



Accessibility & Universal Design



Universal Design Center

csun.edu/udc

What does **A11y** stand for?



Accessibility (A11y)



accessibility
1 2 3 4 5 6 7 8 9 10 11

a11y

accessibility is for
everyone

- “a11y” stands for “accessibility.” A numeronym is a number-based word with 11 for the number of letters between the letters a and y.
- A11y often appears on social media platforms like Twitter because space is limited and every character counts #a11y.
- It is always good practice to spell the word and any abbreviations or make a reference to your abbreviation when used for the first time.
- The universal icon for accessibility consists of an image of a person symbol.

Accessibility ensures everyone can perceive, understand, engage, navigate, and interact with technology regardless of device, software, or product **without** barriers.

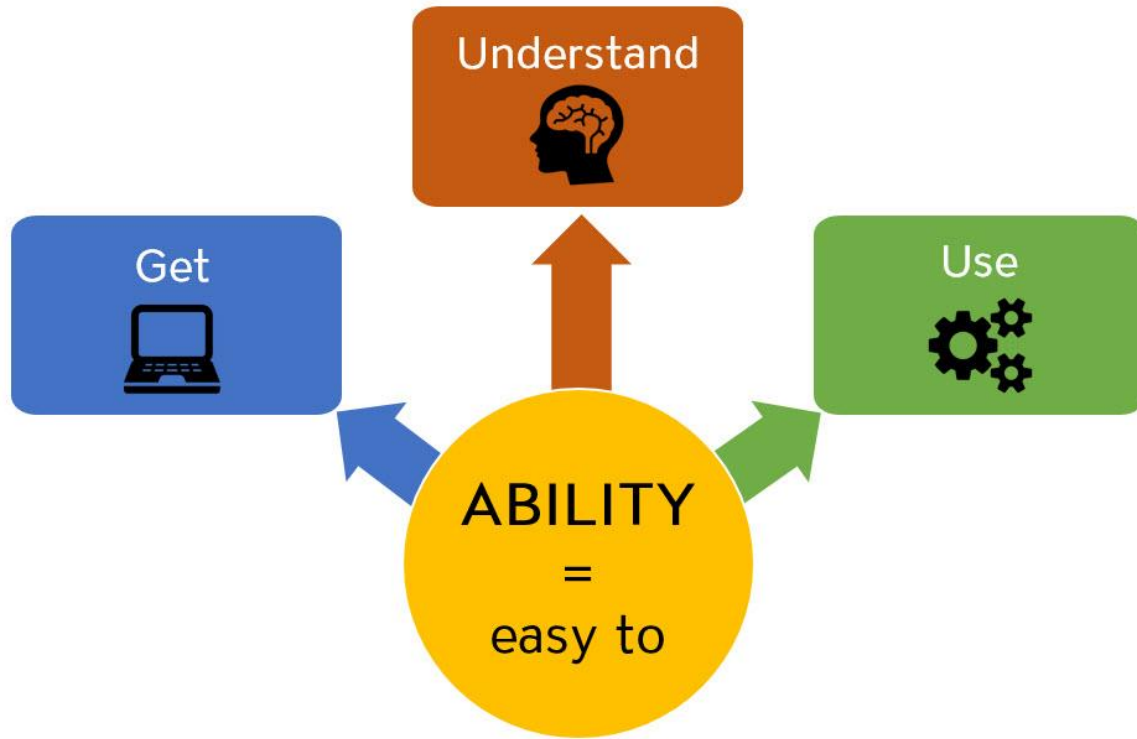


Universal Design

The design that is simple, useful and accommodates a wide range of individual preferences and abilities.



Understanding Abilities, 1 of 2



Accessibility is not about disability; it's actually about **ability**. It's about making it easy for **everyone** to:

- Acquire the **same** information
- Engage in the **same** interactions
- Enjoy the **same** services



Understanding Abilities, 2 of 2



VISION

Low vision, blind, colorblind, etc.

- Screen readers
- Braille display
- High contrast settings
- Magnifiers



HEARING

Deaf, hard of hearing, noisy environment

- Sign language
- Captions/Subtitles
- Transcripts



MOBILITY

Muscular dystrophy, arthritis, injury, etc.

- Keyboard only
- Speech to text



COGNITIVE

Learning disability, dyslexia, ADHD, etc.

- Digital content layout
- Information organization



LEARNING

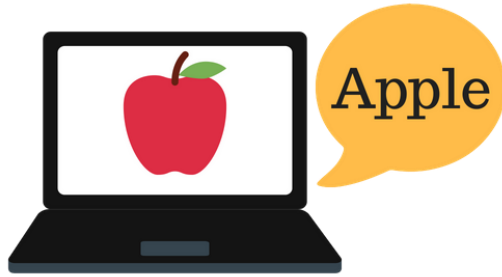
Learning styles, preferences, etc.

- Visual learners
- English as a Second Language (ESL)
- Accents



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



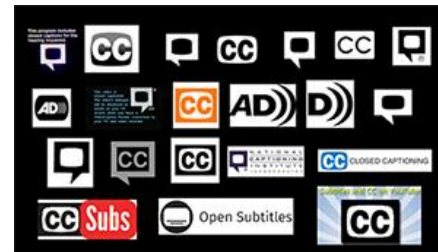
Keyboard

ZoomText

Zoom Text



Braille Computer Keyboard



Captions/Subtitles



Captioned Telephone



Video Relay Services

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).

- **Provides access** to someone who is visually impaired, mobility or has a learning disability to access text on the screen.
- Offers same level of **independence** and privacy as anyone else.



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.



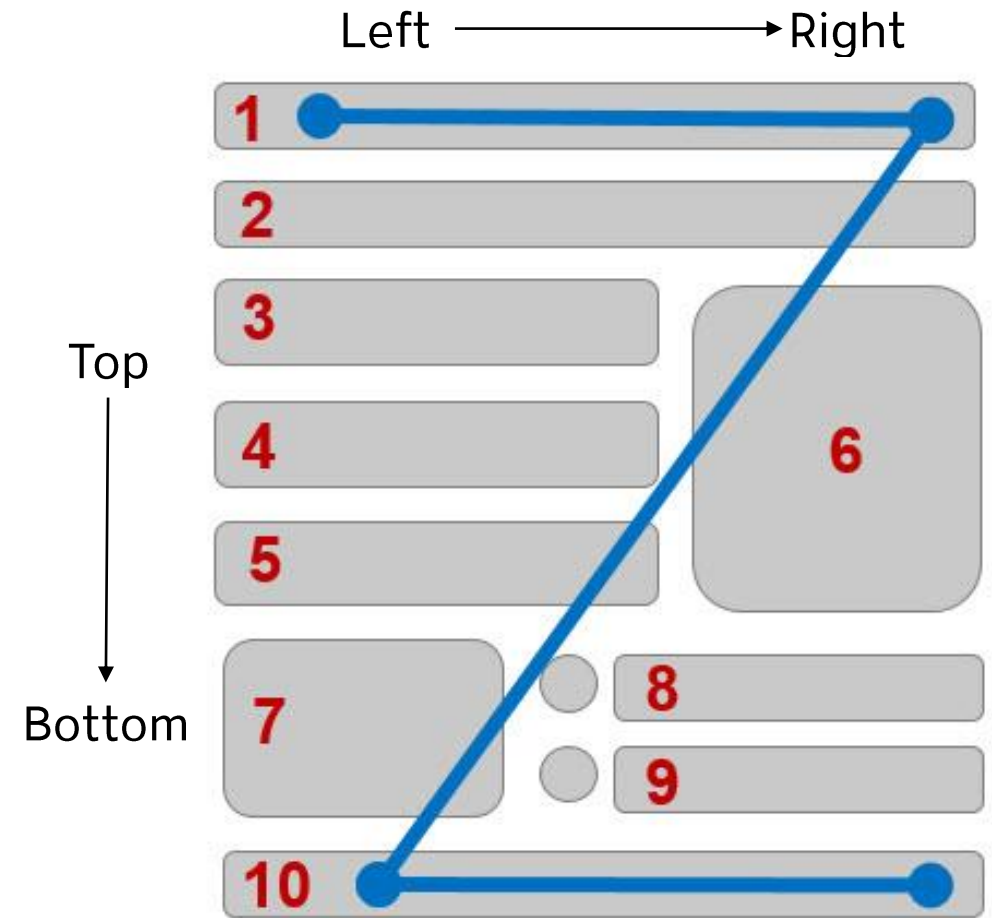
Adds spoken, audible, and vibration feedback to your device.



