The Empathy Lab
Understanding Digital Accessibility

Presented by Kate Gwynne
Technical Director of Shared Services
Columbus IBM iX Studio

- Business Analysts
- Product Owners
- Quality Analysts
- Digital Accessibility

Kate Gwynne
CBAP, CSM

Technical Director
Shared Services
IBM iX Columbus Studio

Kate is a Certified BA and Certified Scrum Master, and is an experienced Agile coach and Enterprise Design Thinking facilitator for IBM iX clients and internal project teams. She has a passion for digital accessibility, and recently implemented the iX Empathy Lab - an interactive space where clients and project teams can engage in activities that help them to better understand the impact and importance of digital accessibility best practices.

In addition to these areas, Kate has been a guest speaker at industry conferences and corporate events around the country and, according to her parents, 'has never met a stage she didn't like.'

WHAT MAKES A GOOD WEBSITE?

WHAT MAKES A GOOD WEBSITE?

Easy to Navigate

Product Images

Product Reviews

WHAT MAKES A GOOD WEBSITE . . .

WHAT MAKES A GOOD WEBSITE . . .
when you close your eyes?

Easy to Navigate

Product Images

Product Reviews

WHAT MAKES A GOOD WEBSITE . . .
when you close your eyes?

Easy to Navigate

With a keyboard

Product Images

Product Reviews

WHAT MAKES A GOOD WEBSITE . . .
when you close your eyes?

Easy to Navigate	Product Images	Product Reviews
With a keyboard	Have text descriptions	

WHAT MAKES A GOOD WEBSITE . . .
when you close your eyes?

Easy to Navigate	Product Images	Product Reviews
With a keyboard	Have text descriptions	Can listen to with a screen reader

WHAT IS DIGITAL ACCESSIBILITY

WHAT ARE ACCESSIBILITY BEST PRACTICES

Empathy

WHAT ARE COMPANY MOTIVATORS

HOW CAN YOU CREATE AN INCLUSIVE CULTURE
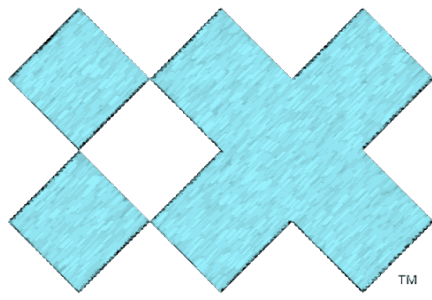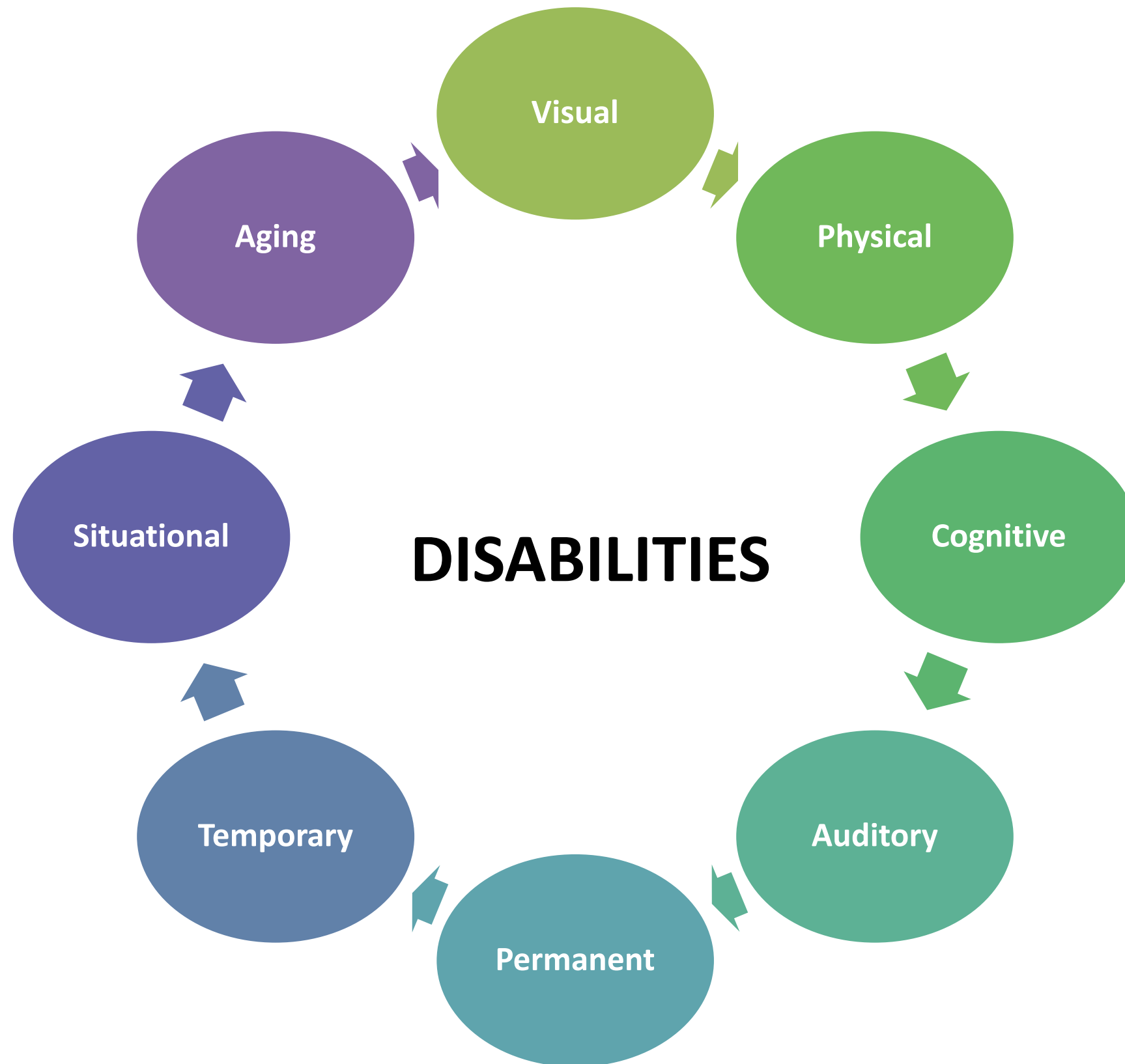
WHAT IS

DIGITAL

A11Y

WHAT IS A11Y?

