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Week 5 Lecture

Accessibility

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Learning objectives

- To **appreciate** the different definitions when referring to accessibility (including digital and Web versions)
- To **distinguish** between the social and medical models of disability
- To **understand** how accessibility, compliance and usability are related
- To **identify** and **describe** the four main Web accessibility principles

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What will be covered:

- What is accessibility?
  - Definitions and social model
- W5H: who, what, where, when, why, and how
- What is digital accessibility?
- Web accessibility perspectives

- Compliance and Accessibility
- Web accessibility, removing barriers
- Web accessibility principles
- Making the Web accessible:
  - Design with accessibility in mind

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What is accessibility?

1. Webster's Dictionary to define accessibility

"**Easily used** or **accessed** by people with disabilities: **adapted** for use by people with disabilities."

2. "Accessibility is the concept of whether a product or service can be **used by everyone**—however they encounter it. Accessibility laws exist to aid people with disabilities, but designers should try to **accommodate all potential users** in many contexts of use anyway."

1. https://www.merriam-webster.com/dictionary/accessible
2. https://www.interaction-design.org/literature/topics/accessibility

Social vs Medical Model of Disability

*Social model:

- Disability is caused by the way society is organized.
- Seeks to find ways of removing barriers that restrict life choices for disabled people.
- Help to develop more inclusive ways of living, with independence choice and control.

*www.disabilitynottinghamshire.org.uk/about/social-model-vs-medical-model-of-disability/

Social vs Medical Model of Disability

*Medical model:

- The medical model of disability says that people are disabled by their impairments or differences.
- The medical model looks at what is 'wrong' with the person and not what the person needs.
- It can create low expectations and leads to people losing independence, choice and control in their own lives.

*www.disabilitynottinghamshire.org.uk/about/social-model-vs-medical-model-of-disability/

W5H: who, what, where, when, why, and how

- A good starting point when considering the user experience and designing a product is to ask the following questions (also known as the W5H):

  Who: Who is using your product?

  What: What are they doing?

  Where: Where are they doing it?

  When: When are they doing it?

  Why: Why are they doing it?

  How: How are they doing it?

Image from: https://learning.oreilly.com/library/view/inclusive-design-for/9781484250167/html/471061_1_En_2_Chapter.xhtml#Fig1

What is Digital Accessibility?

- The “design of and building of websites and web apps that disabled people can **interact** with in a **meaningful** and **equivalent** way”.

  https://web.dev/learn/accessibility/why

- “Digital accessibility means designing and building your digital offerings so that, regardless of a person's mental or physical ability, they can still **interact** with your website, app, or other digital product in a **meaningful** and **equal** way.”

  https://web.dev/learn/accessibility/measure

Web Accessibility Perspectives

Compliance and Accessibility

- Often, accessibility is viewed as a series of checkboxes to complete.
- Accessibility is not only about compliance, but it is also about usability.
- One way to ensure accessibility is by following the WCAG: https://www.w3.org/WAI/standards-guidelines/wcag/
  - WCAG: Web Content Accessibility Guidelines.
  - WCAG is not an introduction to accessibility.
  - WCAG documents explain how to make web content more accessible to people with disabilities.
  - WCAG is for those who want a technical standard.

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Accessibility and Usability

- **Remember that:**
  - Usability is part of usefulness, which has two key parts:
    - **Utility:** Does the system do what users need?
    - **Usability:** Can users easily use the system's features?
- **Nielsen's usability characteristics**
  - Learnability – the system should be easy to learn
  - Efficiency – the system should be efficient to use
  - Memorability – the system should be easy to remember
  - Errors - the system should have a low error rate
  - Satisfaction – the system should be satisfying to use

Web Accessibility: removing barriers

"The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect."