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

How Do Screen Readers Work?

- Screen readers read line-by-line from left-to-right and top-to-bottom.
- Screen readers start at the top of a document or website and read any text including alternative text for images, graphics or charts.
- Screen readers navigate a document or website using the keyboard **without** a mouse. **Tab** key: jump from link to link, **Enter**: select a link, **arrow** keys: navigate a document or website.
- Reading order is important for users with visual challenges. The users can become confused if the document (content, tables, images or charts) is poorly organized or out of order.



Click vs Select

Screen readers and physical or mobility limitation users navigate a document or website using the keyboard **without** a mouse. The word “Click” is not inclusive of people who can’t use the mouse. Use the word “Select” to write step-by-step instructions.



“Click” or “Click on” Example

- Go to YouTube video player
- Click on Settings gear icon
- Click on Subtitles/CC
- Click on Options to Customize
- Click on Caption Style

Use “Select” Example (Recommend)

- Go to YouTube video player
- Select Settings gear icon
- Select Subtitles/CC
- Select Options to Customize
- Select Caption Style

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.*

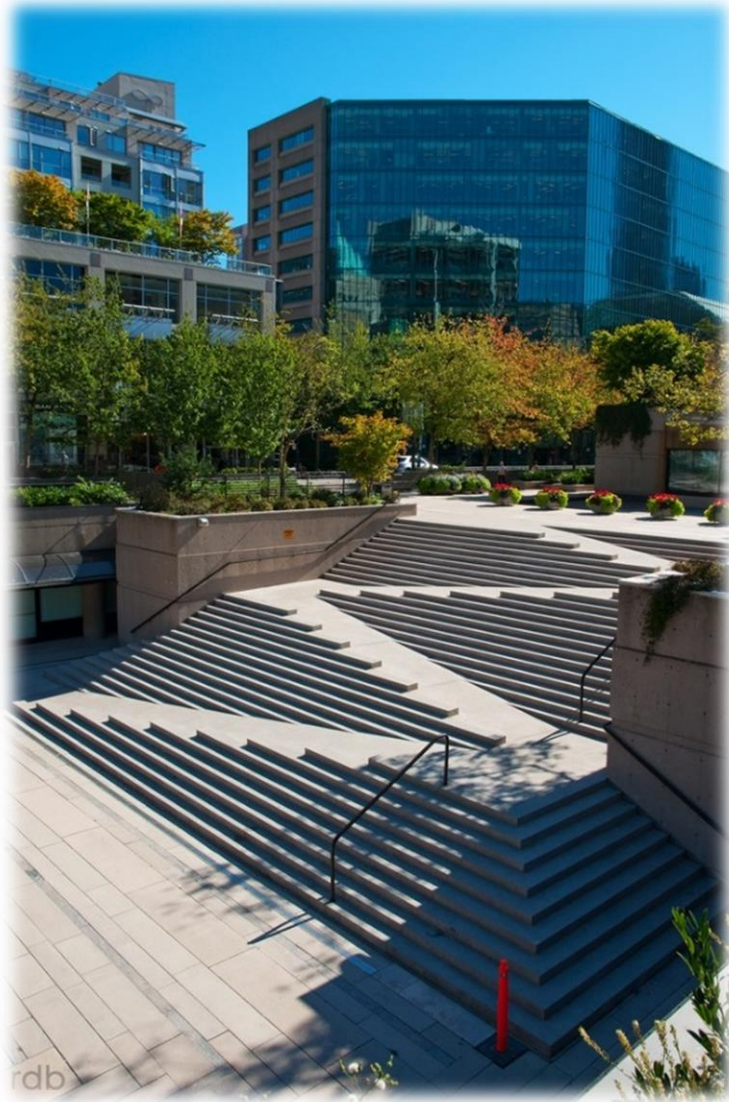
For examples:

- 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.

Universal Design



Universal Design for ALL



Is Captioning Universal Design?



Who is the **largest audience** that benefits from captions?



Captioning Videos

Per federal and state law, and CSU policy, instructional media (e.g., videos, captured lectures, recorded presentations) must have captions. This includes instructional media used in classrooms, posted on websites or shared in Canvas.