Accessibility is about enabling our clients to better serve their individual employee and customer, and building an inclusive environment to establish the foundation for innovation
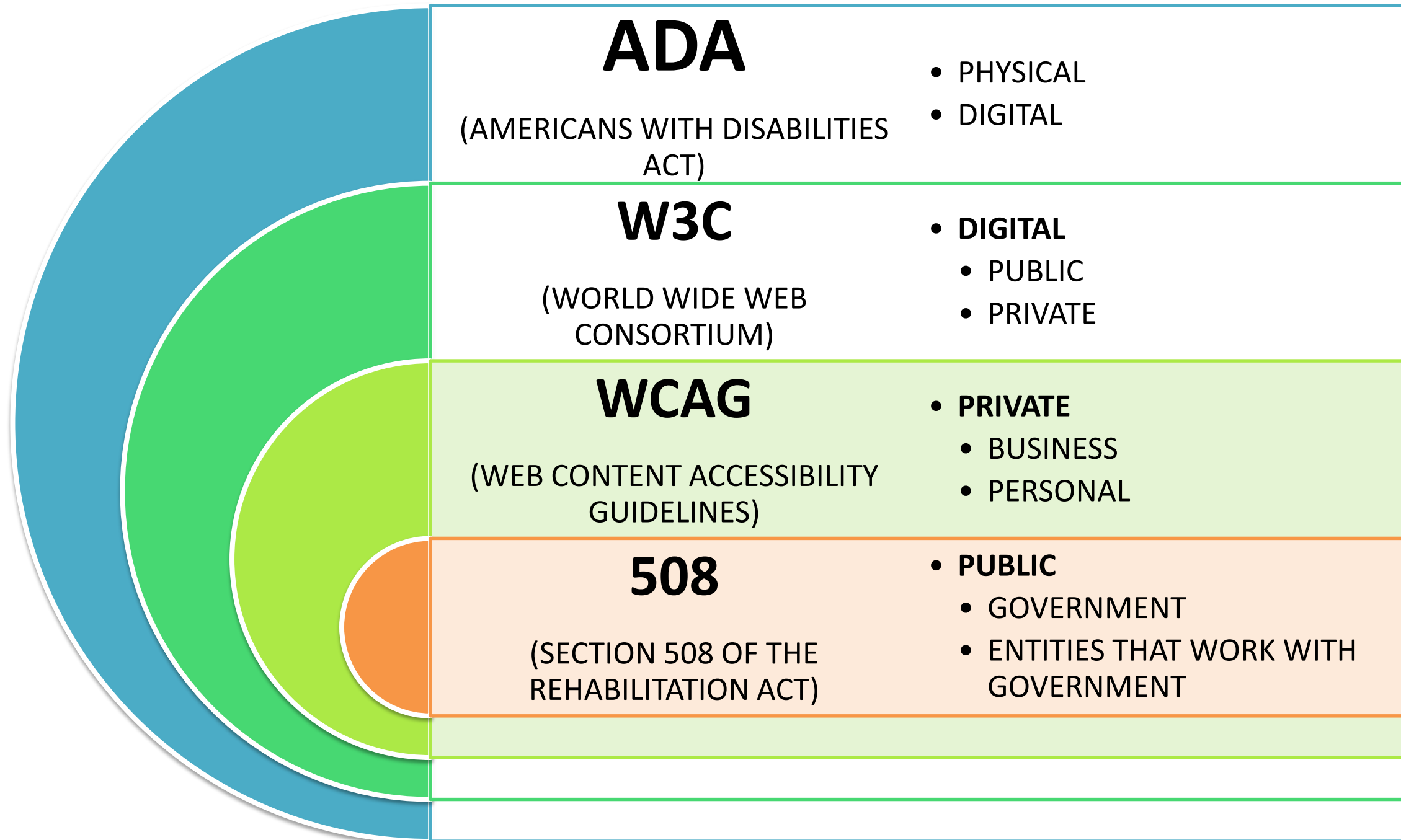

Citizen Preferences – anywhere, any time, any way

Access to every kind of people

Creating things we've never thought about

DISABILITIES

WHO WANTS THE ONLINE WORLD TO BE ACCESSIBILE?

HOW IS A11Y GOVERNED?

ADA
(AMERICANS WITH DISABILITIES ACT)

- PHYSICAL
- DIGITAL

W3C
(WORLD WIDE WEB CONSORTIUM)

- **DIGITAL**
  - PUBLIC
  - PRIVATE

WCAG
(WEB CONTENT ACCESSIBILITY GUIDELINES)

- **PRIVATE**
  - BUSINESS
  - PERSONAL

508
(SECTION 508 OF THE REHABILITATION ACT)

- **PUBLIC**
  - GOVERNMENT
  - ENTITIES THAT WORK WITH GOVERNMENT

THE FOCUS OF DIGITAL ACCESSIBILITY

The Americans with Disabilities Act (ADA) is a set of guidelines and principles that help to ensure disabled people have the same access as non-disabled people.

Under the ADA umbrella, these guidelines help create barrier-free design, and web 'usability,' which focuses on the ease of use.

Primarily focus on disabilities in these categories:

- Visual (blindness, color blindness, low vision)

- Auditory (deafness)

- Motor (mobility limitations and limited hand use)

- Cognitive (learning and developmental disabilities, dyslexia)

- Seizures

WCAG 2.0/2.1 Checkpoints

Web **SW** **Doc** These checkpoints apply to all electronic content, whether web or non-web software or documentation, except those marked **N/A for non-web documents and software**. Checkpoints marked **WCAG 2.1*** indicate additions not required to meet WCAG 2.0.

Principle 1: Perceivable - Information and user interface components must be presentable to users in ways they can perceive.

Guideline 1.1 Text Alternatives: Provide text alternatives for any non-text content so that it can be changed into other forms people need, such as large print, braille, speech, symbols or simpler language.

1.1.1 Non-text Content. All non-text content that is presented to the user has a text alternative that serves the equivalent purpose. (Level A)

Guideline 1.2 Time-based Media: Provide alternatives for time-based media.

1.2.1 Audio-only and Video-only (Prerecorded). For prerecorded audio-only or video-only media, an alternative provides equivalent information. (Level A)

1.2.2 Captions (Prerecorded). Captions are provided for all prerecorded audio content in synchronized media. (Level A)

1.2.3 Audio Description or Media Alternative (Prerecorded). An alternative for time-based media or audio description of the prerecorded video content is provided for synchronized media. (Level A)

1.2.4 Captions (Live). Captions are provided for all live audio content in synchronized media. (Level AA)

1.2.5 Audio Description (Prerecorded). Audio description is provided for all prerecorded video content in synchronized media. (Level AA)

Guideline 1.3 Adaptable: Create content that can be presented in different ways (for example simpler layout) without losing information or structure.

1.3.1 Info and Relationships. Information, structure, and relationships conveyed through presentation can be programmatically determined or are available in text. (Level A)

1.3.2 Meaningful Sequence. When the sequence in which content is presented affects its meaning, a correct reading sequence can be programmatically determined. (Level A)

1.3.3 Sensory Characteristics. Instructions provided for understanding and operating content do not rely solely on sensory characteristics of components such as shape, size, visual location, orientation, or sound. (Level A)

1.3.4 Orientation. Content does not restrict its view and operation to a single display orientation, such as portrait or landscape. (Level AA) **WCAG 2.1***

1.3.5 Identify Input Purpose. The purpose of each input field that collects information about the user can be programmatically determined when the field serves a common purpose. (Level AA) **WCAG 2.1***

Guideline 1.4 Distinguishable: Make it easier for users to see and hear content including separating foreground from background.

