



Alabama Department of
REHABILITATION SERVICES

Rehabilitation Engineering and
Assistive Technology

Everyday Accessibility, Employment & Workplace Success

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one mission

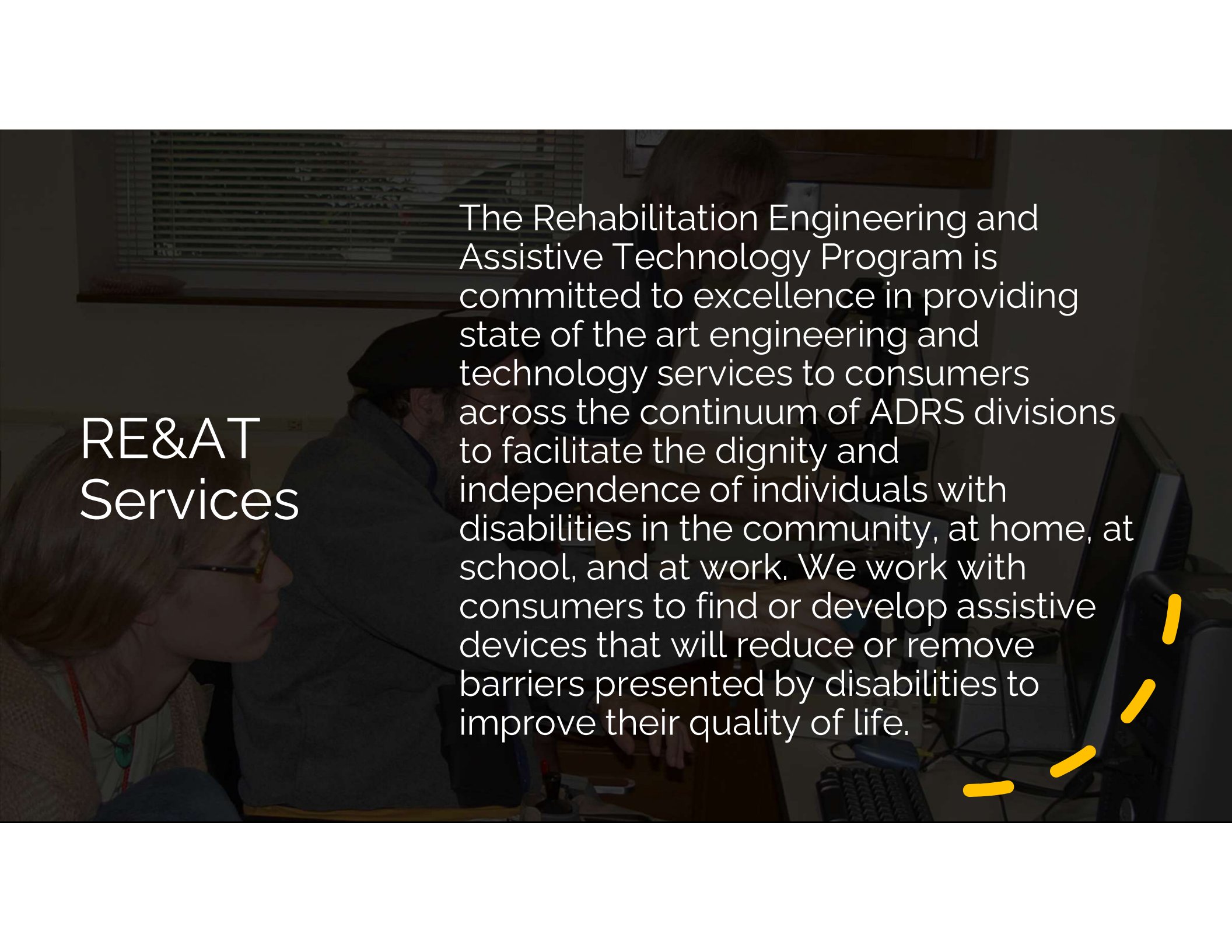
ONE DEPARTMENT. ONE MISSION

Our mission is to enable Alabama's children and adults with disabilities to achieve their maximum potential.



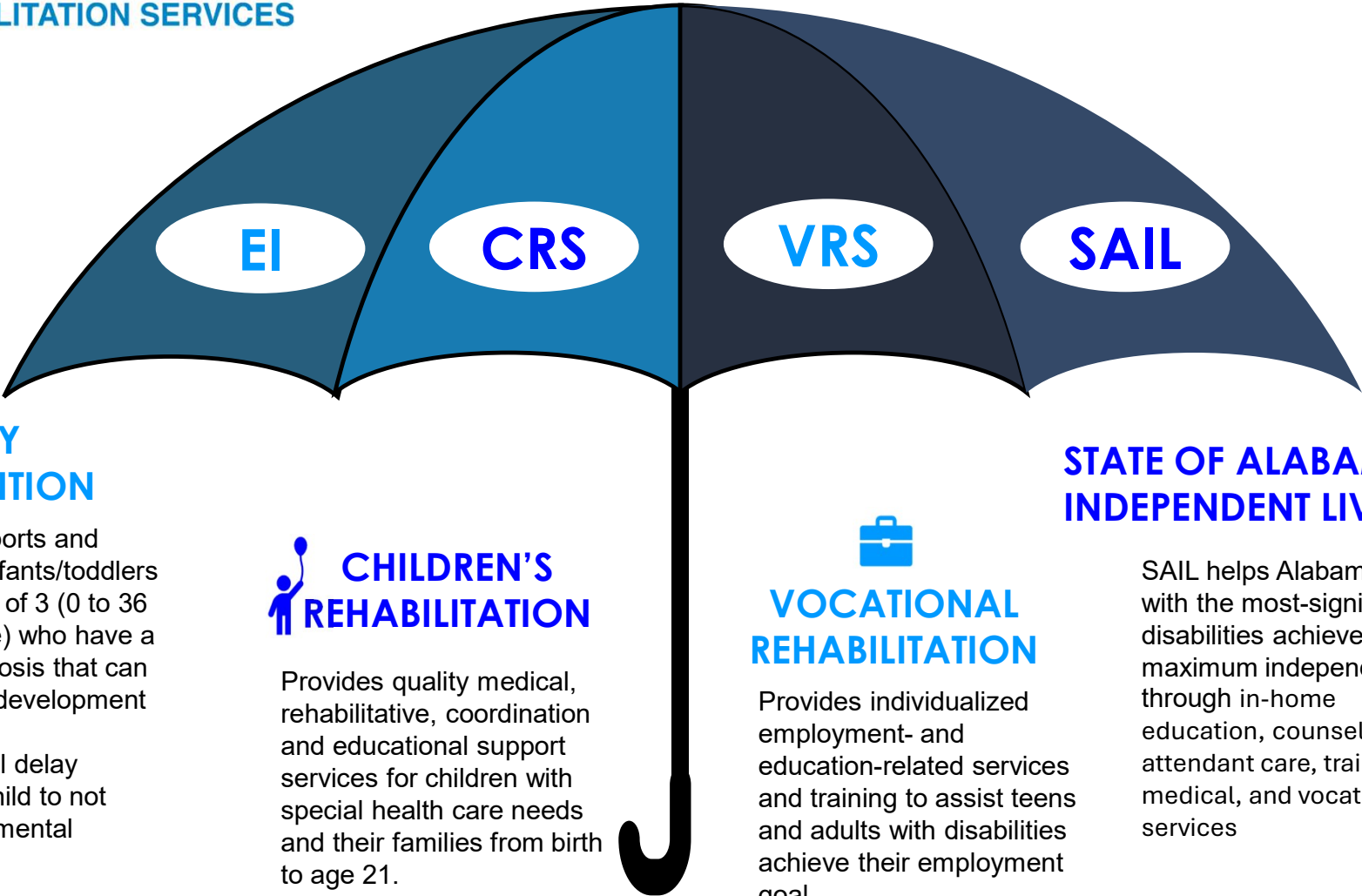
Session Goals

- Participants will be able to identify built-in accessibility features of iOS devices
- Participants will be able to identify built-in accessibility features of Windows devices
- Participants will be able to identify ergonomic aids and environmental modifications to common workplace layouts

The background of the slide is a dark, low-key photograph of several people in an office or laboratory setting. In the foreground, a woman with short blonde hair and glasses is looking towards the right. Behind her, another person is partially visible. To the right, a computer monitor and keyboard are visible. Several bright yellow dashed lines are drawn across the lower right portion of the image, creating a sense of movement or highlighting a specific area.

