Demystifying Screen Readers

What is Assistive Technology?

Assistive Technology (AT) are "products, equipment, and systems that enhance learning, working, and daily living for persons with disabilities."

Screen Readers

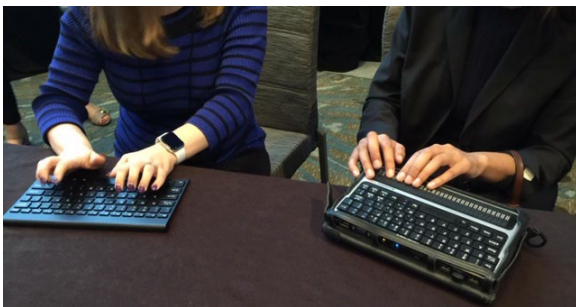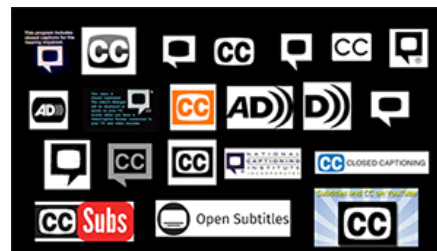Magnification Software

Speech Recognition

Trackball Mouse

Keyboard

Zoom Text

Braille Computer Keyboard

Captions/Subtitles

Captioned Telephone

Video Relay Services

Who uses AT?

Someone who is **visually impaired,** has a **mobility limitation** or has a **learning disability**

What are Screen Readers

Screen readers are a form of assistive technology (AT) software that *enables access* to a computer, and all the things a computer does, by attempting to identify and interpret what is being displayed on the computer screen using ***text-to-speech***. Screen readers can only **access** and process live text (fully editable or selectable text).
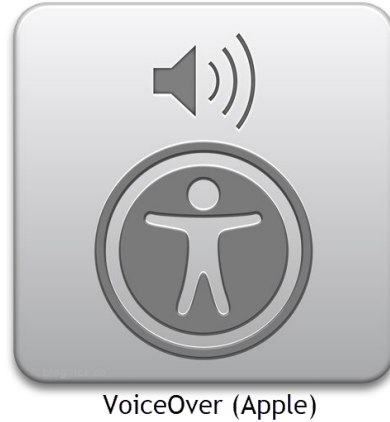
Normally used by someone who is visually impaired.

Types of screen readers

Screen reader program for Microsoft Windows that allows blind and visually impaired users to read the screen either with a text-to-speech output or by a refreshable Braille display. NVDA screen reader can be **downloaded free of charge** by anyone.

VoiceOver (Apple)

Provides auditory descriptions of each onscreen element using gestures, a keyboard, or a braille display.

Android

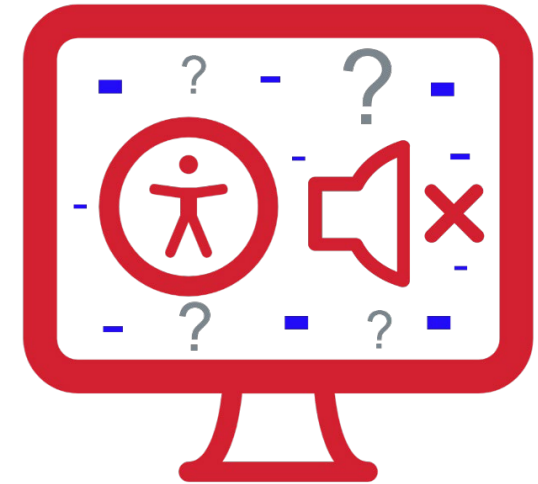Adds spoken, audible, and vibration feedback to your device.

Screen magnifier for Microsoft Windows that allows you to see and hear everything on the computer.

Mysterious Dash or Hyphen

Screen readers do not know what the **–** symbol represents (minus, hyphen, en dash or em dash) so screen readers **will not** read it. *It is always a good practice to spell the word and any abbreviations or make a reference to your abbreviation when used for the first time.*

For examples:

- May 8th, 2022 from 3:30 **-** 5:00pm. The screen reader reads three, thirty five. Recommend May 8th, 2022 from 3:30 **to** 5:00pm.

- Final exams May 14 **-** 20, 2022, screen reader reads May 1420, 2022. Recommend May 14 **to** 20, 2022.

- Homework assignment pages 200 **–** 281 for tonight's reading material. Recommend pages 200 **to** 281.

- The fiscal year 2015**-**2016. Recommend The fiscal year from 2015 to 2016.

- Grading scale 95 **-** 100%, screen reader reads 95100%. Recommend 95 **to** 100%.
    - ❖ A + , screen reader reads A+. Recommend A plus.
    - ❖ A – , screen reader reads A. Recommend A minus.
    - ❖ Recommend to spell the word plus or minus for consistency purpose.

Minor changes can have a big effect on maintaining clarity for students using assistive technology.