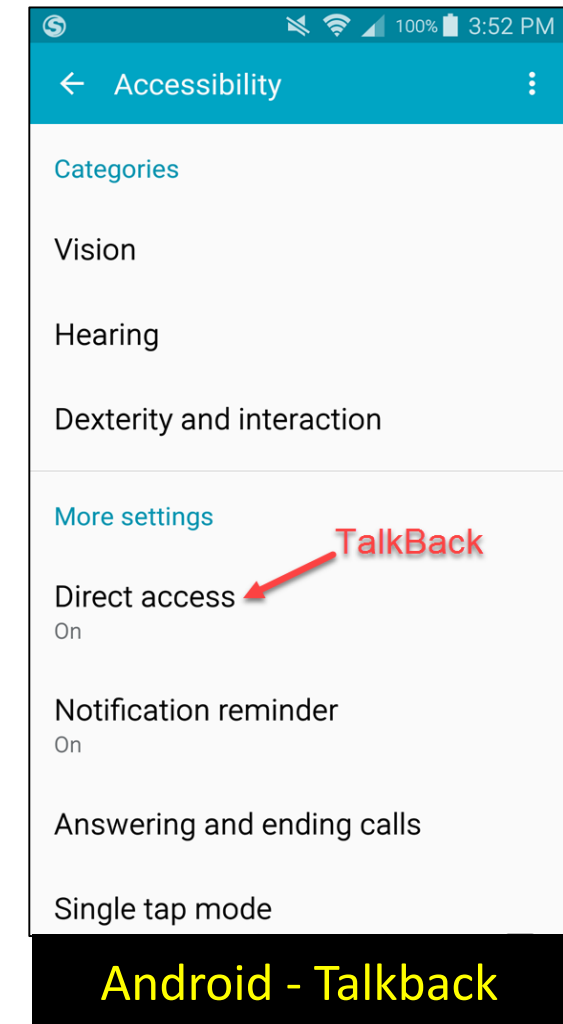
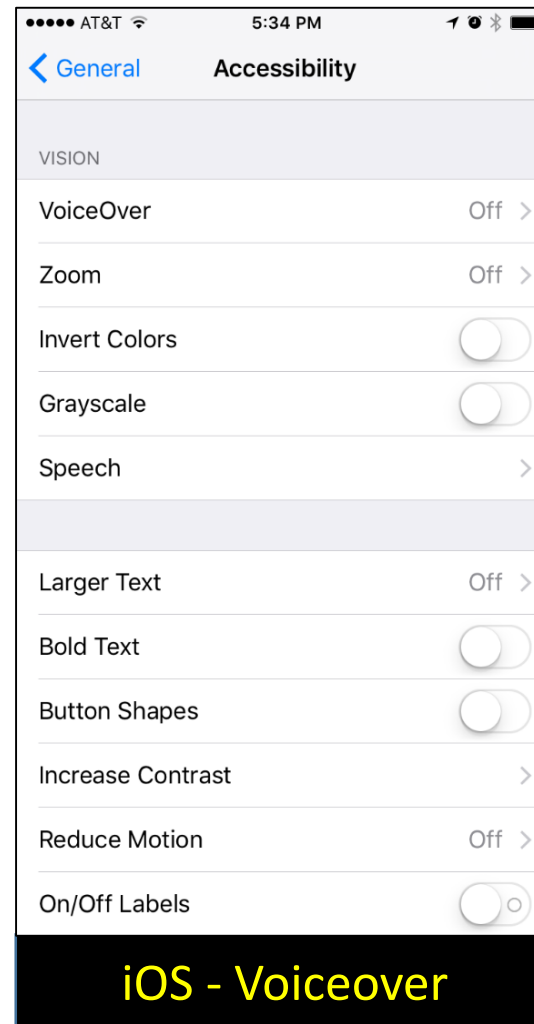
- All students who are enrolled in a course must be able to access the content in the course.
- **Faculty:** Funding is available to help faculty generate captions and transcripts for instructional media. Materials should be submitted **at least six weeks** in advance of their use in instruction.
- **Staff:** For CSUN staff who do not provide classroom material, there is a cost through chargeback. For information on the chargeback, email ncod@csun.edu.



csun.edu/captioning

Mobile Universal Design

- Siri, Genie, etc.
- Dictation
- Predictive text
- Vibrating/flashing alerts
- Safari Reader
- Screen Reader
- Font size
- Color Contrast



Law and Policy

Americans with Disabilities Act (ADA), 1990

Prohibits discrimination and ensures equal opportunity for persons with disabilities in employment, State and local government services, [and] public accommodations. The ADA extends to and includes the technologies used by the campus.

Section 508

Accessibility compliance

Requires CSUN to go further and make our information and communication technologies accessible to everyone.

State of California Government Code Section 11135

Requiring all of its agencies and departments to comply with federal Section 508.

CSU E.O. 1111

"It is the policy of the CSU to make information technology resources and services accessible to all CSU students, faculty, staff and the general public regardless of disability."

Accessible Technology Initiative

- Instructional Materials
- Web
- Procurement

Learn more about [Laws and Policies](#)

Universal
Design
Center



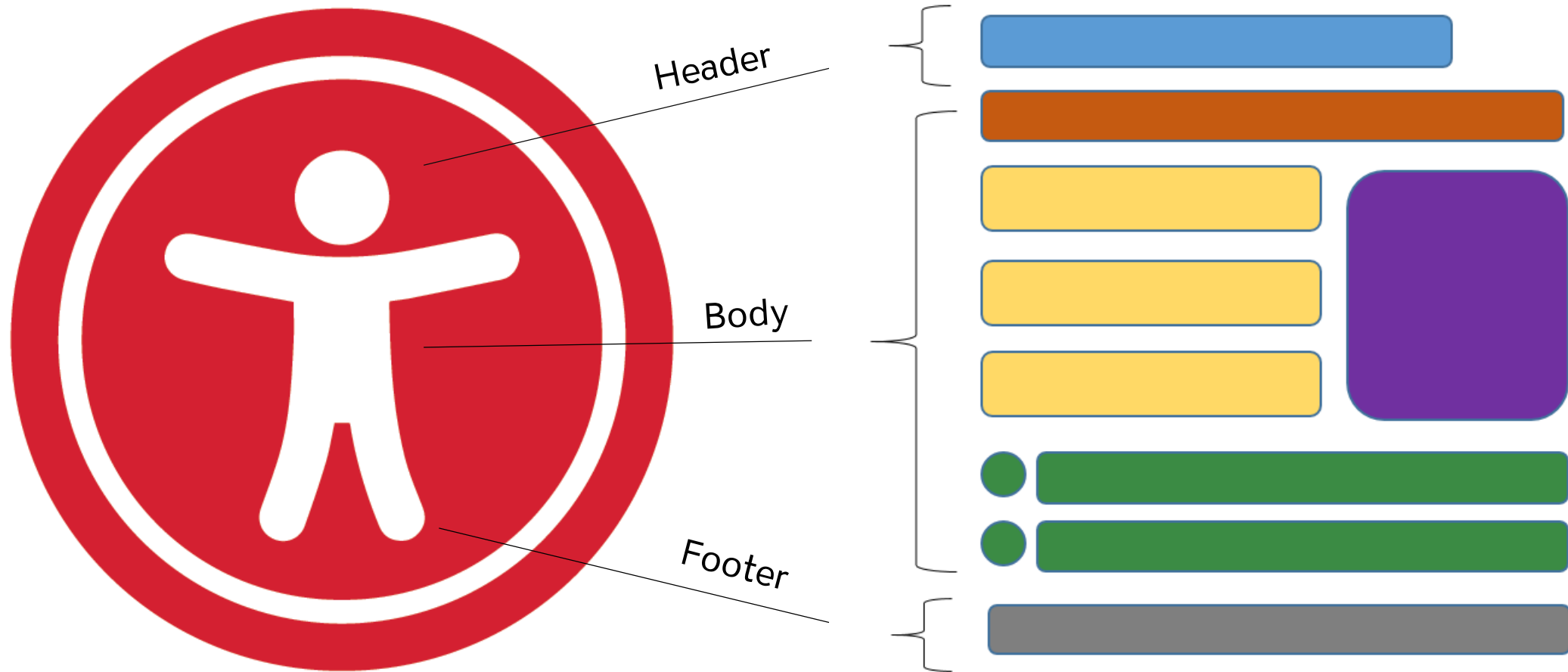
Accessible Technology Initiative



[Apple – Accessibility - Sady](#)



Digital Accessibility Content Analogy



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

Headings and Document Structure

Example 1: Reading long, dense text documents can be a daunting task for learners

As part of our commitment to excellence through diversity and inclusion, California State University, Northridge (CSUN) strives to ensure that campus communication and information technology is accessible to everyone. The California State University system statement on accessibility is articulated in California State University - Executive Order 1111, in accordance with both federal and state laws including the Americans with Disabilities Act of 1990 (ADA) and Section 508 of the U.S. Rehabilitation Act.

Need assistance or have a question not answered here? Please contact the Universal Design Center (UDC) at UDC@csun.edu or, during business hours (Monday through Friday, 8am to 5pm Pacific time), at (818) 677-5898.

In this context, “accessibility” means that people with disabilities have access – to facilities, to information and to technology.

