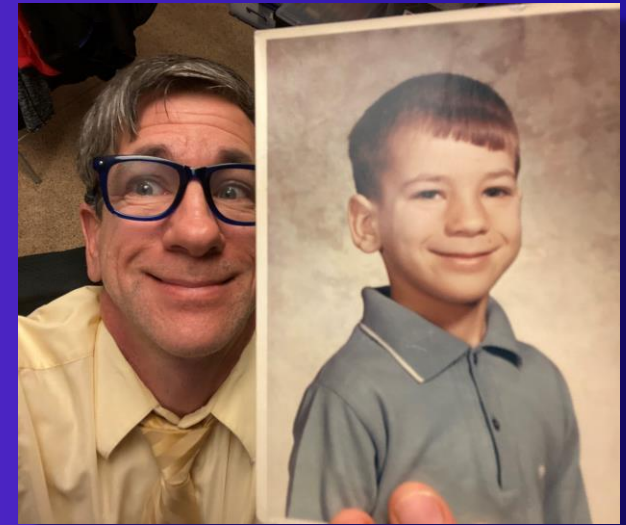
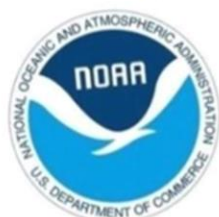


Comparing Two Field Data Gathering Tools: ArcGIS Field Maps and ArcGIS Survey123

Joseph J. Kerski, PhD GISP, Esri
jkerski@esri.com



Federal Agencies



Private Industry

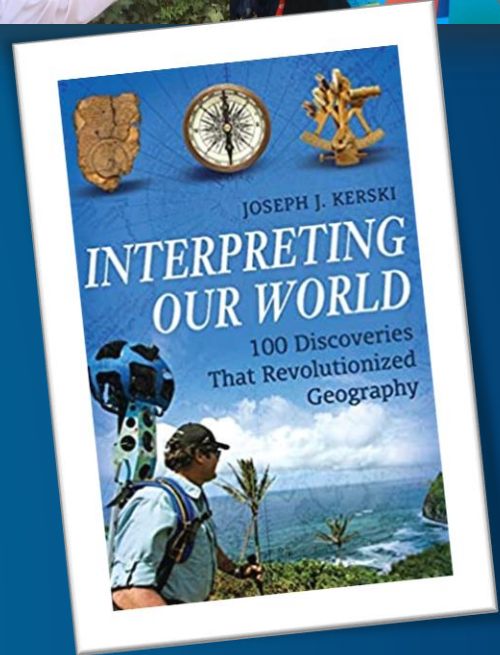


University

Graduate School



Nonprofit



Esri's Education Program

Enabling, Encouraging, and Equipping

... future decision makers to think spatially and critically, solve problems, and use geotechnologies effectively to build a resilient world and become the change agents of tomorrow.

- 7,000+ universities globally
- Free licenses for all K-12 (Esri Schools)
- Education, research, and operations



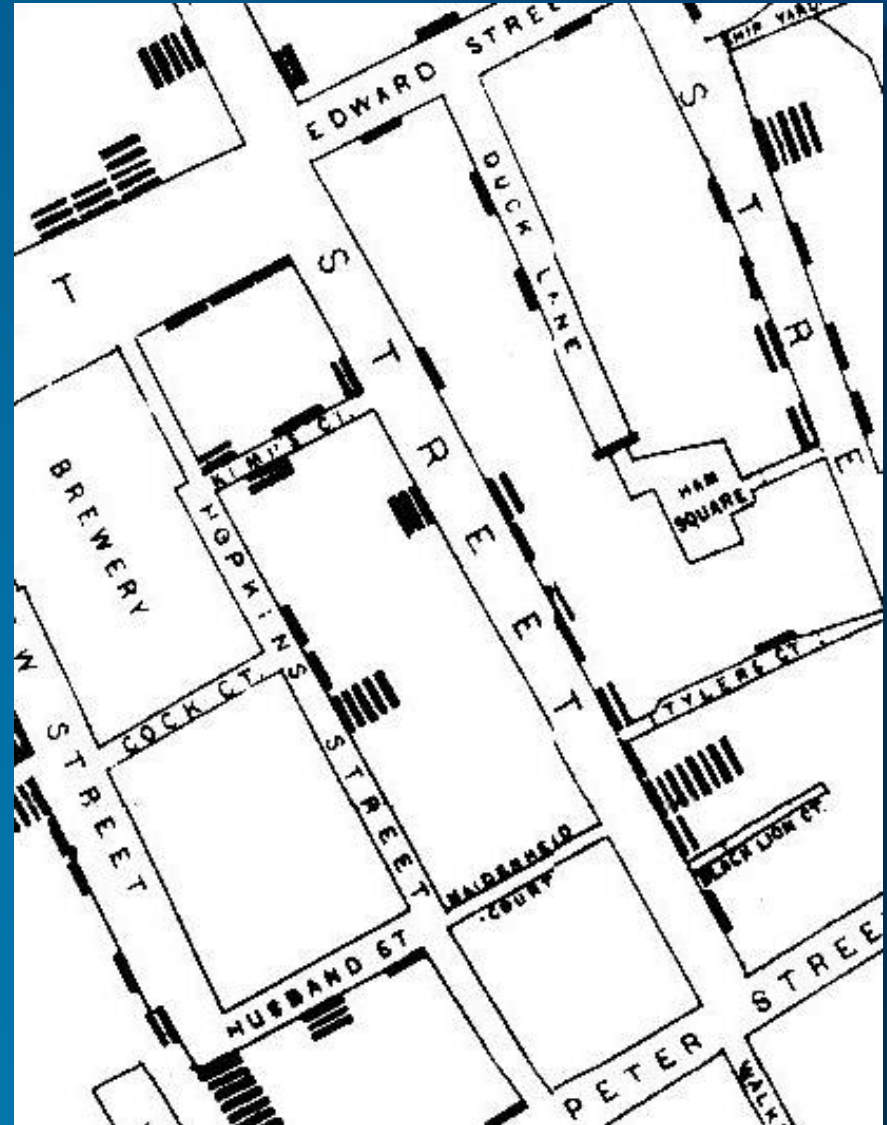
'Field Operations' - Goals for this workshop

- Understand the capabilities of the 2 (+1) main Esri mobile field data collection tools.
- Be able to determine which tool is best to meet specific instructional and research goals.
- Gain confidence using these tools in the



Outline

- Introductions
- Why field data and collection?
- Esri's field apps
- *Discussion*
- Resources / Wrap-up



Why use field tools?

1. Collect needed data.
2. Connect people with issues in their own community.
3. Develop skills in field data collection, citizen science, data assessment, mapping, spatial analysis.

Can you name this location?

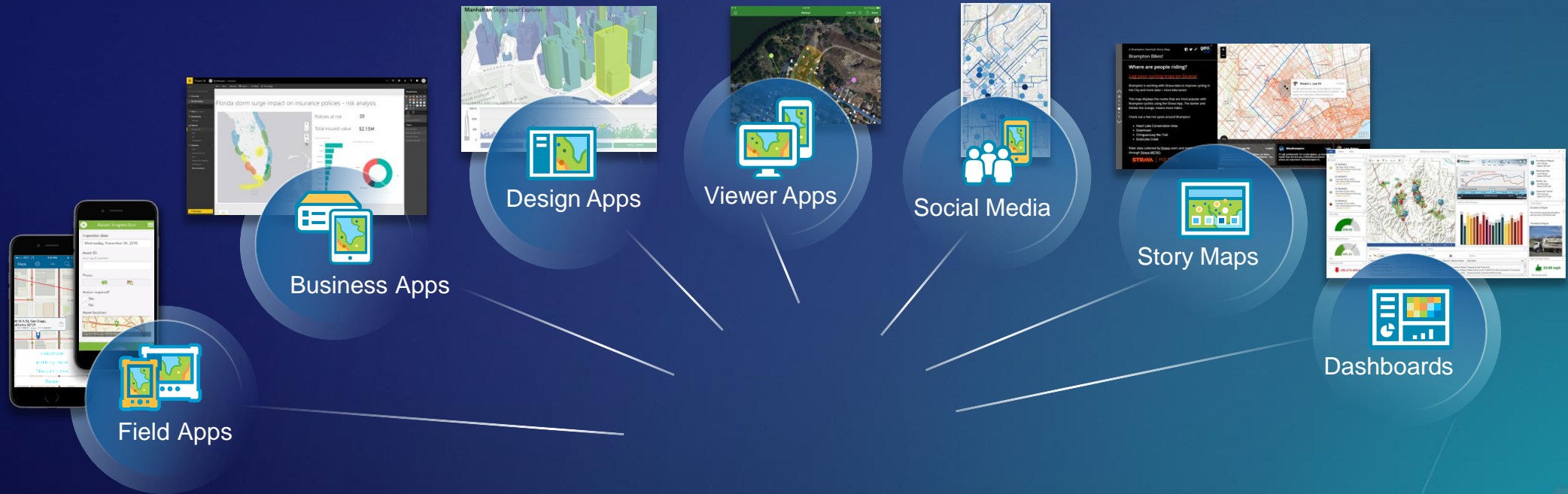
The Web GIS Paradigm



ArcGIS for Developers

ArcGIS Apps Bring the Power of Location to Everyone

Extending the Reach of GIS



Across Organizations and Beyond

Apps by theme

Focused, powerful, ready to use



Office



ArcGIS Earth



Esri CityEngine



Maps for Office 365



Maps for SharePoint



ArcGIS Insights



Esri Business Analyst



GeoPlanner for ArcGIS



Story Maps



ArcGIS Dashboards



Field



ArcGIS QuickCapture



ArcGIS Field Maps



Tracker for ArcGIS



Survey123 for ArcGIS



Drone2Map for ArcGIS

Apps by theme

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GeoPlanner for ArcGIS



Story Maps



ArcGIS Dashboards



Field



ArcGIS QuickCapture



ArcGIS Field Maps



Tracker for ArcGIS



Survey123 for ArcGIS



Drone2Map for ArcGIS

How can you map field-gathered data?

5 selected methods:

1. Add a set of geotagged photos as “photos with locations” to ArcGIS Online.
2. Collect a GPX file from GPS receivers and smartphone fitness apps.
> Add to ArcGIS Online.
3. Generate table in CSV or TXT > Add to ArcGIS Online.
4. Use Esri **Survey123**, Collector, or QuickCapture to collect data.
5. Use other field apps: eBird, Globe Observer, Mapillary, iNaturalist, or others.
Export to CSV > Add to ArcGIS Online.

