



2022 ESRI USER CONFERENCE

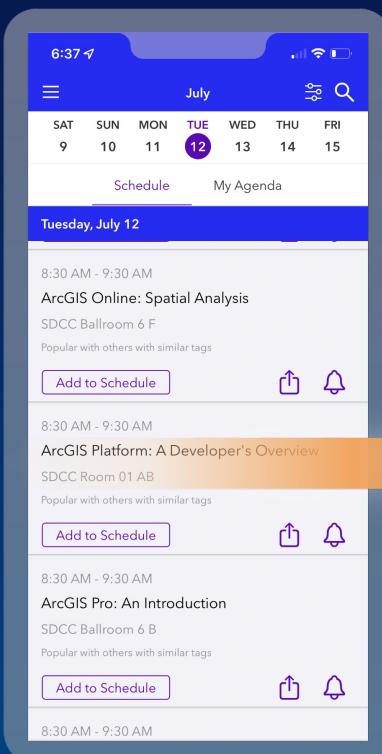
ArcGIS Online: Best Practices for Web Accessibility

Krista McPherson, Will Hackney, Kelly Hutchins

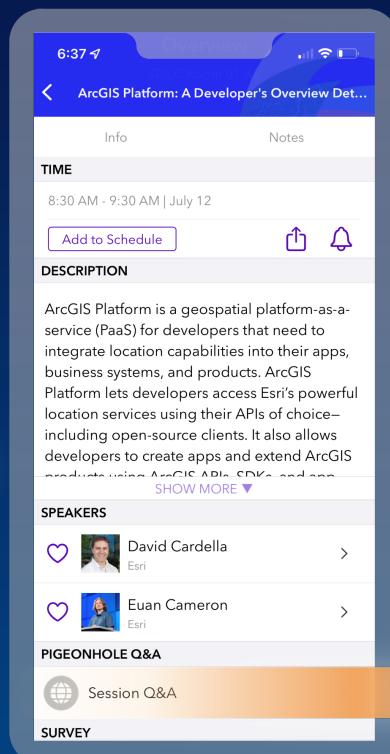
In-Person Digital Q&A Tool

for Technical Workshop, Demo Theater and User Presentation Sessions

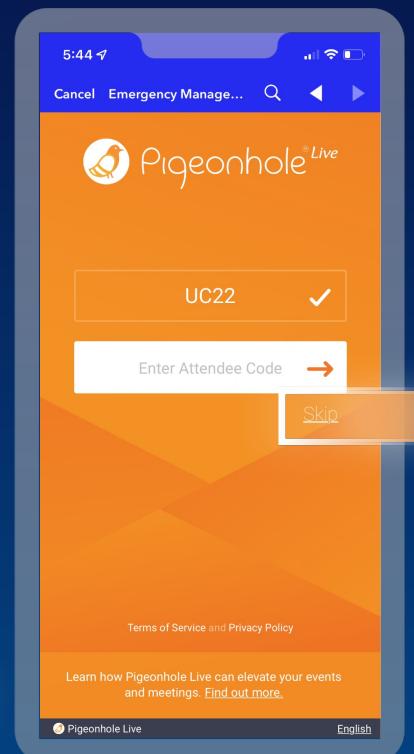
Select your session



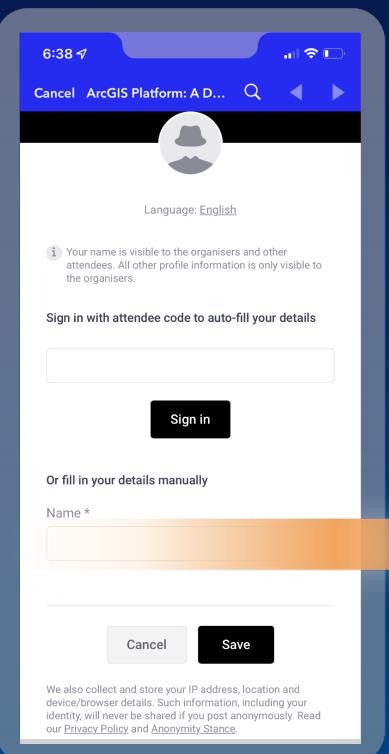
Click on the Pigeonhole Session Q&A link



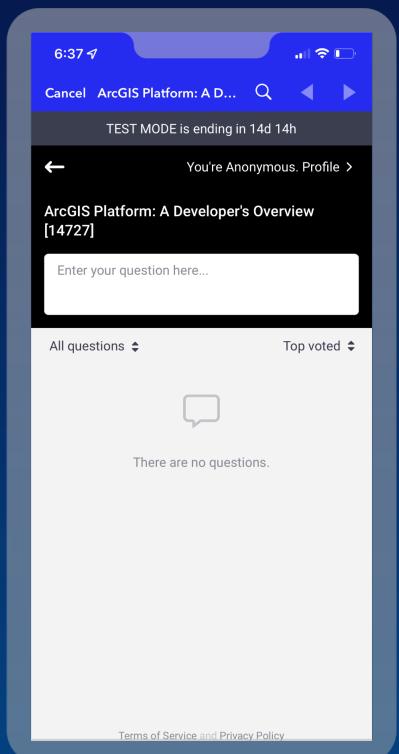
Click "Skip" on the Enter Attendee Code screen



Type in your name or type in "anonymous"

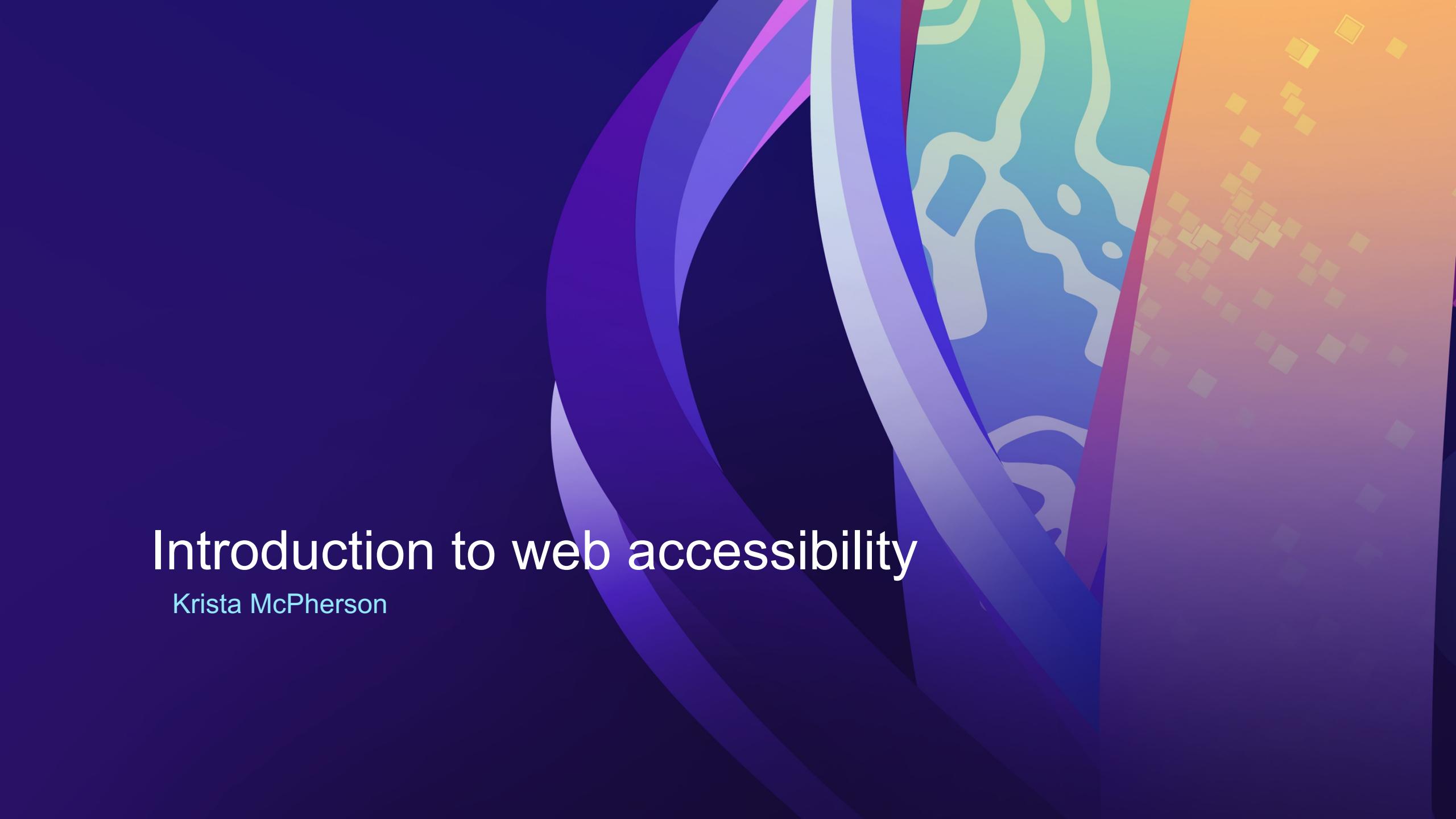


Start asking questions!



