intopia

Introduction to digital accessibility

Some definitions

Permanent, temporary, situational

Permanent disabilities

Long-term disabling conditions that cannot be healed.

Temporary conditions

Disabling conditions that pass as the body heals.

- A broken arm.
- Temporary hearing loss.
- Concussion.

Situational conditions

Disabling conditions created by environments.

- Unable to see a screen due to sunlight.

- Unable to hear audio due to local noise.
- Unable to use a mouse while holding a baby.

What does ‘disability’ mean?

There are three different ways to define the term ‘disability’.

1. Medical model of disability

Defines disability as having a deficit. The medical model wants to ‘treat’ and ‘cure’ differences.

2. Social model of disability

People are disabled by barriers in society.

An example could be a wheelchair user who cannot access a train station as the only access is via stairs.

Using the medical model of disability, the user is disabled by the condition that requires them to use a wheelchair, their impairment.

Using the social model of disability, the user is disabled by the stairs and the station design, not their wheelchair or impairment.

The social model is not about changing people with impairment to accommodate society.

It's about challenging the physical, attitudinal and social environment to accommodate people living with impairment.

3. Legal definition of disability

The legal definition of 'disability' may differ in each country.

> *Persons are considered to have a disability if they have a limitation, restriction or impairment, which has lasted, or is likely to last, for at least six months and restricts everyday activities.*
>
> Source

ADHD, Autism and other neurodivergence can be considered disabilities if they meet the criteria in the Disability Discrimination Act.

Mental illnesses can also be considered disabilities if they meet the criteria in the Disability Discrimination Act.

What does 'accessibility' mean?

Accessibility:

Ensuring that your products, services, and facilities meet the needs of people of all abilities.

Digital accessibility includes:

- Websites and web applications.
- Native mobile applications.
- Digital documents (such as PDFs and EPUBs).
- Email.

Any questions or comments?

Is the term ‘disability’ ok?

Some people prefer to be referred to as ‘differently-abled’. Others prefer the term ‘disabled’.

Listen to people

- What we call ourselves (Full 34 secs)
- Just say disabled! (Full 53 secs)
- How to talk about disability 101 (First 50 secs)
- This is your sign to just say disabled (Full 52 secs)

Emily Ladau

Emily is a passionate disability rights activist, writer, speaker, and digital communications consultant who educates people about her life with a physical disability.

Emily has a great book on this topic: ‘Demystifying Disability - What to Know, What to Say, and How to Be an Ally’ (15:40 - 17:52).

Always ask people for their preferences.

Any questions or comments?

What is ‘ableism’?

The discrimination of and social prejudice against people with disabilities based on the belief that these people are inferior.

Ableism can include the following in regard to people with disabilities:

- Generalizations
- Misconceptions
- Harmful stereotypes

Examples of ableism in systems:

- Lack of compliance with disability rights laws like the ADA.
- Failing to incorporate accessibility into building designs.
- Designing and building inaccessible websites.

Examples of ableist behaviour:

- Assuming that people with disabilities want to be ‘fixed’.
- Mocking people with disabilities.
- Talking down to people with disabilities.
- Questioning whether people are ‘actually’ disabled.

Any questions or comments?

Why should you care about accessibility?

Key reasons to care:

1. Legal responsibilities
2. Reputation
3. Improved user experience
4. Commercial incentives

1. Legal responsibilities

All public-facing digital products in Australia are required to comply with the Disability Discrimination Act 1992.

> *The Disability Discrimination Act 1992 (DDA) makes it unlawful to discriminate against a person, in many areas of public life... because of their disability.*
>
> Source

Australian public-facing digital products must also conform to WCAG 2.0 AA via the Australian Human Rights Commission Advisory Notes.

> *All existing non-government websites and web content should comply with WCAG 2.0 to a minimum level of AA conformance by December*

31 2013.