1.4.1 Use of Color. Color is not used as the only visual means of conveying information, indicating an action, prompting a response, or distinguishing a visual element. (Level A)

1.4.2 Audio Control. If any audio plays automatically for more than 3 seconds, either a mechanism is available to pause or stop the audio, or a mechanism is available to control audio volume independently from the overall system volume level. (Level A)

1.4.3 Contrast (Minimum). The visual presentation of text and images of text has a contrast ratio of at least 4.5:1, with a 3:1 ratio for large-scale text. (Level AA)

1.4.4 Resize text. Text can be resized without assistive technology up to 200 percent without loss of content or functionality. (Level AA)

1.4.5 Images of Text. If the technologies being used can achieve the visual presentation, text is used to convey information rather than images of text. (Level AA)

1.4.10 Reflow. Content can reflow without loss of information or functionality, and without requiring scrolling in two dimensions. (Level AA) **WCAG 2.1***

1.4.11 Non-text Contrast. The parts of graphical objects required to understand the content, and the visual information required to identify UI components and states, have a contrast ratio of at least 3:1 against adjacent colors. (Level AA) **WCAG 2.1***

1.4.12 Text Spacing. No loss of content or functionality occurs when users change letter, word and paragraph spacing, as well as line height. (Level AA) **WCAG 2.1***

1.4.13 Content on Hover or Focus. Where hover or focus actions cause additional content to become visible and hidden, the additional content is dismissable, hoverable and persistent. (Level AA) **WCAG 2.1***

Principle 2: Operable - User interface components and navigation must be operable.

Guideline 2.1 Keyboard Accessible: Make all functionality available from a keyboard.

2.1.1 Keyboard. All functionality of the content is operable through a keyboard interface without requiring specific timings for individual keystrokes. (Level A)

2.1.2 No Keyboard Trap. If keyboard focus can be moved to a component using a keyboard interface, then focus can be moved away from that component using only a keyboard interface, and, if it requires more than unmodified arrow or tab keys or other standard exit methods, the user is advised of the method for moving focus away. (Level A)

2.1.4 Character Key Shortcuts. If a keyboard shortcut is implemented using only letter, punctuation, number or symbol characters, then the shortcut can be turned off, remapped or activated only on focus. (Level A) **WCAG 2.1***

Guideline 2.2 Enough Time: Provide users enough time to read and use content.

2.2.1 Timing Adjustable. For each time limit that is set by the content, the user can turn off, adjust, or extend the limit. (Level A)

2.2.2 Pause, Stop, Hide. For moving, blinking, scrolling, or auto-updating information, the user can pause, stop or hide it, or control the update frequency. (Level A)

Guideline 2.3 Seizures and Physical Reactions: Do not design content in a way that is known to cause seizures or physical reactions.

2.3.1 Three Flashes or Below Threshold. Content does not contain anything that flashes more than three times in any one second period, or the flash is below the general flash and red flash thresholds. (Level A)

Guideline 2.4 Navigable: Provide ways to help users navigate, find content, and determine where they are.

2.4.1 Bypass Blocks. A mechanism is available to bypass blocks of content that are repeated on multiple Web pages. (Level A) **N/A for non-web documents and software**

2.4.2 Page Titled. Web pages, non-web documents, and software have titles that describe topic or purpose. (Level A)

2.4.3 Focus Order. If content can be navigated sequentially and the navigation sequences affect meaning or operation, focusable components receive focus in an order that preserves meaning and operability. (Level A)

2.4.4 Link Purpose (In Context). The purpose of each link can be determined from the link text alone or from the link text together with its programmatically determined link context. (Level A)

2.4.5 Multiple Ways. More than one way is available to locate a Web page within a set of Web pages except where the Web page is the result of, or a step in, a process. (Level AA) **N/A for non-web documents and software**

2.4.6 Headings and Labels. Headings and labels describe topic or purpose. (Level AA)

2.4.7 Focus Visible. Any keyboard operable user interface has a mode of operation where the keyboard focus indicator is visible. (Level AA)

Guideline 2.5 Input Modalities: Make it easier for users to operate functionality through various inputs beyond keyboard.

2.5.1 Pointer Gestures. All functionality that uses multipoint or path-based gestures for operation can be operated with a single pointer without a path-based gesture. (Level A) **WCAG 2.1***

2.5.2 Pointer Cancellation. For functionality that can be operated using a single pointer, completion of the function is on the up-event with an ability to abort, undo or reverse the outcome. (Level A) **WCAG 2.1***

2.5.3 Label in Name. For user interface components with labels that include text or images of text, the accessible name contains the text that is presented visually. (Level A) **WCAG 2.1***

2.5.4 Motion Actuation. Functionality that can be operated by motion can also be operated by user interface components, and the motion trigger can be disabled. (Level A) **WCAG 2.1***

Principle 3: Understandable - Information and the operation of user interface must be understandable.

Guideline 3.1 Readable: Make content readable and understandable.

3.1.1 Language of Page. The default human language of Web pages, non-Web documents, or software can be programmatically determined. (Level A)

3.1.2 Language of Parts. The human language of each passage or phrase in the content can be programmatically determined. (Level AA)

Guideline 3.2 Predictable: Make content appear and operate in predictable ways.

3.2.1 On Focus. When any component receives focus, it does not initiate a change of context. (Level A)

3.2.2 On Input. Changing the setting of any user interface component does not automatically cause a change of context unless the user has been advised of the behavior before using the component. (Level A)

3.2.3 Consistent Navigation. Navigational mechanisms that are repeated on multiple Web pages within a set of Web pages occur in the same relative order each time they are repeated, unless a change is initiated by the user. (Level AA) **N/A for non-web documents and software**

3.2.4 Consistent Identification. Components that have the same functionality within a set of Web pages are identified consistently. (Level AA) **N/A for non-web documents and software**

Guideline 3.3 Input Assistance: Help users avoid and correct mistakes.

3.3.1 Error Identification. If an input error is automatically detected, the item that is in error is identified and the error is described to the user in text. (Level A)

3.3.2 Labels or Instructions. Labels or instructions are provided when content requires user input. (Level A)

3.3.3 Error Suggestion. If an input error is automatically detected and suggestions for correction are known, then the suggestions are provided to the user, unless it would jeopardize the security or purpose of the content. (Level AA)

3.3.4 Error Prevention (Legal, Financial, Data). For content that causes legal commitments or financial transactions for the user to occur, that modify or delete user-controllable data in data storage systems, or that submit user test responses, the user can reverse, correct, or confirm the action. (Level AA)

Principle 4: Robust - Content must be robust enough that it can be interpreted reliably by a wide variety of user agents, including assistive technologies.

Guideline 4.1 Compatible: Maximize compatibility with current and future user agents, including assistive technologies.