RE&AT Services

The Rehabilitation Engineering and Assistive Technology Program is committed to excellence in providing state of the art engineering and technology services to consumers across the continuum of ADRS divisions to facilitate the dignity and independence of individuals with disabilities in the community, at home, at school, and at work. We work with consumers to find or develop assistive devices that will reduce or remove barriers presented by disabilities to improve their quality of life.



 EARLY INTERVENTION

Provides supports and services for infants/toddlers under the age of 3 (0 to 36 months of age) who have a medical diagnosis that can delay normal development or who have a developmental delay causing the child to not meet developmental milestones.

 CHILDREN'S REHABILITATION

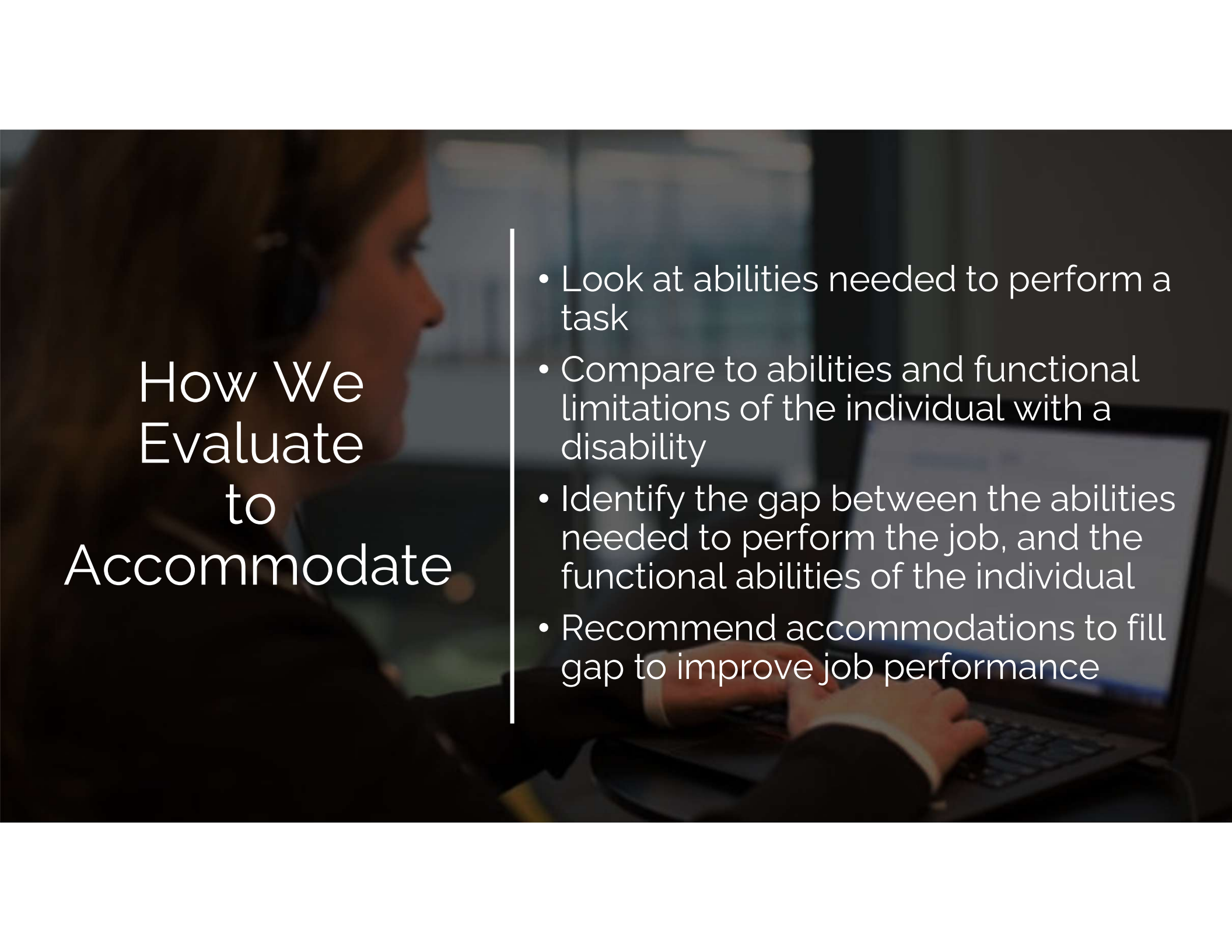
Provides quality medical, rehabilitative, coordination and educational support services for children with special health care needs and their families from birth to age 21.

 VOCATIONAL REHABILITATION

Provides individualized employment- and education-related services and training to assist teens and adults with disabilities achieve their employment goal.

STATE OF ALABAMA INDEPENDENT LIVING

SAIL helps Alabamians with the most-significant disabilities achieve their maximum independence through in-home education, counseling, attendant care, training, medical, and vocational services

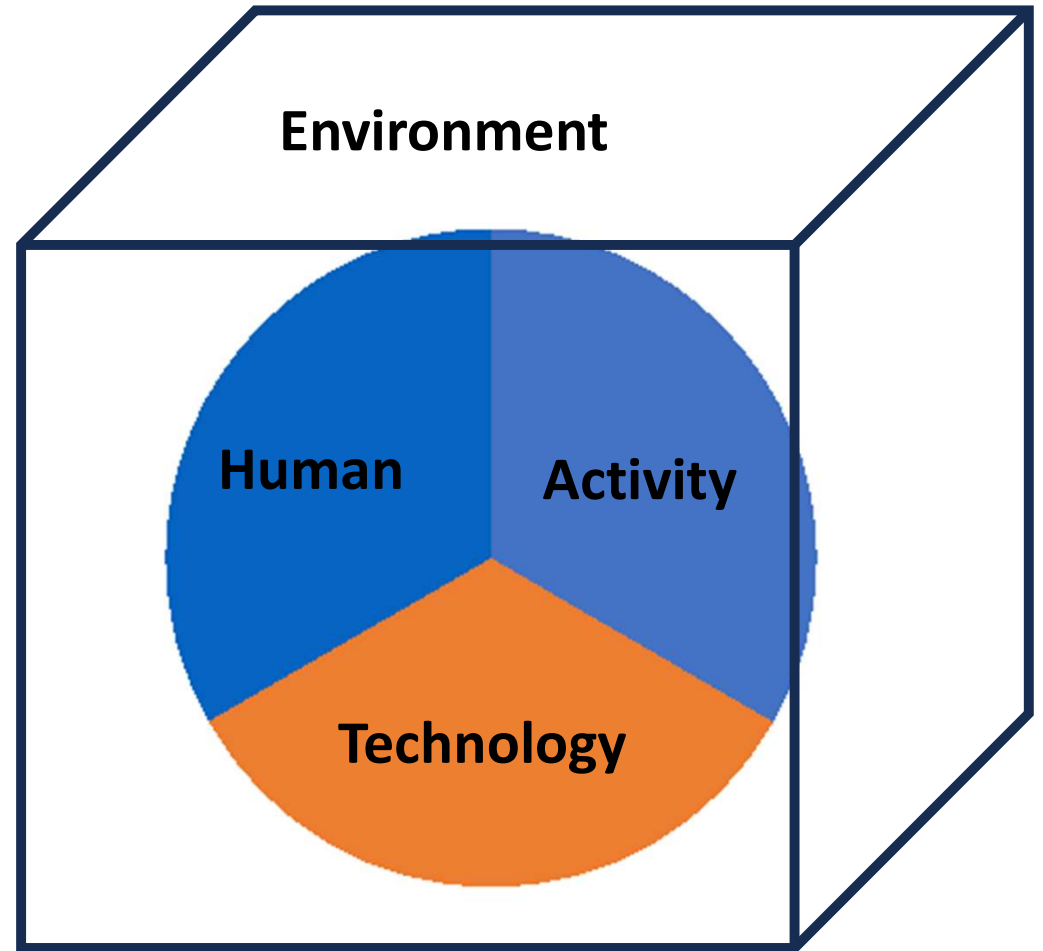


How We Evaluate to Accommodate

- Look at abilities needed to perform a task
- Compare to abilities and functional limitations of the individual with a disability
- Identify the gap between the abilities needed to perform the job, and the functional abilities of the individual
- Recommend accommodations to fill gap to improve job performance

Assistive Technology Human Performance Model*

A comprehensive AT assessment allows us to build an assistive technology system to support the individual, based on their needs



*Assistive Technologies: Principles and Practice, Cook and Hussey, 1995

Person

Identify the characteristics of the person

What are their abilities?