Field Operations & Data Collection

Location-Enabling All Aspects of Field Work

Specialized Data Collection

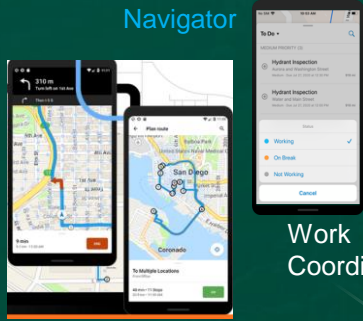
Geocentric Data Collection

Field Work Management

Workforce Navigator

Work Coordination

Navigation

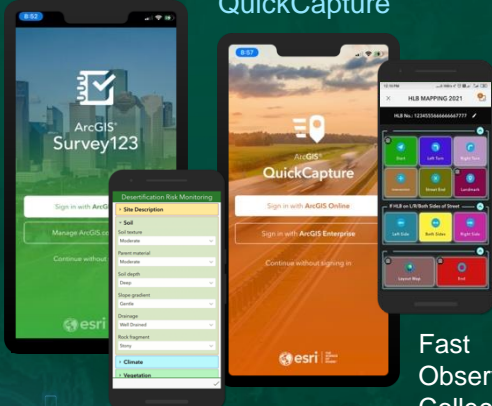


Survey123

QuickCapture

Form-Centric Collection

Fast Observation Collection



ArcGIS Field Maps



Dashboard

Monitoreo de Respuesta

Indicadores

3:00 Min

KPI: 1:00 Min

30

11

3:30 hrs

KPI: 5:00 hrs

48

67



Integrates

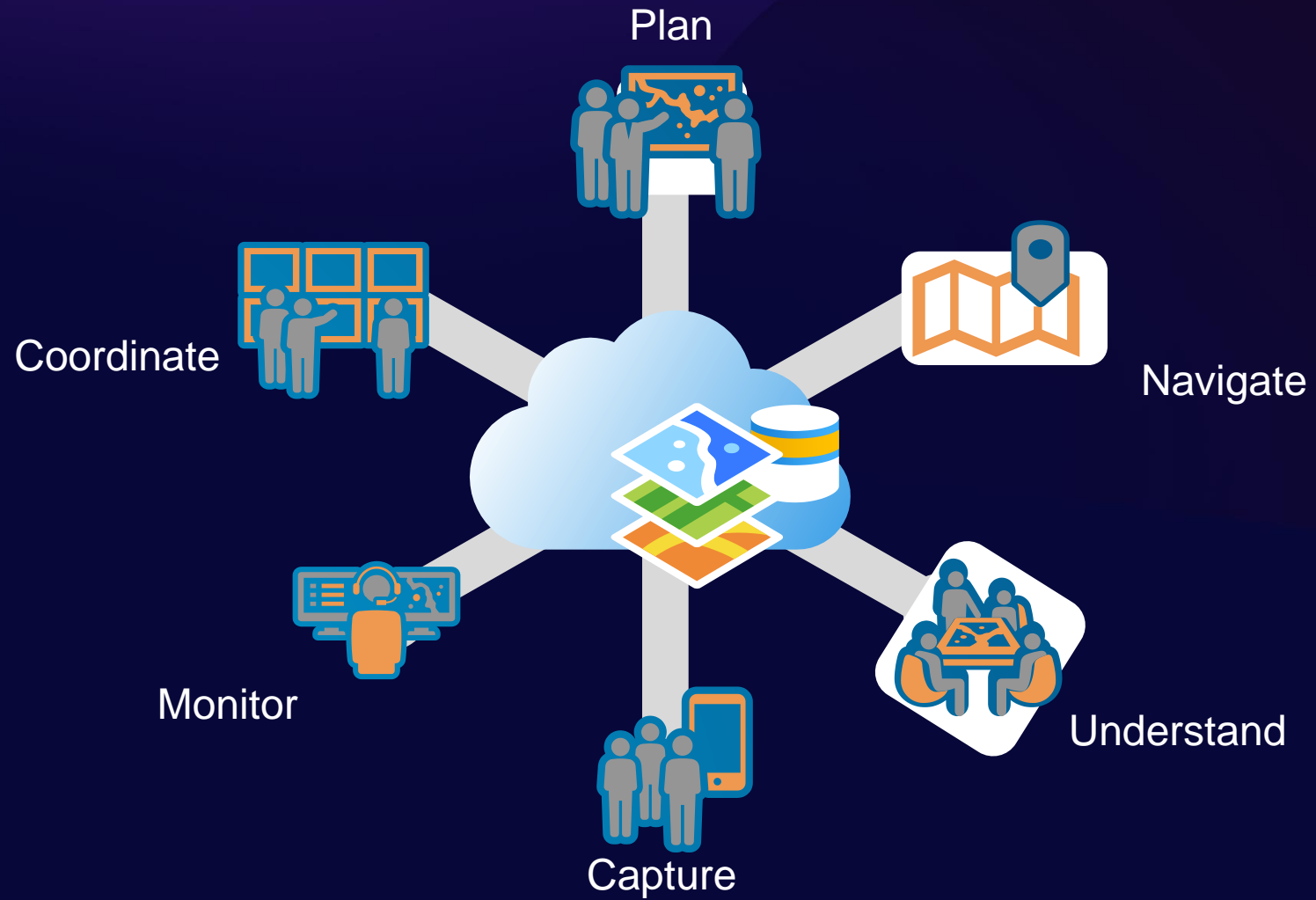
- Collecting
- Updating
- Tracking
- Viewing
- Markup

Comprehensive Field App

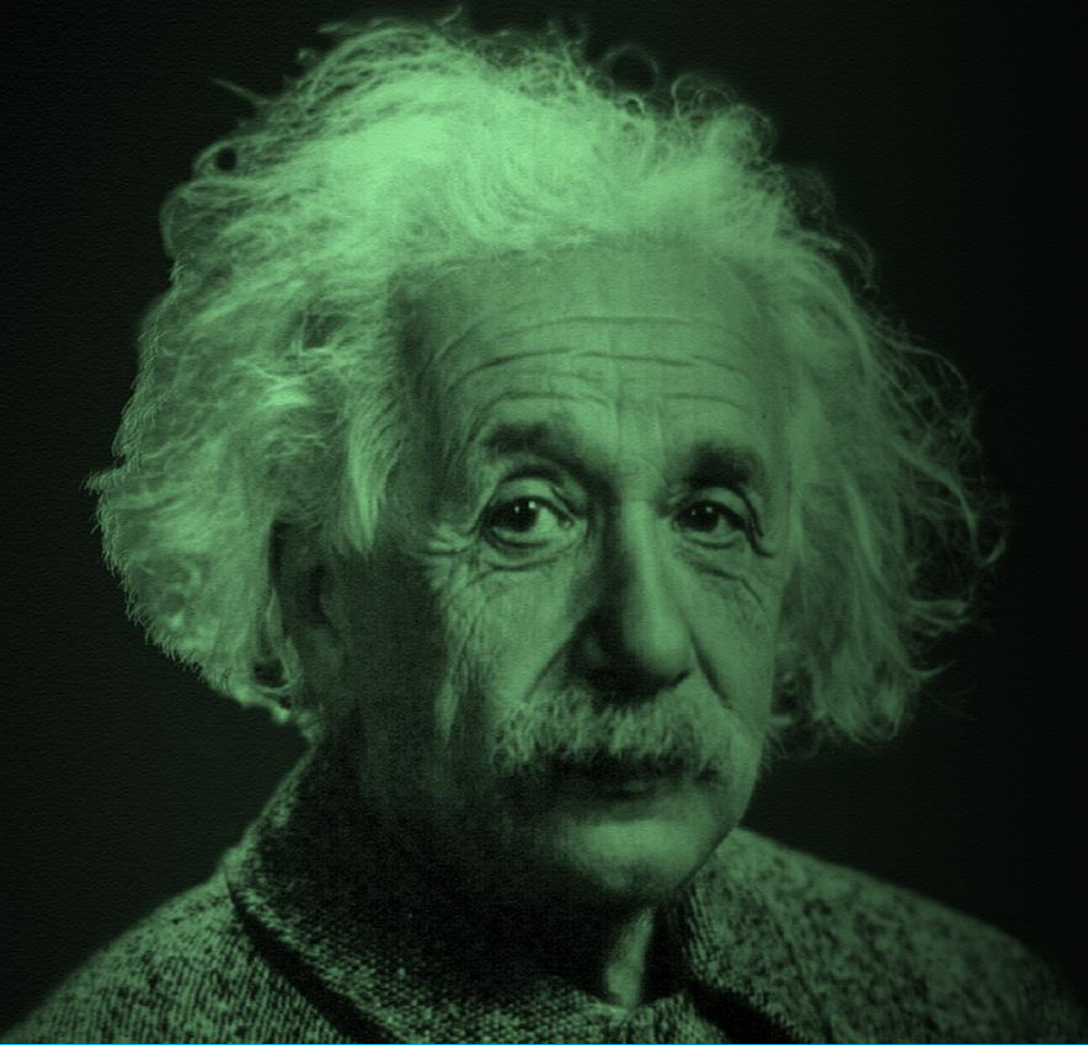


Connecting & Transforming Mobile Workflows

Data collection overview



Data collection



If I had an hour to solve a problem and my life depended on it, I would use the first 55 minutes determining the proper questions to ask.

- Albert Einstein

Apps by theme

Focused, powerful, ready to use



Office



ArcGIS Earth



Esri CityEngine



Maps for Office 365



Maps for SharePoint



ArcGIS Insights



Esri Business Analyst



GeoPlanner for ArcGIS



Story Maps



ArcGIS Dashboards



Field



ArcGIS QuickCapture



ArcGIS Field Maps



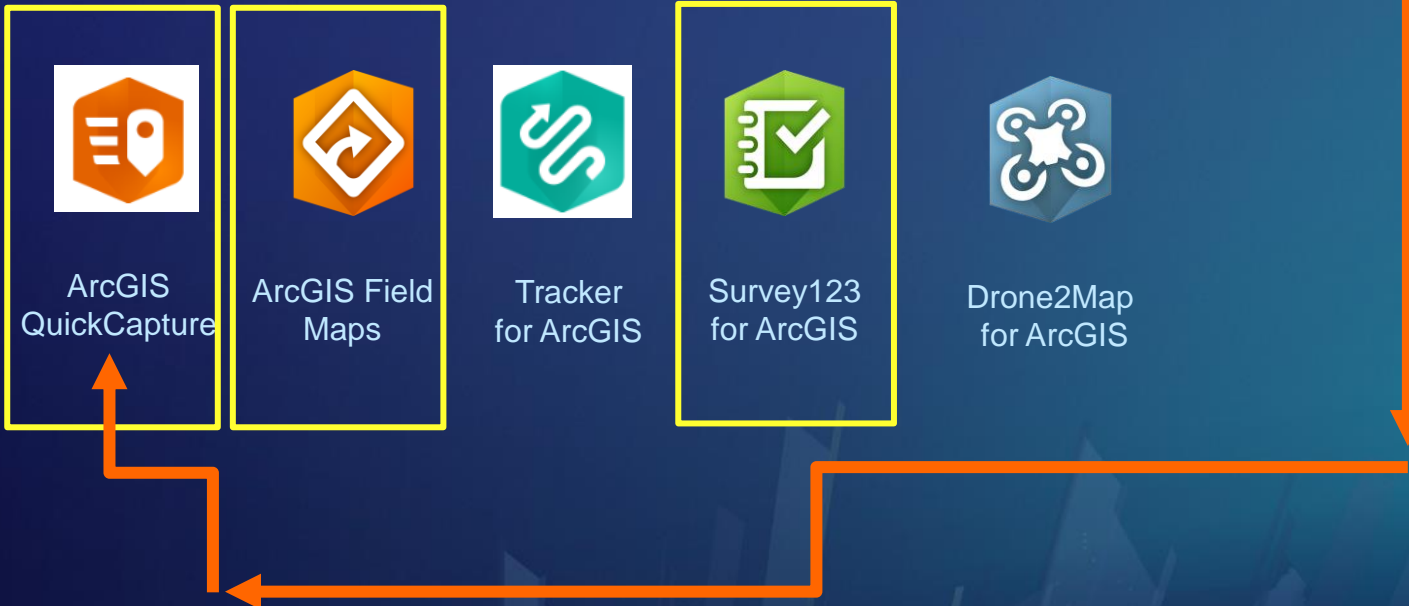
Tracker for ArcGIS



Survey123 for ArcGIS



Drone2Map for ArcGIS

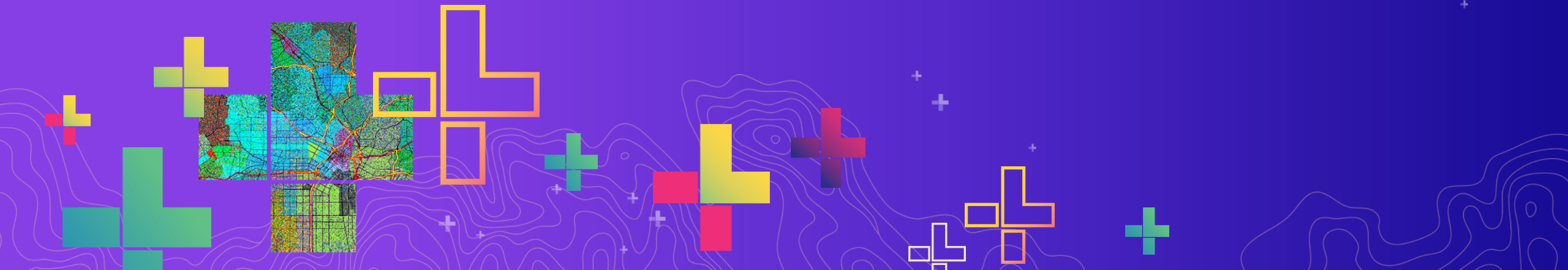
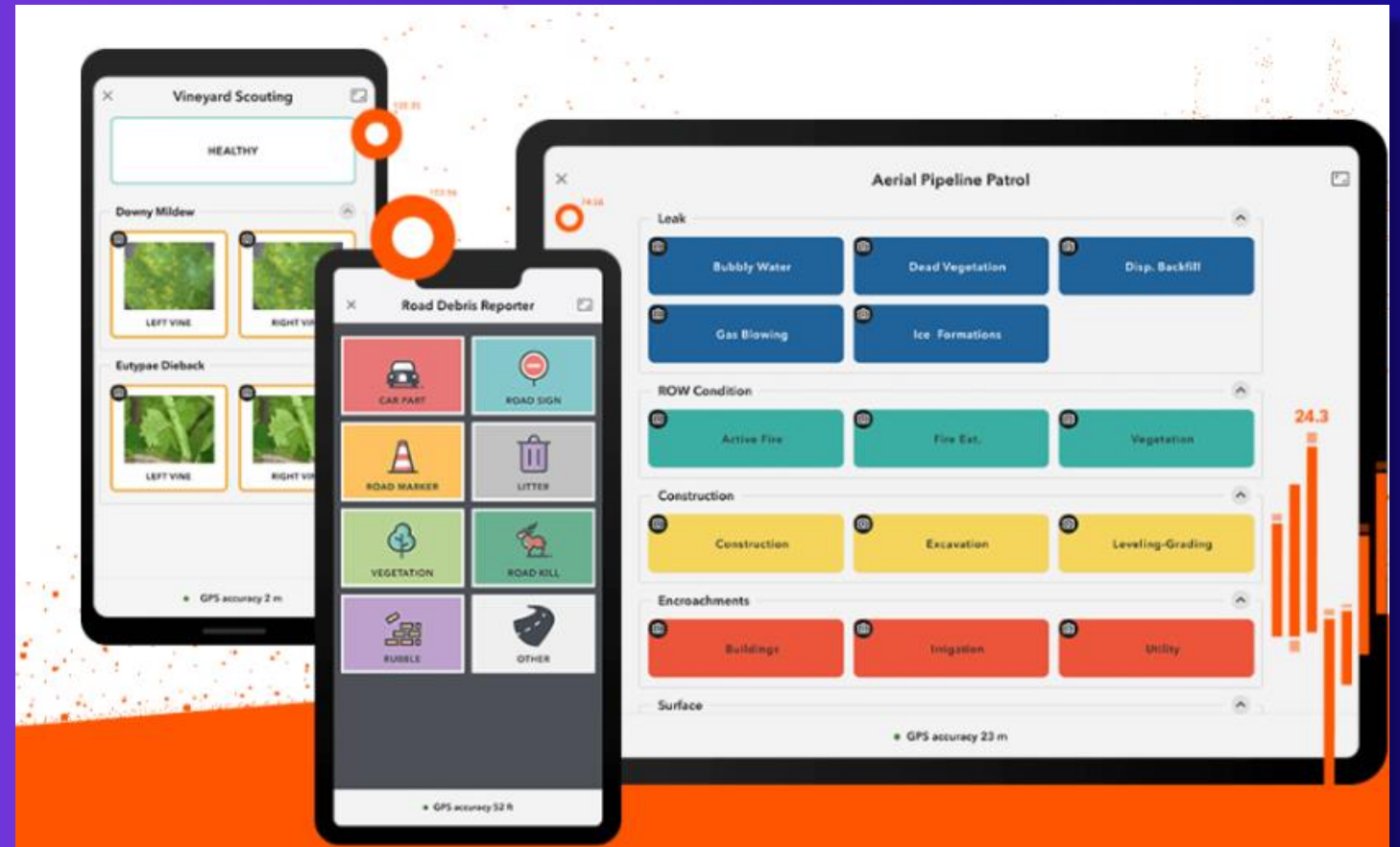


ArcGIS QuickCapture

Is a 'big button' app designed to quickly collect data in the field.