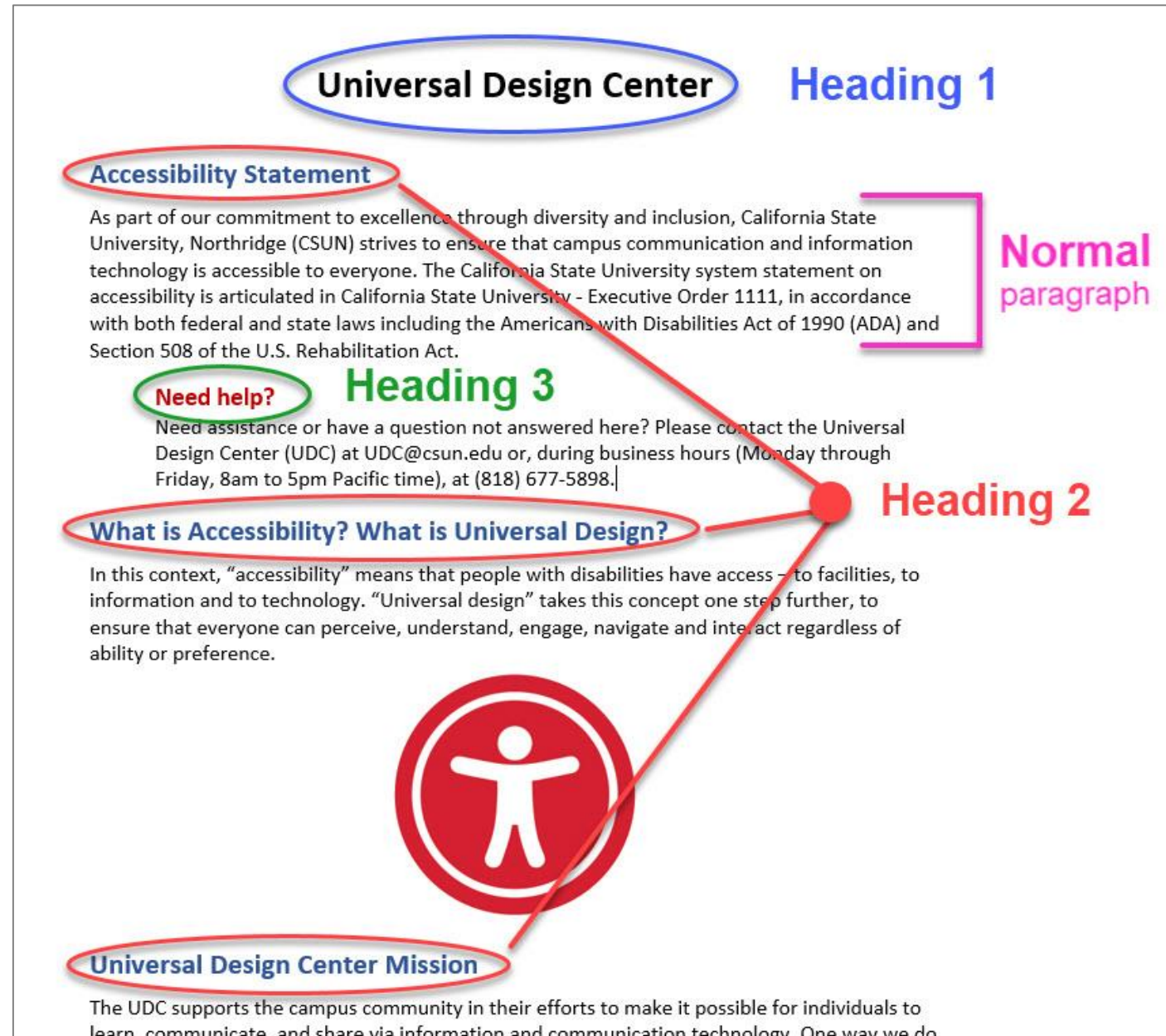
“Universal design” takes this concept one step further, to ensure that everyone can perceive, understand, engage, navigate and interact regardless of ability or preference.

The UDC supports the campus community in their efforts to make it possible for individuals to learn, communicate, and share via information and communication technology. One way we do this is by assisting the campus community to ensure their information and communication technology is interoperable, usable and accessible, so that individual learning and processing styles and/or physical characteristics are not barriers to access.

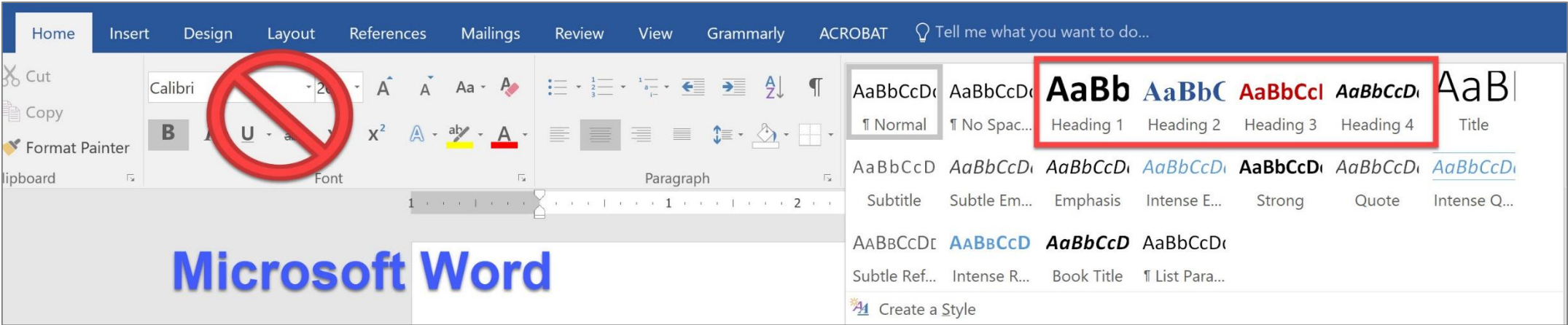
The role of the UDC is to help CSUN implement business practices which enable the campus to meet policy standards under the Accessible Technology Initiative Coded Memoranda. What does this mean to me?

Everyone has a part in creating accessible and usable information. The responsibility of creating and maintaining accessible content falls to the entire campus community.

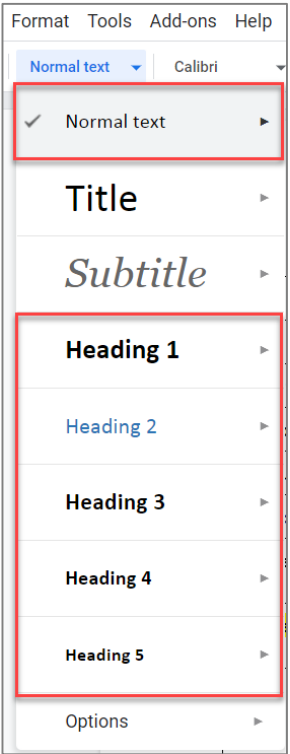
Example 2: Well-structured documents help readers organize and process texts



Heading Styles compatible with other programs



Google Docs



Website

```
<h1> Main Heading </h1>
<h2> Sub Heading </h2>
  <h3> Sub sub heading </h3>
<h2> Sub Heading </h2>
  <h3> Sub sub heading </h3>
  <h3> Sub sub heading </h3>
```