- Physical
- Sensory
- Cognitive
- What are their functional limitations?
- Anthropometric Data
- Skills and knowledge



Activity/Task

What is the Task or Activity to be performed?

- Essential components of the task
- How is the task currently or normal performed?
- Are there alternative ways to do the task?





Environment

Where will the person be using technology to perform the task?

- Inside or Outside
- Bright light or darkness
- Dry or Moist Areas
- Vibration, mechanical stresses
- Other conditions that may pose a risk to the person or their technology

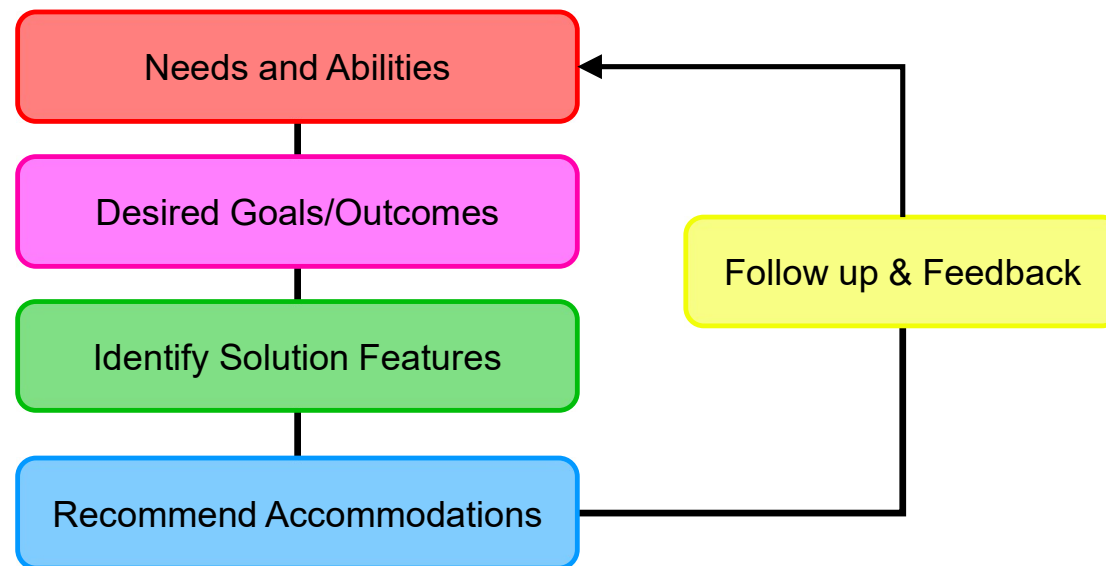
Technology

What technology is used or could be used by a person to perform a task?

- Characteristics of the Technology
- High vs. Low Tech
- Electrical vs. Mechanical



Accommodation Assessment Process



Ways Accessibility is Achieved

Built-in Accessibility Features

- Increased bold and text size
- High contrast themes
- Closed captioning support
- Keyboard shortcuts
- Voice control features
- Slow keys

Assistive Technologies

- Screen readers
- Screen magnifiers
- Speech recognition software
- Switch devices
- Refreshable Braille displays
- Adapted mice and keyboards
- Positioning Aids



macOS



Windows

Android



Built-In Accessibility



chromeOS

Operating System



Devices

iPad, iPhone

MacBook, iMac, Mac Mini

Desktops and Laptops

Google Pixel, Samsung
Galaxy, Galaxy Tablet, Fire
Tablet

ChromeBook

Vision

Screen Magnification and Zoom	Excellent	Excellent	Excellent	Excellent	Excellent
High Contrast Mode	Excellent	Excellent	Excellent	Excellent	Excellent
Screen Reader	Excellent, works with voice control		Excellent	Excellent	Excellent
Color Filters	Excellent	Excellent	Excellent	Excellent	Excellent
Larger text & Bold Fonts	Excellent	Excellent	Excellent	Excellent	Excellent

Hearing

Closed Captions and subtitles support	Excellent	Excellent	Excellent	Excellent	Excellent
Sound Notification Customization	Excellent	Excellent	Excellent	Excellent	Excellent
Audio/Visual alerts	Excellent	Excellent	Excellent	Excellent	Excellent

Mobility/Dexterity

Switch Control	Excellent	Excellent	Excellent, Eye Control	Excellent	Excellent, Switch Access
On-Screen Keyboard	Excellent	Excellent	Excellent	Excellent	Excellent
Voice Control	Excellent	Excellent(Dictation)		Excellent	Excellent
Slow keys/Repeat Keys	Excellent	Excellent	Excellent	Excellent	Excellent

Learning

Text-to-Speech	Excellent	Excellent	Excellent	Excellent	Excellent
Focus Highlighting	Excellent	Excellent	Excellent	Excellent	Excellent
Simplified Display	Good	Good	Good	Good	Good
Predictive Text	Excellent	Excellent	Excellent	Excellent	Excellent

General

Ease of Finding Accessibility Settings	Excellent	Excellent	Excellent	Excellent	Excellent
Accessibility Shortcut	Excellent	Excellent	Excellent	Excellent	Excellent
Compatibility with Assistive Technology	Excellent	Excellent	Excellent	Excellent	Excellent
Regular Updates with New Features	Excellent	Excellent	Excellent	Excellent	Excellent

Newest Accessibility Features of iOS 26

New Features

- Accessibility Nutrition Labels Come to the App Store
- An All-New Magnifier for Mac
- Braille Access
- Live Captions Arrive on Apple Watch
- Accessibility Reader Adapts Even More
- VoiceOver and Magnifier Can Explore More
- Voice Control Gets Natural Language
- Share Accessibility Settings
- Assistive Access adds a new custom Apple TV app with a simplified media player.

Updated Features

- Voice Over
- Magnifier
- Personal Voice
- Dictation
- Eye Tracking
- Head Tracking
- Switch Control