Session Outline

- Introduction to web accessibility
- Testing for web accessibility
- Building maps for accessibility
- Configuring apps for accessibility
- Key takeaways and resources

The background of the slide features a complex abstract design. It includes large, overlapping shapes in shades of purple, blue, and white. There are also wavy, organic patterns in light blue and green. In the bottom right corner, there is a cluster of small, yellow square tiles arranged in a grid-like pattern.

Introduction to web accessibility

Krista McPherson

Introduction to web accessibility

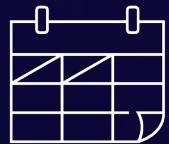
Why is accessibility important?



1 billion

people worldwide are living
with a disability

2030



by this year, 2 billion people will
need at least 1 assistive product

25+



countries currently have web
accessibility laws and policies

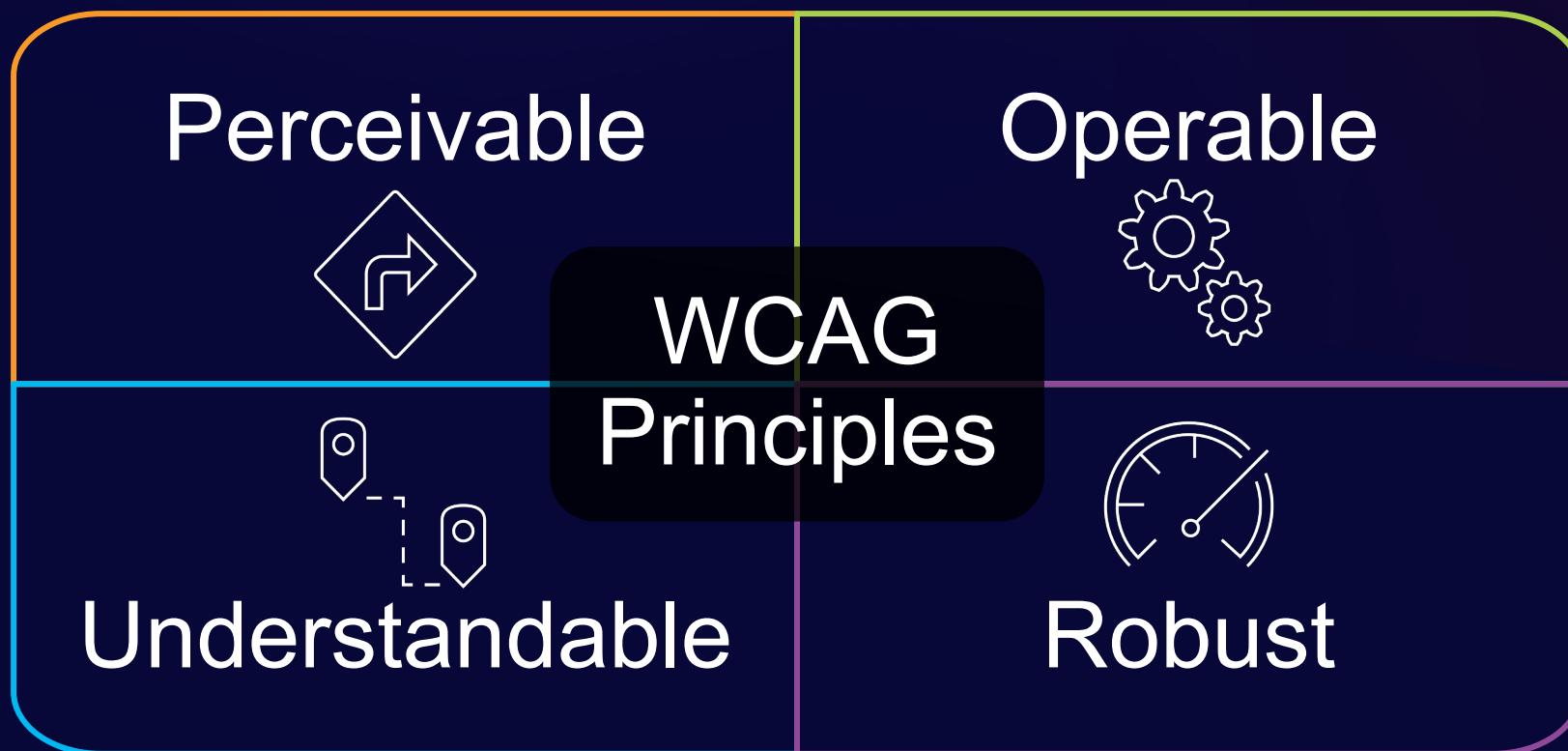


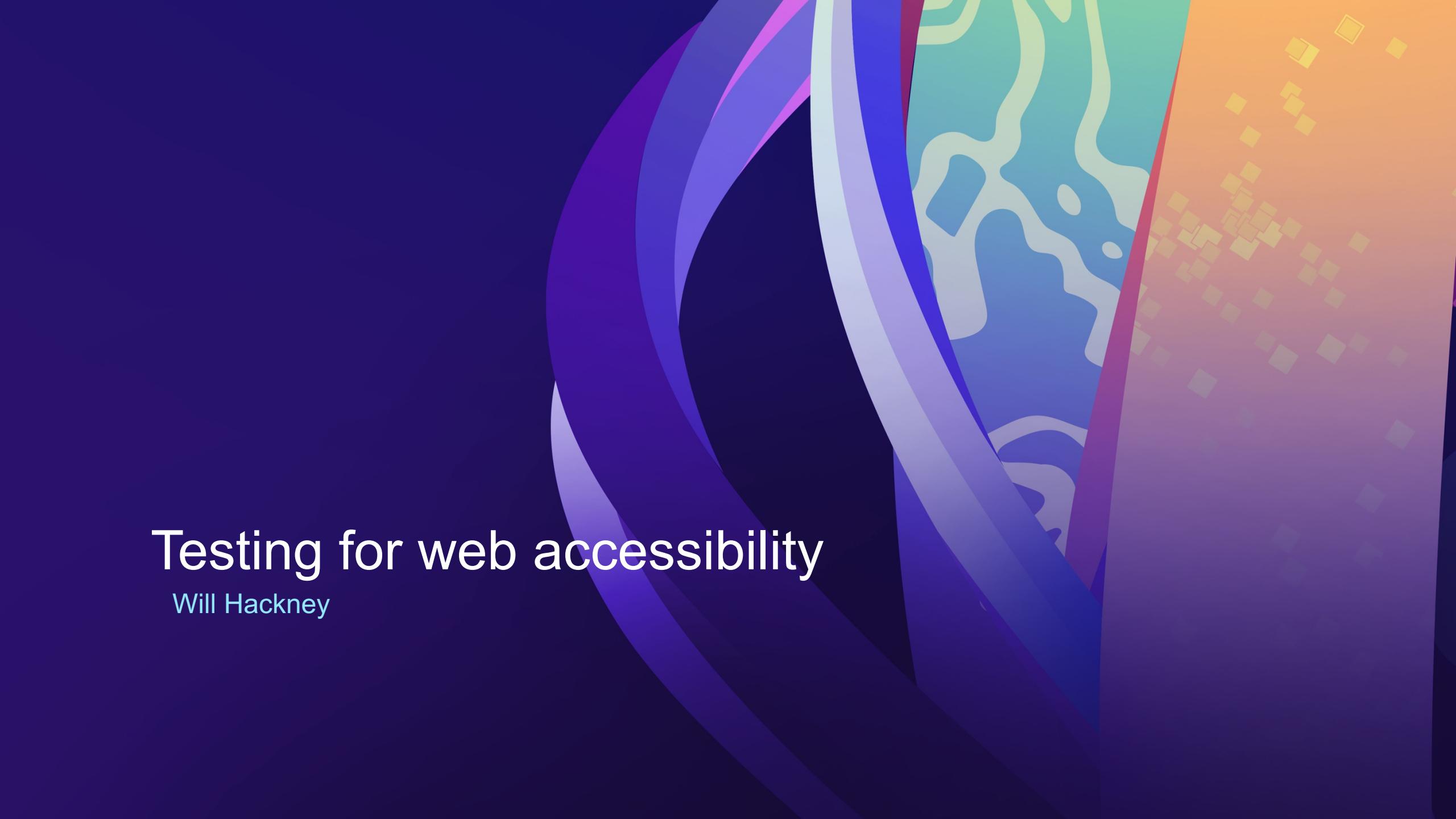
20%

of web traffic could come from a
person with a disability

Introduction to web accessibility

Web Content Accessibility Guidelines



The background features a complex abstract design composed of several overlapping elements. On the left, there is a large, dark purple circle. To its right is a vertical rectangle divided into four horizontal bands of different colors: light blue at the top, followed by teal, yellow-green, and orange. Below this is another vertical rectangle with a wavy pattern in shades of blue and white. To the right of these is a diagonal band of orange with a grid of small yellow squares. The overall composition is dynamic and layered.

Testing for web accessibility

Will Hackney

Testing for accessibility

Assistive technologies

- Keyboard navigation
 - Many consumers of online content use the keyboard rather than a mouse to navigate through web pages, apps, etc.