Source

2. Reputation

Some examples of legal cases

- 2019, USA: Guillermo Robles v. Domino's Pizza
- 2015, Australia: Gisele Mesnage v. Coles
- 2000, Australia: Bruce Maguire v. SOCOG

While there are financial risks associated with legal actions, the possible damage to an organisation's reputation is far more significant.

Domino's will likely forever be remembered as the brand that argued against the basic rights of a blind man - and lost.

Source

3. Improved user experience

Features intended for people with disabilities often improve the user experience for many other groups.

Ramps designed for wheelchair users also aid parents with prams, people with trollies and anyone with mobility issues.

SMS texting was invented by Finnish inventors to help deaf people to communicate without speaking.

Captions designed for people with hearing loss also help everyone better understand and concentrate on video content.

4. Commercial incentives

Do you know the percentage of people who have some form of disability in Australia?

Some stats

- Australia: 21.4% of the population
- New Zealand: 24.3% of the population
- USA: 26% of the population

These estimates are known to be low, as people:

- May not identify themselves as having a disability.
- May not want to disclose information on their disability.
- May not be aware that they have a disability.

Bottom line?

Can you afford to alienate potential or existing customers due to inaccessible products and services?

Any questions or comments?

Let’s meet some people

We’re going to look a range of different people and how they interact with the digital world.

1. People with no vision
2. People with reduced vision
3. People with reduced colour vision
4. People with reduced movement
5. People with varied learning or cognition
6. People with reduced or no hearing
7. People with affected or no speech

For each group of people we will explore:

- May include: types of people in this category
- May use: types of assistive technologies
- May need: features that could benefit these people

1. People with no vision

May include:

- Blindness
- Legally blind

> *A person is considered legally blind if they can't see at six metres what someone with regular vision can see at 60 metres, or if their field of vision is less than 20 degrees in diameter.*
>
> Source

May use:

- A keyboard - without a mouse
- Screen reader software (e.g. JAWS, NVDA, VoiceOver, Narrator)
- Refreshable braille devices (e.g. Stand-alone, Smart displays)

May need:

- The ability to navigate using the keyboard only
- Well-structured content (e.g. headings, lists, tables)
- Alternatives for visual content (e.g. images, video)
- Clearly labelled interactive components (e.g. links, buttons)
- Accessible forms

2. People with reduced vision

May include:

- Cataract
- Glaucoma
- Diabetic retinopathy

- Macular degeneration

May use:

- System settings (e.g. magnification, font size, spacing, colour)
- Browser-based page zoom (e.g. increase to 400%)
- Increase text-size only (e.g. increase text to 200%)
- Screen magnifier software (e.g. ZoomText)
- Screen reader software (e.g. JAWS, NVDA, VoiceOver, Narrator)

May need:

- Good colour contrast
- Readable fonts
- The ability to magnify or zoom content
- The ability to customise colours
- The ability to customise text and paragraph spacing

3. People with reduced colour vision

Color vision deficiency (CVD) or Colour blindness, is the decreased ability to see colour or differences in colour.

May include:

- Green-deficient *(Deuteranomaly)* and Green-Blind *(Deuteranopia)*
- Red-deficient *(Protanomaly)* and Red-Blind *(Protanopia)*
- Blue-deficient *(Tritanomaly)* and Blue-Blind *(Tritanopia)*
- Blue Cone Monochromacy *(Achromatomaly)*
- Monochromacy *(Achromatopsia)*

May need:

- Good colour contrast
- Information that is conveyed using methods other than colour-alone

4. People with reduced movement

May include traumatic injuries:

- Spinal cord injuries that affect the upper body
- Loss or damage to limb(s)

May include full-body conditions:

- Arthritis
- Spina Bifida
- Cerebral Palsy
- Multiple Sclerosis
- Muscular Dystrophy

May include arm & hand conditions:

- Osteoarthritis
- Trigger Finger
- Rheumatoid Arthritis
- Boutonnière Deformity
- Dupuytren Contracture

May include other motor-related conditions:

- Chorea
- Tremors

- Myoclonus
- Dystonia
- Tic disorders

May use:

- Head pointer
- Sip and puff
- Head switch
- Eye or head tracking software (e.g. Dynavox, Apple)
- Voice recognition software (e.g. Dragon NaturallySpeaking)

May need:

- The ability to navigate using the keyboard only
- Efficient methods of navigating content
- Clear and visible focus states
- Enough time to complete tasks

5. People with varied learning or cognition

May include intellectual disabilities:

- Down Syndrome
- Fragile X Syndrome
- Phenylketonuria (PKU)
- Prader-Willi Syndrome (PWS)
- Fetal Alcohol Spectrum Disorder (FASD)

May include neurodiverse conditions:

- Dyslexia

- Dyscalculia
- Autism Spectrum Disorder/Condition (ASD, ASC)
- Attention Deficit Hyperactivity Disorder (ADHD)
- Developmental Coordination Disorder/Dyspraxia (DCD)

May include processing differences:

- Aphasia
- Language Disorders
- Auditory processing disorders
- Sensory processing disorders
- Non-Verbal Learning Disabilities

May include memory impairments:

- Dementia
- Alzheimer disease
- Limited short-term memory
- Missing long-term memory

May use:

- 'Text-to-speech' and 'Speech-to-text' software
- Screen masking software (e.g. Read&Write)
- Spelling and grammar software (e.g. Grammarly, MS Word)
- Screen reader software (e.g. JAWS, NVDA, VoiceOver, Narrator)

May need:

- Content that is clearly written and presented
- Navigation that is easy to understand
- Help to avoid mistakes
- Limited distractions

- Processes that do not rely on memory

6. People with reduced or no hearing

May include:

- Hard of Hearing
- Deaf

May need:

- Transcript - text version in separate document
- Captions - synchronised text presented within media
- Sign language translations
- A choice of communication methods

7. People with affected or no speech

May include:

- Stuttering
- Cluttering
- Dysarthria
- Selective Mutism
- Apraxia of speech (AOS)

May need:

- Allow people to finish at their own pace

- Optional methods of communication

Disabilities are varied and complex

Disabilities may be spectrums - such as ADHD, ASD, Fetal Alcohol Spectrum Disorder.

Some people have multiple disabilities or conditions.

Some disabilities change over time such as:

- Deteriorating eye sight or hearing.
- Improved functionality after a stroke.
- Changes due to different treatment or medication.

Some disabilities may change from day to day.

Tempory or situational conditions

Making digital products accessible for people with disabilities also benefits others.

For example, some people may experience temporary or situational barriers that are similar to the symptoms of disabilities.

Examples of temporary barriers:

- A broken arm.
- Temporary hearing loss.
- Concussion.

Examples of situational barriers:

- Unable to see a screen due to sunlight.
- Unable to hear video or audio material due to a local noise.
- Unable to use a mouse while holding a baby.

Your customers

Any of these people could be your customers today or tomorrow!

Any questions or comments?

What is WCAG?

The World Wide Web Consortium (W3C) develops international standards for the World Wide Web.

One of these standards is the Web Content Accessibility Guidelines - often called ‘WCAG’.

These guidelines explain how to make web content more accessible to people with disabilities.

The current standard is WCAG 2.2, launched on 5 October 2023.

How is WCAG structured?

NORMATIVE: REQUIRED FOR CONFORMANCE

- Principles
  - Guidelines
    - Success Criteria

NON-NORMATIVE: ADVISORY ONLY

- Sufficient Techniques
- Advisory Techniques
- Failures

Principles

The four foundational principles—Perceivable, Operable, Understandable, and Robust (POUR)—define the essential qualities content must have to be accessible.

Principle 1: Perceivable

Content and user interface components must be presented in ways that users can recognize, regardless of sensory ability.

Principle 2: Operable

Interactive elements must be usable through a variety of inputs, such as keyboards, touch, or assistive technologies.

Principle 3: Understandable

Content and operation must be easy to comprehend, with consistent functionality and clear instructions.