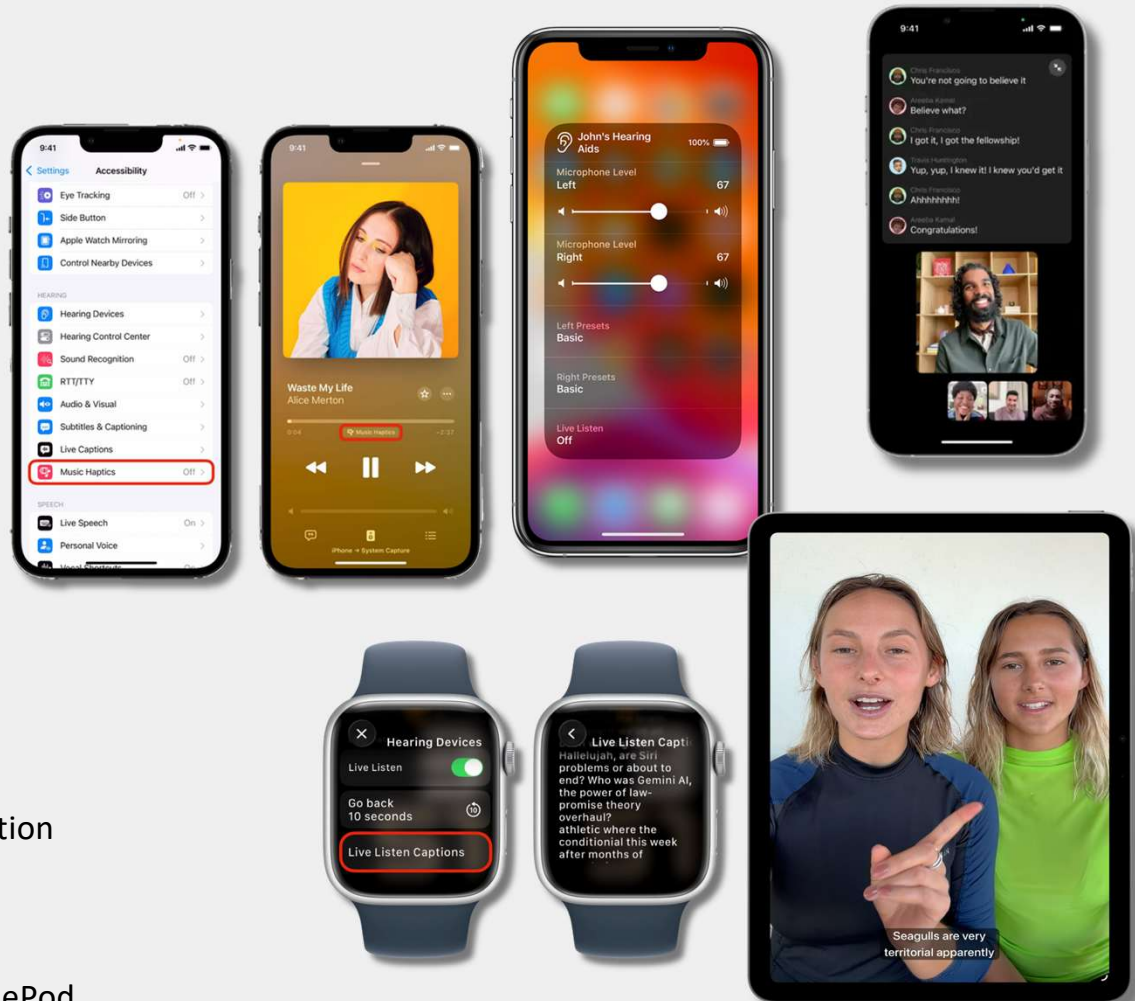
General Accessibility Settings

- Guided Access
- Siri
- Accessibility Shortcut
- Per-app settings



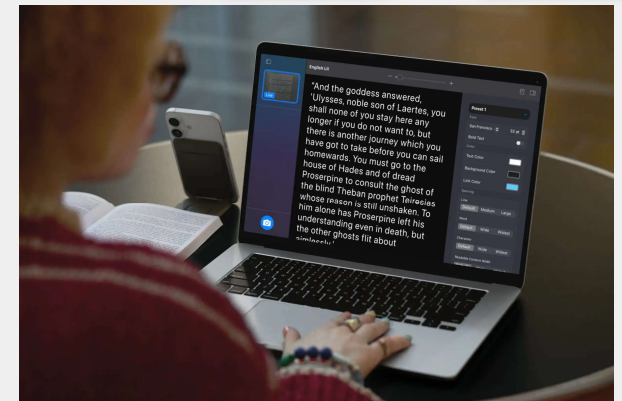
Hearing Accessibility Settings

- **Generated Subtitles for Video**
- **Hearing Health**
- Hearing Aid in Airpod Pro 2
- **Music Haptics**
- **Live Captions**
- **Transcriptions**
- Hearing Devices
- Live Listen
- Sound Recognition
- Mono audio, balance, and phone noise cancellation
- LED flash for alerts
- Headphone accommodations
- Subtitles and captions
- Transcriptions for intercom messages from HomePod



Vision Accessibility Settings

- VoiceOver
- **Magnifier**
- **Vehicle Motion Cues**
- Display and Text Size
- Motion
- Spoken Content
- Audio Descriptions
- Point and Speak Magnifier
- Braille Access



Physical and Motor Accessibility Settings

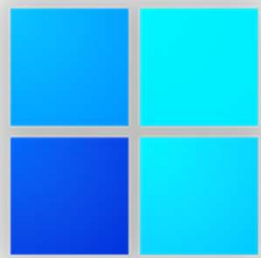
- AssistiveTouch
- Touch Accommodations
- Back Tap
- Reachability
- Call audio routing
- Vibration
- Face ID and Attention
- Switch Control
- Voice Control
- **Eye Tracking**
- **Dictation**
- Pointer Control
- Hikawa Adaptive MagSafe Accessory Now Widely Available



Cognitive Settings

- Assistive Access
- Live Speech
- Live Captions
- Background Sounds
- Spoken Content
- Accessibility Reader





Windows 11

Accessibility Features

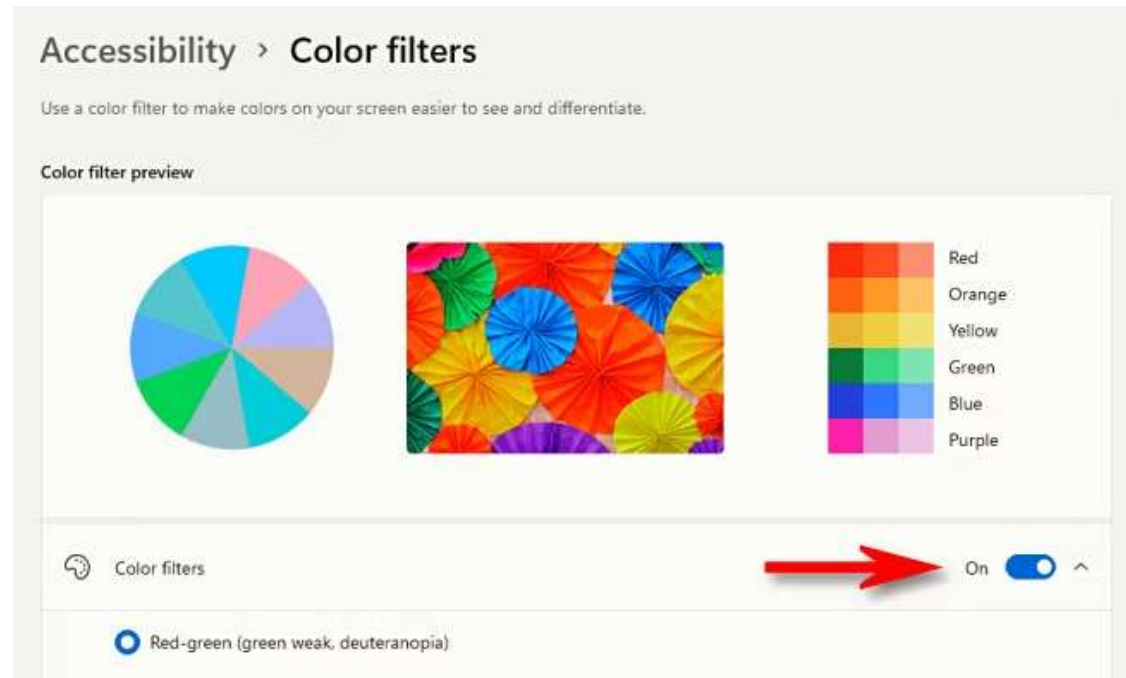


Vision: Screen Magnification and Zoom

Acts as electronic magnifying glass for computer screen

- Improves text readability
- See fine details
- Reduces eye strain
- Adjustable magnification
- Tracks pointer or cursor
- Full, split, or box views