Canvas

Header 2 -> This is the Title

Header 3 -> This is the sub title

Header 4 -> This is a category

Paragraph -> This is the body of the content

InDesign

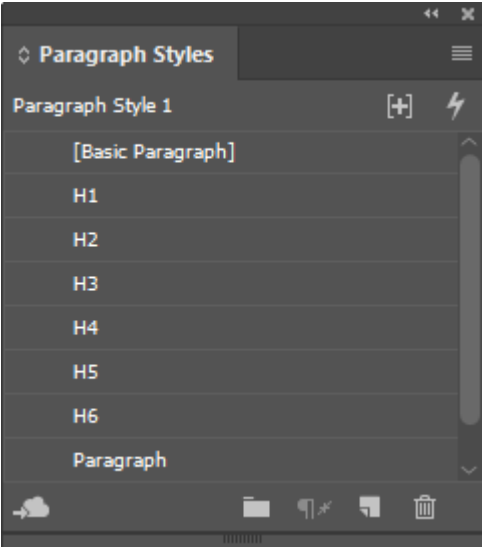


Image Alternative or Alt Text



Screen readers and other AT announce that it's an "image" or "graphic", then read the alt text: "Three plants going through transformation with text quote Accessibility user-friendly document for CSUN student success."

- The purpose of **Alt Text** is to allow low vision or blind users who use text-to-speech assistive technologies (AT), such as screen readers, to understand the purpose of graphic images. Sighted users usually don't see alt text unless they use AT.
- Screen readers and other AT **can't** convert images into texts. So, when writing alt text, consider the following for images:
 - Describe the content and the purpose of the image clearly and concisely, in a phrase or a sentence or two. Keep alt text short 200 characters or less.
 - Image with text (for example, the CSUN wordmark) should include the words on the image.
 - "Image of...", "Photo of..." is not needed because screen readers and other AT announce that it's an "image" or "graphic".
 - When completing the alt text, use proper punctuation such as periods to indicate the end of the alt text. Without proper punctuation, some screen readers will run the alt text into the body text that follows and cause confusion to the user.
 - Don't insert hyperlinks in alt text because they are not clickable and can't create descriptive link text.

How to Describe Images?



A stair chase leading up to an entryway is painted yellow with bold black text that reads museums are now.



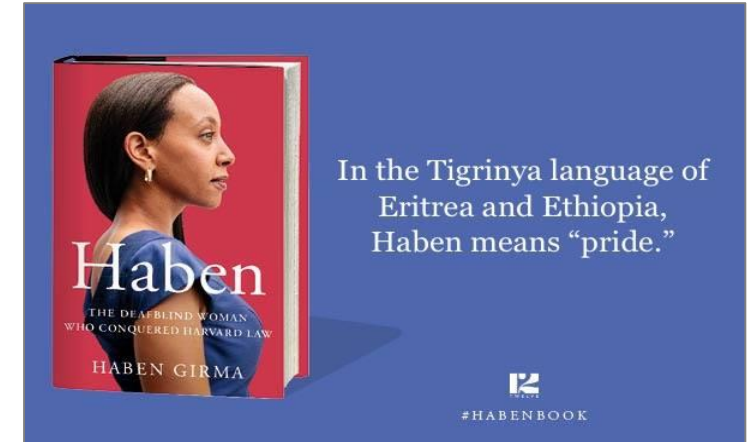
A hand reaches out of a computer screen giving the hand gesture for stop. The screen reads 'access denied!'



Michelle Obama claps and Barack waves.



Student holds a diploma hardcover up in the air during CSUN commencement. Caption text "and together, as Matadors, we will move mountains."



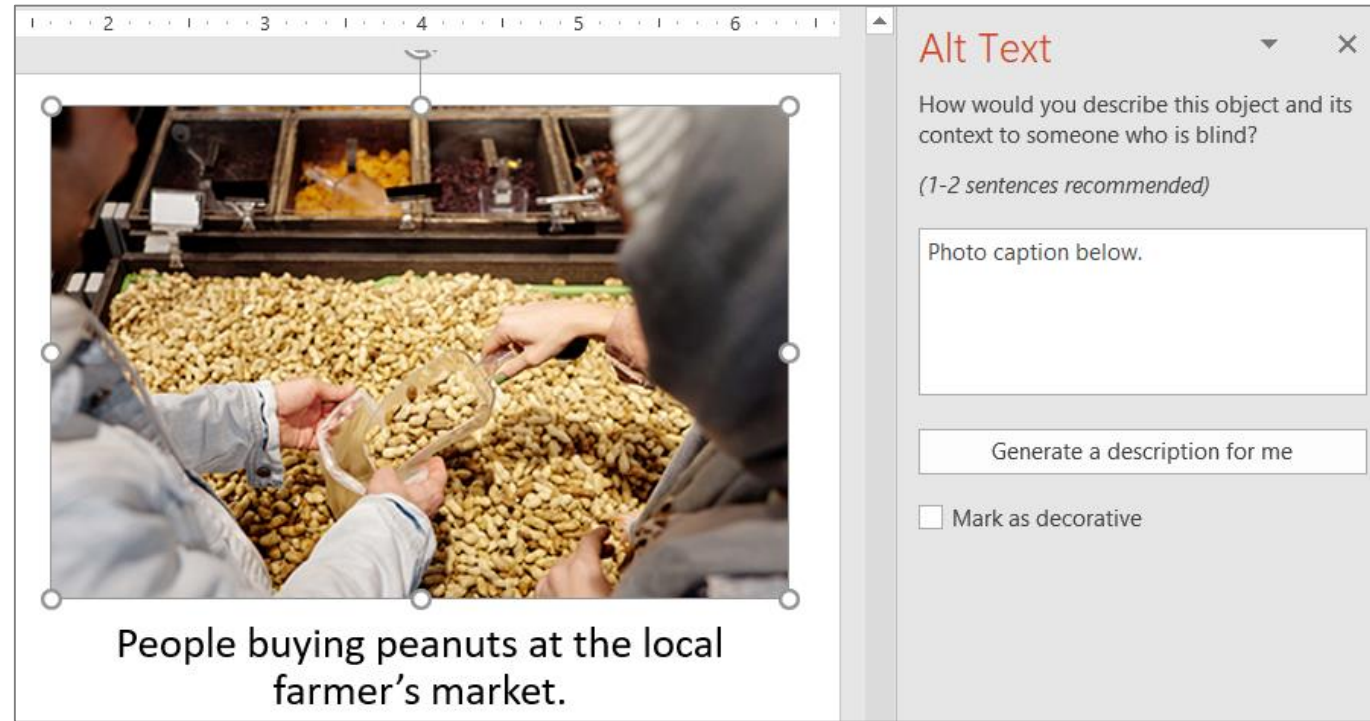
On the left is the book cover for Haben The Deafblind Woman Who Conquered Harvard Law, and on the right is the quote: "In the Tigrinya language of Eritrea and Ethiopia, Haben means 'pride.'"

More examples of How to Describe Images

- [Document Learning Tools: Describing images](#)
- [How to Describe Images](#) (Art, Chemistry, Diagrams, Flow Charts, Formatting & Layout, Graphs, Maps, Mathematics, Page Layout, Tables, Text-only images)
- [Periodic Table of the Elements](#)
- [UDC Best Practices for Describing Images](#)

Image Captions

- Captions are universal and accessible for everyone.
- Captions are read and visible to all users whether they use assistive technologies (AT) or not.
- Captions and alt text have different purposes.
 - **Captions** convey what's visible in the image.
 - **Alt text** describes the visual aspect of the image and should be brief.
- If captions and alt text are similar in their descriptions, alt text can say "Photo caption below." For example, see caption example as shown on the right side.
- **Don't repeat** the image's caption as the alt text. People don't need to hear the same information twice.