Tutorials:

<https://www.esri.com/en-us/arcgis/products/arcgis-quickcapture/resources>



Comparing the 3 ArcGIS Field Data Collection Apps



ArcGIS Survey123

- Fill out a form
- Example:
Interviews, tree inventory.



ArcGIS Field Maps

- Place info on a map
- Example:
Map soil types in a field, water assets in a community



ArcGIS QuickCapture

- Press a single button
- Example:
Post-disaster assessments

Field app deciding factors

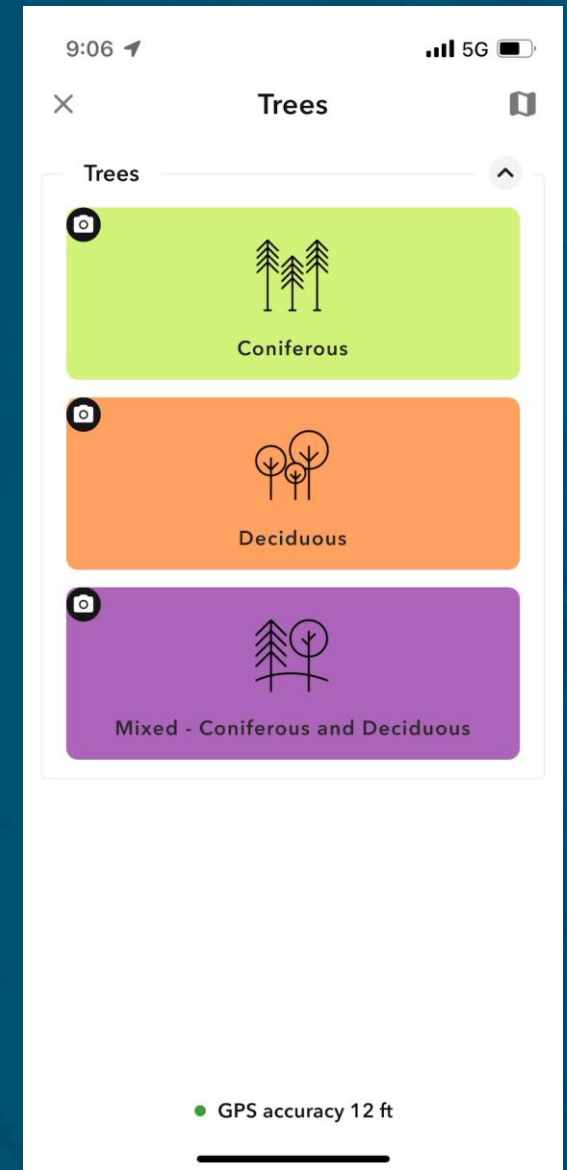
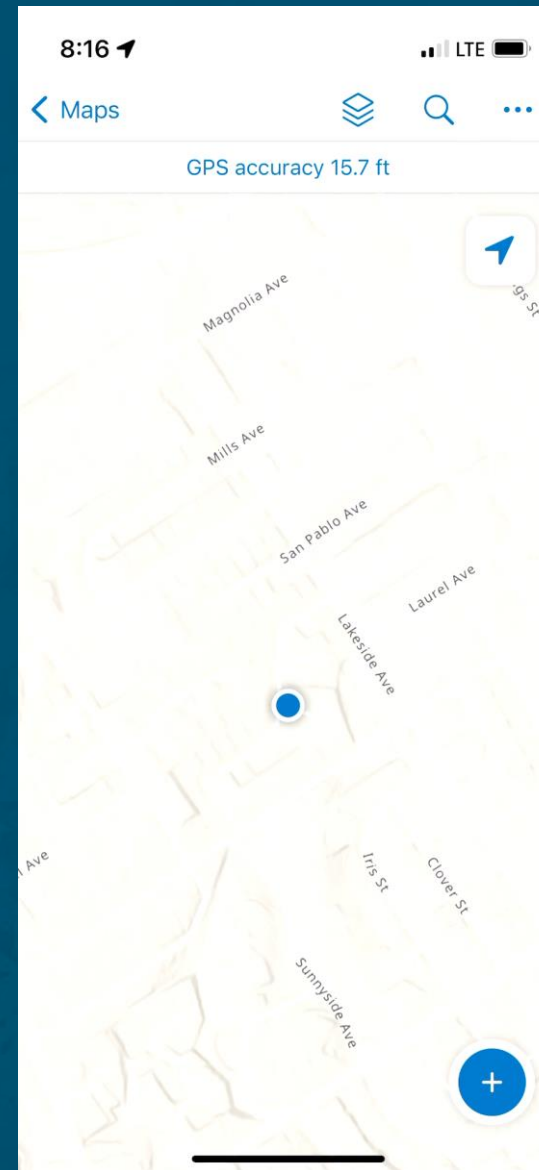
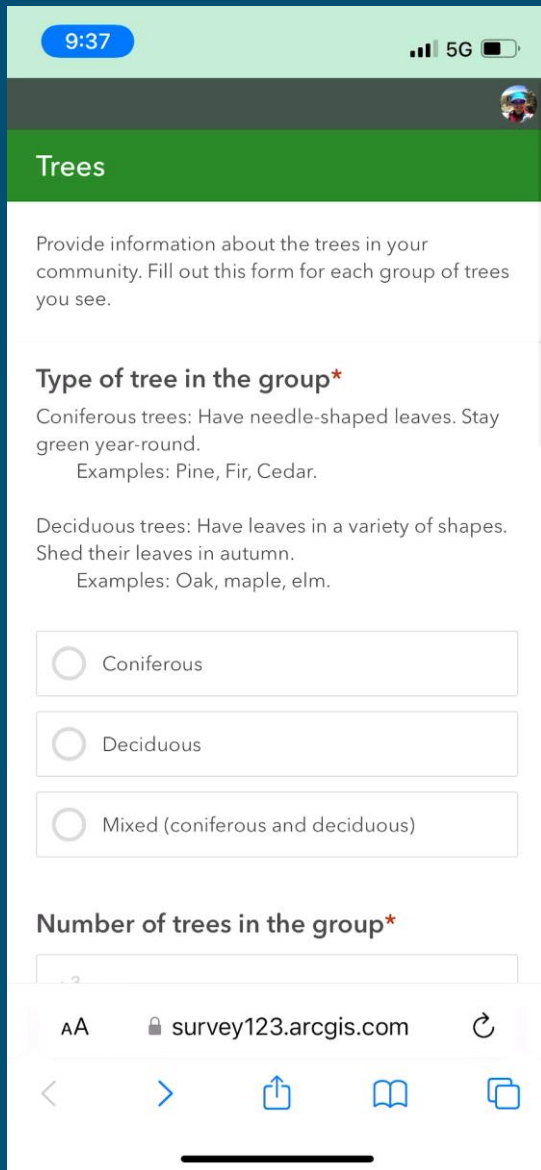
Field app	Level of detail	Collection environment	Answer format
ArcGIS Field Maps	Highly detailed	Stationary location	Map-centric
ArcGIS Survey123	Highly detailed	Stationary location	Form-centric
ArcGIS QuickCapture	Basic	In-motion	Button-centric

Each of the 3 apps do the following:

1. Capture location
2. Create points, lines and polygons
3. Have the ability to add photographs.
4. Work online or offline.



3 apps, one map



Comparing the different ArcGIS Field Apps

 No network connection

 Sign-in required

 App required


 


 Data updates

 Advanced location



 GeoMentor knowledge

 Ask them!

Comparison of fundamentals

<https://esriurl.com/appsinschools>

	Survey123	Field Maps	QuickCapture
Intended use	Filling out forms, including ones with complex choices and structures.	Map-focused data collection and updating (editing), including advanced location capturing (such as offsets and snapping).	Rapid, one-button data collection.
Example projects	Interviews (ideally with a question about location). Restaurant inspections and other long, complex forms.	Creating a map of an area, such as a campus or park.	Where trash is found on campus, BioBlitz.
<i>Authoring</i>			
Authoring experience	Simple drag and drop website to create forms or app for more complex authoring.	Create an editable feature layer (templates available), put the layer in a map, and share the map.	Create an editable feature layer (templates available), configure a QuickCapture project, and share the project.
Authoring workflow	<u>Example</u>	<u>Example</u>	<u>Example</u> <u>Example</u>
<i>Data Collection</i>			
Anonymous data collection?	Yes	No (map shared with specific user)	Limited (supported with ArcGIS Hub Premium, else project must be shared with specific user)
Edit (update) existing data	Yes (if form configured for it)	Yes	No
App required for collection	No	Yes	Yes
Capture user-entered information	Yes	Yes	Limited
Capture multiple features simultaneously	No	No	Yes
Capture a line as you walk or drive along it	No	Yes	Yes
Capture into multiple layers in a single form/map/project	No	Yes	Yes
<i>Offline</i>			
Offline support	Yes	Yes	Yes
Offline basemap	Yes Supported for geographic areas you as the map author define.	Yes Supported for geographic areas defined by the map author or defined in the app by the data collector.	Yes Supported by adding a map package (TPK, VTPK, or MMPK) to your project.
Offline workflow	<u>Offline workflow</u>	<u>Overview video and Implementation Guide</u>	<u>Blog on configuring the map</u>
<i>After collection</i>			
Viewing the data	Has integrated analytics and reports.	Use Map Viewer or other apps.	Use Map Viewer or other apps.

Therefore: What is the best field data collection app?