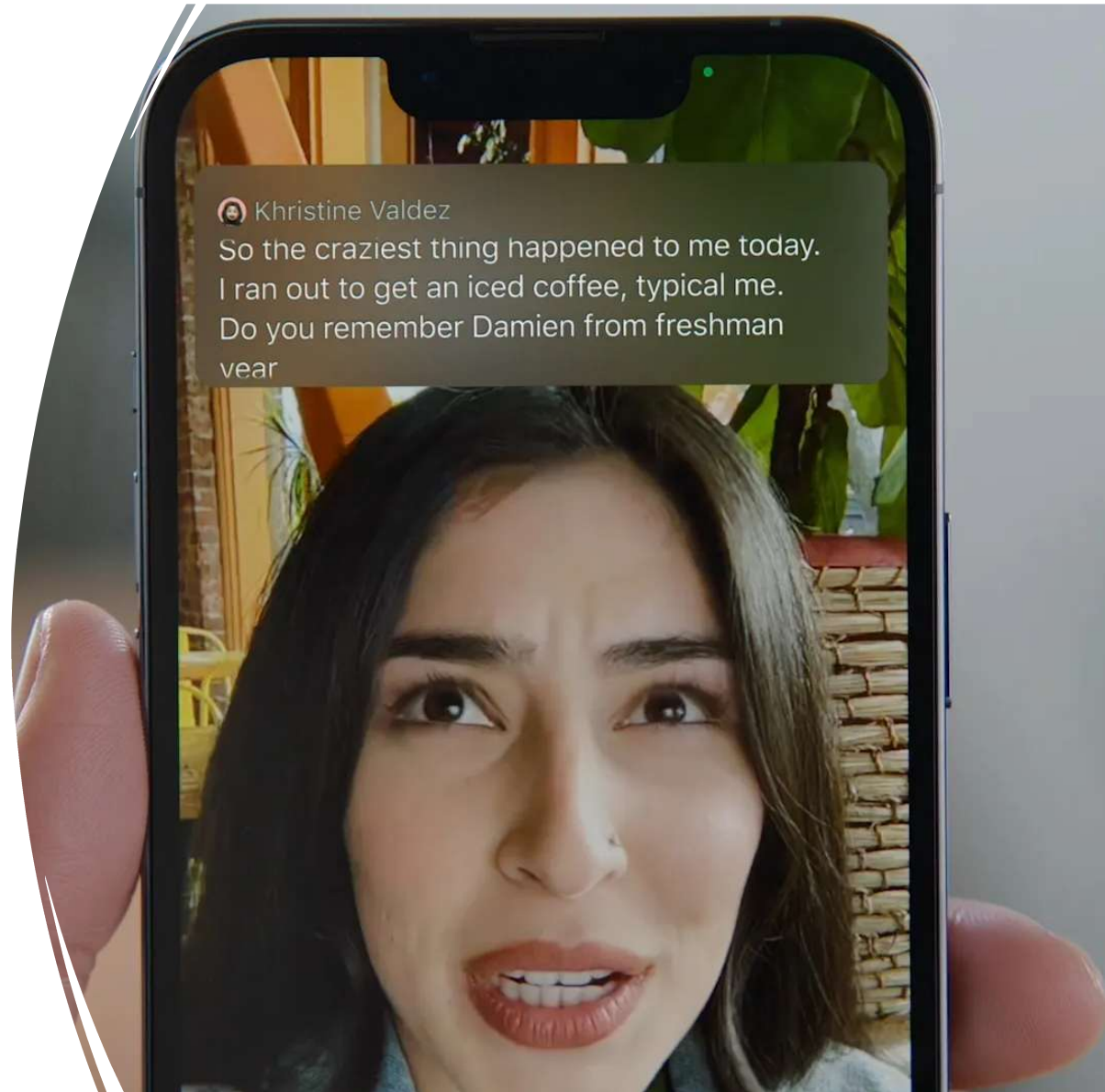
Vision: Color Filters



- Enhanced Contrast
- Reduced Color Confusion
- Improved Readability
- Custom Colors

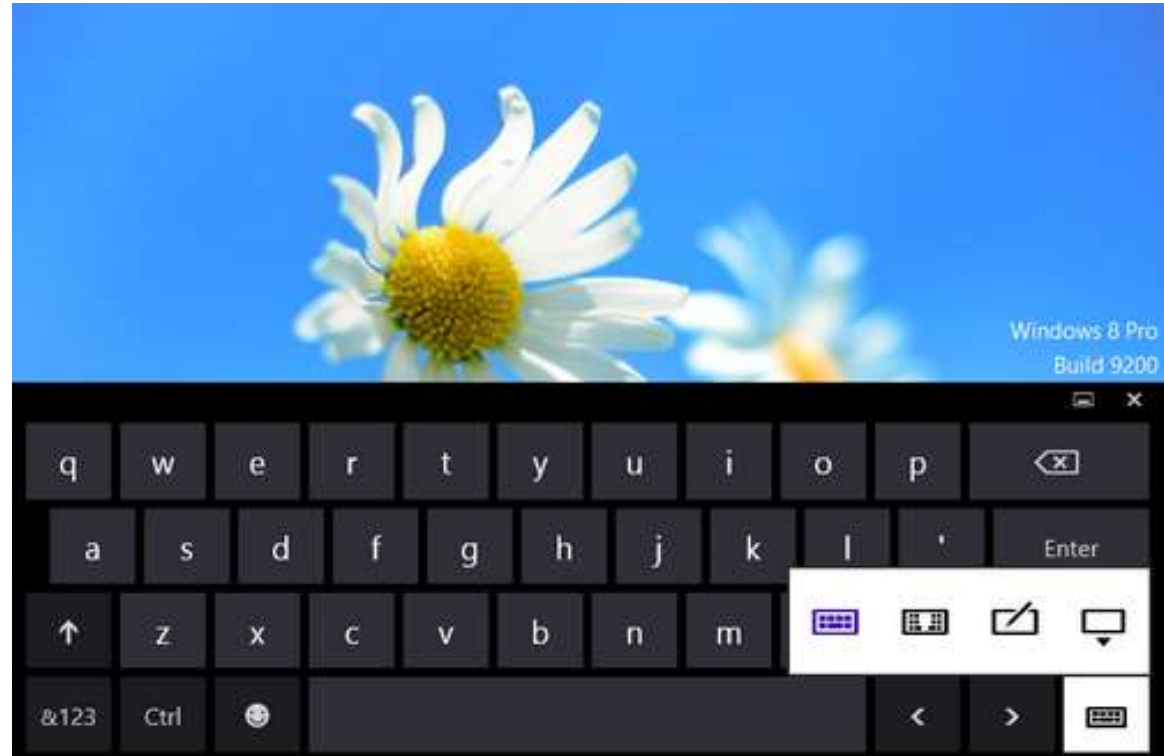
Hearing: Closed Captions & Subtitles

- Closed Captions aid viewers who are hearing impaired by transcribing the audio. CC includes important sounds like music, footsteps, bells, etc.
- Subtitles aid viewers who need spoken language translated into another language.

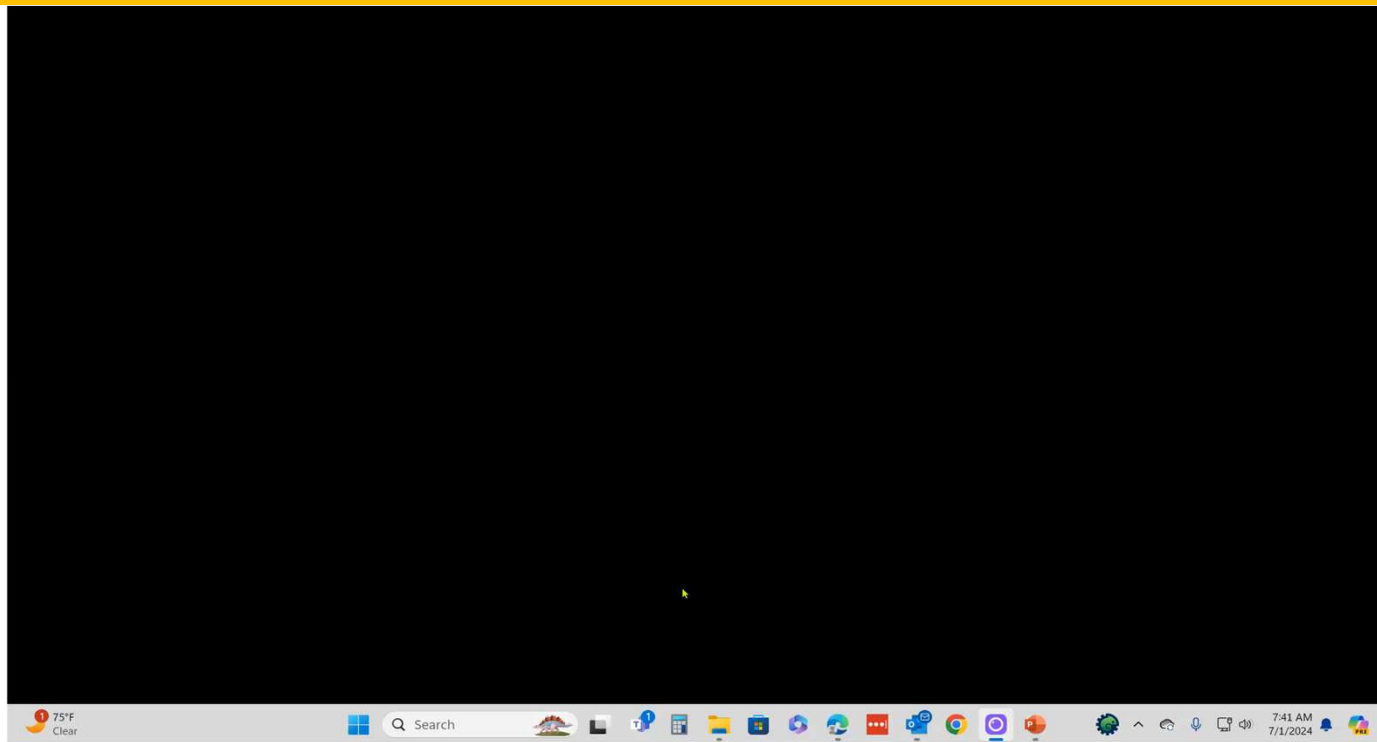


Mobility/Dexterity: On-Screen Keyboard

- Provides Alternative Input Method
 - For people with limited hand or arm mobility, using a physical keyboard can be difficult or even impossible
- Accessibility for Touchscreens
- Improved Accuracy
 - Tremors or coordination issues help with larger, more spaced-out keys, which can improve typing accuracy by reducing the chance of accidentally hitting the wrong key.