Functions of a screen reader

- Attempt to convey visual information to users in a non-visual means using text-to-speech (TTS)
    - TTS reads aloud digital text

- Provides equal functionality of interactive elements

- Provides navigation tools for non-visual users
    - Navigation through document/webpage structure
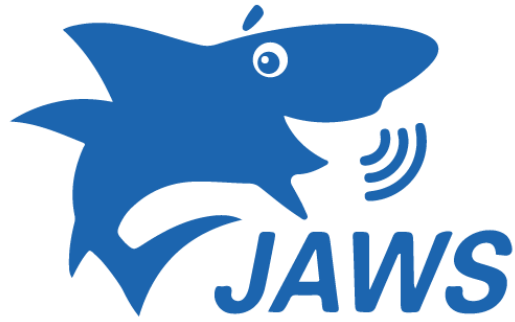   - i.e. headings and links

BENEFITS of using a screen reader

- **provides access** to someone who does not have useful vision, mobility or has a learning disability to access text on the screen

- offers same level of **independence** and privacy as anyone else
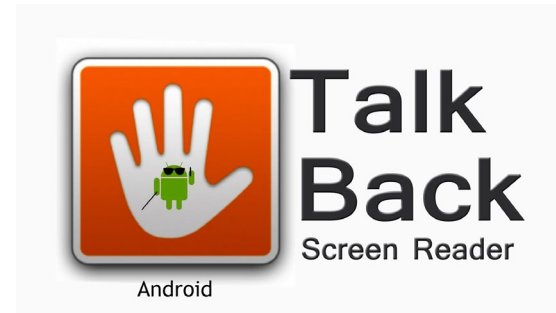
Demo of screen reader

JAWS — Job Access With Speech
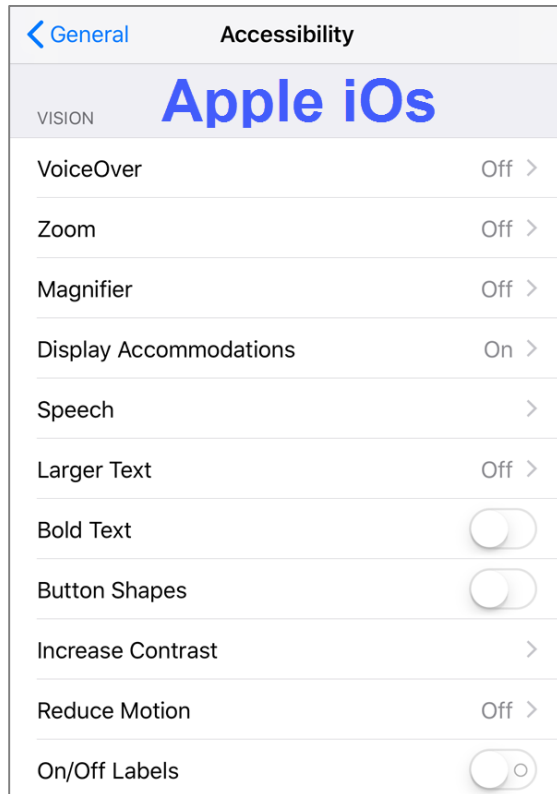

Windows Narrator

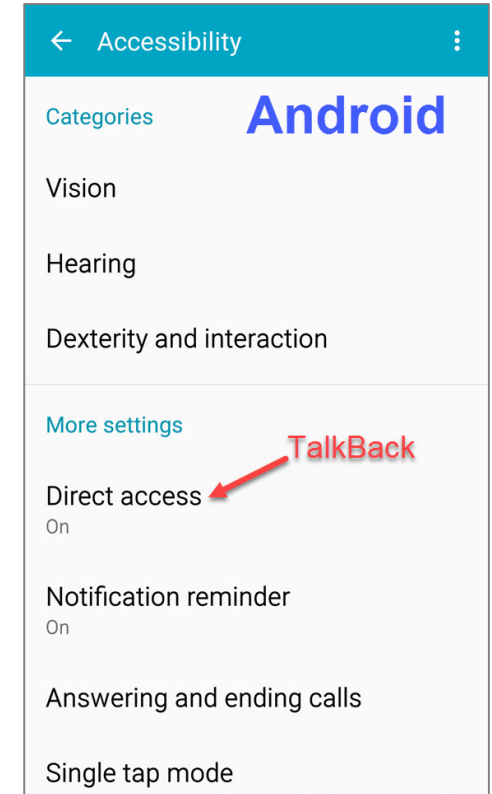Read Out Loud Feature

VoiceOver (Apple)

TalkBack Screen Reader — Android

Mobile Devices: Built in features

Apple iOs

- Accessibility features built-in on **mobile devices** for everyone to use

Accessibility Features
- Siri, Genie, etc.
- Dictation
- Predictive text
- Vibrating/flashing alerts
- VoiceOver
- Large Print/Bold Print
- Safari Reader