 - Can test simply by using the TAB key to make sure all the important elements are navigated to in a logical order and the ENTER key to test interactive features like drop-down menus

Testing for accessibility

Assistive technologies

- Screen readers
 - Software that uses text-to-speech to enable users with visual impairments to access content
 - Some screen readers that are recommended by Esri's Accessibility team for various operating systems and browsers:

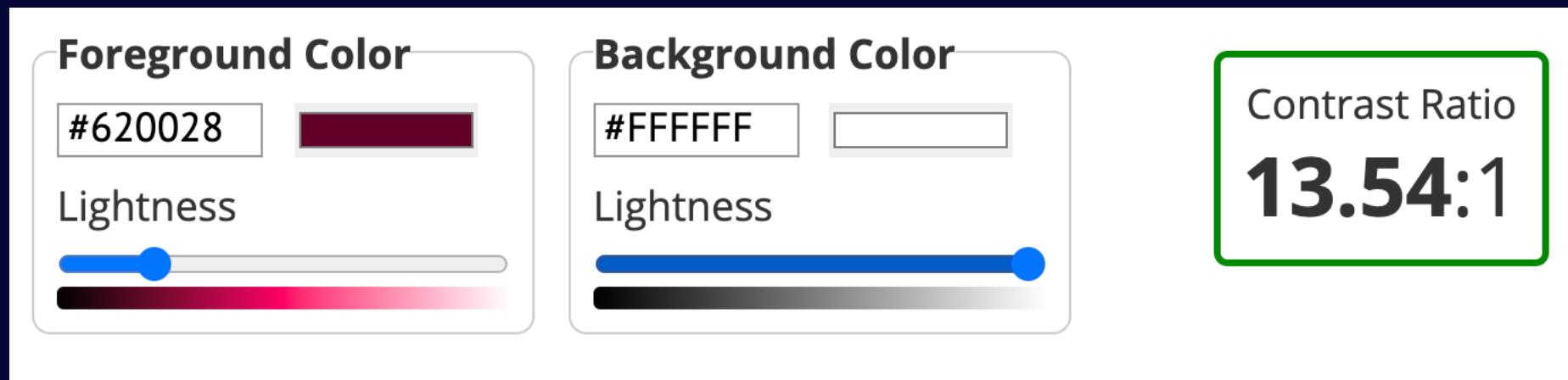
Screen reader	OS	Browser(s)
<u>NVDA</u>	Windows	Firefox, Chrome
<u>Narrator</u>	Windows	Edge, Chrome
<u>VoiceOver</u>	MacOS	Safari, Chrome
TalkBack	Android Mobile	Chrome

Testing for accessibility

Color

- Color contrast

- Elements in the foreground (especially text) need to stand out clearly and be legible against the background
- Can test with [WebAIM Contrast Checker](#) (should be 4.5:1 or greater for maximum accessibility)



Testing for accessibility

Color

- Color Vision Deficiencies

- As many as 1 in 20 people worldwide have some form of Color Vision Deficiency (CVD) — and not just the red-green variety
- Test your app's color palette to see how it looks for people with multiple forms of CVD using plug-ins and apps such as [Color Oracle](#), [Sim Daltonism](#) (for MacOS) or [Colorblindly](#) (Chrome plug-in)



Full-color vision



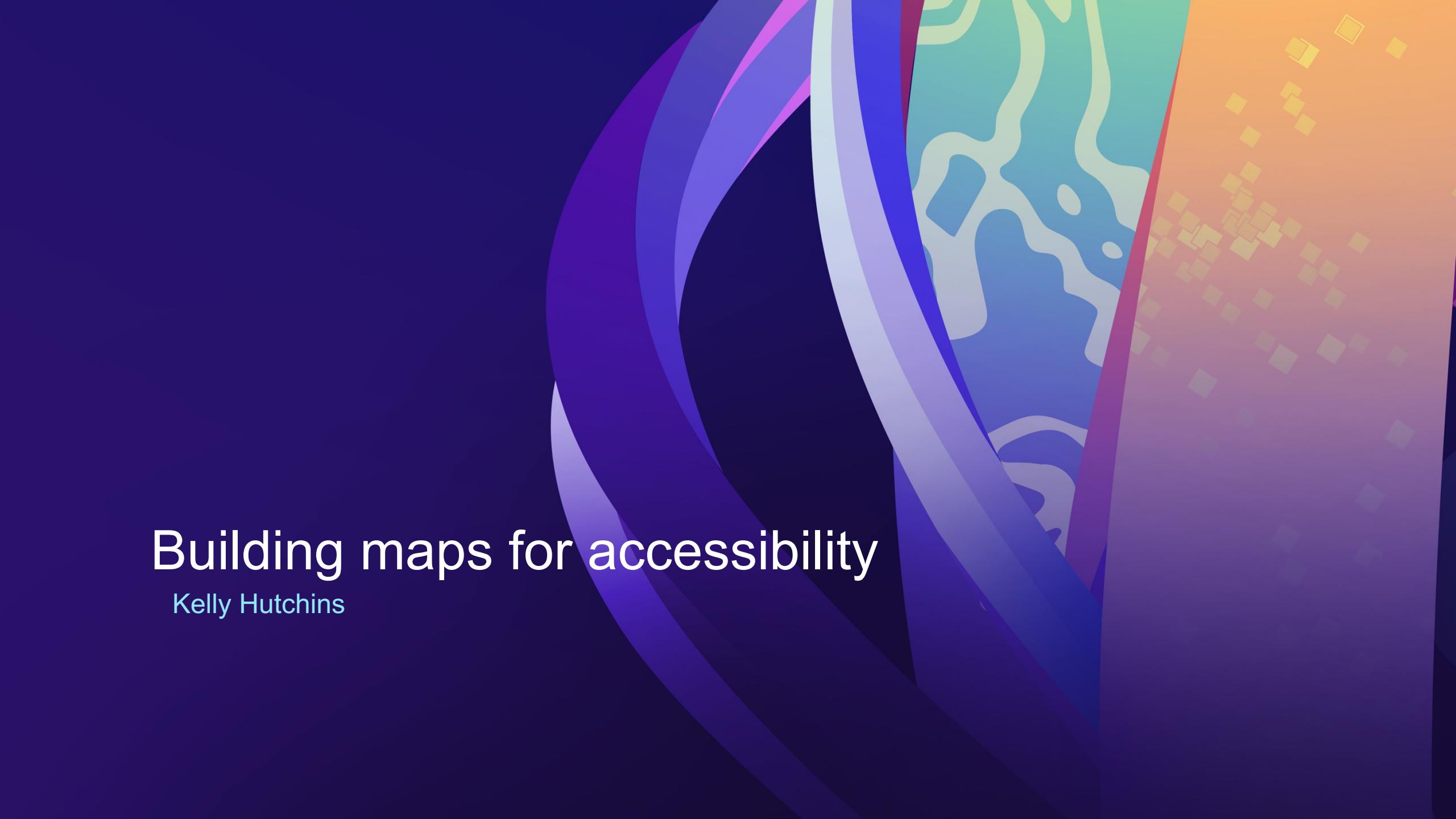
*Deuteranomaly
(red-green CVD)*



*Protoanomaly
(red-green CVD)*



*Tritanopia
(yellow-blue CVD)*

The background features a complex abstract design. On the left, a large dark purple circle overlaps a smaller white circle. To the right of this, there's a vertical strip containing a blue and green topographic-style map. Further right is a yellow-to-orange gradient area with a grid of small yellow squares.