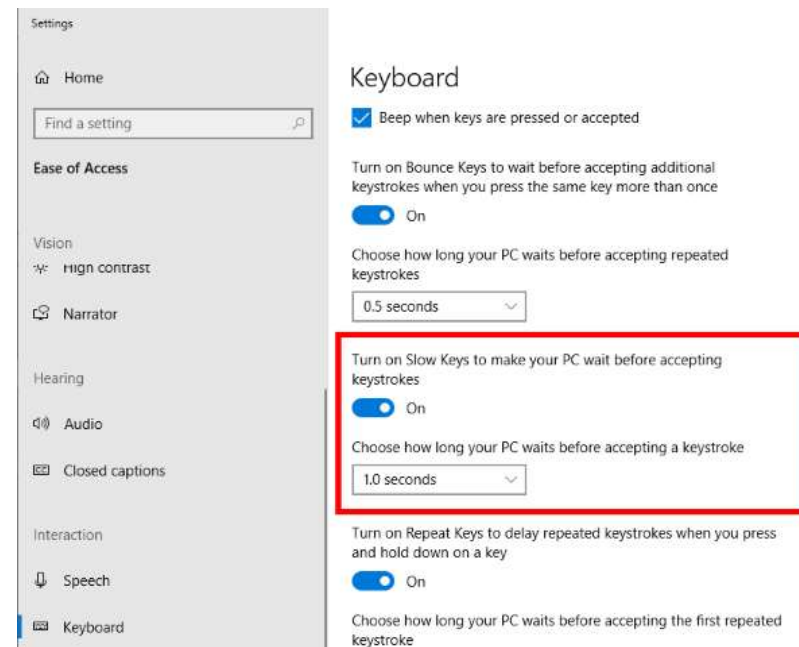


On Screen Keyboard Demo



Mobility/Dexterity: Slow Keys/Repeat/Sticky Keys

- Slow Keys reduce accidental key presses
- Key Repeat rate delays response to the key being held down
- Sticky Keys hold down shift, control, alt, and other special keys for one-finger typist





Microsoft Edge Accessibility



Built-In Tools

Go to **Settings** and more **...** > **Settings** ⚙ > **Accessibility** ♿.

Support for Screen Readers and Braille Displays

Closed Captioning and Descriptive Audio for Videos and Images

Immersive Reader (F9)

Read Aloud (Ctrl+Shift+U)

Keyboard Navigation/Caret Browsing (F7)

Voice Typing (Win+H)



Vision: High Contrast

- Improves the visual distinction between different elements on the screen
- Enhanced readability
- Reduced visual clutter
- Improved focus
- Relieves light sensitivity





Mobility/ Dexterity: Voice Control

- Alternative access for users who can't use the keyboard or mouse.
- Open applications, navigate menus, compose documents, browse the web, and control IoT devices
- Improves efficiency

Importance of the Workspace

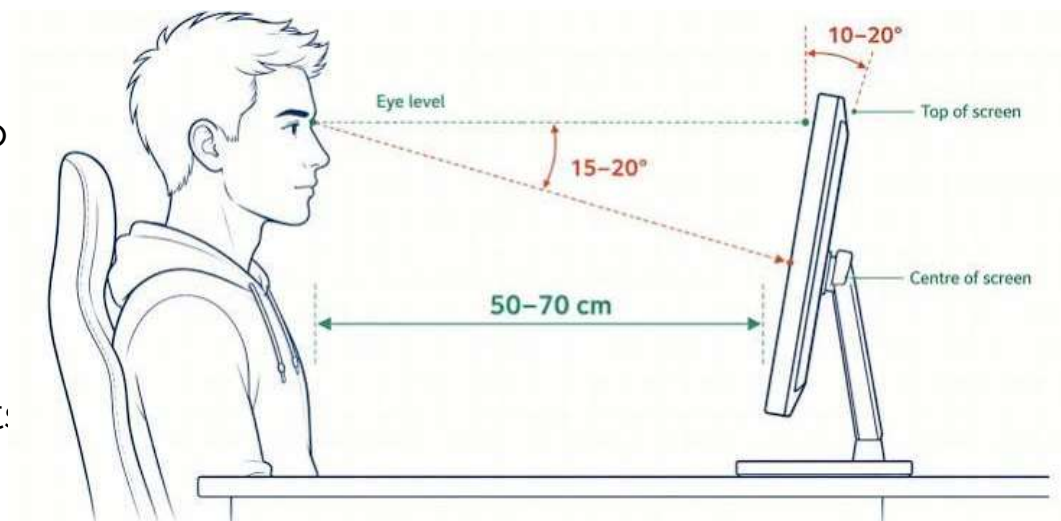
- Positioning and ergonomics are functional interventions... not just comfort upgrades
- Monitor and device positioning
- Keyboard and mouse placement
- Seating and foot support
- Lighting, glare, reach, and workspace organization



Monitor and Device Positioning

Monitor Height & Viewing Angle

- Primary viewing area should be seen without sustained neck flexion, extension, or rotation
- Set monitor distance based on visual needs and screen size (enlarge content if needed)
- Keyboard, mouse, and document should be kept close to limit repeated head, eye, and reach demands





Seating & Lower Extremity Supports

- The chair should provide a stable base and seat height, arm support, and desk height should be coordinated for each user
- Feet should be supported when they do not rest flat on the floor
- Available chair adjustments (lumbar or posture support) should be used to improve functional alignment

Upper Extremity & Low-Tech Supports

- Mouse alternatives can be considered if they create a barrier. Considerations include trackballs, vertical mice, touchpads, or joysticks
- Compact, split, low-force, or large format keyboards can be considered as alternatives
- When necessary, forearm support can be provided to reduced sustained muscle effort
- Document holders, device stands, mount and trays can be integrated into workspace.



Low-Cost Tools to Try First

- Laptop stand or sturdy riser
- External keyboard and mouse
- Footrest or stable box
- Document holder or clipboard stand
- Keyguard or keyboard stickers
- Anti-glare screen filter
- Adjustable task lamp
- Headset with microphone
- Cable clips or desk organizers





Adapted Sewing Machine

- Man with C6 SCI
- Custom Car Upholstery
- Foot & Knee Control

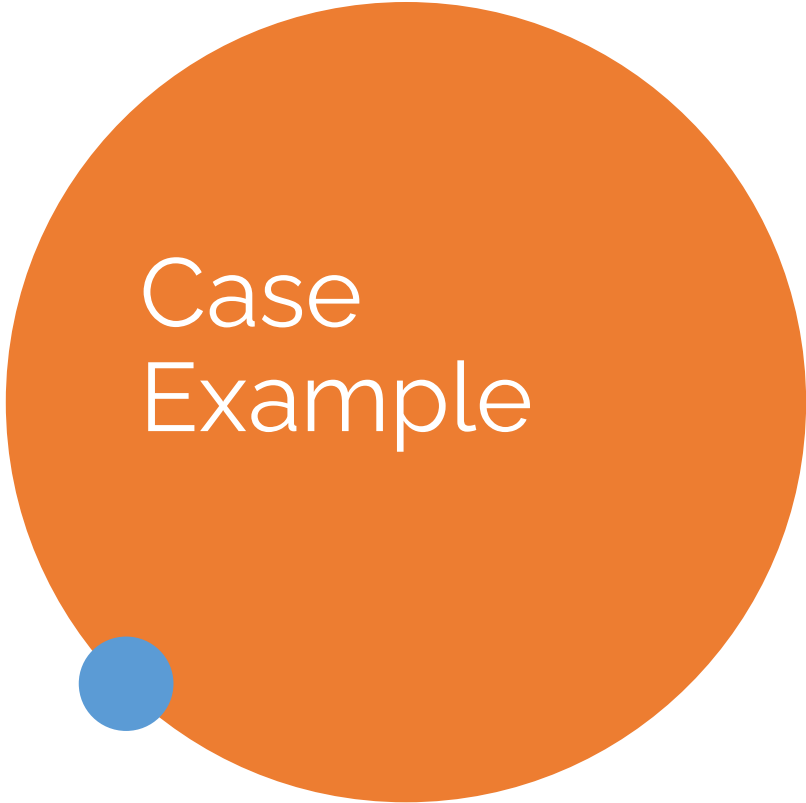
Foot and knee control
reconfigured for right
elbow







What if someone declines a high-tech device?