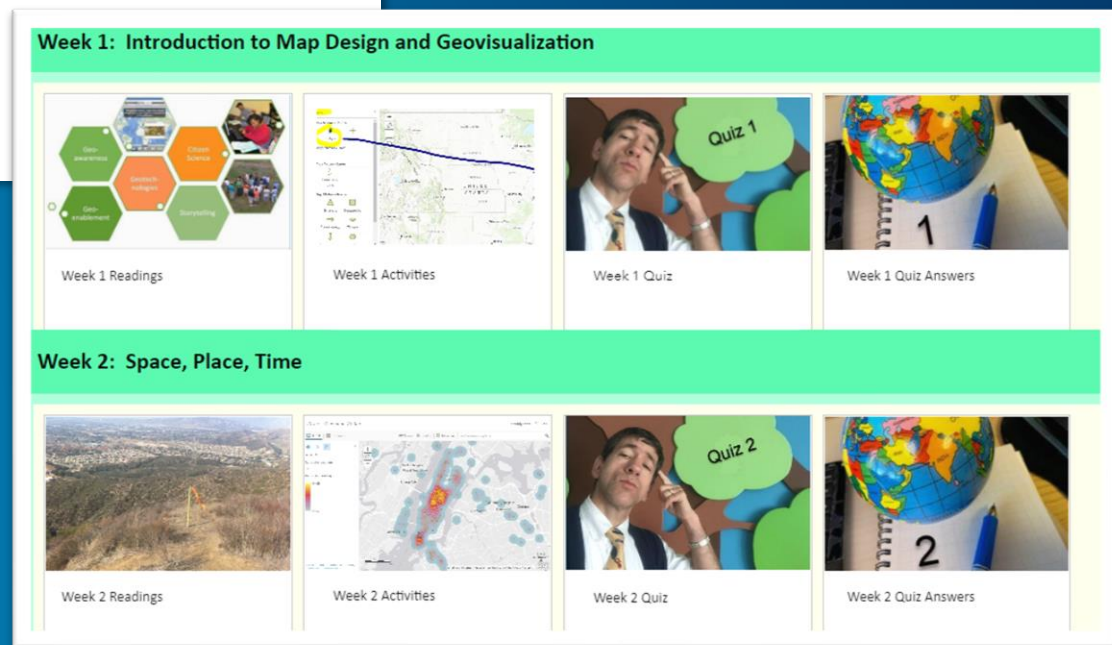
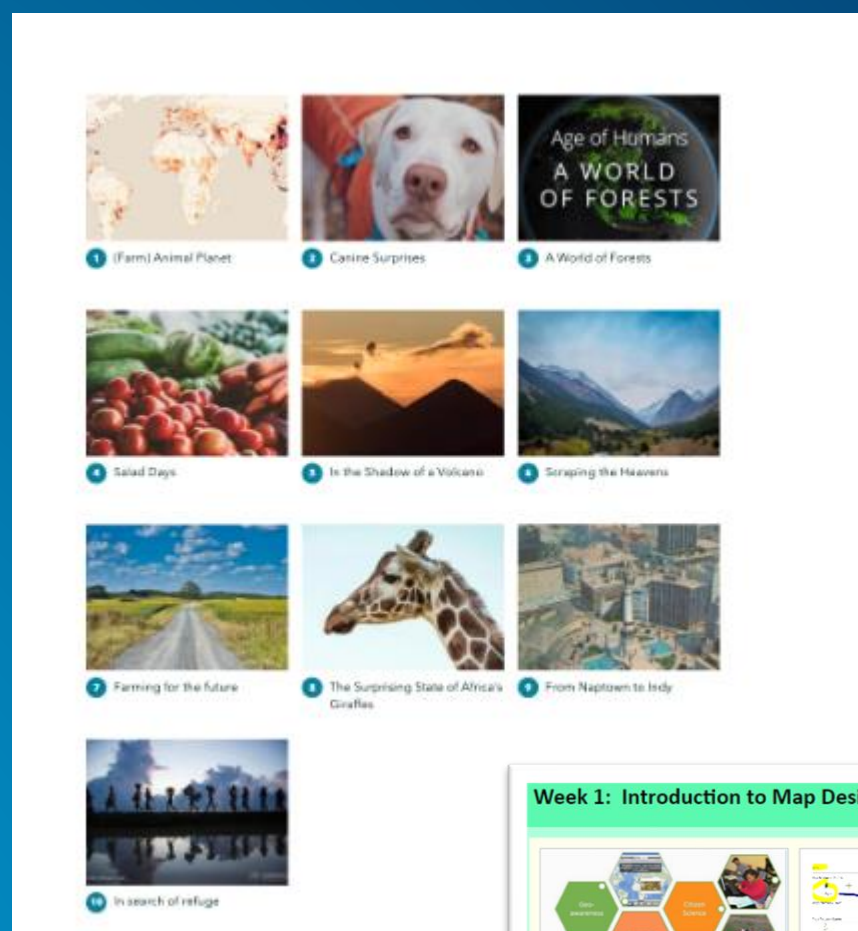
It is the app that best meets your need for field data and your organization's goals.

If it serves your purpose, it is the best app.



Analogy

- Instant App
- Story Map Collection
- Experience Builder





**1- Collect data
Using a field tool**



**2-Map data
Using ArcGIS Online
or ArcGIS Pro**

**3 field apps,
1 workflow**



**3- Analyze data
Using ArcGIS Online
and ArcGIS Pro**



**5 - Create and share
via web mapping app
such as story map**

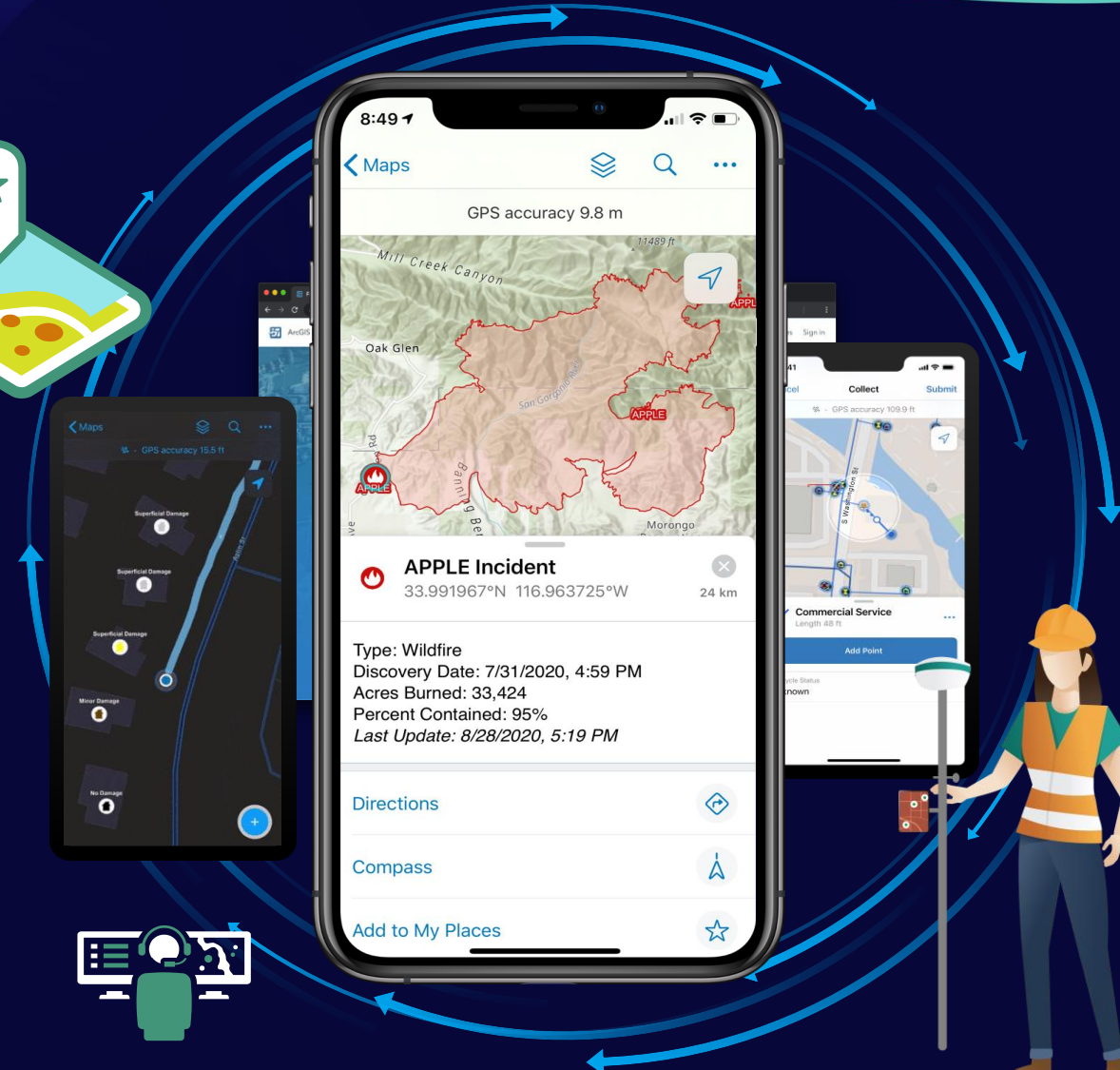


**4- Create
Dashboard**

ArcGIS Field Maps

All in one map-centric mobile experience, everywhere

- Easy to use
- Streamlined data collection & editing
- Relevant location focused content
- Office and Field Synchronicity
- Connected and Offline
- Part of the ArcGIS System



Preparing a web map for ArcGIS Field maps

- Ways to create a web map
 - Publishing from ArcGIS Pro (use Editable configuration)
 - Creates a web map and a hosted feature layer at the same time
 - Domains set up in ArcGIS Pro publish with the hosted feature layer
 - Create or publish web layers > Add to ArcGIS Online map viewer > Save
- Shared with the data collector(s)
- Settings
 - Use in ArcGIS Field Maps

Publishing options for web maps



ArcGIS Field Maps

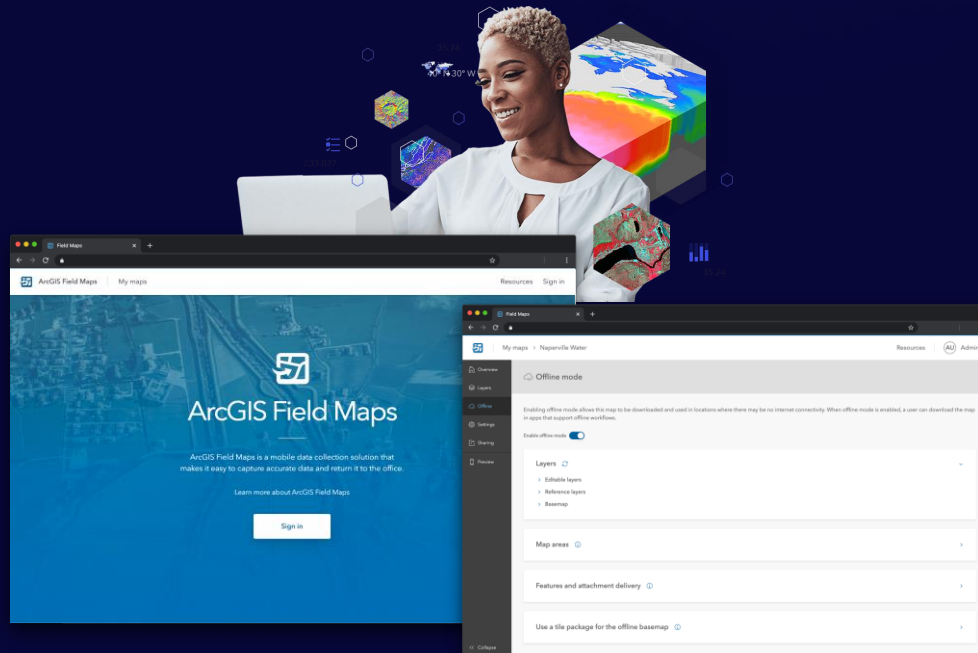
- 5 key capabilities in one app
 - Map Viewing
 - Map Markup
 - Data Collection
 - Asset inspection
 - Location Tracking



Field Maps Components

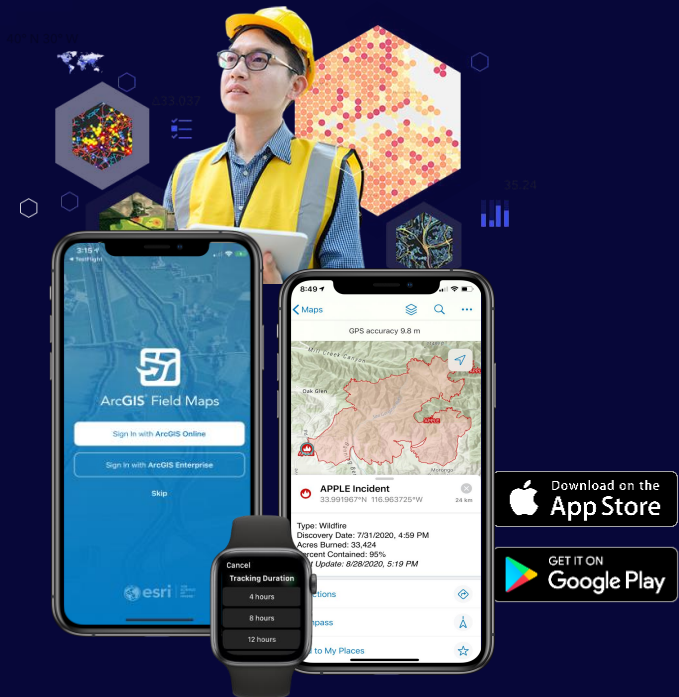
Prepare Maps for the Field

Field Maps web app

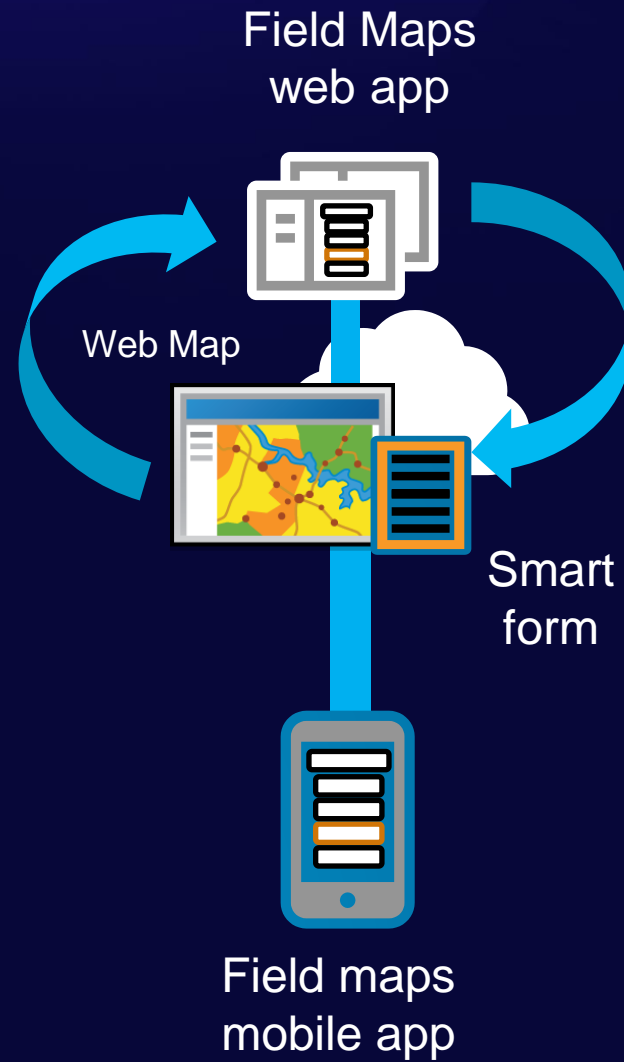


Do Work in the Field

Field Maps mobile app



Field Maps Components



Field Maps Web App

Prepare Maps for the Field

Who is it for?