Building maps for accessibility

Kelly Hutchins

Building maps for accessibility

High Contrast Base maps

- Foundation for accessible web map
- Customizable
 - Grayscale via layer effects
 - Vector Tile Style editor

The screenshot shows the ArcGIS Living Atlas of the World interface. A search bar at the top contains the text "Enhanced Contrast Map". Below the search bar, there are several filter buttons: All, Trending, Basemaps, Imagery, Boundaries, People, Infrastructure, and Environment. Further down, there are dropdown menus for "All content types", "All time", "All regions", and checkboxes for "Esri-only content" and "Authoritative-only content". The main content area displays four search results, each with a thumbnail, title, and a brief description. The first result is titled "Enhanced Contrast Map" and describes it as a "Web Map By esri_vector" designed to meet WCAG and US Government Section 508 compliance. The second result is titled "Enhanced Contrast Map (WGS84)" and also describes it as a "Web Map By esri_vector" with similar compliance goals but using WGS84 Geographic version 2 tiling. Below these results is a large, detailed map of Rio de Janeiro, Brazil, showing streets, landmarks, and water bodies. The map uses a color scheme that is described as being built with higher contrast and color-vision-deficient-safe colors. At the bottom right of the map, the text "ArcGIS Living Atlas" is visible. To the right of the map, a text box contains the following text:

Working with Enhanced Contrast basemaps to improve accessibility.

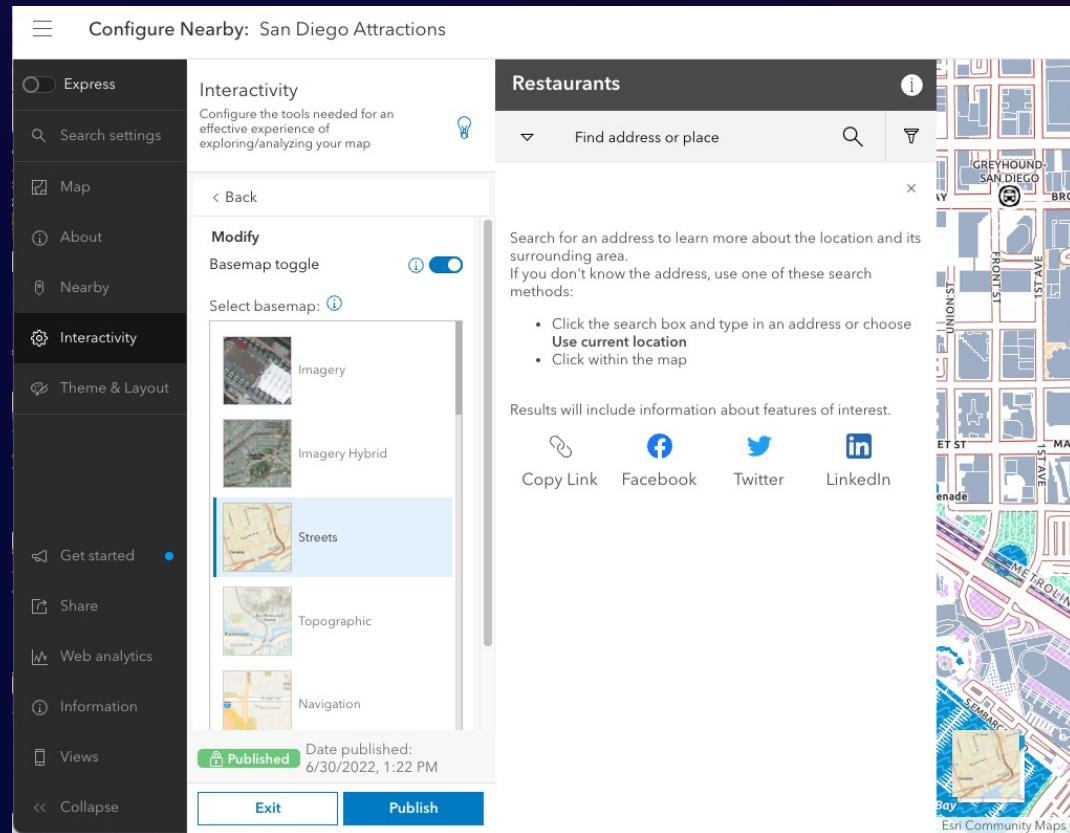
Mapping
June 30, 2022

Andy Skinner

Building maps for accessibility

High Contrast Basemap

- Use as standard basemap
- Provide option to switch
 - Basemap Gallery
 - Basemap Toggle



Building maps for accessibility

Color, Labels, Font

- Check map content for contrast and legibility

- Fonts and Labels
- Color contrast
- Line Styles
- Fill Patterns

- Map Design Tips

- Interactive Web Map Design Tips



Map Design

Accessibility Quick Card

Follow these best practices to create maps that are well designed and accessible. For the complete Map Design Guide and more information on map design and accessibility, visit mn.gov/mnlt/accessibility

- **Data and information**

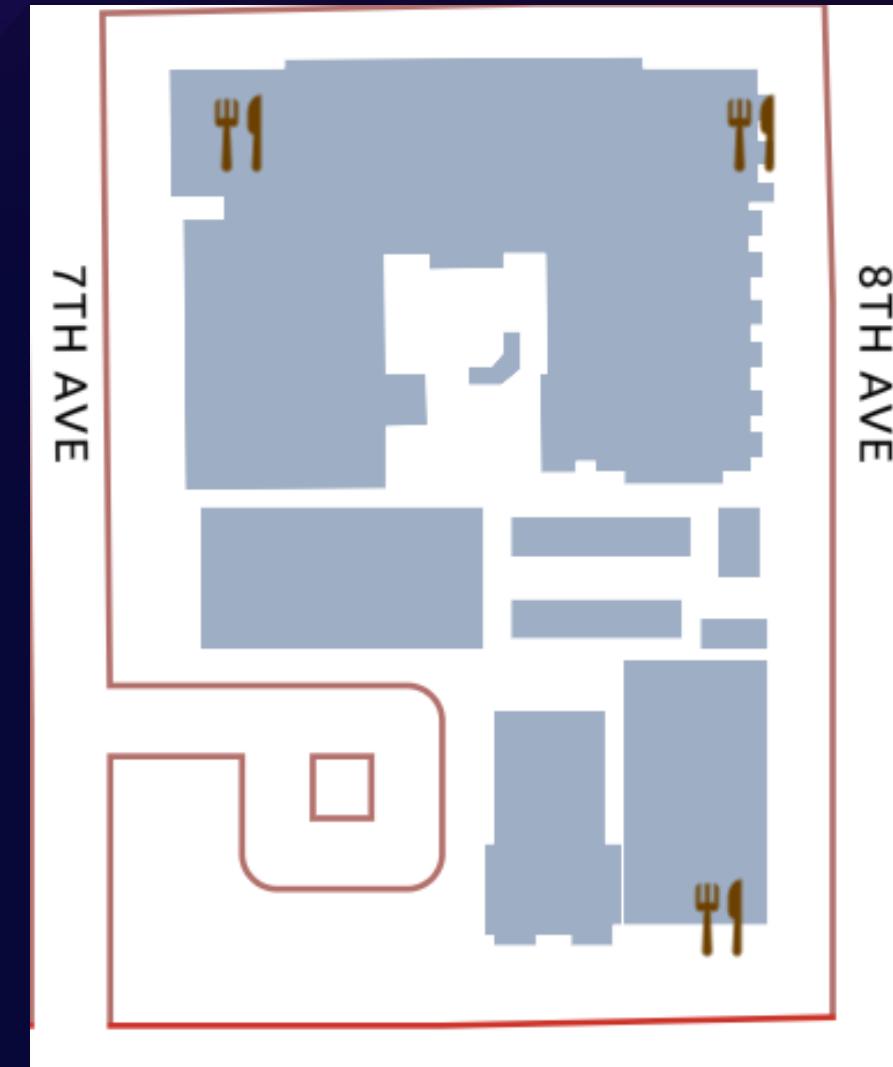
Too much information can bury the map's story. Make sure a map is the best way to show the information. Choose the appropriate scale and page size for the map.
- **Fonts and annotation**