Caption Example

Caption: People buying peanuts at the local farmer's market.

Alt Text: Photo caption below. *(Indicate where image position above, below, left or right side) OR checked "Mark as decorative" skip by screen readers.*

Descriptive Link Text

Not Accessible – vague and redundant

CSUN News

CSUN Honors Four Exceptional Graduate Students for Thesis and Project Work

CSUN's Division of Academic Affairs has selected four exceptional CSUN graduate students as the winners of the 2020 Distinguished Thesis/Graduate Project Competition, with each receiving a \$1,000 award and recognition from the university. [Read more.](#)

CSUN Team to Tap into Power of Inouye Telescope to Study Sun's Atmosphere

With the aid of a telescope in Hawaii, a team of professors at California State University, Northridge hope to solve some of the mysteries found in the sun's atmosphere, information that could help us better understand the impact of solar flares, as well as what is happening with other stars in our solar system. [Read more.](#)

Minimizing the COVID Slide During the Summer

In response to the COVID-19 pandemic, schools across the nation transitioned to meeting online. Given the abruptness of the transition and lack of preparation parents had in becoming in-home teachers' aides, many parents and educators are worried about a "COVID slide" or "COVID slowdown," where students fail to retain any new information learned before and during the pandemic — as well as over the summer, when students are not in school. [Click here](#)

Screen readers read: "Read more, **link**" "Read more, **link**" "Click here, **link**"

Accessible – descriptive and unique

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With the aid of a telescope in Hawaii, a team of professors at California State University, Northridge hope to solve some of the mysteries found in the sun's atmosphere, information that could help us better understand the impact of solar flares, as well as what is happening with other stars in our solar system. [Continue reading about CSUN's Astronomy Team.](#)

Minimizing the COVID Slide During the Summer

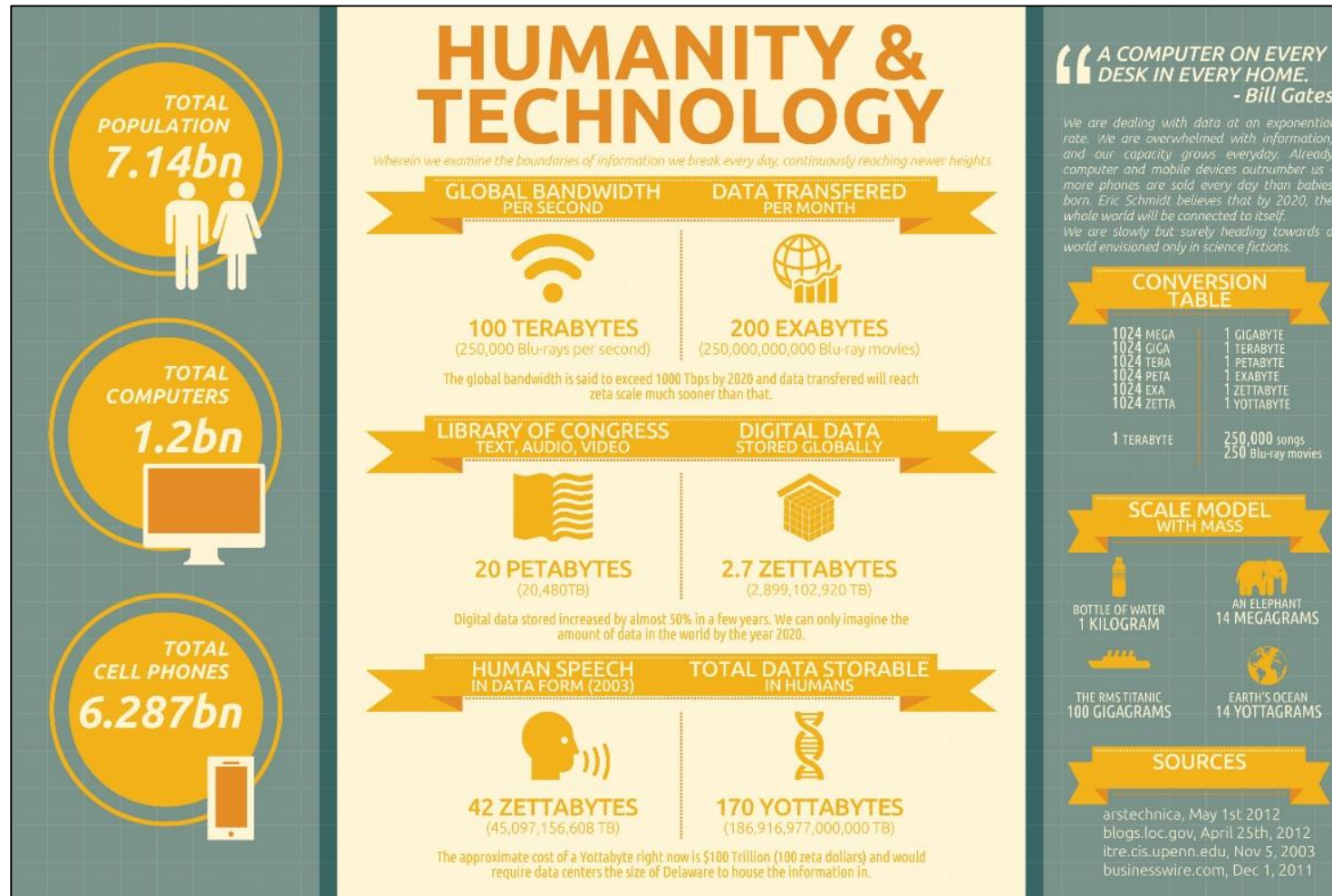
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Screen readers read: The content and link text then announce the word "**link**"

Full URL text <https://www.csun.edu/universal-design-center>

(raw URL may not make sense to screen reader users or others, so make the link text descriptive i.e. [Universal Design Center](#))

Color Contrast



Provide descriptions if using color to convey meaning

Example 1: Inaccessible color highlights in red

May 11 to 17, 2019

Example 1: Accessible with a description

May 11 to 17, 2019* (final exams)

Example 2: Inaccessible table

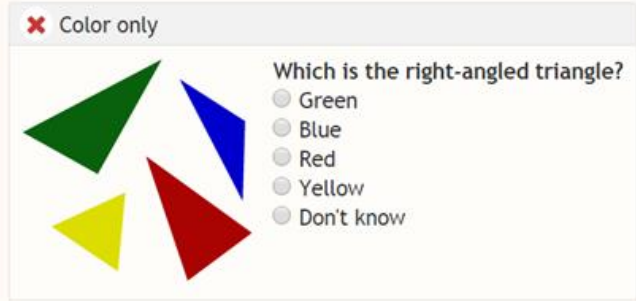
	Assignments (overdue in red)	
	Introduction	
	Chapter 1	