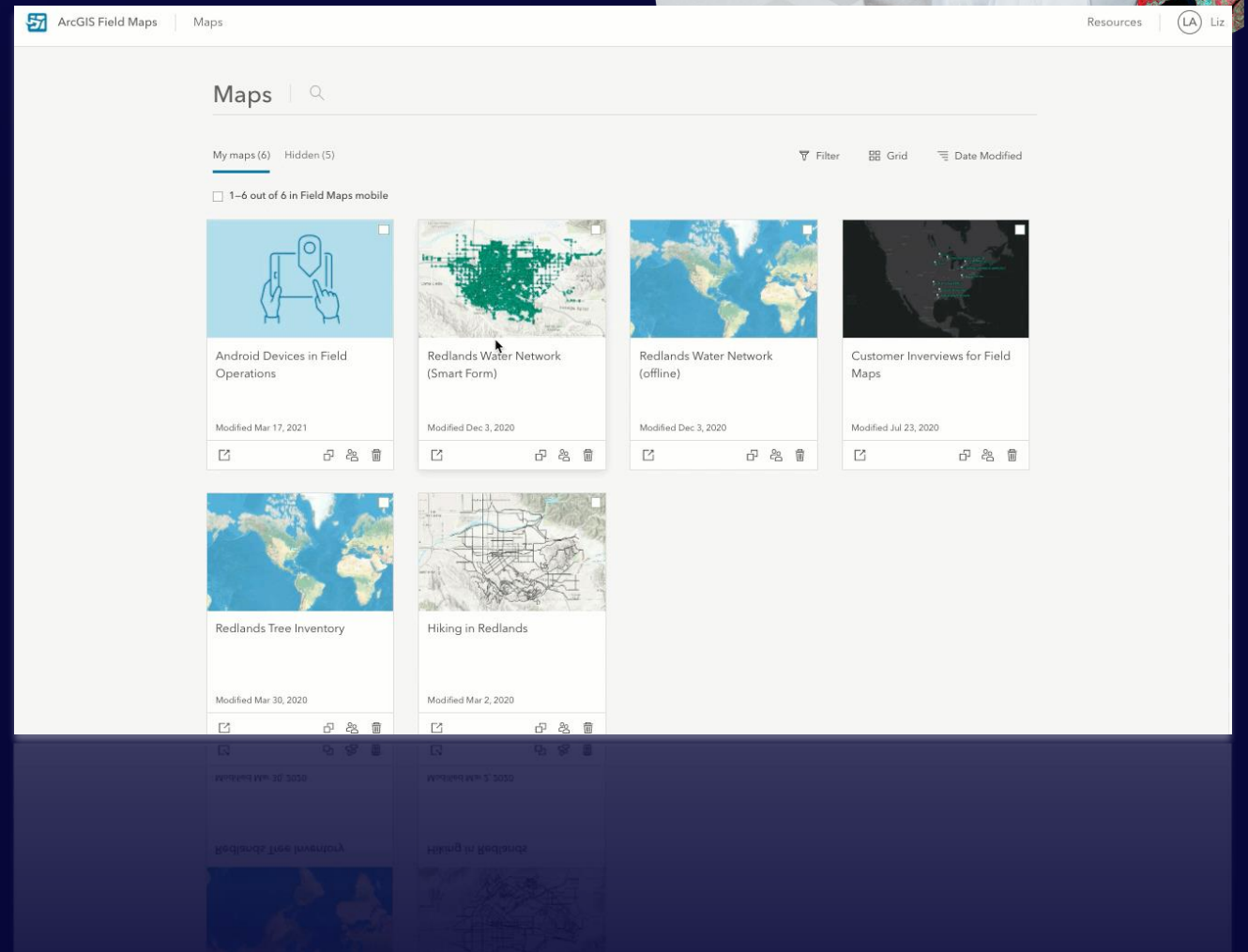
- Map Authors

Requirements

- ArcGIS Online or ArcGIS Enterprise 10.8.1+

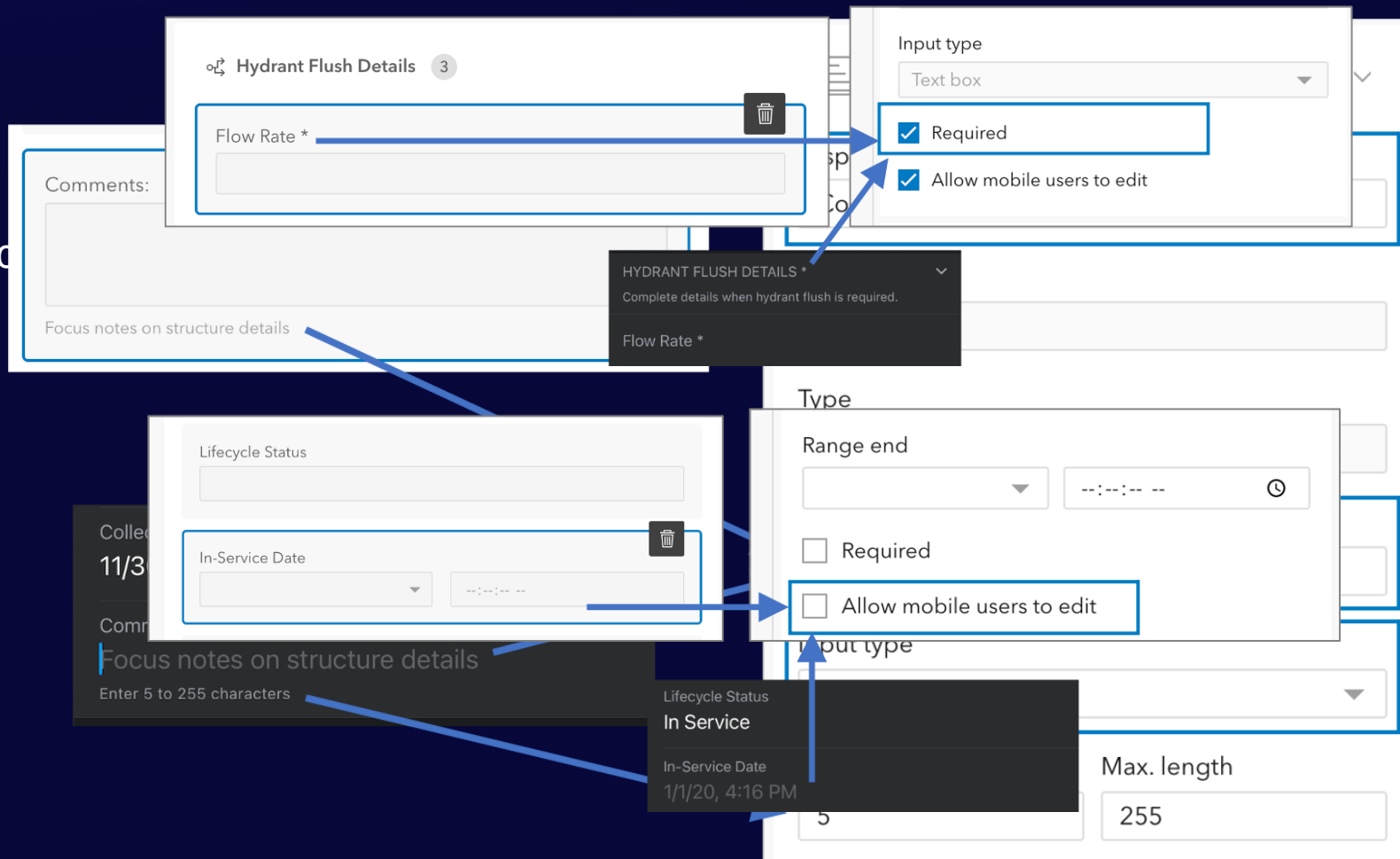
Capabilities

- Configure map properties & settings
- Configure your content (layers, tables)
- Manage feature templates
- Design smart forms
- Create geofences
- Manage offline experience
- Share and deploy maps
- Assign geofences



Smart form capabilities

- Use groups to organize fields
- Apply conditional visibility
- Format form and fields
- Placeholder
 - Example entry and format
 - Displayed when no value entered
- Description to guide form entry
- Required and Read Only fields



Field Maps Mobile App

Do Work in the Field

Who is it for?