Use as few font typefaces as possible, two or three at the most. The minimum font size in print for labels is 6-pt. Font size should reflect the importance of features; important features have larger fonts. The minimum size for explanatory text is 12-pt. Approved State of Minnesota brand fonts include: Brandon Grotesque, Brandon Text and Calibri. Times New Roman Italic is recommended for water labels and is also an approved font.
- **Labels**

Labels should be consistent throughout. Consider uniformity in orientation and placement. Labels

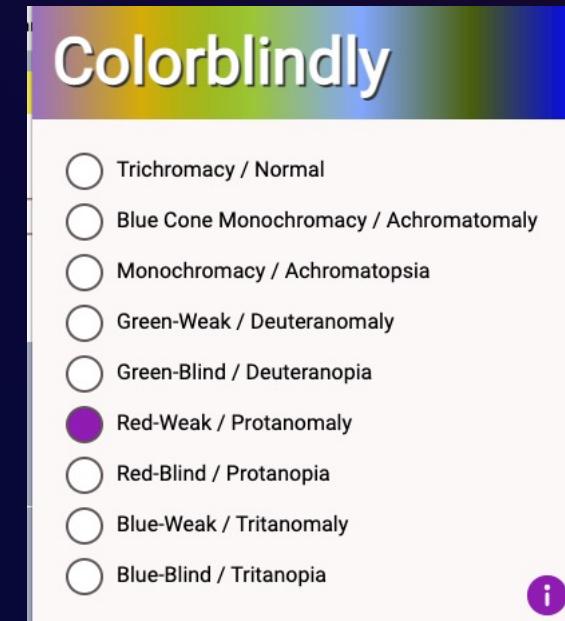
Color Contrast Demo

- [Web Aim Color Contrast Checker](#)



Color vision deficiency friendly color ramps

- [Esri color ramps](#)
- [Designing Apps with Color Blind Users in Mind](#)
- <https://colorbrewer2.org>
- Testing tools
 - Colorblindly
 - Color Oracle



Data and Information

- Avoid information overload
- Clear concise language
- Avoid visual clutter
- Tips from the W3C
- Writing for Web Accessibility

1230-1698 Quest Rdg, Sylva, North Carolina, 28779	
0	6.6 mi
 Results: 1	
▼ 2022 Current Open Sites Operating 1	
Scotts Creek Elementary	(3.27 mi)
Program Type	SSO
Site Name	Scotts Creek Elementary
Site Status	Open
Site County	Jackson
Site Address1	516 Parris Branch Road
Site Address 2	
Site City	Sylva
Site State	NC
Site Zip	28779
Site Supervisor Last Name	Grasty
Site Supervisor First Name	Ali
Site Supervisor Phone	(828) 631-2740
Sponsoring Organization	Jackson County Schools
Site Start Date	9/30/2021, 5:00 PM
Site End Date	7/28/2022, 5:00 PM
Meal Types Served	B,L

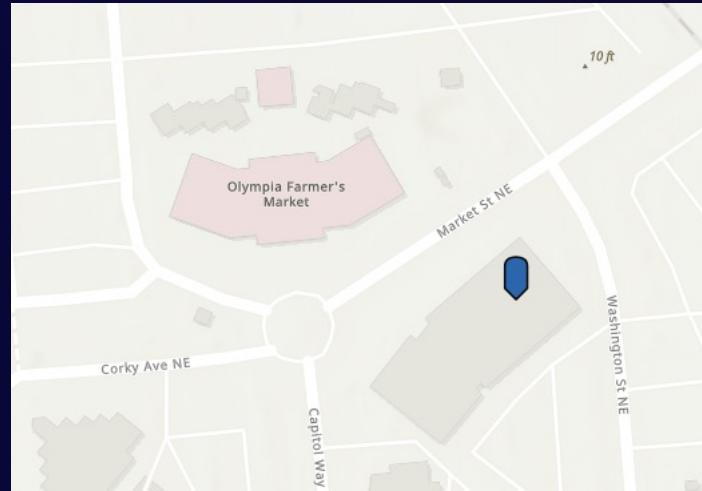
The Map

- No standards for making map accessible

The screenshot shows a Wikipedia-style page for "Accessible Maps". The top navigation bar includes links for "Page", "Discussion", "Read", "View source", "View history", and "Search". A note in the top right corner states: "Important note: This Wiki page is edited by participants of the RDWG. It does not necessarily represent consensus and it may have incorrect information or information that is not supported by other Working Group participants, WAI, or W3C. It may also have some very useful information." The main content area features a large heading "Accessible Maps" and a paragraph describing the purpose of the page: "'Accessible Maps' aims at discussing and outlining the need for detailed guidelines and standards how maps and geographical data should made accessible and how maps and geographical data could provide a valuable source for assistive functionalities for people with disabilities." On the left side, there is a sidebar with links to "Main page", "Recent changes", "Random page", "Help", "Tools", and "What links here". The W3C logo is visible at the top left of the sidebar.

Map Description

- Describe map content
- Good for
 - Simple static maps
 - Small number of features



The Esri Olympia regional office is located on the second floor 111 Market Street directly across from the Farmer's Market