4.1.1 Parsing. In content implemented using markup languages, elements have complete start and end tags, elements are nested according to their specifications, elements do not contain duplicate attributes, and any IDs are unique, except where the specifications allow these features. (Level A)

4.1.2 Name, Role, Value. For all user interface components (including but not limited to: form elements, links and components generated by scripts), the name and role can be programmatically determined; states, properties, and values that can be set by the user can be programmatically set; and notification of changes to these items is available to user agents, including assistive technologies. (Level A)

4.1.3 Status Messages. In content implemented using markup languages, status messages can be programmatically determined through role or properties so that messages can be presented by assistive technologies without receiving focus. (Level AA) **WCAG 2.1***

4.1.4 Accessibility-supported technologies only. Use accessibility supported technologies. Any information or functionality that is implemented in technologies that are not accessibility supported must also be available via technologies that are accessibility supported.
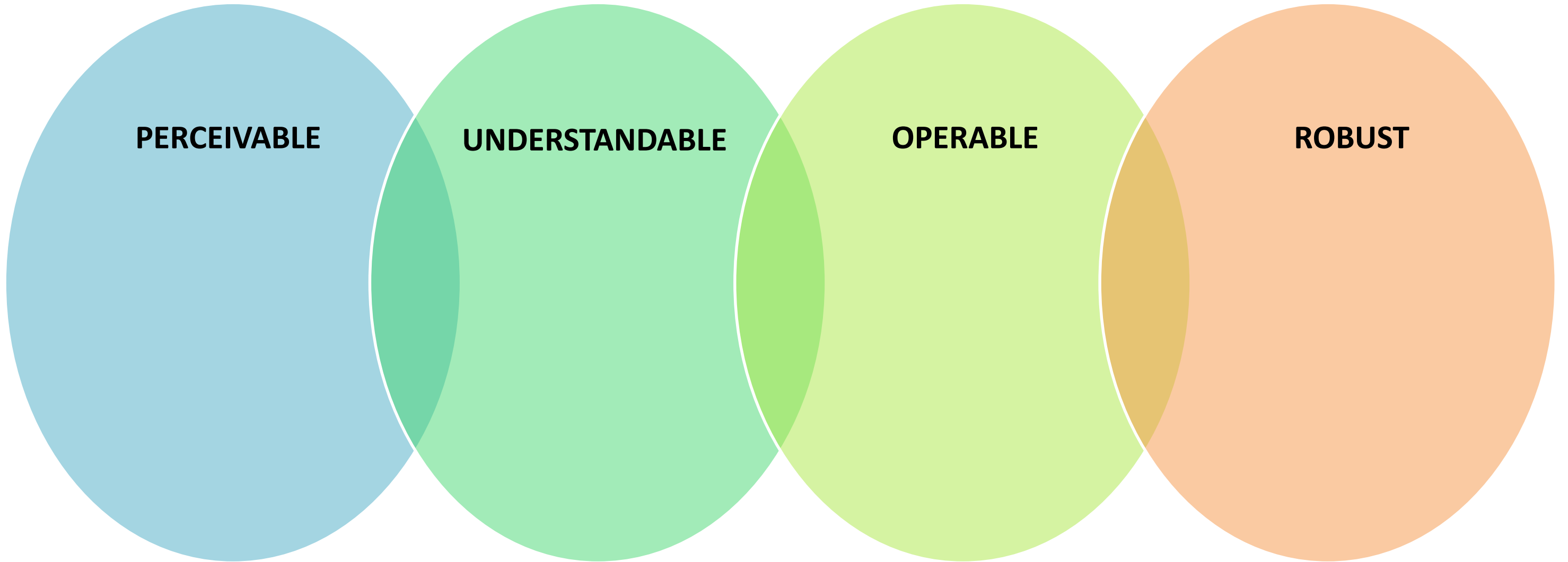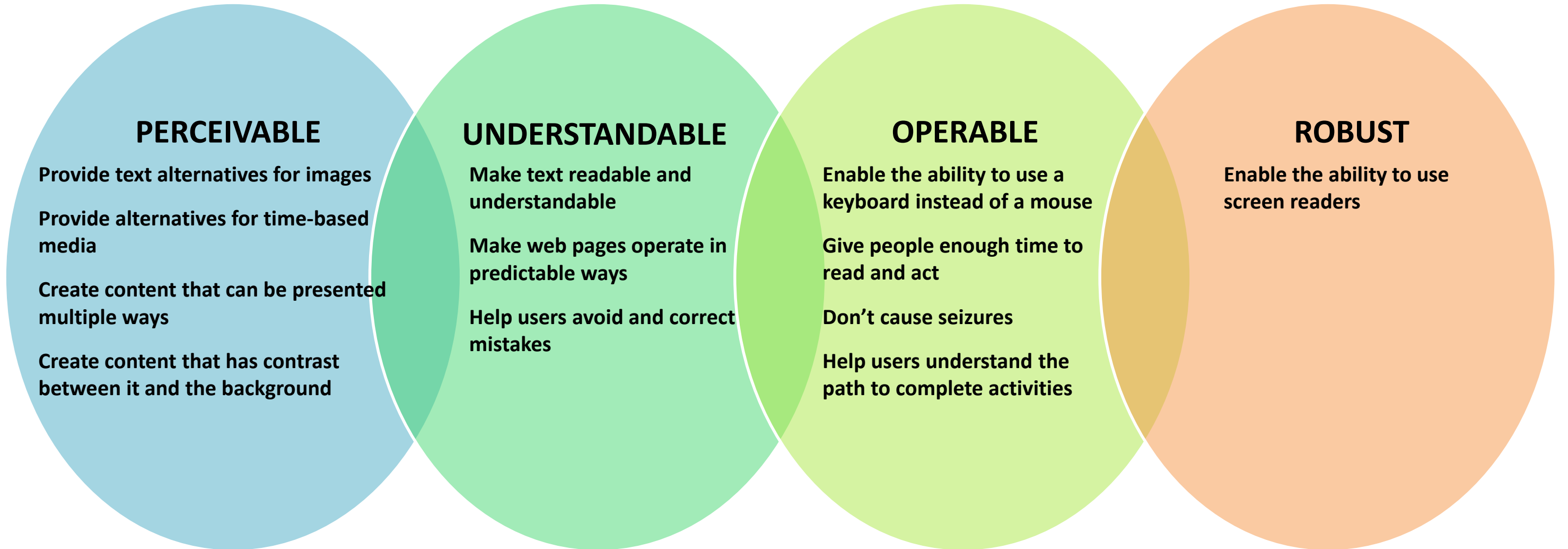
WHO UNDERSTANDS DIGITAL ACCESSIBILITY?