Example 2: Accessible table

	Assignments	Overdue	
	Introduction	Yes	
	Chapter 1	No	

Example 3: Inaccessible color shape

Example: Refer to something using color alone

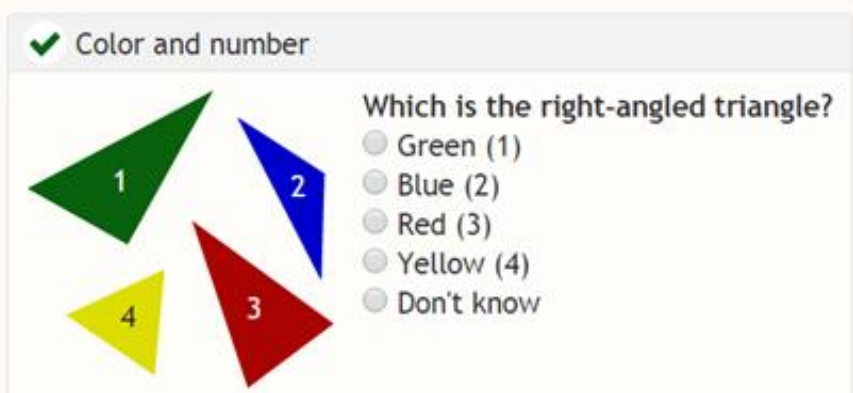


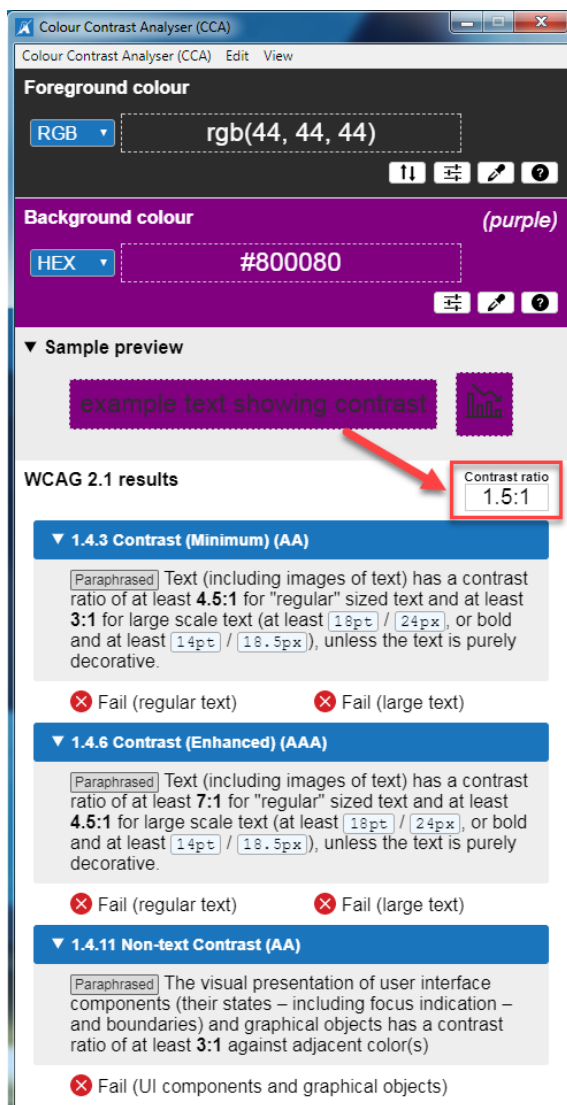
Color identical may not be recognized by colorblind users

Example: Refer to something using color alone



Example 3: Accessible color and number





People who have low vision or colorblind could encounter some difficulty distinguishing text color from a background color if the contrast is insufficient contrast ratio 1.5:1.



This example has a great color contrast ratio of 8.7:1. The contrast is sufficient for those who have color deficiencies

Check Color Contrast

Bad Examples	Good Examples
Red on black is bad	Yellow on black is good
Blue on orange is bad	Black on orange is ok
Red on green is bad	White on green is good
Grey on purple is bad	Aqua on purple is ok

- Download [Colour Contrast Analyser](#) onto your computer (PC/Mac) to ensure accessible contrast or use an online contrast checker from [WebAIM](#).
- WCAG Level AA requires a contrast ratio of at least **4.5:1** for regular sized text (12 or 14 pt. font) and **3:1** for large text (18 pt. font).
- [Coblis Color Blindness Simulator](#)

Keyboard Navigation or Touch

- Users should be able to get to content without using a mouse
 - Keyboard
 - Hearing
 - Touch
- Users should be able to access content on different screens (phone, tablet, etc.)



Eight-Point Accessibility Evaluation



Is it legible? Can you read it? Is the font easy to read?



Is it searchable and selectable?



Does it have a descriptive title at the top page?



Is link text descriptive? Does the text accurately describe the link destination or purpose?



Color. Is there enough contrast between text and color background? Does color convey meaning?



Can you resize and read up to 400% without horizontal scrolling? Can you zoom in without distorting the text?



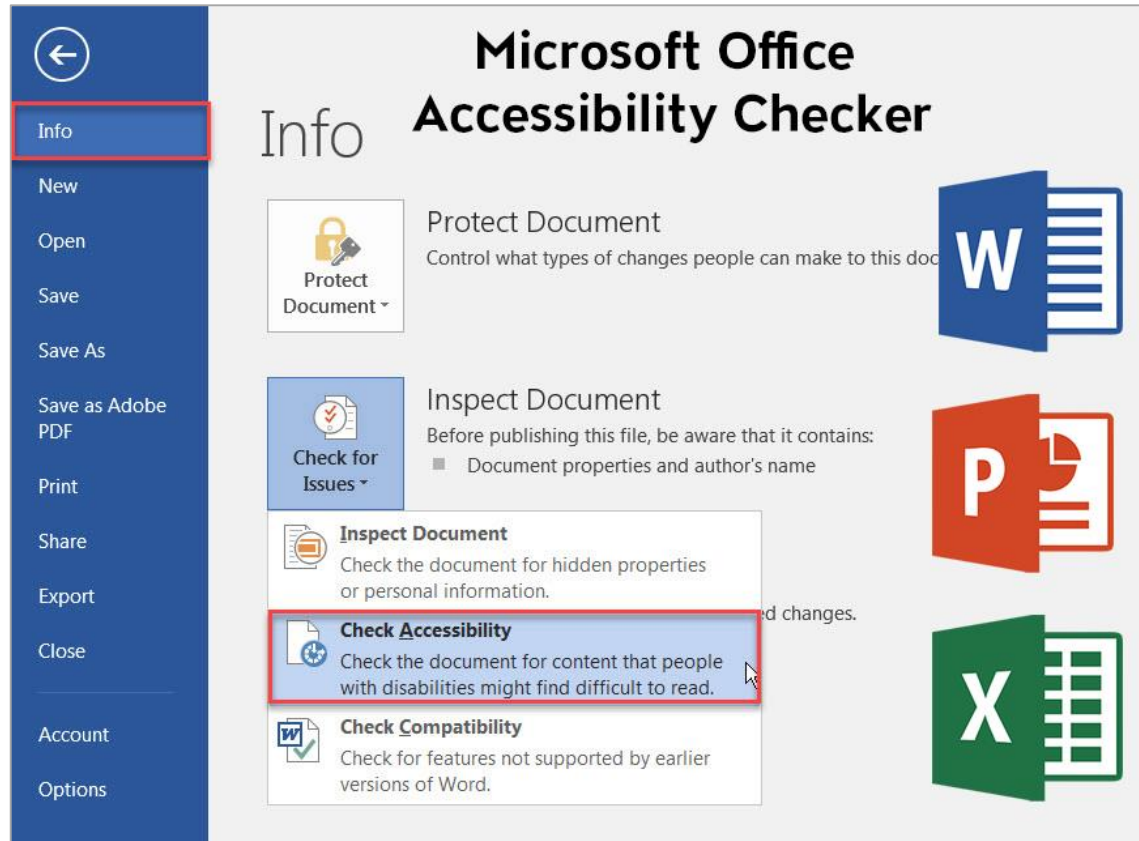
Can you navigate using only your keyboard (no mouse)?