- Mobile workers

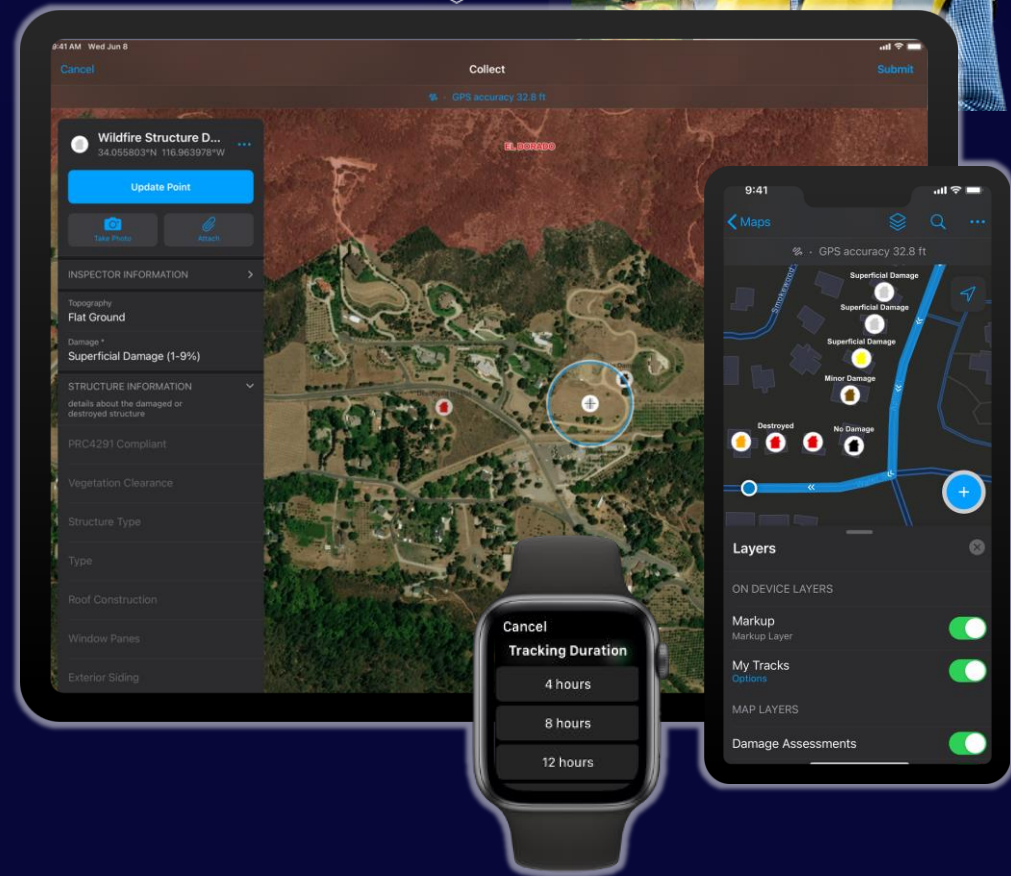
Requirements

- Android 8.0+ / iOS 14.5+

Key Capabilities

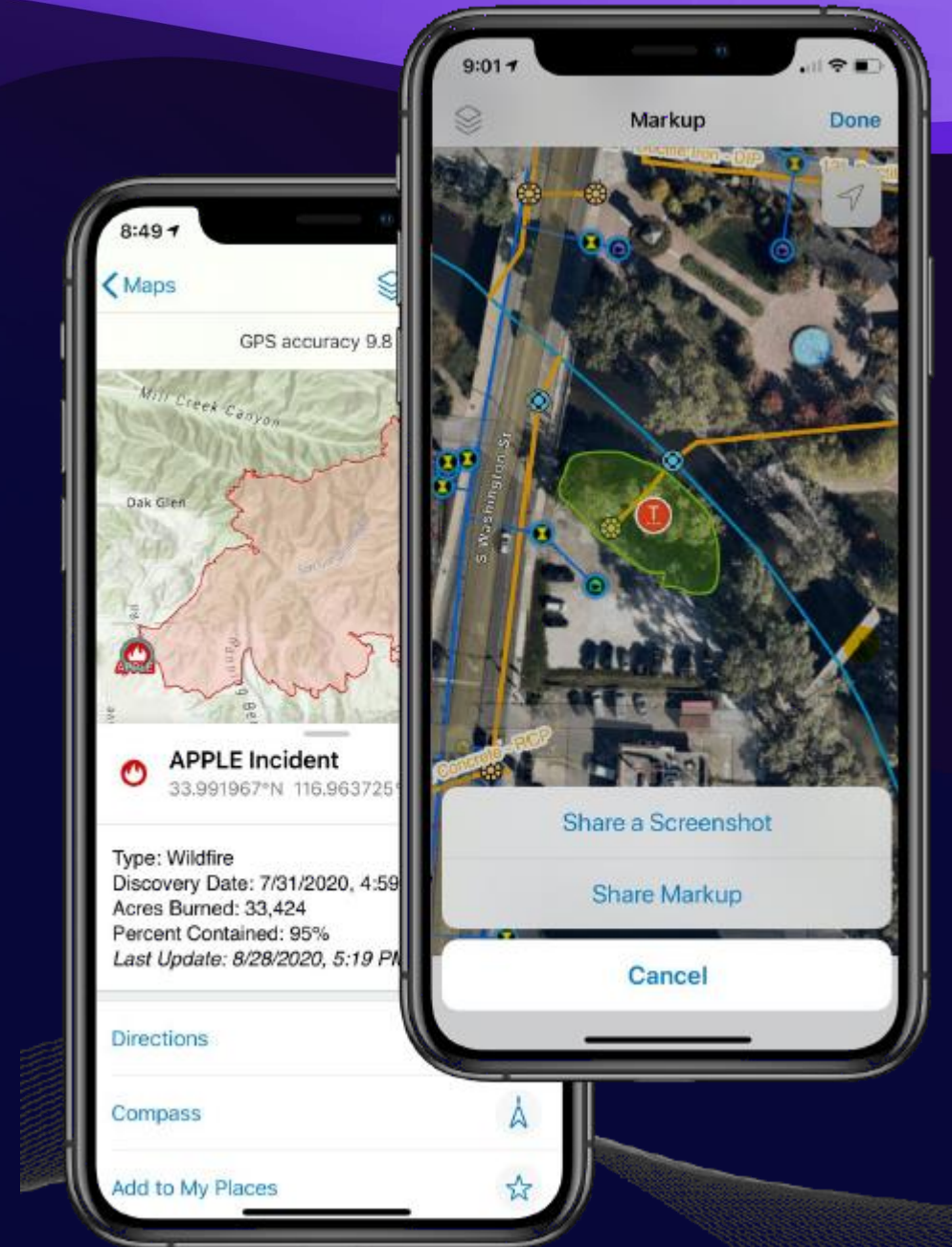
- View and search maps
- Receive location alerts
- View and trace utility networks
- Capture location with high accuracy GPS
- Complete smart forms
- Record and share location

Works Collected or Offline



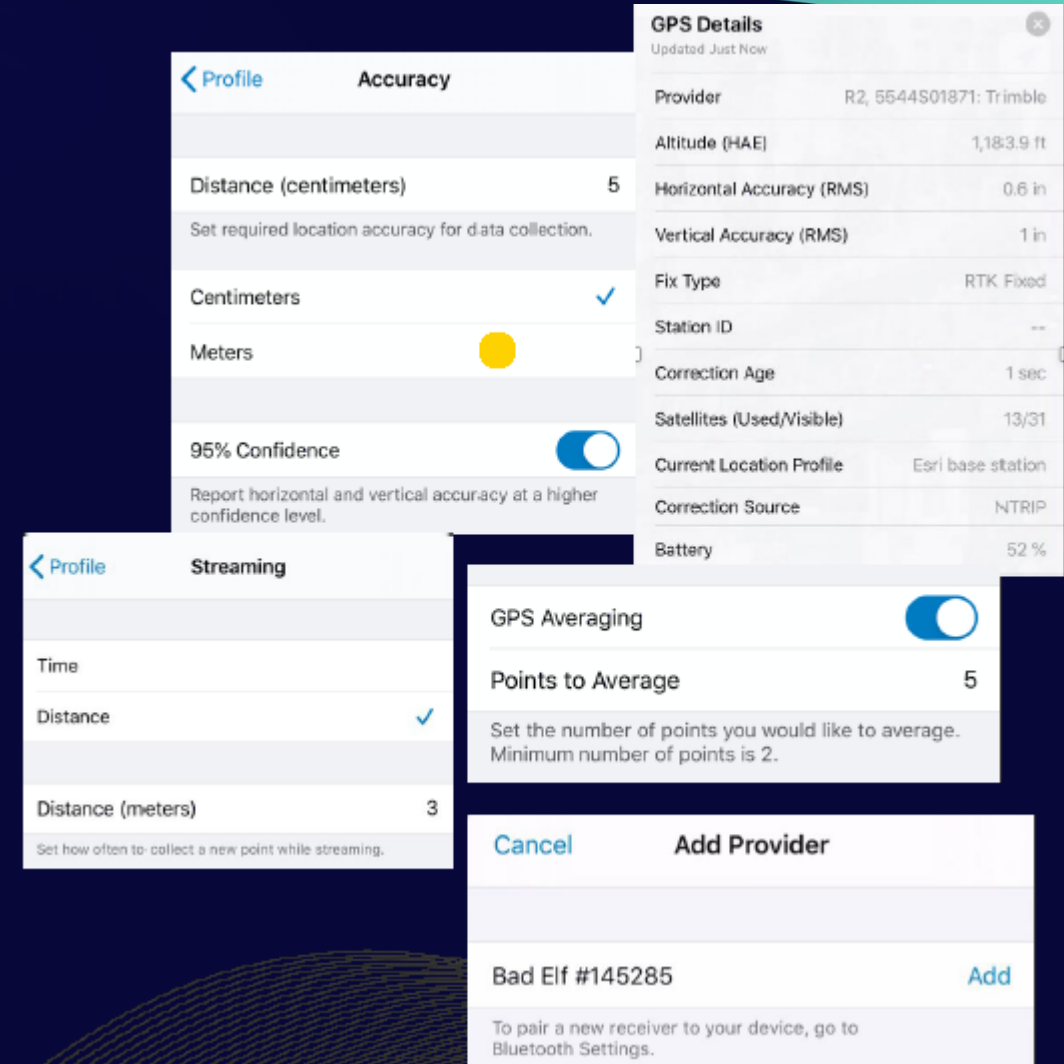
ArcGIS Field Maps mobile app capabilities

- Map Support
 - Advanced symbology/labeling (incl. Arcade)
 - Group layers, annotation
 - Popups (incl. Arcade)
- Map tools
 - Measure, Search
 - Download, Sync
 - Directions, Compass
- Map Markup
 - Notes, freehand sketch, markers
 - Share peer to peer, by email, to organization
 - Apple watch support, track for duration



ArcGIS Field Maps mobile app capabilities (cont.)

- High accuracy data collection
 - Capture points, lines, and polygons
 - Use external GPS or map
 - Single point/vertex capture or streaming
 - GPS averaging
 - GPS metadata
 - Required accuracy
- Robust smart form editing
- View , record, and share location tracks



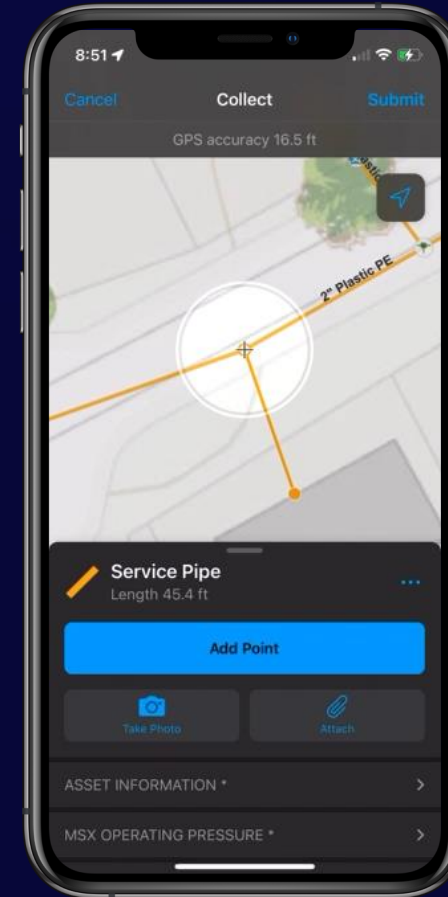
Field Maps: **What's New Highlights (Mar – June)**

- Smart Forms
 - Calculated Expressions
 - Contingent Values
 - Creating form elements
- Geofencing
 - Notify mobile workers when they enter or exit a location
 - Switch on/off location tracking when inside/outside an area
- Indoors
 - Include support for Indoor Maps and Indoor Positioning
- Linear Referencing
 - Find measurements along linear features
- GPS metadata for lines and polygons
 - Average/Worst horizontal and vertical accuracy, worst fix type, number of manual locations captured

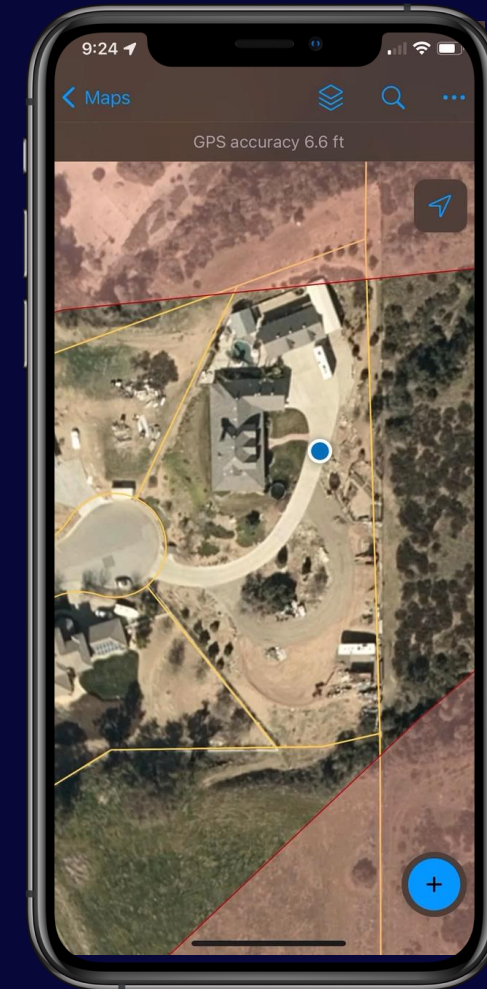
Calculated Expressions

Increase efficiency and minimize errors

- Built in Arcade scripting language
- Provide immediate feedback to mobile worker
- Works online and offline
- Calculations can use:
 - Information already collected in the form
 - Geometry, Attributes
 - Additional layers and tables in the map
 - Portal connection (user information, etc)
- Calculations can control form behavior:
 - Required fields
 - Conditional visibility in forms



Decode barcode

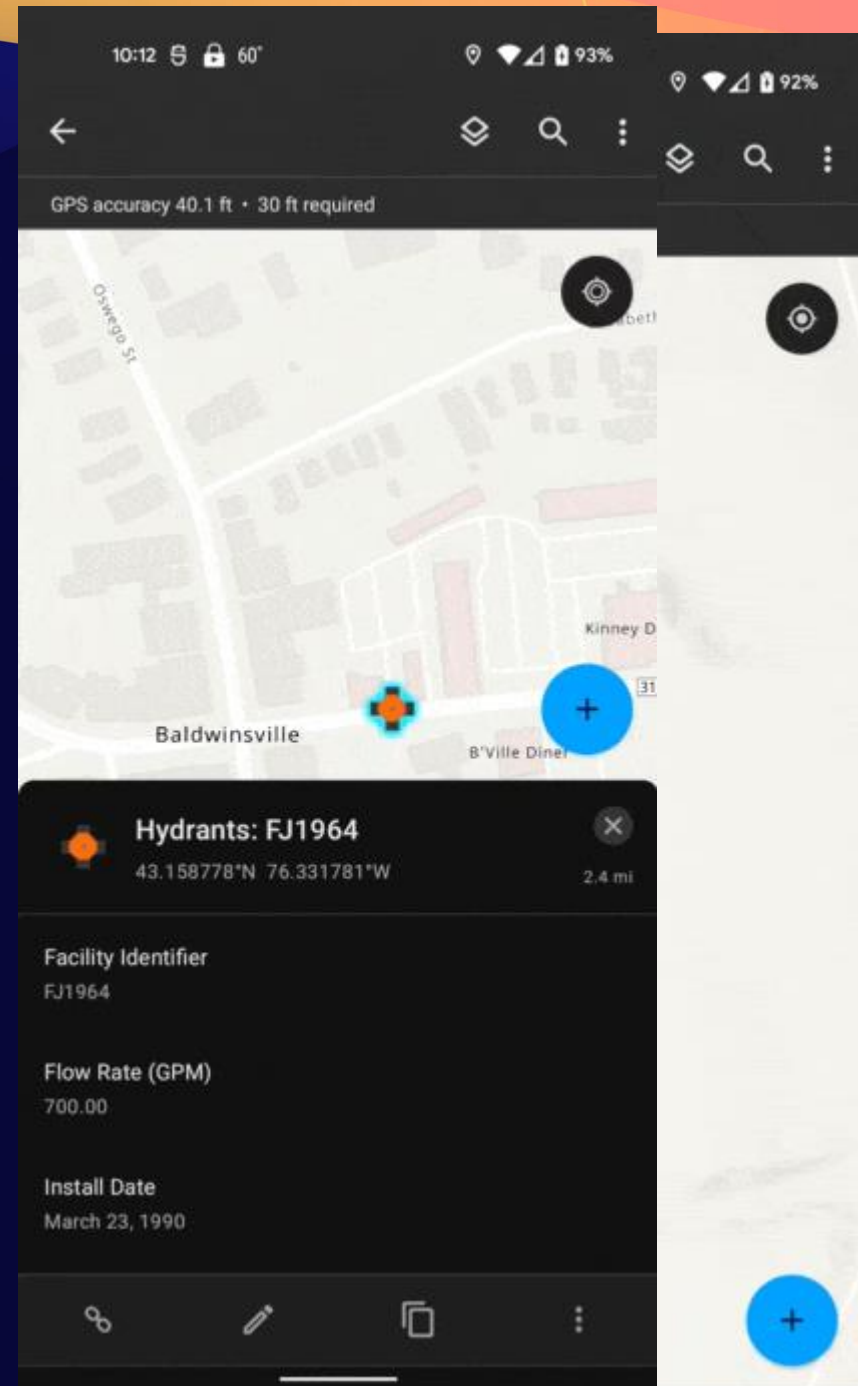


Fields from other layers

Calculated Expressions (cont.)