THE FOCUS OF DIGITAL ACCESSIBILITY

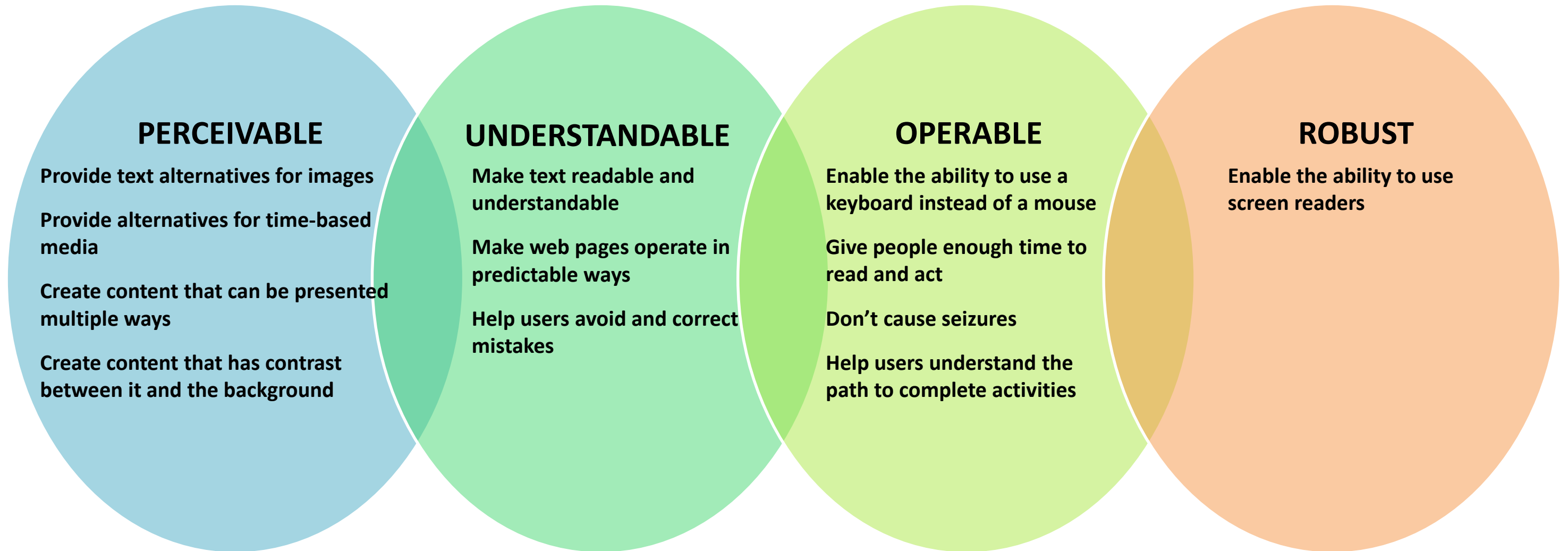**All accessibility rules and guidelines are born out of 4 foundational principles.**

PERCEIVABLE

UNDERSTANDABLE

OPERABLE

ROBUST

THE FOCUS OF DIGITAL ACCESSIBILITY

Those 4 principles break down into 12 guidelines

PERCEIVABLE

Provide text alternatives for images

Provide alternatives for time-based media

Create content that can be presented multiple ways

Create content that has contrast between it and the background

UNDERSTANDABLE

Make text readable and understandable

Make web pages operate in predictable ways

Help users avoid and correct mistakes

OPERABLE

Enable the ability to use a keyboard instead of a mouse

Give people enough time to read and act

Don't cause seizures

Help users understand the path to complete activities

ROBUST

Enable the ability to use screen readers

THE FOCUS OF DIGITAL ACCESSIBILITY

Those 4 principles break down into 12 guidelines

PERCEIVABLE

Provide text alternatives for images

Provide alternatives for time-based media

Create content that can be presented multiple ways

Create content that has contrast between it and the background

UNDERSTANDABLE

Make text readable and understandable

Make web pages operate in predictable ways

Help users avoid and correct mistakes

OPERABLE

Enable the ability to use a keyboard instead of a mouse

Give people enough time to read and act

Don't cause seizures

Help users understand the path to complete activities

ROBUST

Enable the ability to use screen readers

WEB SITES   -   MOBILE APPLICATIONS   -   ONLINE DOCUMENTATION

WHO UNDERSTANDS DIGITAL ACCESSIBILITY?

EXERCISE
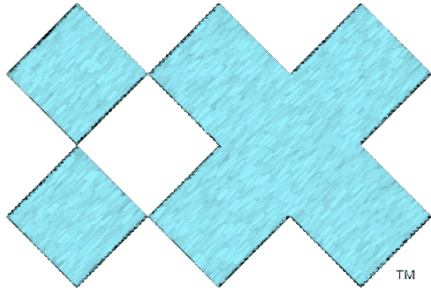
WHAT ARE

A11Y BEST
PRACTICES

ROLE RESPONSIBILITY

LEADERSHIP Supports digital accessibility best practices that improve our clients' products and reduce their risk

SALES Sells the value of digital accessibility and write it in to proposals and SOW's

ACCOUNT / CLIENT SERVICE Provides consistent messaging and builds relationships of trust

PROJECT MANAGERS Monitors timeline, resources, and budget to help team incorporate accessibility and prioritize work

STRATEGISTS Manages client brand and vision, and help to make them inclusive

RESEARCH Understands disability types and include them in personas

Setup
Expectations
Support

ROLE RESPONSIBILITY

Setup
Expectations
Support

UX Understand the user flows and help champion ease of use for all audiences

DESIGNERS Design content for the overall user experience

SEO Optimize search visibility to give users a better experience

WRITERS Differentiate client products and services with inclusive language

PRODUCT OWNER / BUSINESS ANALYSTS Manage requirements and help to prioritize accessibility on all devices

ARCHITECTS Consider interaction approaches and communicate structure

DEVELOPERS Code with accessibility in mind, as well as test as they move forward

QUALITY ANALYSTS / TESTERS Create streamlined testing processes that compare products with principles and guidelines

ROLE RESPONSIBILITY

PRODUCT

Analysts / Product Owners need to know **what** has to be accessible

Designers and Developers need to know **how** to make it accessible

Testers need to know that **it is** accessible

TOOLS

Automated Testing Tools

DAP
Lighthouse
Wave
Color Contrast Analyzer

Screen Readers

JAWS
NVDA
VoiceOver (native to iOS)
Mobile Accessibility (native to Android)
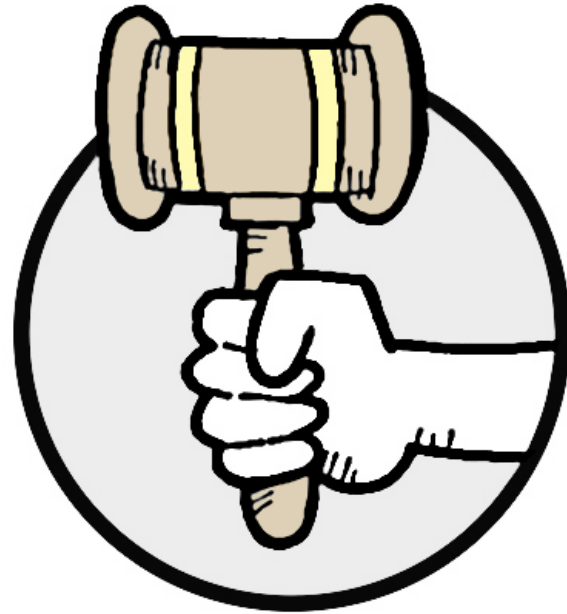
Document Analyzers