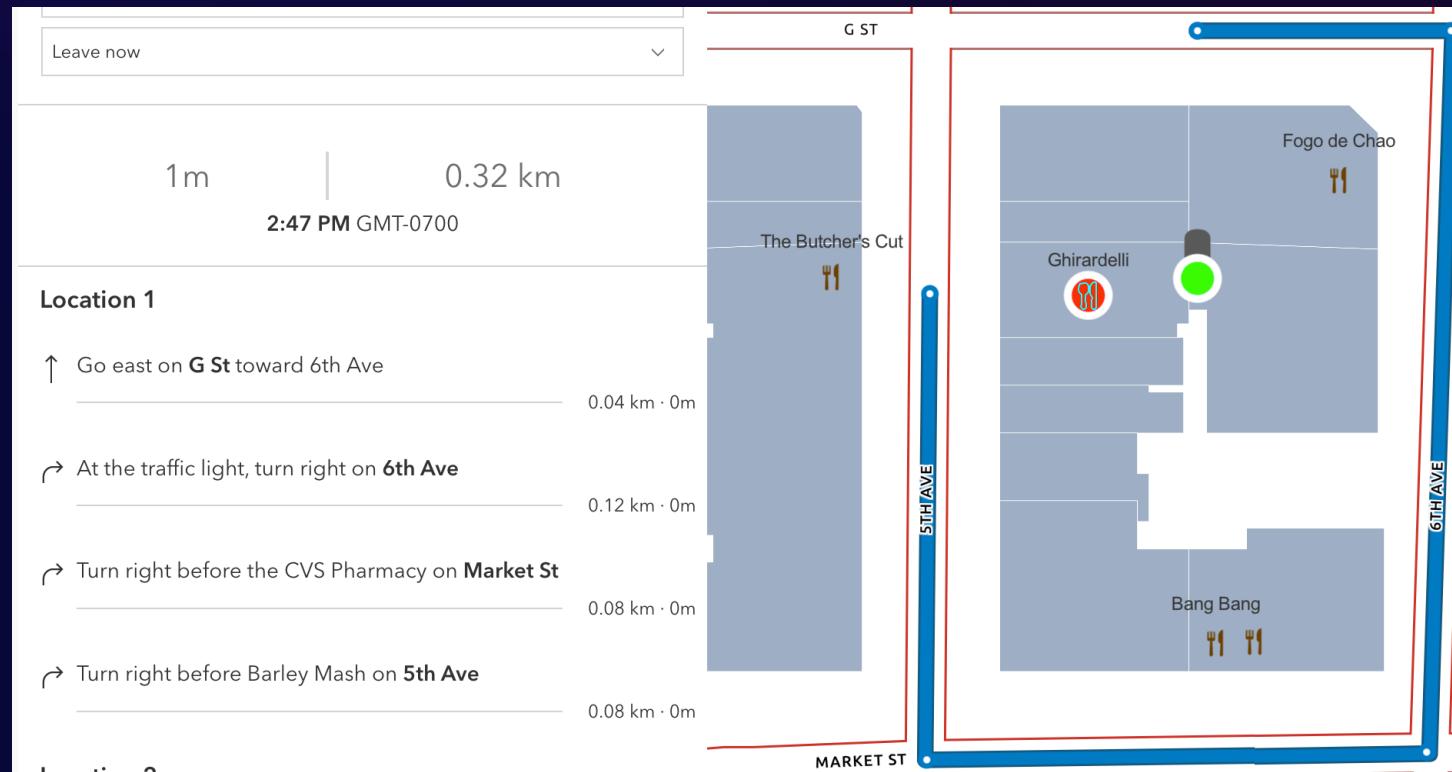
Map Descriptions

- Complex Maps
 - List of locations
 - Table
 - CSV

Community toilets (Features: 101, Selected: 0)					
Name	Address	Postcode	Ward	Toilet opening hours	
Snuff Mills Park Public Con...	River View, Bristol, BS16 1DL	BS16 1DL	Frome Vale	Monday - Sunday 08.00 - ...	
Victoria Park Public Conve...	Somerset Terrace, Bristol	BS3 4LL	Windmill Hill	Winter Monday - Sunday ...	
Ardagh Public Convenien...	Kellaway Avenue, Horfield...	BS6 7YL	Bishopston & Ashley Down	Monday-Sunday 08.00-17....	
Brandon Hill Park - Public ...	Great George Street, City ...	BS1 5PZ	Hotwells & Harbourside	Monday - Sunday 08.00 - ...	
Blaise Castle Estate Public ...	Kings Weston Road, Kings...	BS10 7QT	Henbury & Brentry	Winter Monday - Sunday ...	
Blaise Castle House Muse...	Henbury Road	BS10 7QS	Henbury & Brentry	Thu- Sun 11:00- 16:00, op...	
Ashton Court Estate Public...	Kennel Lodge Road, Long ...	BS41 9JN	North Somerset Ward	Monday-Sunday 07.00-17:...	

Directions

Provide Text based directions



Building maps for accessibility

Do you need a map?

Restaurants

Gaslamp, San Diego, CA, USA

Results: 81

Amenities

Smocking Gun (0.05 km)

Ciro's (0.06 km)
San Diego
Data © OpenStreetMap contributors

Bang Bang (0.07 km)
526 Market Street
Data © OpenStreetMap contributors

Blue Point (0.09 km)
Data © OpenStreetMap contributors

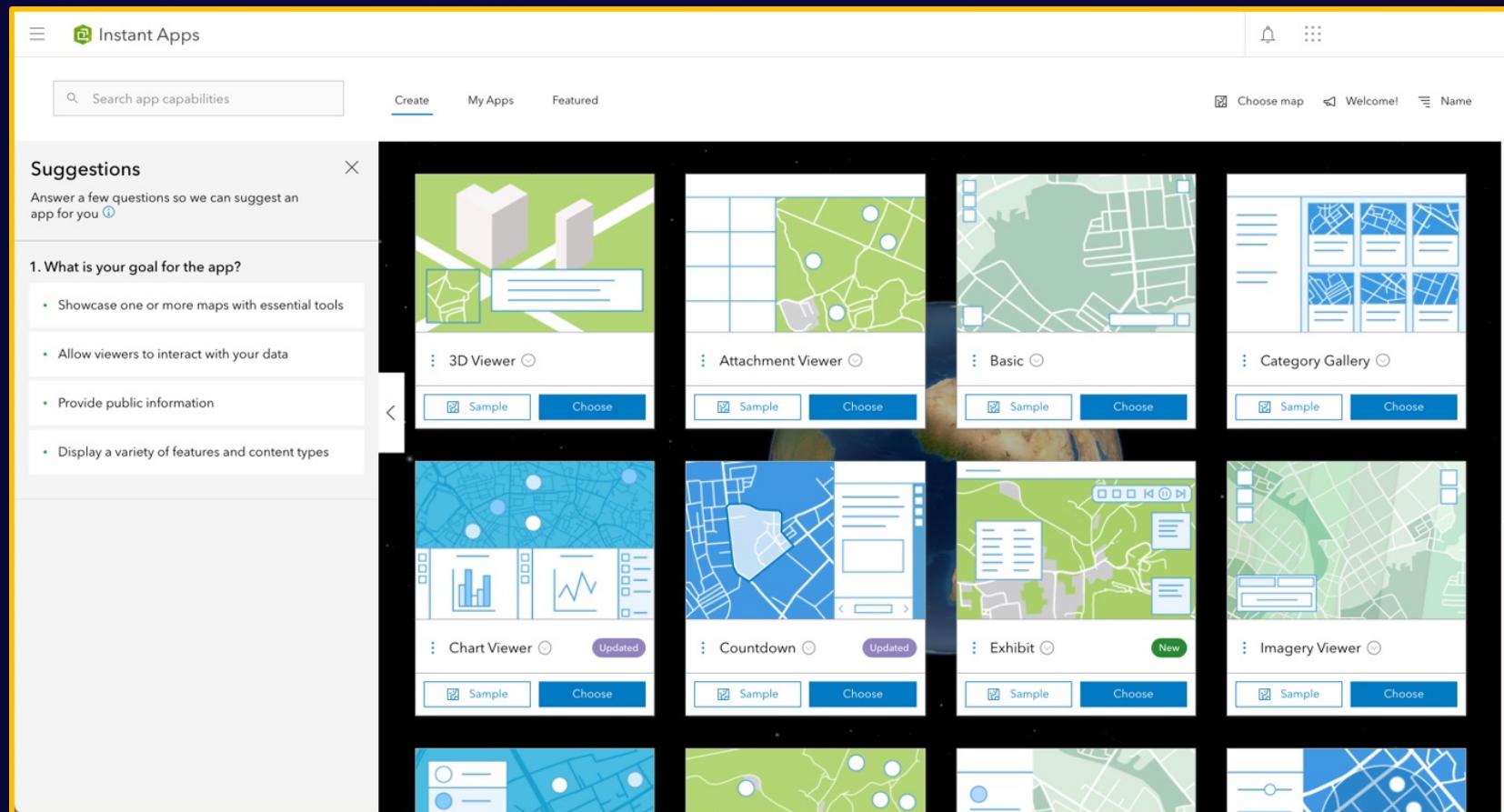
Fogo de Chao (0.10 km)
668 6th Avenue
San Diego 92101
Data © OpenStreetMap contributors

Configuring apps for accessibility

Krista McPherson and Will Hackney

Instant Apps

Configuring apps for accessibility



Instant Apps

Configuring apps for accessibility

The image shows a screenshot of a mobile application's accessibility settings. A yellow box highlights the "Shortcuts menu" switch, which is turned on (blue). A yellow arrow points from this switch to a detailed view of the "Select the map" section of the Shortcuts menu.