Increase efficiency and minimize errors

- Example: I am recording bird sightings and want to automatically store the region I'm in.
 - Fetch an attribute from an underlying polygon
- Example: I'm filling out an inspection report and need to provide my name.
 - Store a user's name, email address, or username
- And many more: [Blog article](#) Common Calculated expressions in Field Maps



Contingent Values

Using Field Groups

- **Improve form entry using contingencies**
 - Genus > Species > Common Name
- **Author in ArcGIS Pro**
 - Fields and Field Groups in ArcGIS Pro
- **Design Field Groups when authoring forms**
- **Supported offline**

TREE CLASSIFICATION

Common name:
No value

Genus:
Eucalyptus

Species:
No value

Recommended

Other

Common name: Done

Filter

No value ✓

RECOMMENDED

Red-Flowering Gum

White Ironbark

Silver Dollar Gum

Lemon-Scented Gum

OTHER

One of the following values may cause an invalid combination with other fields.

Holly Oak

Cork Oak

Coast Live Oak

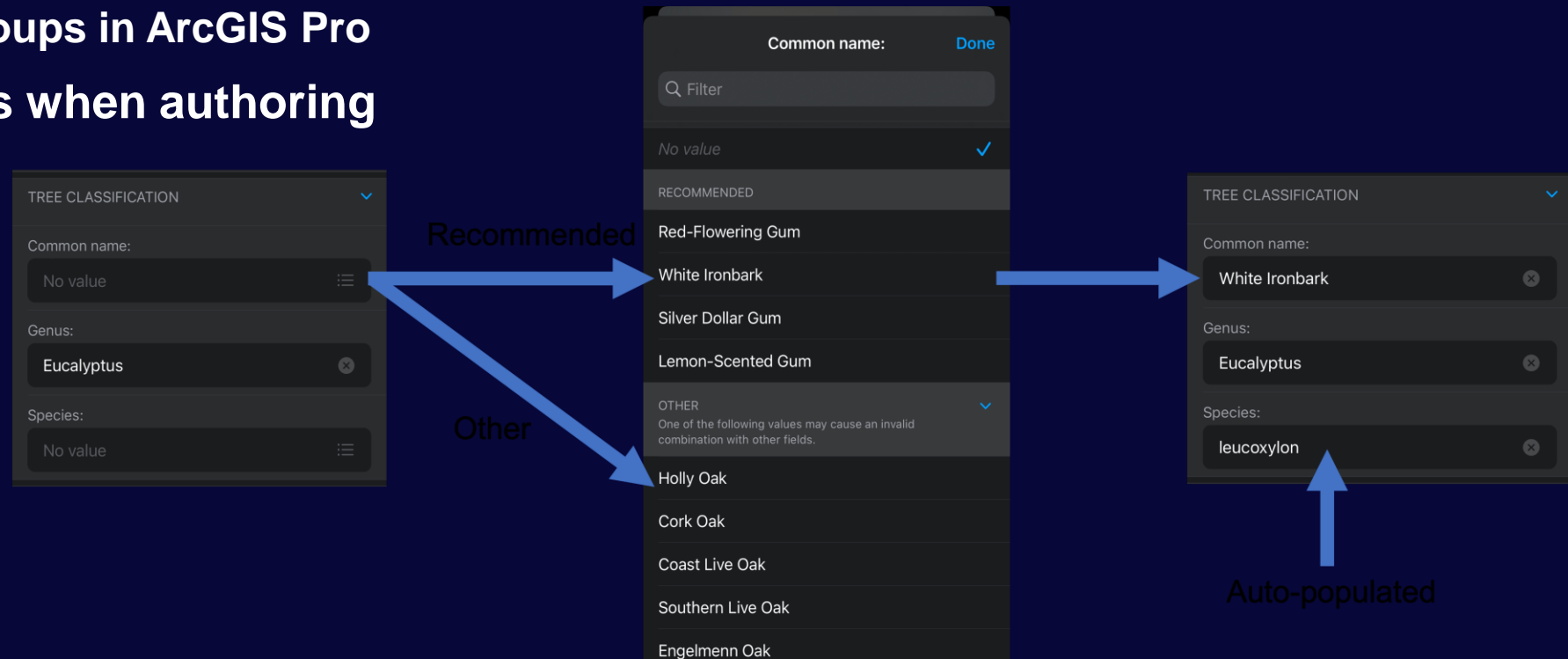
Southern Live Oak

Engelmenn Oak

Contingent Values

Using Field Groups

- **Improve form entry using contingencies**
 - Genus > Species > Common Name
- **Author in ArcGIS Pro**
 - Fields and Field Groups in ArcGIS Pro
- **Design Field Groups when authoring forms**
- **Supported offline**



Geofencing

Real-time Location Alerts

- Notify mobile workers when they enter or exit a location
 - Supported online or offline
 - When app is backgrounded
- Author Geofence Location Alerts
 - From an existing map layer (polygon layer*)
 - Alert details:
 - Name
 - Map Layer
 - Support On Enter and/or On Exit Geotriggers
 - Message can include text and field values from feature (including attribute expressions)
- Requires acknowledgement of location alerts when opening

The screenshot displays the Field Maps application interface for configuring geofences. The main map shows an aerial view of a facility with a yellow dashed geofence boundary. The left sidebar contains a 'Geofences' panel with two entries: 'Track within' (Location sharing - Facility) and 'Facility Contact' (Notification - Facility). The right sidebar shows the configuration for a 'New geofence' with the following details:

- Name***: Facility Safety Contact
- Layer***: Facility
- Type**: Location alert
- On enter**: (checked)
- Message***: On Duty: {SafetySupervisor}, {ContactNumber}
- On exit**: (checked)
- Message***: Now leaving {FacilityName}

A notification card is overlaid on the map, displaying the following information:

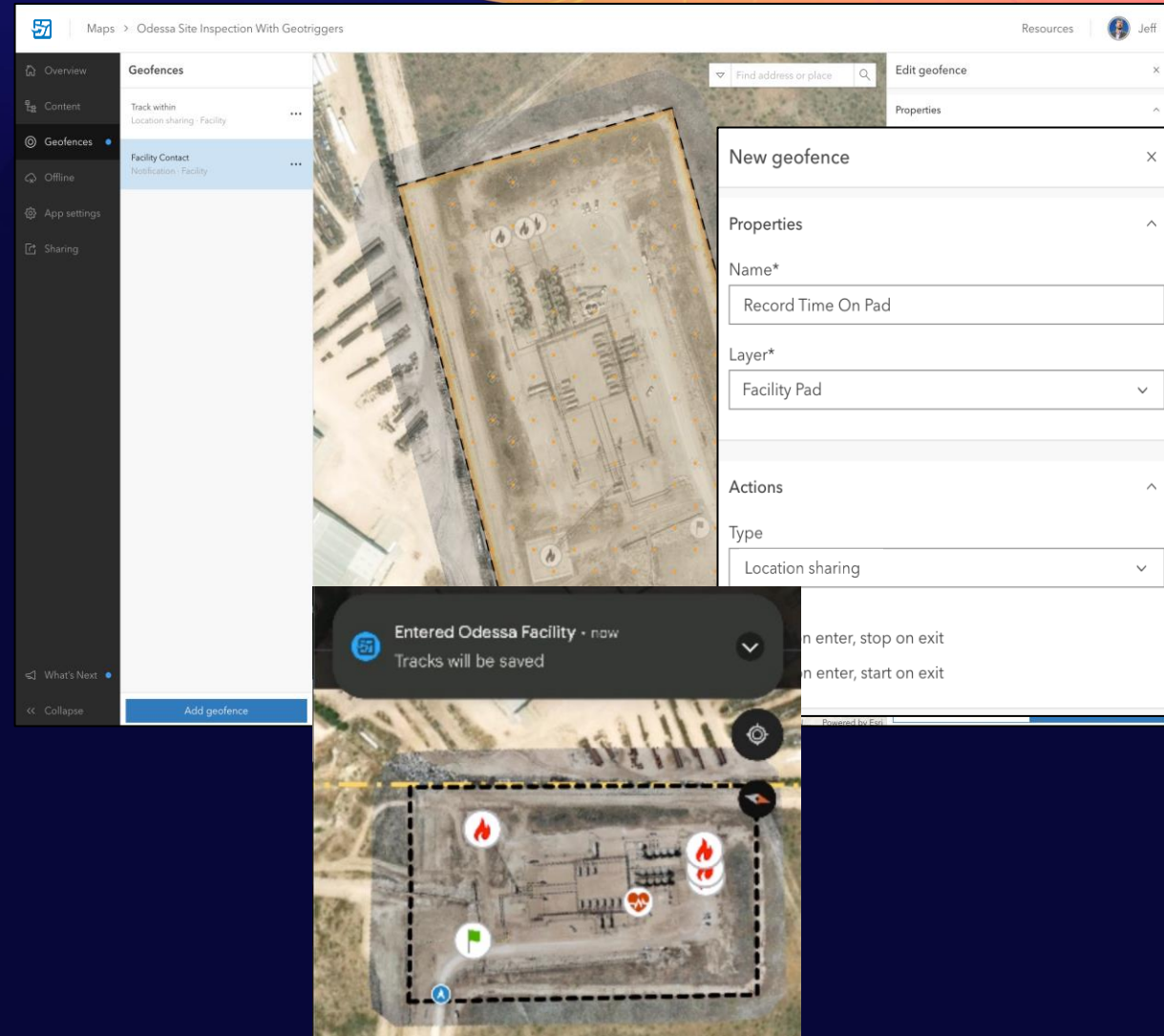
- Field Maps • now
- Entered Odessa Facility
- Supervisor: Sam Rosario (909)-369-8878

The bottom portion of the screenshot shows the same facility map with several icons overlaid on the geofence: a red fire icon, a red heart icon, a green flag icon, and a blue location pin icon.

Geofencing

Control location sharing

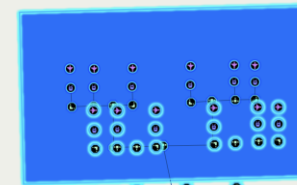
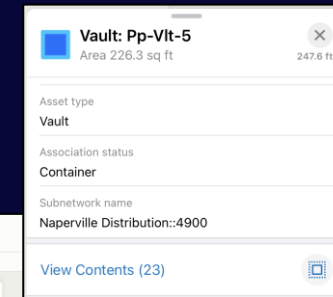
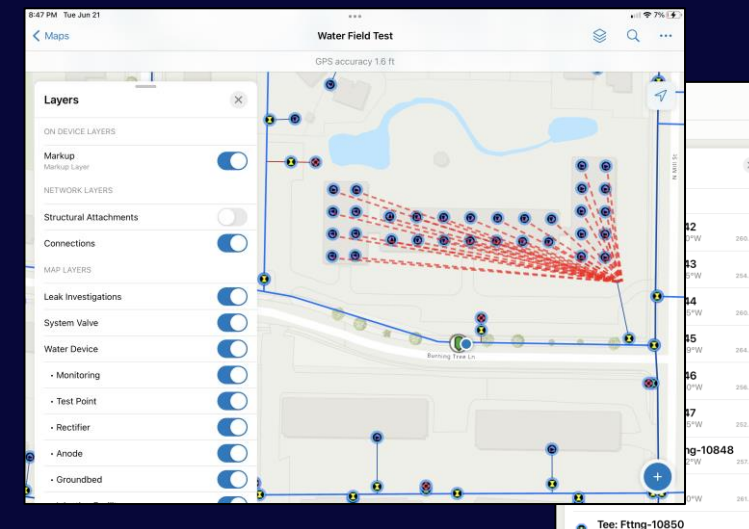
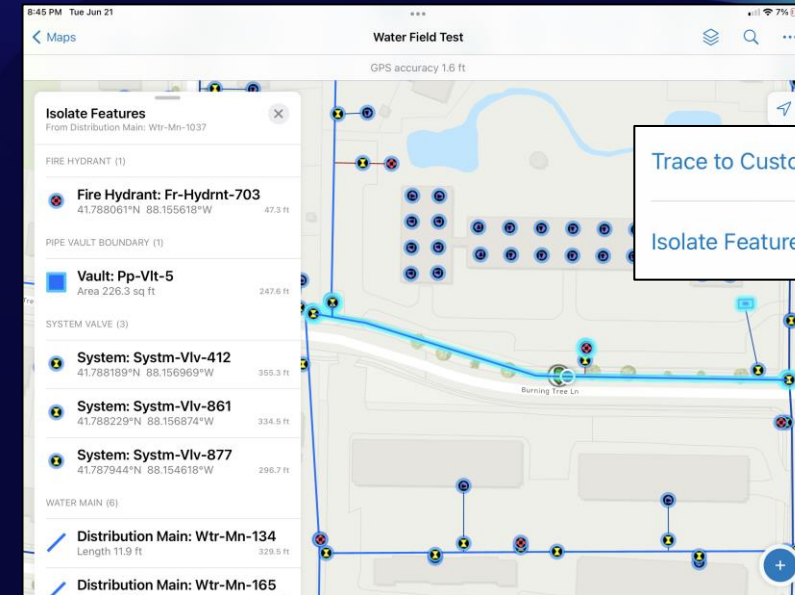
- Automatically start/stop location sharing
 - Supported online or offline
 - When app is backgrounded
- Author Geofence Action
 - From an existing map layer (polygon layer*)
 - Sharing behavior:
 - Start on enter, stop on exit
 - Stop on enter, start on exit
- Requires location sharing for mobile worker