Word
Excel
PDF
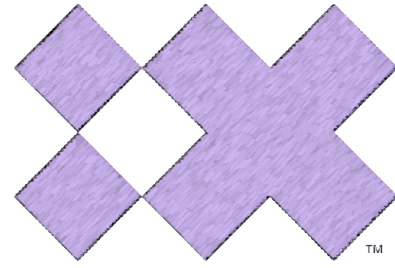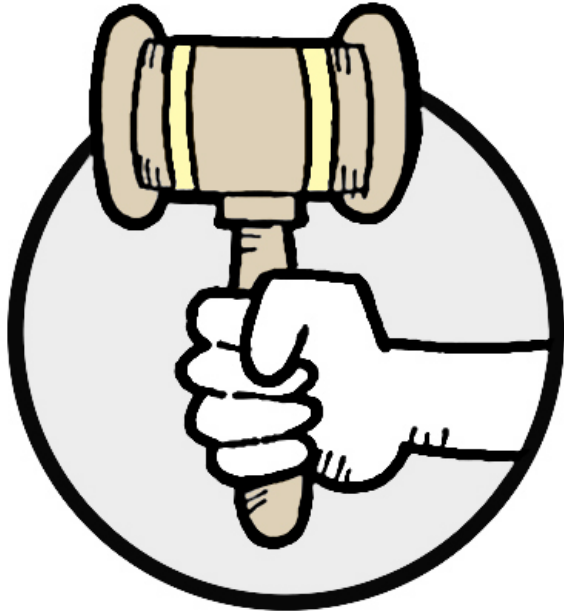
MOTIVATION

MOTIVATION

FEAR   SALES   ALTRUISM

MOTIVATION
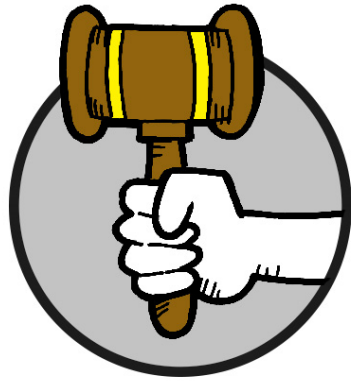
- **Companies who want to reduce the risk of law suits. Regardless of whether they become the target of a "troll" or legitimately disabled person, reacting to a law suit is more expensive than proactively conforming to accessibility**
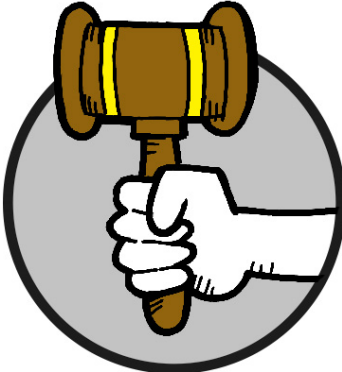
A11Y LAWSUIT RISK

180% increase in lawsuits from 2017 to 2018

FEDERAL WEBSITE ADA LAWSUITS
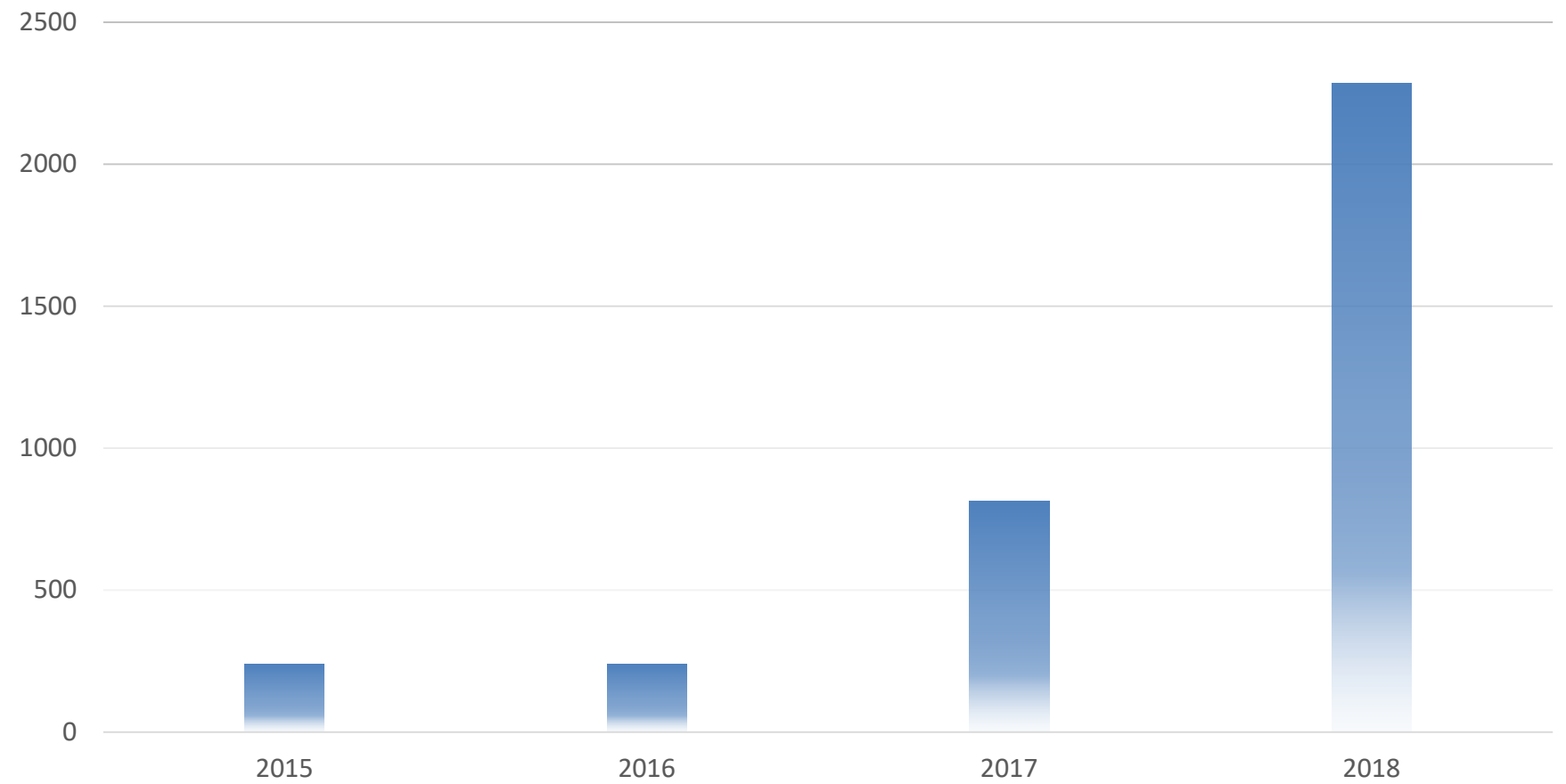
MOTIVATION

- Companies who want to reduce the risk of law suits. Regardless of whether they become the target of a "troll" or legitimately disabled person, reacting to a law suit is more expensive than proactively conforming to accessibility