Case Example



An administrative employee completes data entry, emails, and electronic forms throughout the day. She experiences hand and wrist fatigue, has difficulty holding key combinations, and leans toward her laptop to read small text.

Solution?

Layered Solution

Built-in accessibility features:

- Increase windows text size
- Enlarge and increase the contrast of the mouse pointer
- Turn on Sticky Keys for keyboard combinations
- Use Magnifier when reviewing detailed forms

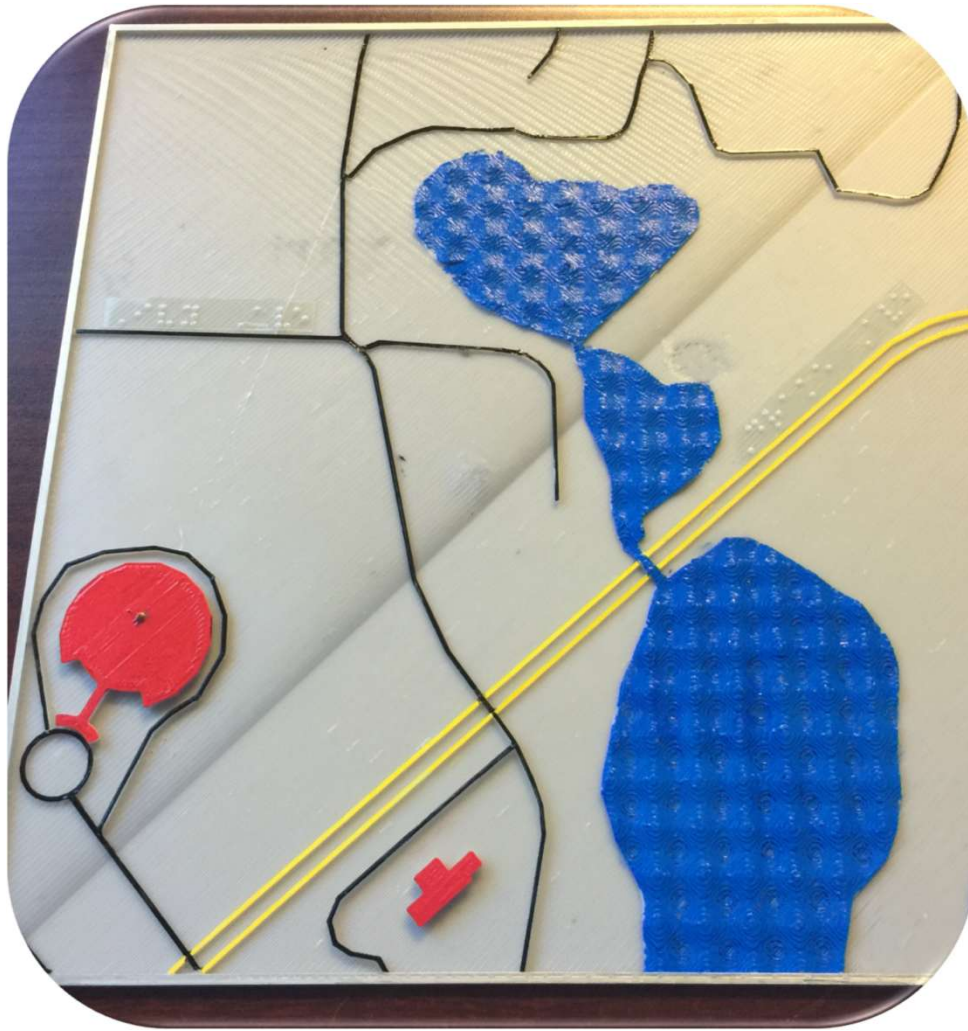
Low-cost ergonomic tools:

- Raise the laptop with a stand or riser
- Add an ergonomic external keyboard and mouse
- Place paperwork in a document holder beside the screen

Low Vision Metric Scale

- EEG Tech with low vision can't see standard metric tape to measure and place EEG sensors
- Created custom metric tape with large print and high-contrast colors
- 3D printed slide to help read scale