Tim Berners-Lee, W3C Director and inventor of the World Wide Web

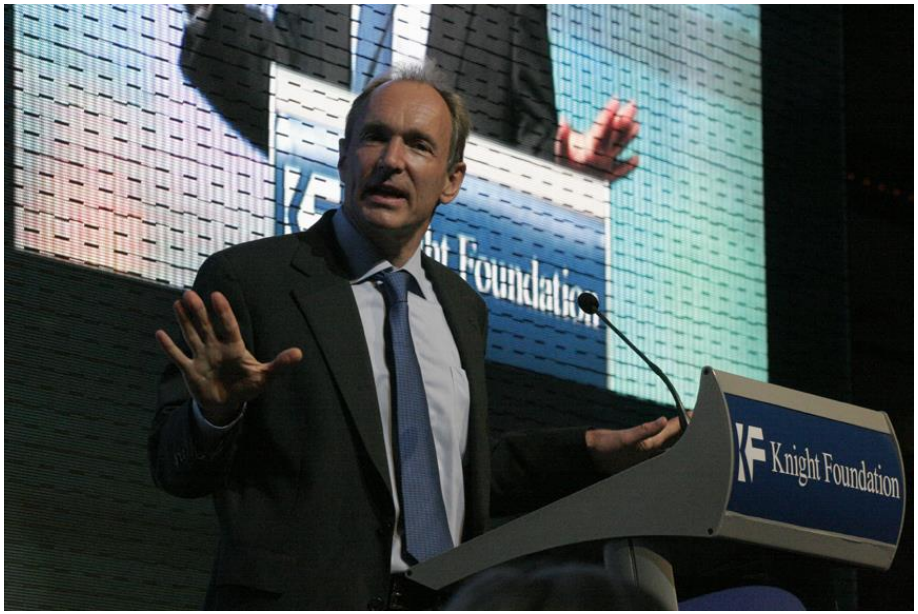

Image from https://en.wikipedia.org/wiki/Tim_Berners-Lee#/media/File:Berners-Lee_announcing_W3F.jpg

What is Web Accessibility?

- Websites, tools, and technologies are designed and developed so that people with disabilities can use them.

  https://www.w3.org/WAI/fundamentals/accessibility-intro/

- Perceive, Operate, Understand (Navigate, Interact and Contribute to the Web), Robust.
- Encompasses all disabilities that affect access to the Web:
  - auditory, visual, cognitive, physical, and speech.

Benefits people **without** disabilities

- Small screen devices
- Older people (with changing abilities)
- Temporary disabilities e.g., a broken arm, lost glasses
- Situational limitations e.g., bright light, noisy environment
- Slow internet connections or limited bandwidth

Image from Microsoft Design toolkit: https://microsoft.design/

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Accessibility is Important for Businesses

Drive innovation	Enhances the brand
Extend the market reach	Minimise the legal risk