Providing access to online information and products could increase market share

- 20% of Americans have some form of a disability

- Global Demographics Shift: Worldwide Population Over Age 65 Doubling in the Next 20 Years

UNDERSTANDING THE IMPACT

18.7%
Americans have some
form of a disability *
(8.1 million vision)

70%
of websites are
NOT compliant
with accessibility
standards **

Only
30%
of the internet can
be fully utilized **

MOTIVATION

- Companies who want to reduce the risk of law suits. Regardless of whether they become the target of a "troll" or legitimately disabled person, reacting to a law suit is more expensive than proactively conforming to accessibility

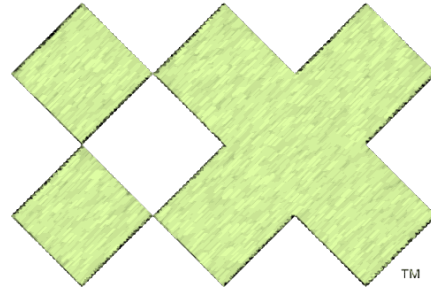**Providing access to online information and products could increase market share**

- 20% of Americans have some form of a disability

- Global Demographics Shift: Worldwide Population Over Age 65 Doubling in the Next 20 Years

It's the right thing to do

- 70% of websites are NOT compliant with accessibility standards
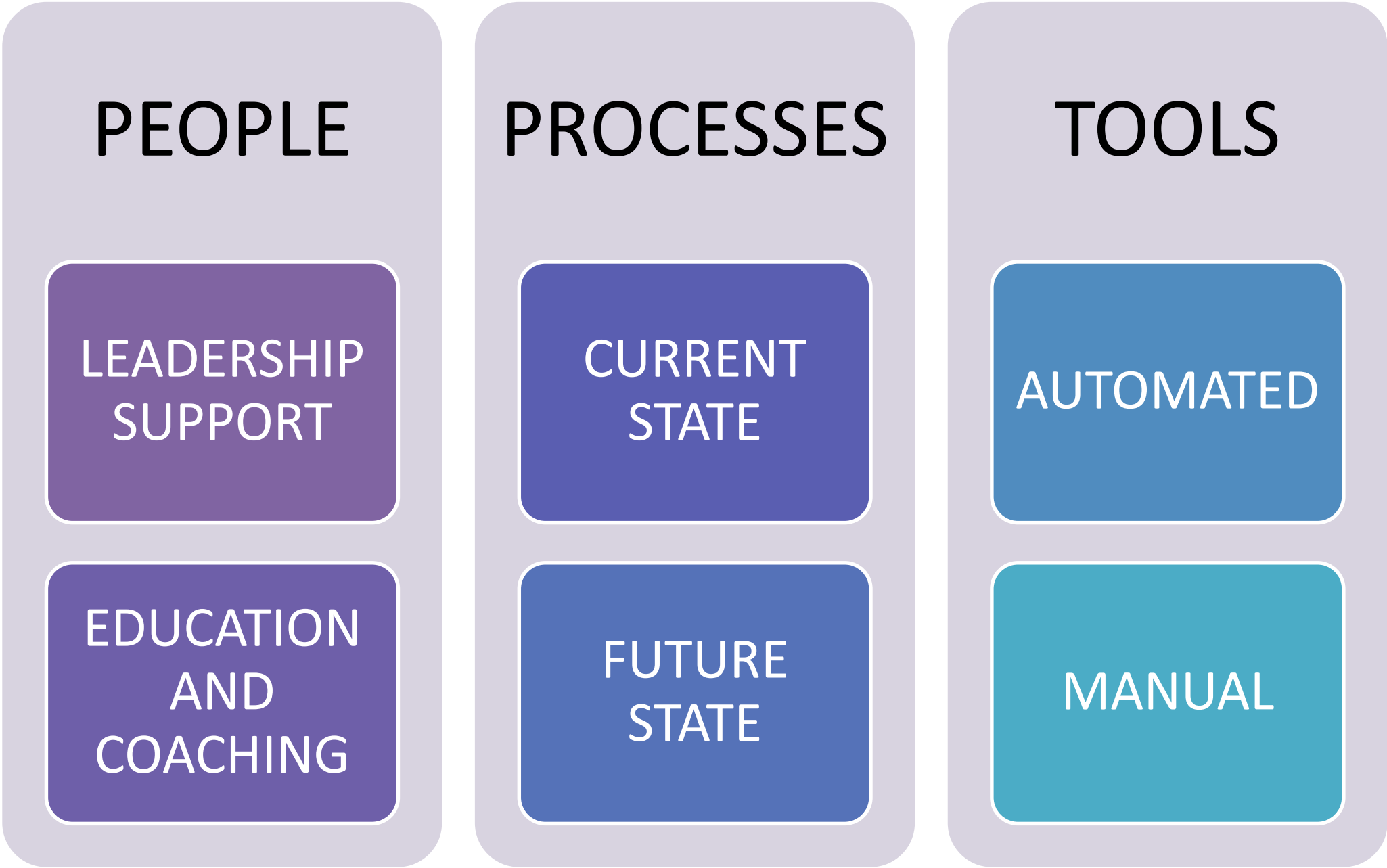- Differentiator for inclusive brands