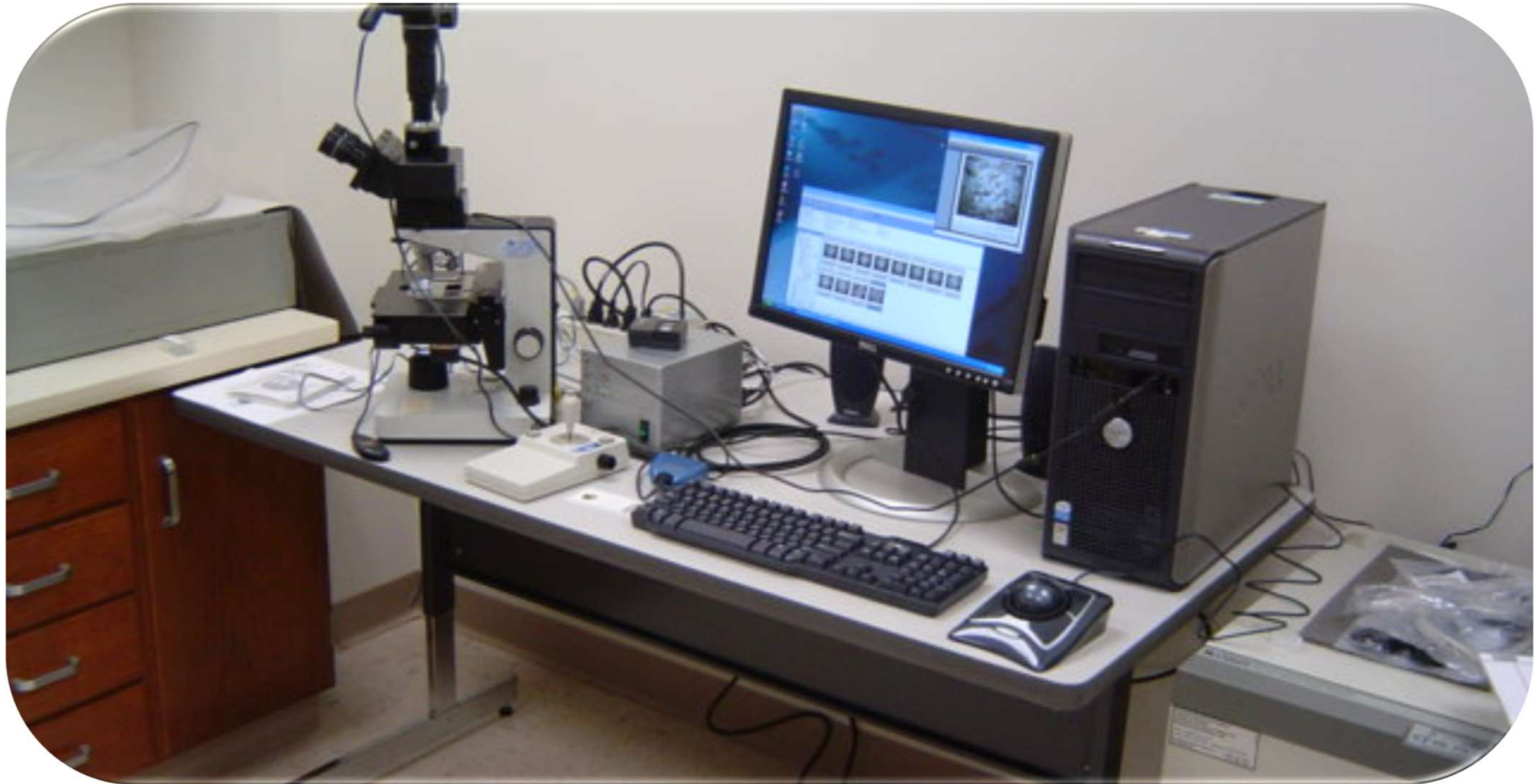


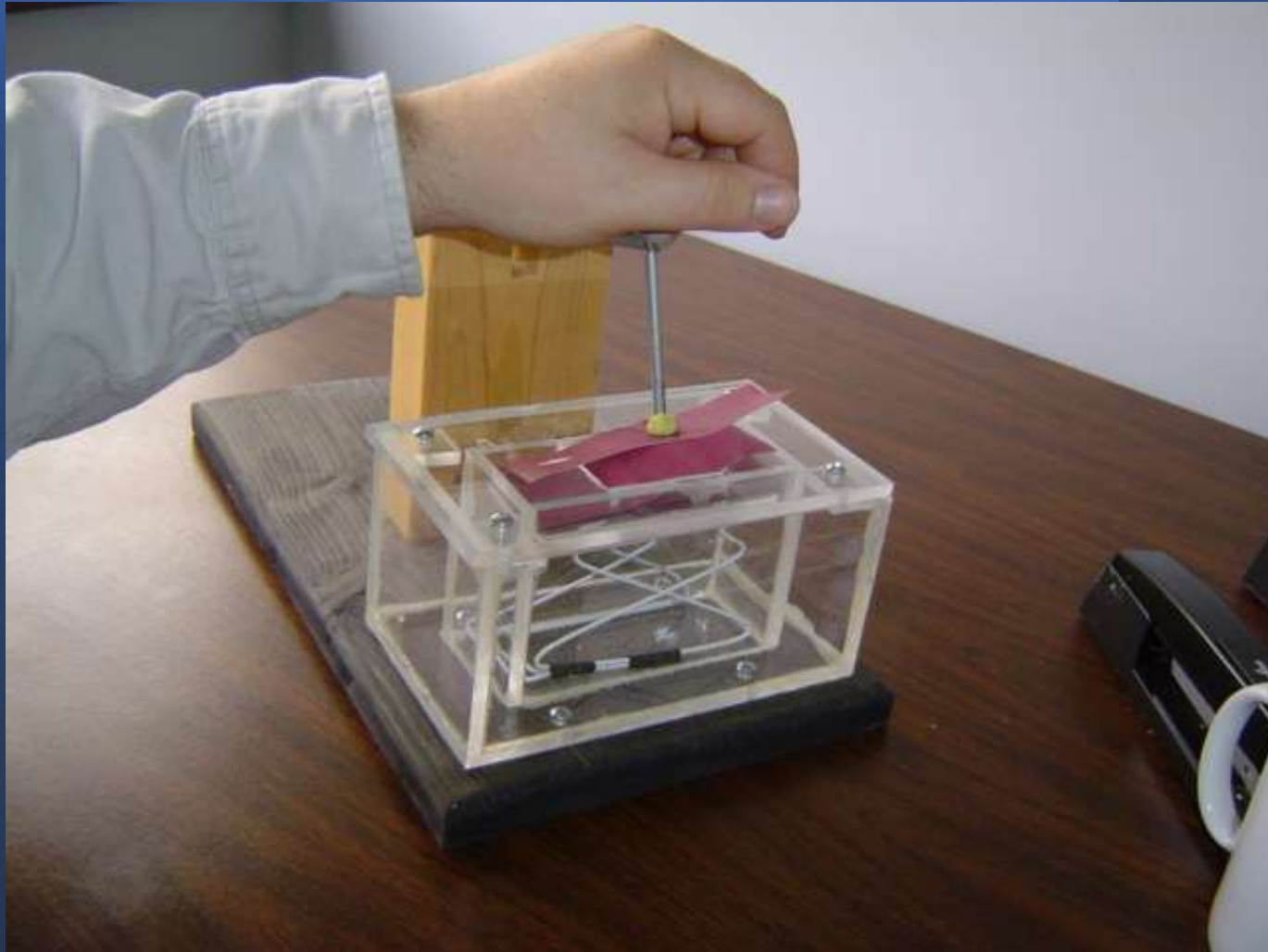
Tactile Map





Custom Zero-Gravity Workstation





Paper Folding Jig



One Hand Rubber Band Jig

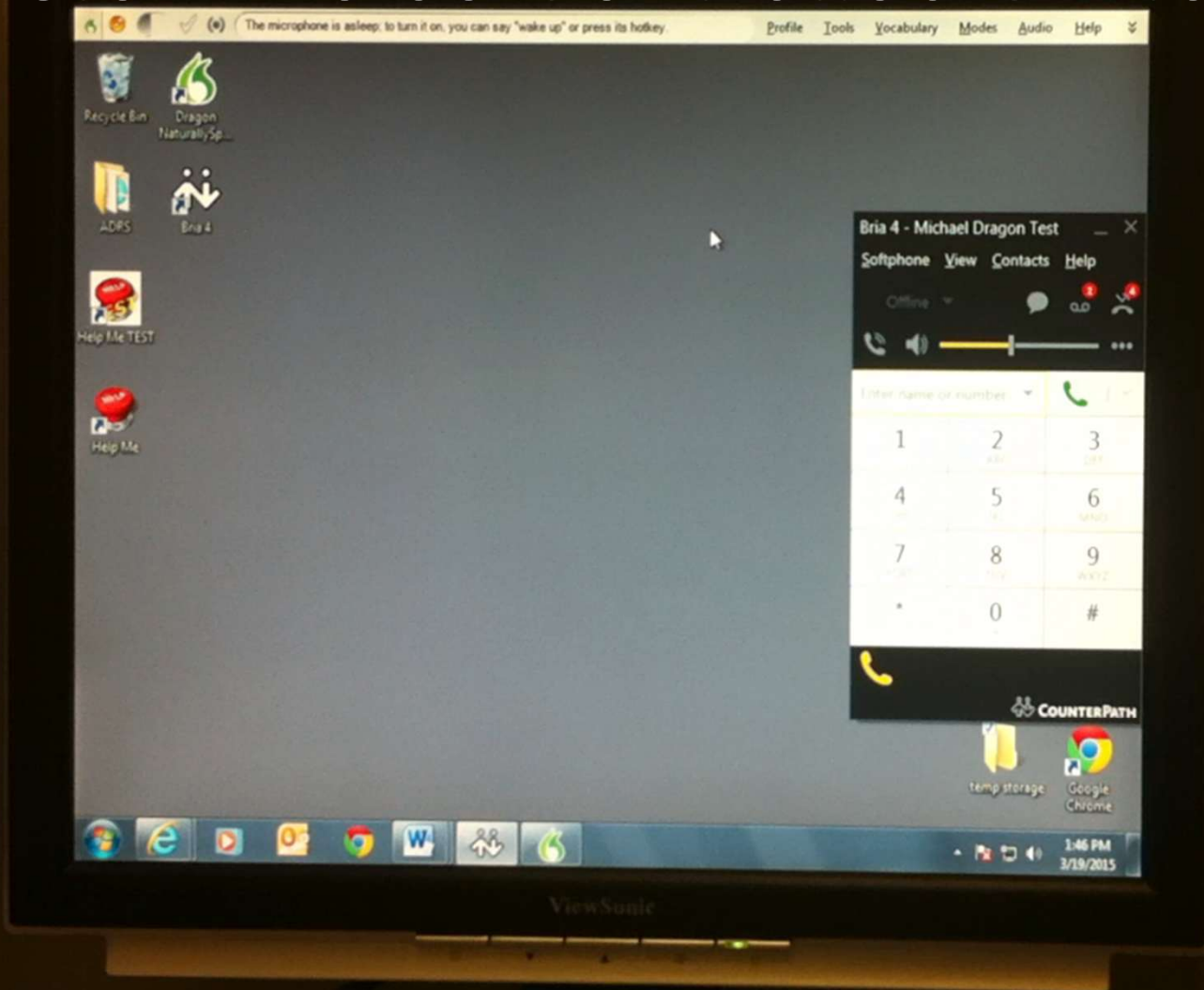


Custom Desks and Workstations

- Adapted Typing
- Adapted Mouse Control
- Voice Recognition



Custom Voice Controlled Switchboard



The background of the slide features a dark gray field. In the upper half, five large, stylized question marks are scattered across the space in various colors: cyan, pink, light gray, green, and purple. In the lower half, a dense crowd of hands of various skin tones (ranging from light beige to dark brown) is shown reaching upwards, with some hands partially overlapping. A semi-transparent dark gray horizontal band spans the width of the slide, positioned between the hands and the question marks, serving as a backdrop for the text.

Questions

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