Web Accessibility principles

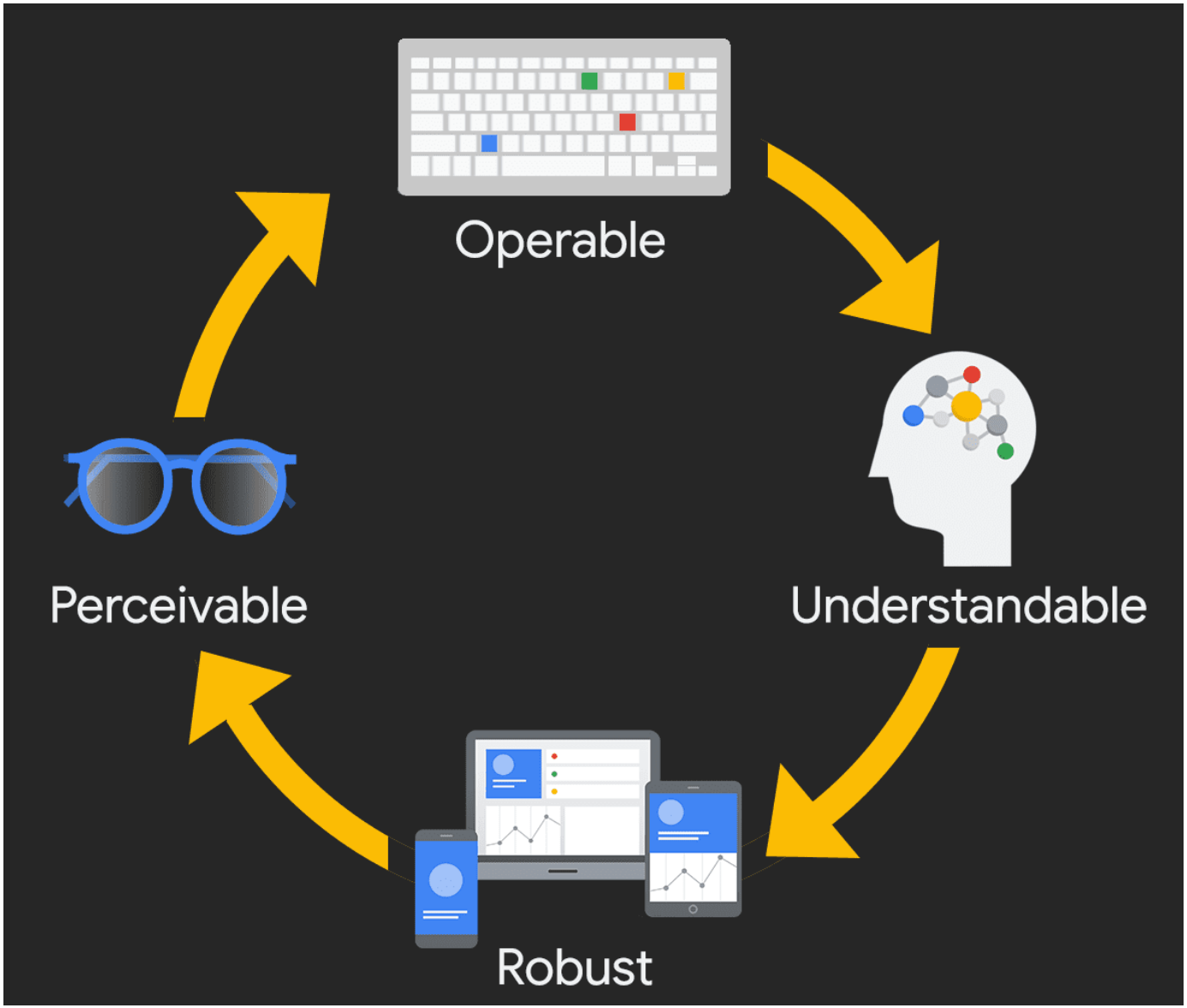

Image from: https://web.dev/learn/accessibility/measure

Web Accessibility principles
Perceivable

- Users must be able to perceive all essential information on the screen, and it must be conveyed to multiple senses.

- Is there any content or functionality in your digital product that a person with a specific disability would not be able to perceive?
- Be sure to consider all the different types of disabilities—visual, mobility, hearing, cognitive, and speech impairments, vestibular and seizure disorders, and more.

Web Accessibility principles
Perceivable examples

- Adding text alternatives to all non-decorative images and essential icons.
- Adding captions, transcripts, and audio descriptions to videos.
- Ensuring colour is not the only method of conveying meaning.

Web Accessibility principles: Operable

- Users must be able to operate the digital product's interface.
- The interface cannot require interaction that a user cannot perform.

- Can users control the interactive elements of your digital product?
- Are there any focus order issues or keyboard traps?
- How are touch interfaces handled?

Web Accessibility principles
Operable examples

- Adding keyboard and touchscreen support to all active elements.
- Ensuring slideshows and videos have all of the necessary controls available.
- Giving users enough time to fill out a form or a method to extend the time.

Web Accessibility principles: Understandable

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- Users must understand the information and the operation of the user interface.

- Is all the content clearly written?
- Are all of the interactions easy to understand?
- Does the order of the page make sense—to sighted users, keyboard-only users, screen reader users?

Web Accessibility principles
Understandable examples

- Writing simply—don't use a complex word when a simple one will do.
- Ensuring your digital product has predictable navigation.
- Ensuring error messages are clear and easy to resolve.

Web Accessibility principles: Robust

- Supporting assistive technologies and ensuring that, as devices and user agents evolve, the digital product remains accessible.

- What types of assistive technology are you supporting?
- Does your digital product only work on the newest browsers or operating systems?
- Does it work at all breakpoints and in different device orientations?

Web Accessibility principles: Robust examples

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- Testing keyboard-only navigation.
- Testing with different screen reader technologies.
- Ensuring all of the content and functionality can be accessed, regardless of device size or orientation.

Where in the BCS Code of Conduct is Accessibility relevant?

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- Consider the four main Codes of Conduct from Week 1 Lecture:
  - The Public Interest
  - Professional Competence and Integrity
  - Duty to Relevant Authority
  - Duty to the Profession

- Which of the areas above are relevant when addressing accessibility for software-based systems?

Where in the SDLC does Accessibility need to be considered?

- Consider the four stages of the SDLC from Week 2 Lecture:
  - Planning
  - Analysis
  - Design
  - Implementation

- Which of the stages above would need to consider accessibility for software-based systems?

What requirements and elicitation methods would you consider?

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- Consider the requirements and data gathering methods covered in Week 3 Lecture:
  - Functional and non-functional requirements
  - Requirement elicitations methods

- What type of requirement would you consider? And why?