CHANGE MANAGEMENT

PEOPLE

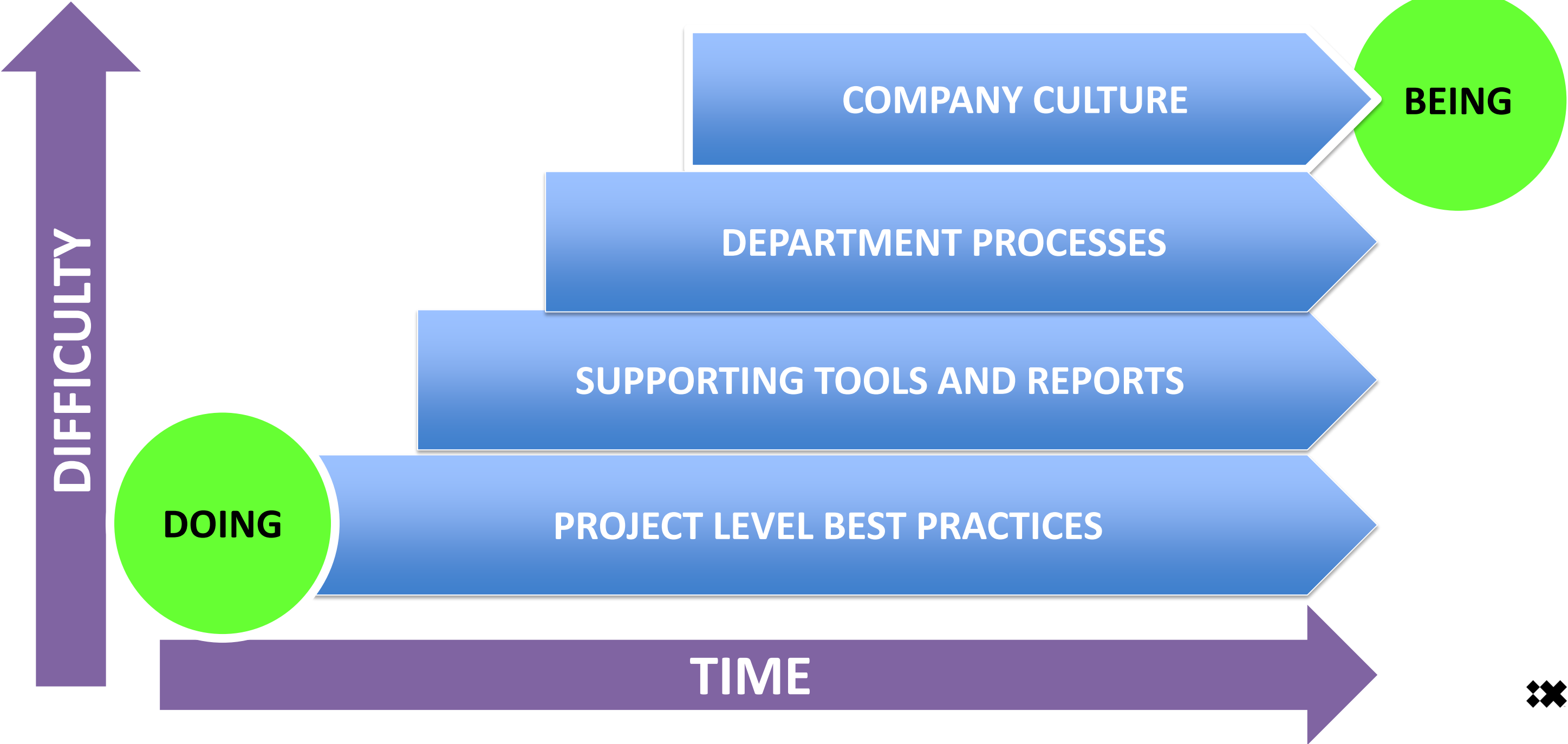**LEADERSHIP SUPPORT**

EDUCATION AND COACHING

PROCESSES

CURRENT STATE

FUTURE STATE

TOOLS

AUTOMATED

MANUAL

COMMUNICATION STRATEGY

ADOPTION ➝ TRANSFORMATION

DIFFICULTY

TIME

COMPANY CULTURE — BEING

DEPARTMENT PROCESSES

SUPPORTING TOOLS AND REPORTS

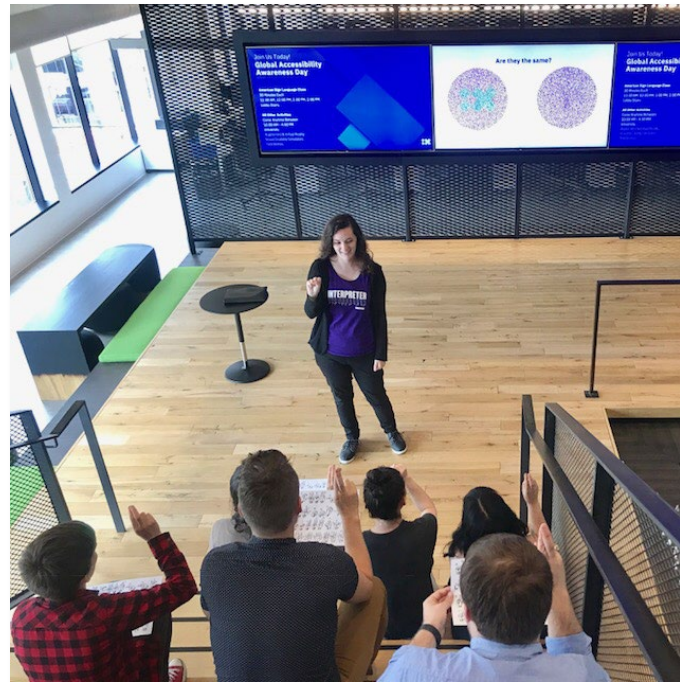PROJECT LEVEL BEST PRACTICES — DOING
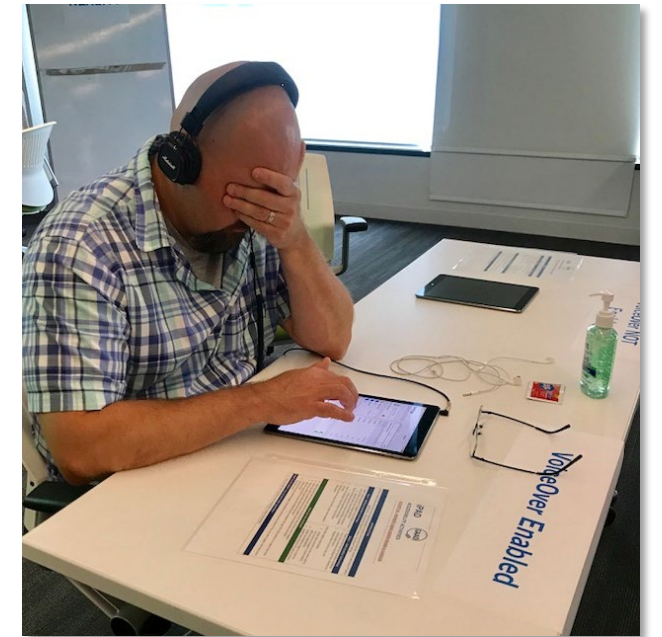
GAAD

Global Accessibility Awareness Day

3rd Thursday in May

American Sign Language

Visual Disability Simulation Goggles

Navigating with Screen Readers

Automated Accessibility Testing Tool Demos

The Benefits of Subtitles and Closed Captioning

Virtual & Augmented Reality

THE IX EMPATHY LAB

Our iX Empathy Lab in the Columbus, Ohio iX Studio provides a physical space where clients and IBM associates can engage with devices that simulate visual, auditory, cognitive, and physical disabilities.

- *Exploring* ways to better understand and improve the world of digital accessibility

- *Enabling* our client and project teams to build inclusive products

- *Evolving* into change agents and accessibility advocates

WHO (better) UNDERSTANDS DIGITAL ACCESSIBILITY?

Thank You!