Principle 4: Robust

Content must work reliably across various technologies, including current and future assistive tools.

Guidelines

Under each principle, guidelines provide high-level objectives that help ensure content meets accessibility standards.

Success Criteria

Each guideline is broken into testable success criteria that help determine if your digital content can be considered ‘accessible’.

Each Success Criteria has a conformance level of either ‘A’, ‘AA’, or ‘AAA’.

Level A

The minimum level of conformance, addressing the most basic web accessibility barriers.

Level AA

The recommended level for most websites, ensuring a broader range of accessibility improvements for users.

Level AAA

The highest level of conformance, providing enhanced accessibility but often impractical for all content.

Sufficient Techniques

These are documented ways to meet success criteria, ensuring compliance with WCAG requirements using code, design, or content strategies.

Advisory Techniques

Optional methods that enhance accessibility but are not required to meet success criteria.

Failures

Documented examples of common practices that do not meet WCAG criteria, helping developers avoid accessibility issues.

Important WCAG documents

Web Content Accessibility Guidelines 2.2

Recommendations for making web content more accessible.

How to Meet WCAG (Quick Reference)

A quick reference to WCAG requirements and techniques.

All WCAG 2.2 Understanding Docs

Detailed explanations for each WCAG success criteria.

Techniques for WCAG 2.2

Examples of ways to meet WCAG.

What's New in WCAG 2.2

A list of all changes in WCAG 2.2.

Two tools

Accessibility Not-Checklist (BETA)

Sort and filter WCAG criteria and best practices by roles and topics.

Accessibility Acceptance Criteria (ALPHA)

Generate detailed acceptance criteria.

Any questions or comments?

Accessibility testing tools: Strengths and weaknesses

There is a wide range of accessibility testing tools that can be used to identify and address accessibility issues.

All accessibility testing tools have limitations.

> *Regardless of which automated testing tool you use, they all only cover about 25-30 percent of WCAG requirements, and the remainder of the requirements need manual testing.*

Source

If an accessibility testing tool passes a website, this doesn't necessarily mean the site is accessible.
Source

Most accessibility testing tools cannot detect the following:

Broad concepts

- Poor usability
- Lack of or poor keyboard accessibility
- Incorrect reading order
- Improper use of HTML elements

Content-related concepts

- Poor alt-text
- Poor use of page titles, headings or link text
- Poor form labels, error messages, instructions
- Lack of and poor quality of captions or transcripts

However, these tools are still very useful - as long as we are aware of their strengths and weaknesses.

Accessibility testing tools: An overview

Let's quickly run through some of the testing tools available.

Automated accessibility platforms

- Deque Axe
- Level Access
- Monsido
- UsableNet AQA

Browser extensions

- Lighthouse (Installed as part of Chrome)
- axe DevTools (Chrome, Firefox or Edge)
- Accessibility Insights for Web (Chrome or Edge)
- Wave Evaluation Tool (Chrome, Firefox or Edge)
- Web Developer extension (Chrome, Firefox or Opera)

Bookmarklets

- A11y audit bookmarklets
- JavaScript Bookmarklets for Accessibility Testing
- ANDI Accessibility Testing Tool

Colour contrast tools

- Colour Contrast Analyzer (CCA) (Mac, Windows)
- WebAIM Color Contrast Checker (Web)
- Stark (Figma and Sketch plugins)

Automated mobile tools

- iOS Accessibility Inspector
- Android Accessibility Scanner
- Axe for Android
- Android Studio - Lint

Content testing tools

- Readability Test

Screen readers

- JAWS - Job Access With Speech (Windows)
- NVDA - NonVisual Desktop Access (Windows)
- VoiceOver (MacOS and iOS)
- TalkBack (Android)

Comparisons

- Comparison of Web Accessibility Tools
- Pros and Cons of 7 Top Web Accessibility Testing Tools

- 23 Best Web Accessibility Testing Tools in 2024

Discussion

- Have you used any of these tools in the past?

Questions or discussion?