Are videos captioned? Every video should have closed captions.

visit csun.edu/udc/8questions
for further explanation

Microsoft Office Accessibility Checker



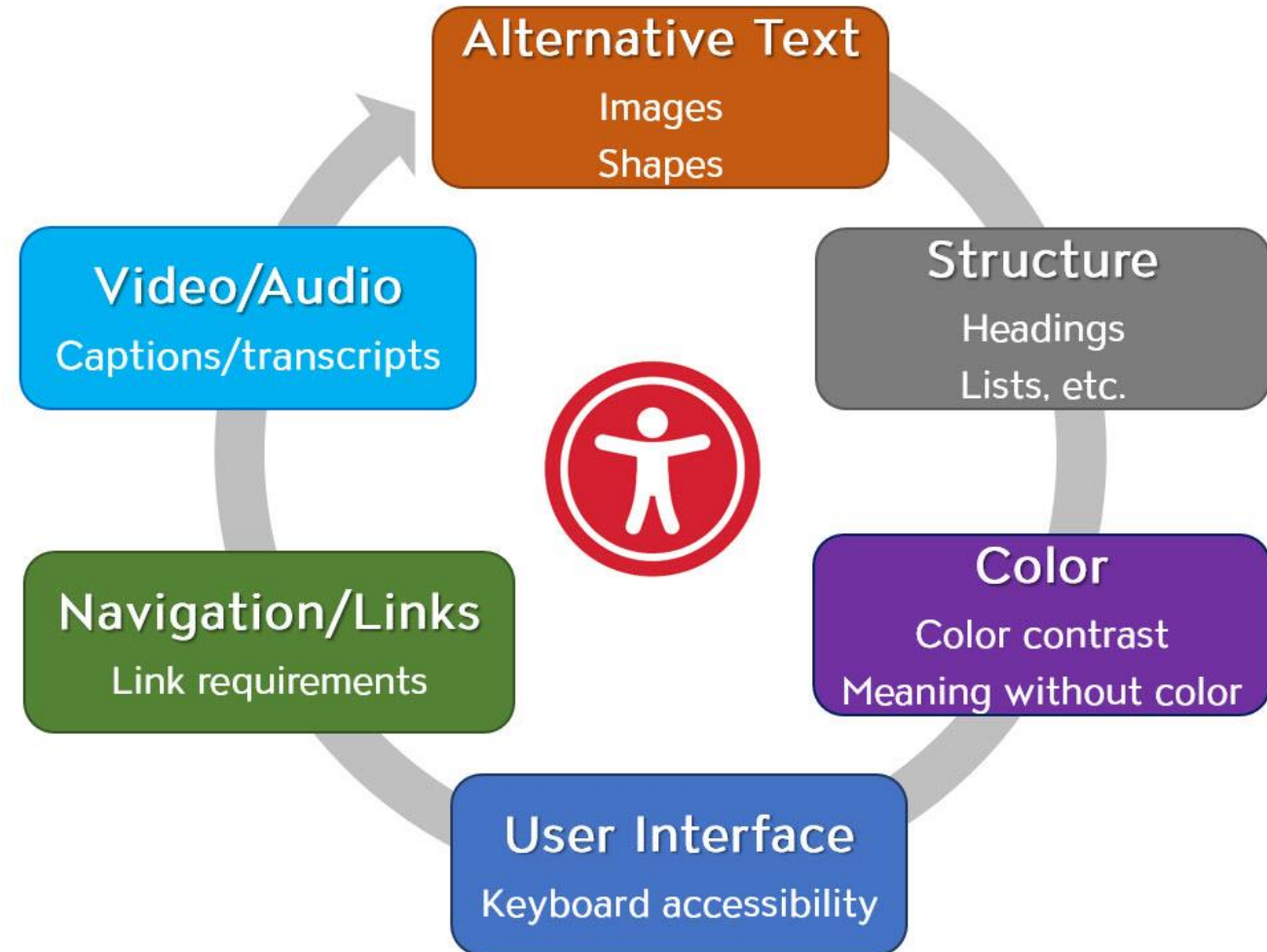
The accessibility checker will identify certain accessibility issues:

- Headings that are not in logical order
- Images with no alt text
- Tables have the header box checked
- Tables that have merged cells or with empty cells
- Large numbers of repeated blank characters (spacebars, tabs, enters)



Create with Accessibility in Mind

Best Practices



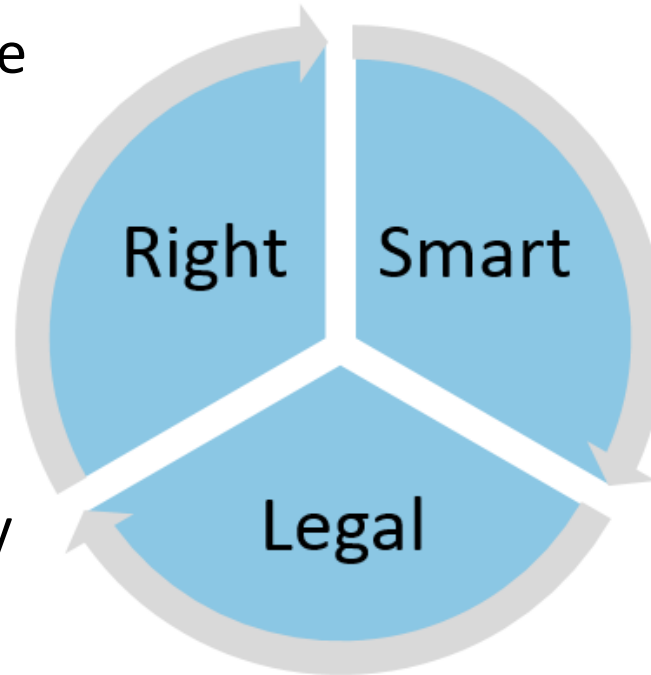
Accessibility, it's the _____ thing to do!

Right:

- Aligns with University Mission or Vision
- Increase usability for all people
- Attracts students to university

Legal:

- Equal access due to laws such as ADA, Section 508
- Department of Justice scrutiny
- Risk of litigation



Smart:

- Sustainable
- Large number of population has disability (19% of US population)
- “If they can use my products, they can buy them.” – Steve Jobs
- Creating a welcoming environment
- Support’s a person’s success and persistence in activity retention



Accessibility is a Journey

You can't build accessible content overnight. It's making progress one step at a time. One small moment of victory propelling you forward to the next.

Accessibility is a constant journey, not an end destination.



accessibility is for
everyone



How can we help you make a **difference**?



Universal Design Center Offers

- Online, self-paced training
- In-person training each semester
- Consultations
- Tools and Services