Android

Unintentional Barriers

When accessing documents

- Image only – screen reader cannot access the text
- No structure
- No logical reading order
- No alt text for images
- Scanned document
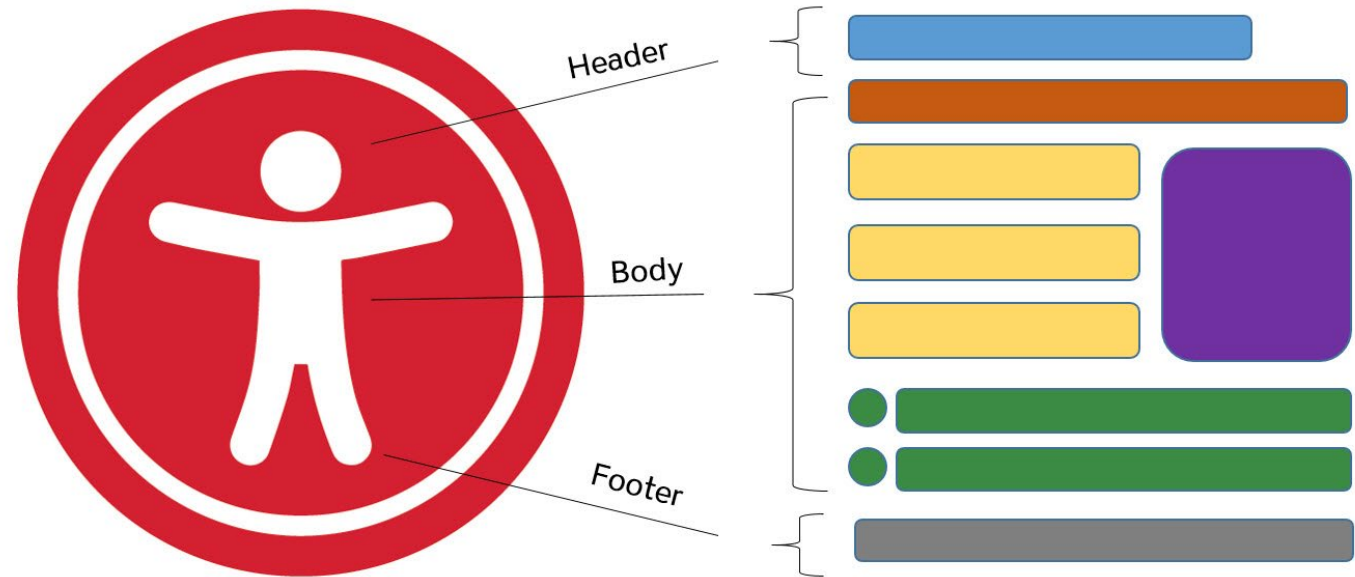- Non-meaningful link text
- Non labeled form fields

When accessing websites

- No structure
- No alt text for images
- No proper tab order
- Keyboard Trap
- Non-meaningful link text
- No form labels
- Mouse-only functionality

Create with Accessibility in Mind

- Use built in features
  - accessibility checker
  - headings
  - alt text
- Use good layout design and color contrast
- Use standard coding as much as possible
- Look for alternative accessible modules
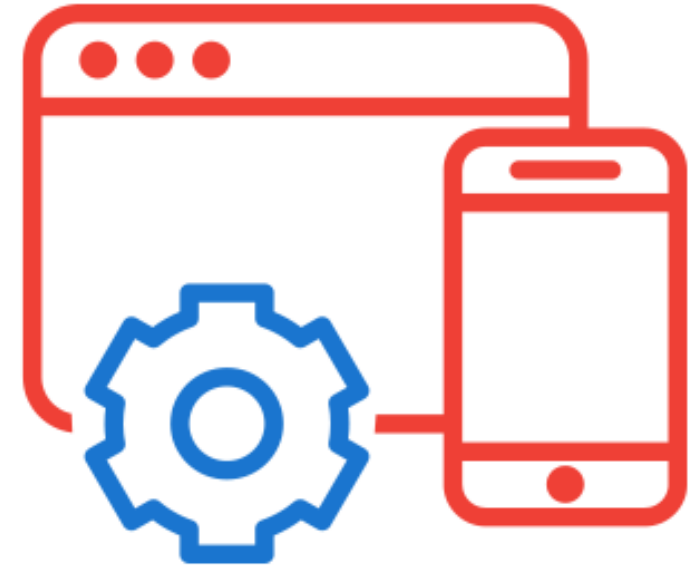- Test while creating

Header

Body

Footer

Organize content with headings, subheadings, images, videos, and footer are important for usability and accessibility.

Accessibility Evaluation Tools

- Wave
- Web Developer Toolbar
- Colour Contrast Analyzer
- Accessibility Developer Tool
- Compliance Deputy
- Greyscale
- Link Grabber

For more information visit:

https://www.csun.edu/universal-design-center/testing-and-learning-tools

Resources

- Universal Design Center: https://www.csun.edu/universal-design-center
- Disability Resources and Educational Services: https://www.csun.edu/dres
- Web Aim: https://webaim.org
- Web Content Accessibility Guidelines: https://www.w3.org
- Freedom Scientific: https://www.freedomscientific.com/Products/Blindness/JAWS
- Apple – VoiceOver: https://www.apple.com/accessibility/mac/vision
- Android – TalkBack: https://support.google.com/accessibility/android/answer/6283677?hl=en

Questions?