Map accessibility:
Map description ⓘ

Shortcuts menu ⓘ

Select the map

Shortcut	Action
Option + M	Select the map

Shortcut	Action
Arrow keys	Nudge to left, right, up, or down
N	Adjust to point north
A	Rotate counterclockwise
D	Rotate clockwise
+	Zoom in at the center
-	Zoom out at the center

Instant Apps

Configuring apps for accessibility



Select a font [i](#)

Avenir Next

Select a preset theme [i](#)

Forest

Colors and contrast ratio [i](#)

Aa Primary

Aa Background #0D3F14

Aa Text #FFFFFF 12.1

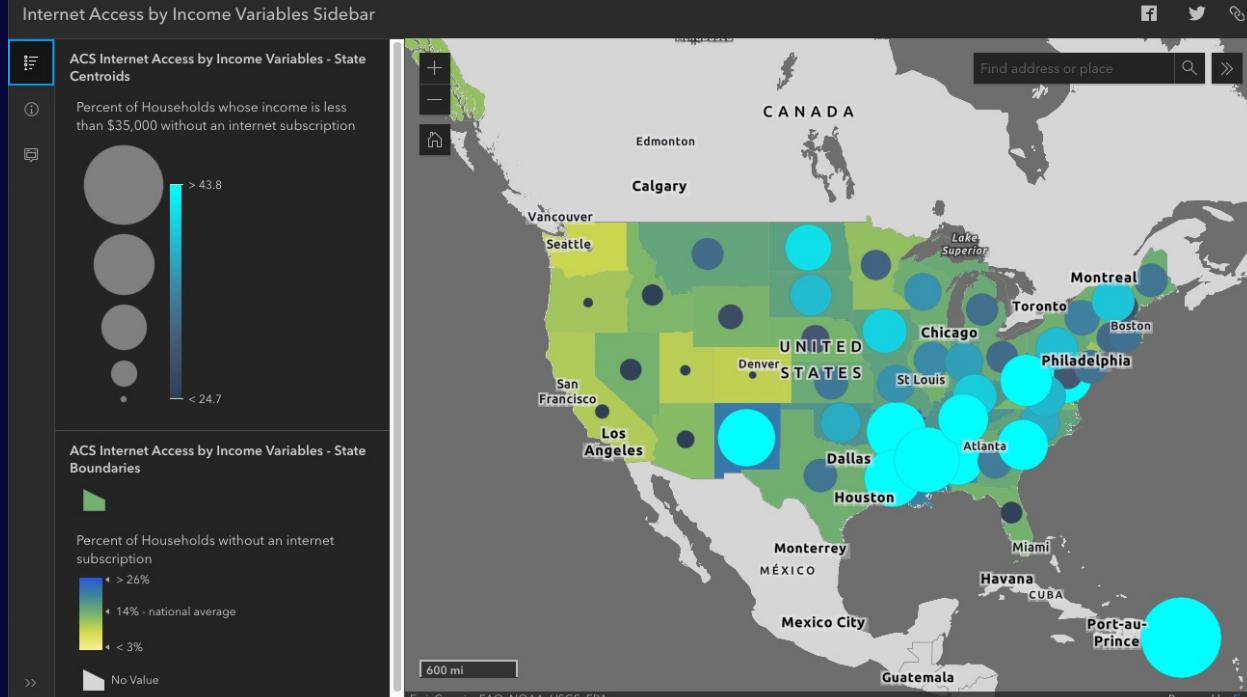
Aa Secondary

Aa Accent

Aa	Avenir Next
Aa	Arial
Aa	Georgia
Aa	Helvetica
Aa	Noto Serif
Aa	Playfair Display

Configuring Instant Apps for accessibility

Krista McPherson





Configuring ArcGIS StoryMaps for accessibility

Will Hackney

ArcGIS StoryMaps

Configuring apps for accessibility

ArcGIS StoryMaps has been evaluated for conformance with WCAG 2.0 AA, WCAG 2.1 AA, and Section 508 standards. This evaluation, the Voluntary Product Accessibility Template (VPAT), can be found [here](#).

The StoryMaps team has also put a lot of effort into giving authors the ability to produce maximally accessible stories through a variety of features.



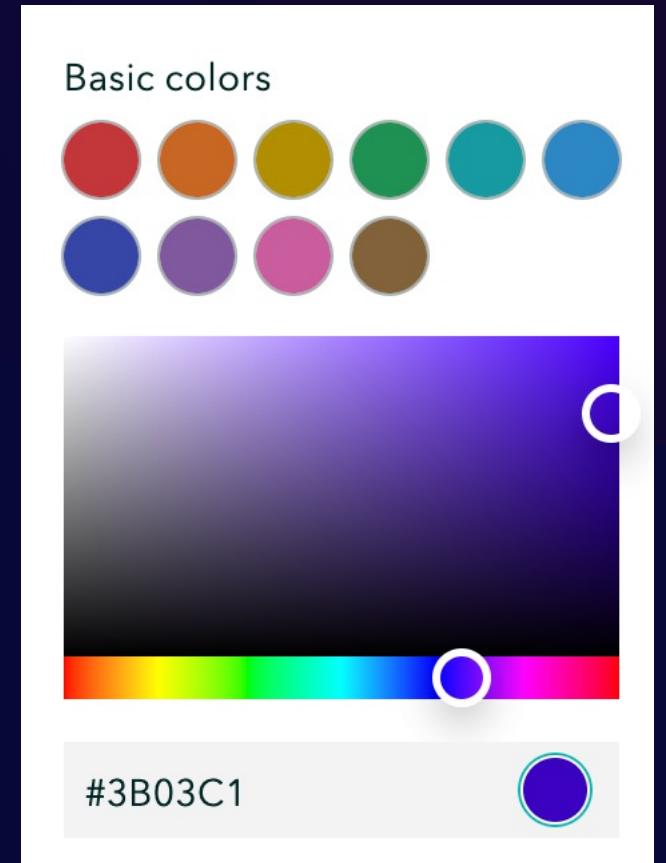
ArcGIS StoryMaps

Story theming

Theme Builder — Gives authors near total control over the aesthetic look and feel of their story

- Color

- Theme builder's color picker lets users input any hex code (or drag selector to desired spot on color ramp)
 - Can control the story's background color, primary and secondary accent colors, text colors, and colors of other elements such as separators and button links
- As mentioned earlier, check for accessible contrast ratio and compatibility with CVDs!



ArcGIS StoryMaps

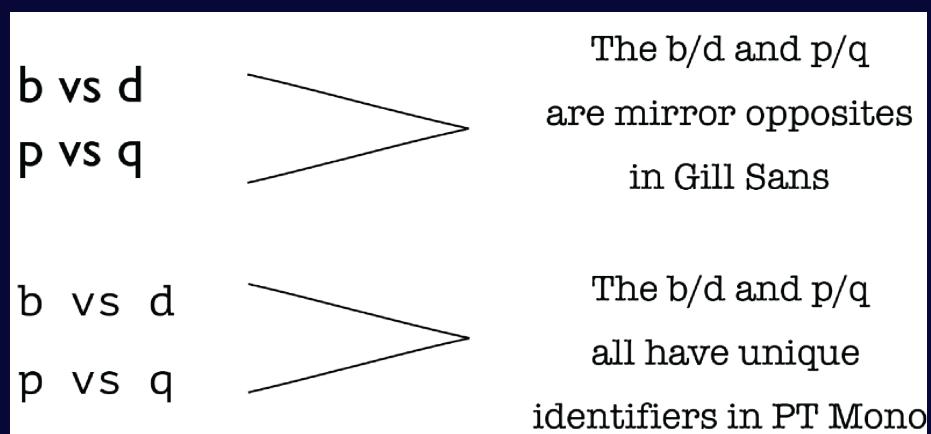
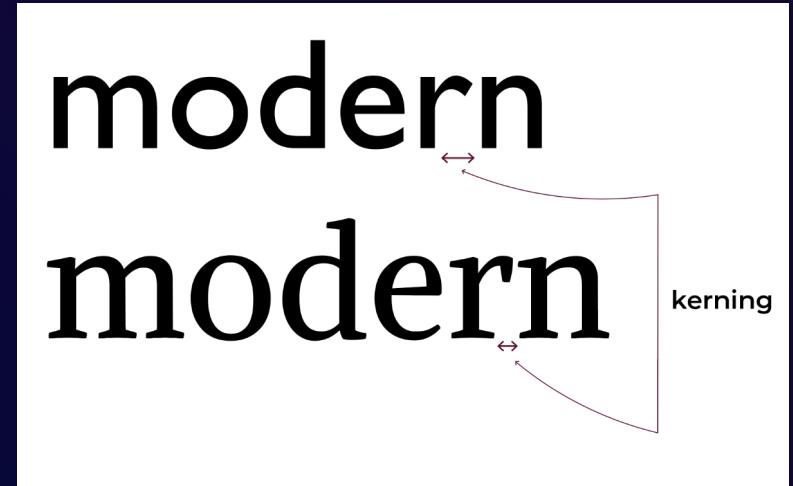
Story theming

- Typography

- Theme builder allows authors to select from the entire library of Google Fonts (over 1,000 fonts). Many of these can be difficult to read for consumers with vision impairments or conditions such as dyslexia.