Making the Web Accessible

Design with accessibility in mind: Accessibility depends on different components that are interdependent

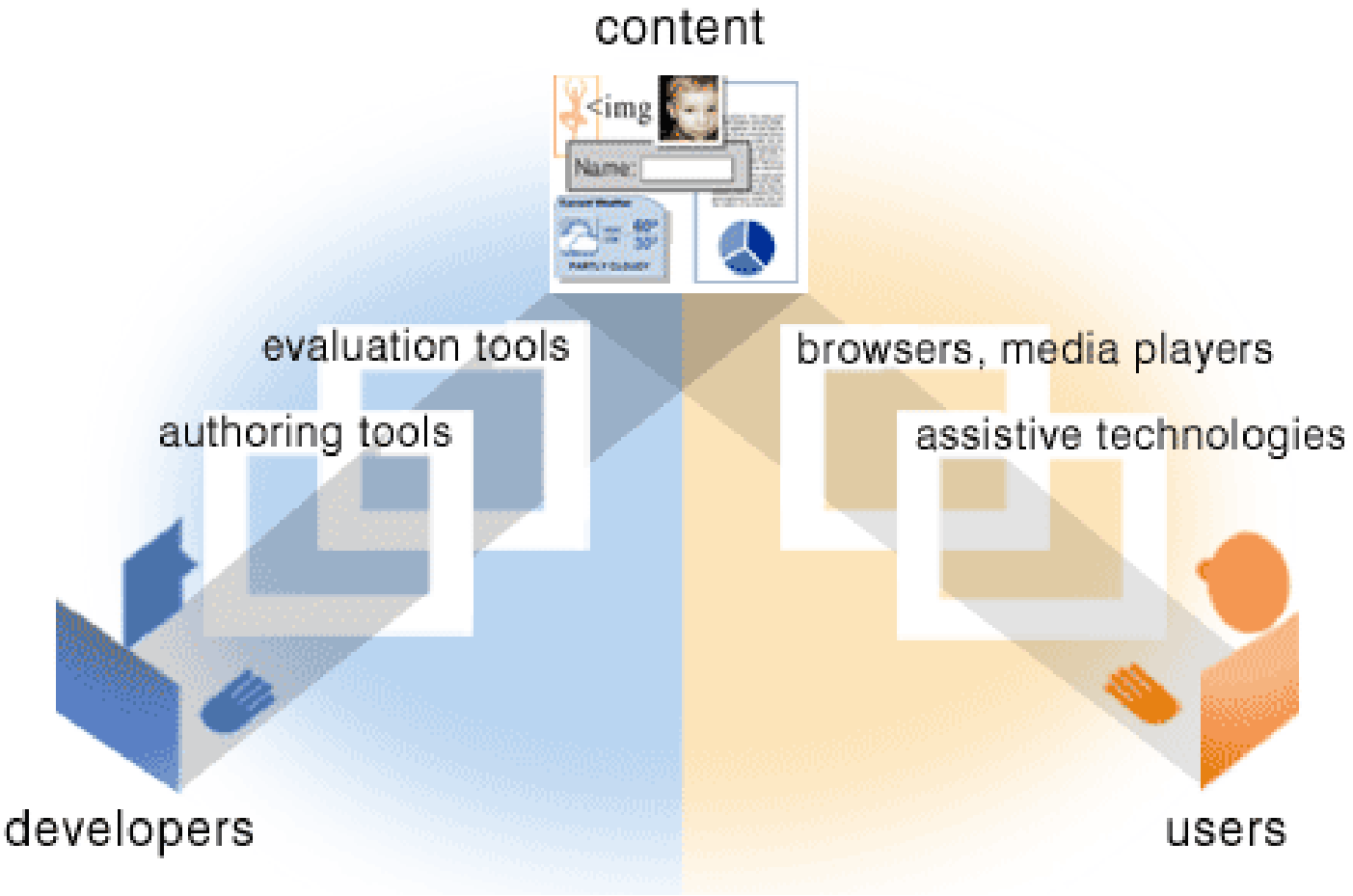

Image from: https://www.w3.org/WAI/fundamentals/components/

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Further resources and links

- https://www.w3.org/WAI/people-use-web/
- https://www.w3.org/WAI/standards-guidelines/shared-experiences/
- FOUR PRINCIPLE OF ACCESSIBILITY: https://www.w3.org/TR/UNDERSTANDING-WCAG20/intro.html#introduction-fourprincs-head