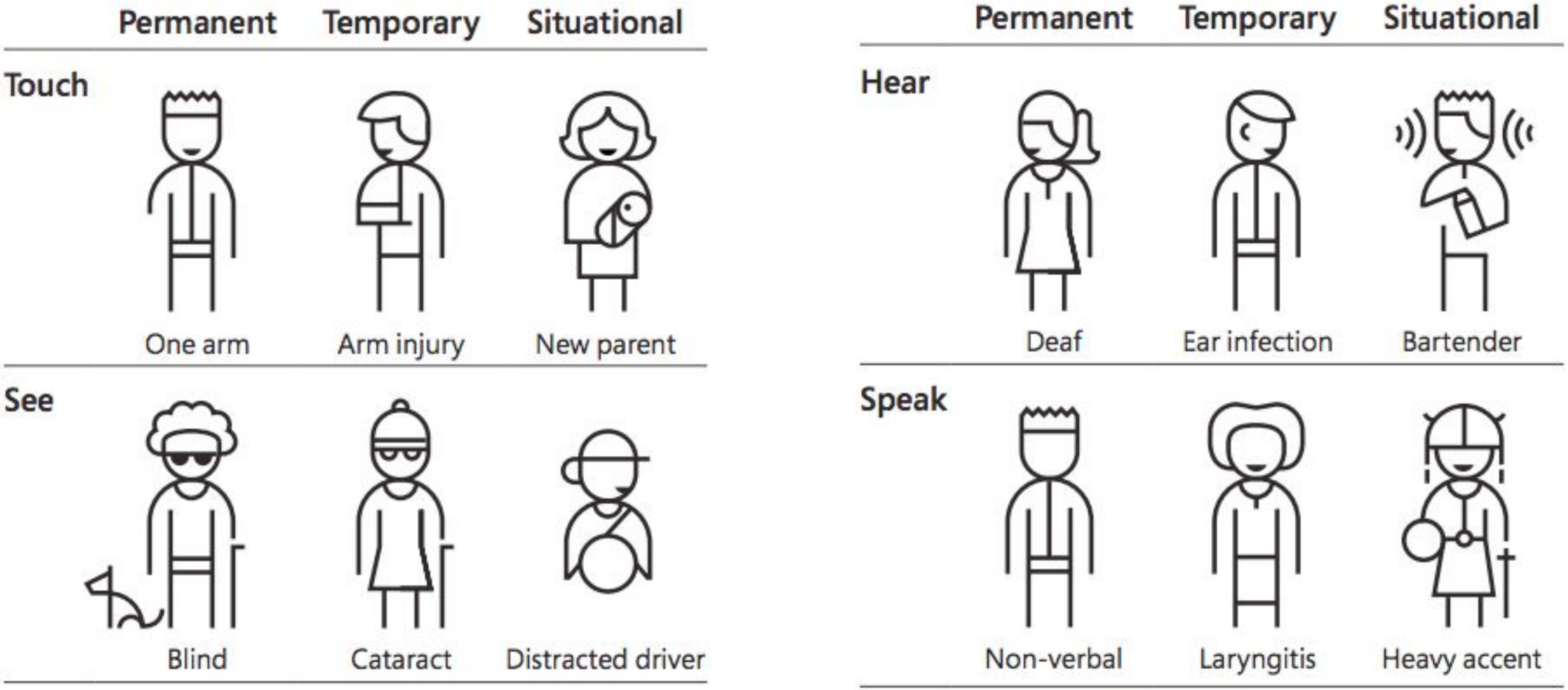
See https://www.w3.org/WAI/

Accessibility should NOT be optional. It’s required in government websites.

Accessibility: One web for all



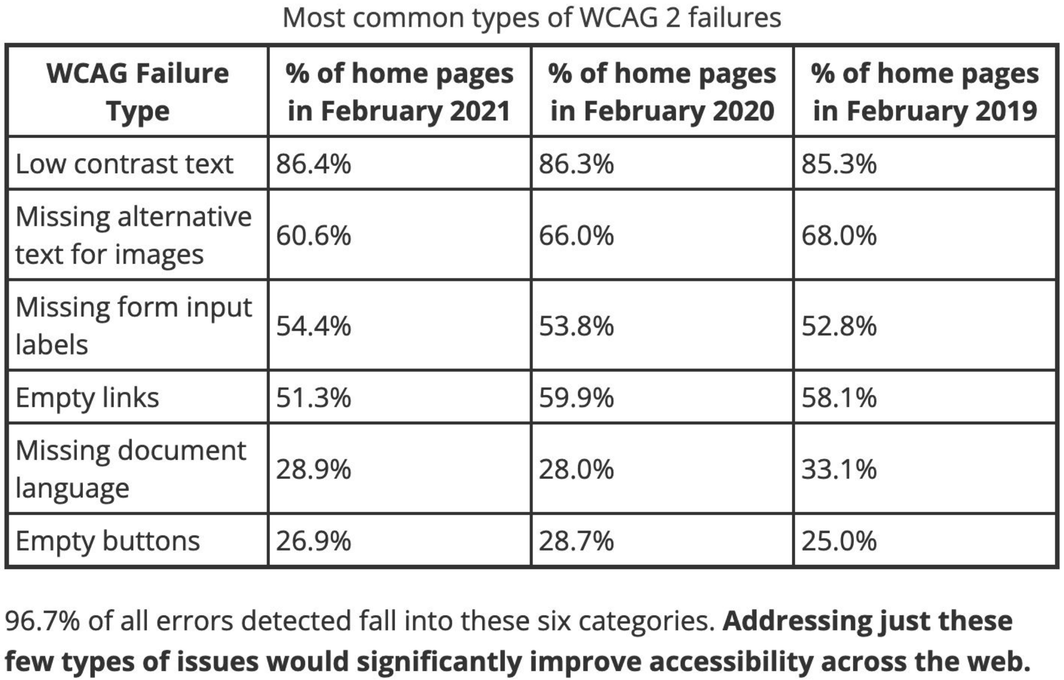
Accessibility: One web for all



	Permanent	Temporary	Situational
Touch	One arm	Arm injury	New parent
See	Blind	Cataract	Distracted driver

	Permanent	Temporary	Situational
Hear	Deaf	Ear infection	Bartender
Speak	Non-verbal	Laryngitis	Heavy accent

Accessibility: One web for all



Most common types of WCAG 2 failures

WCAG Failure Type	% of home pages in February 2021	% of home pages in February 2020	% of home pages in February 2019
Low contrast text	86.4%	86.3%	85.3%
Missing alternative text for images	60.6%	66.0%	68.0%
Missing form input labels	54.4%	53.8%	52.8%
Empty links	51.3%	59.9%	58.1%
Missing document language	28.9%	28.0%	33.1%
Empty buttons	26.9%	28.7%	25.0%

96.7% of all errors detected fall into these six categories. **Addressing just these few types of issues would significantly improve accessibility across the web.**

Source: https://webaim.org/projects/million/#wcag

Performance: The need for speed

Tip: *Aim for a small number of small requests!*

Also:

- Optimize images
- Minify resources (e.g. JSON, HTML, CSS, and JS files)
- Parallelize resource loading
- Defer non-critical resources
- Cache requests
- Use a Content Delivery Network (CDN)