- Some considerations when selecting an accessible font:

- Sans serif fonts tend to be more legible in digital formats
- Kerning (spacing between characters in a given typeface). If it's too tight, multiple characters can blend together and look like one letter (ex: "cool" can read as "cod")
- Fonts with all unique characters are most accessible (tip: compare capital I (eye), lower-case l (ell), and number 1)
- Use display fonts judiciously: they can be fun, but also not very accessible



ArcGIS StoryMaps

Media

Media — One of ArcGIS StoryMaps' best features is the ability to incorporate all kinds of multimedia into a story: Photos, videos, audio, embedded content

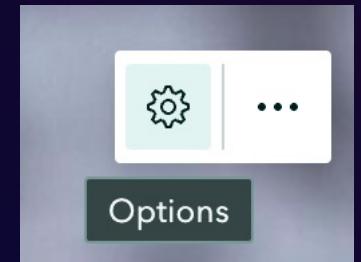
- Videos or audio clips with speech should be captioned or have a transcript made available through a link
- Limit use of graphics that have text within them (especially if the text is important)
 - Screen readers won't pick up on words within graphics
 - Real text is more adaptable by consumer (can be enlarged, copy/pasted, available in reader modes, etc.)

ArcGIS StoryMaps

Media

- Alternative text

- Describes media for screen readers or if the media doesn't load
- ArcGIS StoryMaps allows adding alt text for all forms of media (videos, maps, audio clips as well as images)
- Most effective alt text finds a balance between too much description and not enough



Too much	Not enough	Just right
A person in a neon red jacket and a hefty backpack kneels in the snow beneath a granite sky, peering through the telescopic lens of a tripod-mounted camera. Their target is cluster of penguins camping out on a rocky outcropping several yards away	Person in a red jacket in the snow	A person in a red jacket kneels in the snow, photographing some penguins on a nearby rock



ArcGIS StoryMaps

Story structure/language

- Use heading and subheading text types properly
 - Should be used to break story into logical sections and sub-sections, NOT for effect
 - Helps optimize the story for assistive technologies
- Try to avoid paragraphs that are too long or many short paragraphs in a row
 - Both a wall of text and a lot of line breaks can be disorienting
- Use descriptive language for hyperlinks and button links
 - e.g., “Learn more about rainforest conservation” rather than “Click here to learn more.”



ArcGIS StoryMaps

Story structure/language

- Be mindful of using **inclusive language**

- Many commonplace words and phrases have roots in bias (ableism, racism, sexism, etc.) or violence
 - Can be direct reference, e.g. “Master-slave” to describe certain database/server relationships
 - Use “primary-replica” instead
 - Can indirectly ascribe positive or negative connotations to groups of people, e.g. “whitelist” or “blacklist”
 - Use “blocked list” or “approved list” instead
- Here are some resources to learn more about inclusive language and substitute phrasing for less inclusive terms:
 - Linguistic Society of America’s [guidelines for inclusive language](#)
 - American Psychological Association’s [style guide for bias-free language](#)
 - National Center on Disability and Journalism’s [disability language style guide](#)

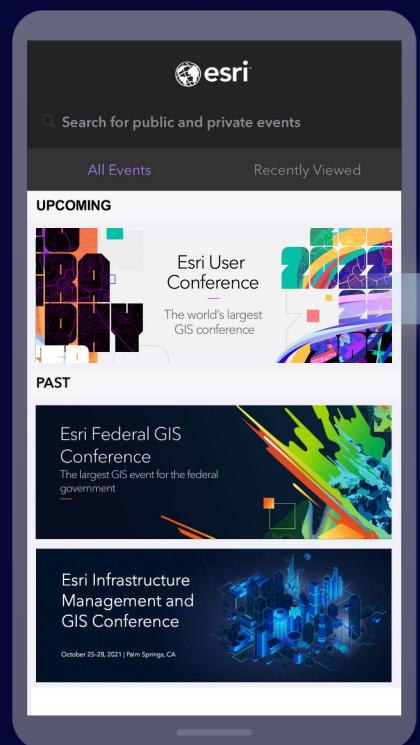
Key takeaways

Resources

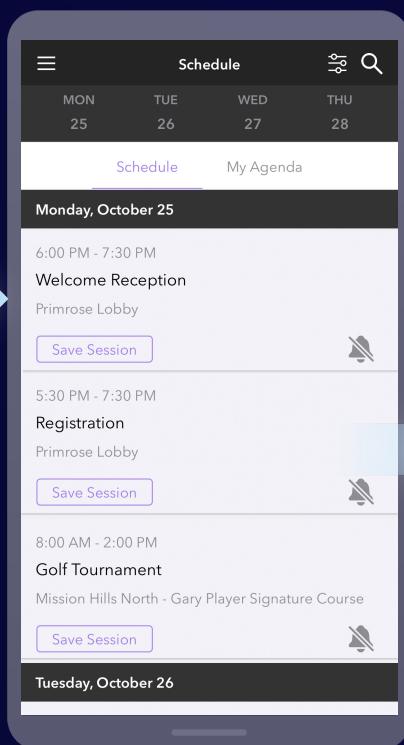
- Esri Accessibility Site: <https://www.esri.com/en-us/accessibility/overview>
- Esri Legal Accessibility: <https://www.esri.com/en-us/legal/accessibility/conformance-reports>
- Esri Accessibility Community: <https://community.esri.com/t5/accessibility/ct-p/accessibility>
- Email alias for issues and requests: EsriAccessibility@Esri.com
- ArcGIS Instant Apps resources: <https://www.esri.com/en-us/arcgis/products/arcgis-instant-apps/resources>
- ArcGIS StoryMaps resources: <https://storymaps.arcgis.com/stories/02670c9018f14cfbbafef7cba5c54d453>

Please Share Your Feedback in the App

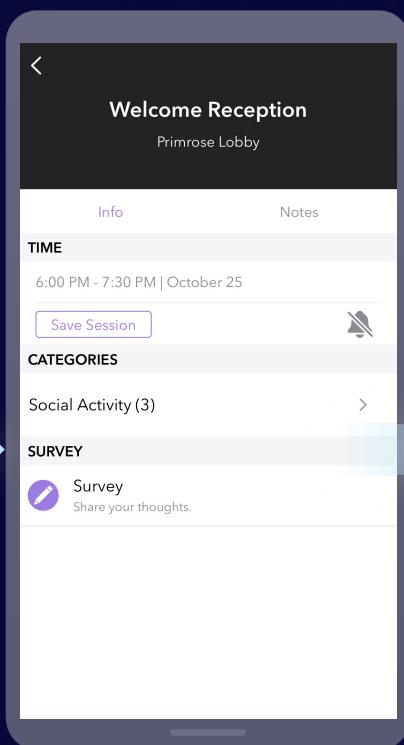
Download the Esri Events app and find your event



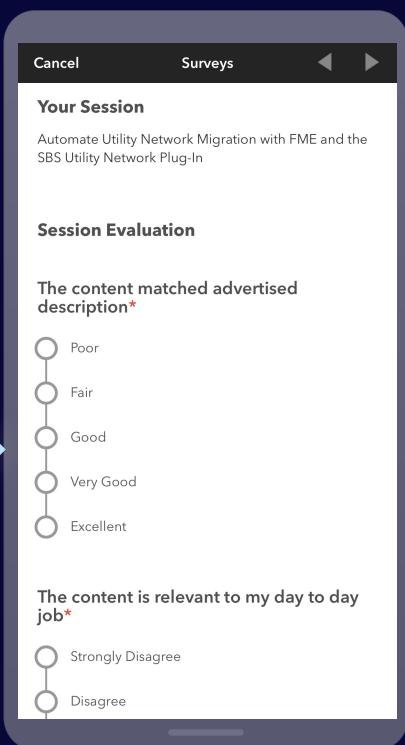
Select the session you attended



Scroll down to "Survey"



Log in to access the survey





esri

THE
SCIENCE
OF
WHERE®

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