Utility Networks

Connected viewing and tracing

- Support for Electric, gas, water, storm water, and wastewater networks:
 - View network connectivity and associations
 - View contained assets
 - Trace the network
- Published from ArcGIS Pro
 - Read-only/connected-only support
 - Include Named Trace configurations
- Requires
 - ArcGIS Enterprise 10.9 or higher
 - Utility Network User Type Extension license for tracing



High Accuracy Data Collection

GPS Metadata

- **Metadata fields**

- **Point layer fields include support for GPS averaging**
- **Summary statistics for lines and polygons**
 - **Average/Worst horizontal and vertical accuracy of all GPS locations**
 - **Worst fix type of all GPS locations**
 - **Number of manual locations**
- **Fields hidden during collection**
- **Fields not directly editable in Field Maps**

- **Adding GPS metadata fields**

- **When creating a new feature layer**
- **Existing Layers:**
 - **ArcGIS Pro**
 - **Python notebook**
<https://github.com/Esri/field-maps-scripts/>

Field alias	Field name	Field type	Domain
Position source type	ESRIGNSS_POSITIONSOURCE	Short	ESRI_POSITIONSOURCE_TYPE_DOMAIN o 0-Unknown o 1-User defined o 2-Integrated (System) Location Provider o 3-External GNSS Receiver o 4-Network Location Provider
Receiver Name	ESRIGNSS_RECEIVER	String (50)	
Latitude	ESRIGNSS_LATITUDE	Double	
Longitude	ESRIGNSS_LONGITUDE	Double	
Altitude	ESRIGNSS_ALTITUDE	Double	
Horizontal Accuracy (m)	ESRIGNSS_H_RMS	Double	
Vertical Accuracy (m)	ESRIGNSS_V_RMS	Double	
Fix Time	ESRIGNSS_FIXDATE	Date	
Fix Type	ESRIGNSS_FIXTYPE	Short	ESRI_FIX_TYPE_DOMAIN o 0-Fix not valid o 1-GPS o 2-Differential GPS o 4-RTK Fixed o 5-RTK Float
Correction Age	ESRIGNSS_CORRECTIONAGE	Double	
Station ID	ESRIGNSS_STATIONID	Short	

Point layer metadata

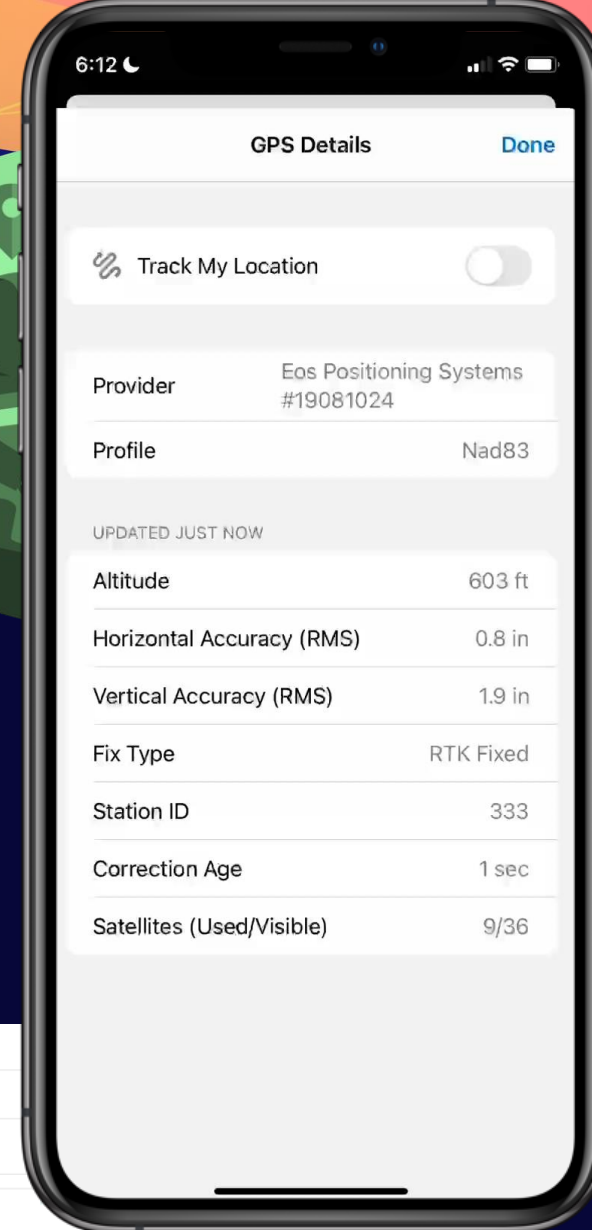
Create a feature layer

Options

Add GPS metadata fields
Add fields to point layers that support capturing GPS receiver information.

Enable Z-values
Allows modeling point, polyline, and polygon features in 3D.

Add GPS metadata fields to all layer types



Full list of current GPS values

ArcGIS Field Maps Workflow



Create a map for field data collection

Share your map for use in Field Maps

Collect data

Inspect, verify, sync



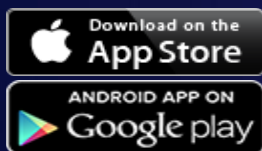
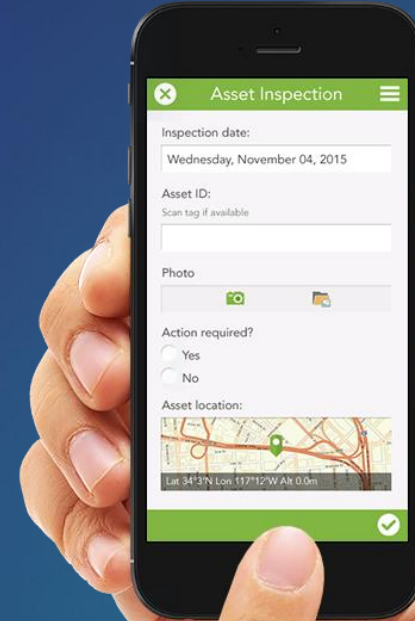
ArcGIS Survey123



Form-centric field data collection

Leverages Smart forms

Analyze results immediately



Survey123 workflow



1- Ask Questions
(Design & Publish)

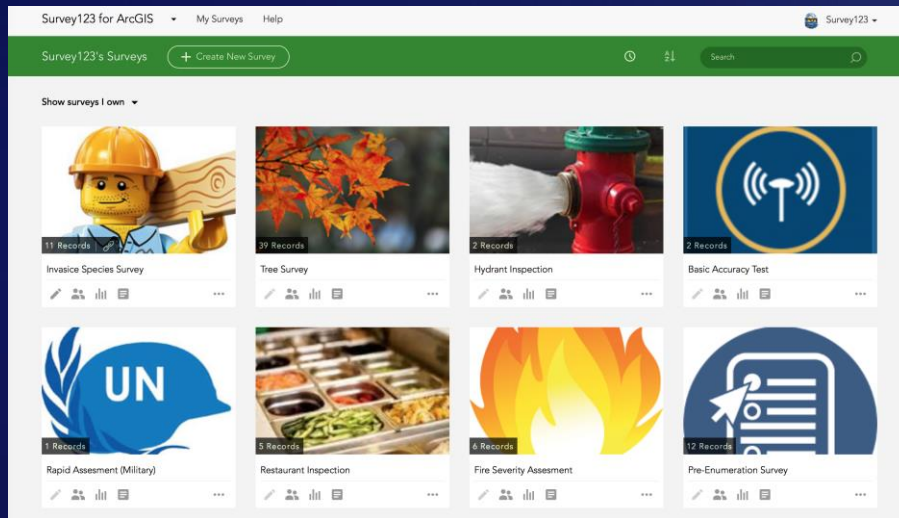


2- Get Answers
(Capture Data)



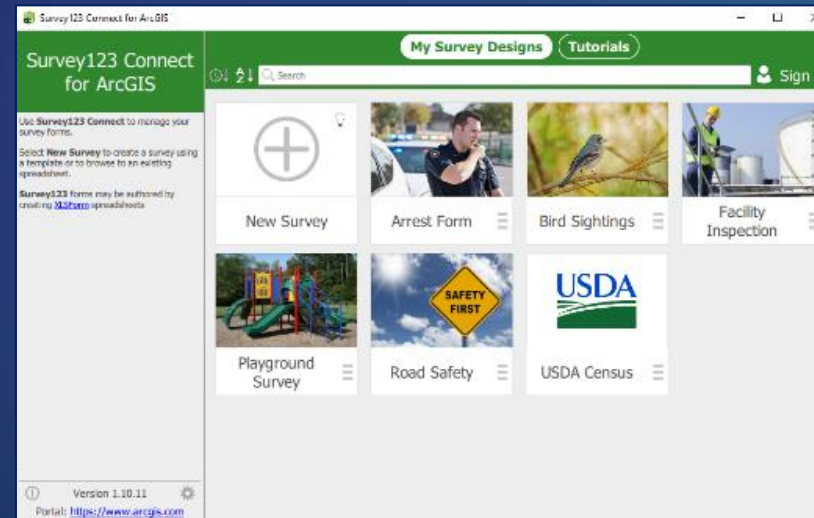
3- Make Decisions
(View & Analyze)

Survey123 Components



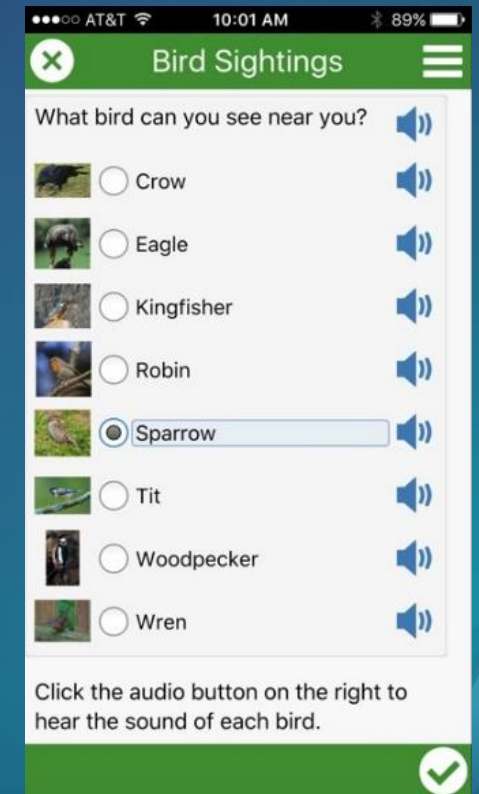
Survey123 website

- Author Simple Surveys
- Complete Simple Surveys
- Manage Access
- Analyze Results



Survey123 Connect – Author Complex Surveys

Survey123 for ArcGIS – Complete Surveys



Manage Your Surveys

Reporting Tools

Survey123 for ArcGIS - My Surveys Help

Joseph's Surveys + Create a New Survey Search

All surveys

- Survey of 2017 Solar Eclip... (Record(s): 544)
- Pedestrian Friendliness (Record(s): 0)
- 19 June 2017 Campus Fi... (Record(s): 0)
- 19 June 2017 New Educ... (Record(s): 1)
- Cloud Observations (Record(s): 6)
- Pedestrian Counts 2 (Record(s): 0)
- Vegetation Mapping at a... (Record(s): 0)
- Pedestrian Counts (Record(s): 0)

University Campus Vegetation Mapping Survey

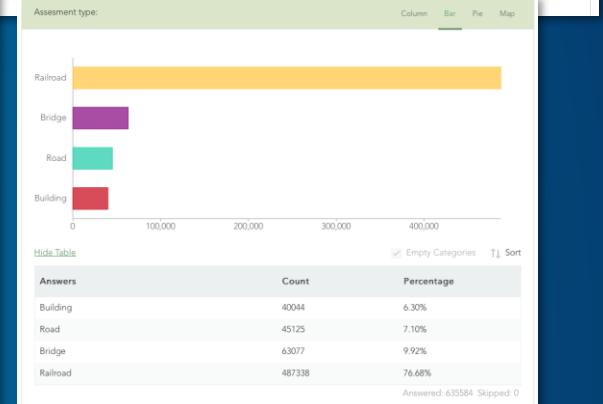
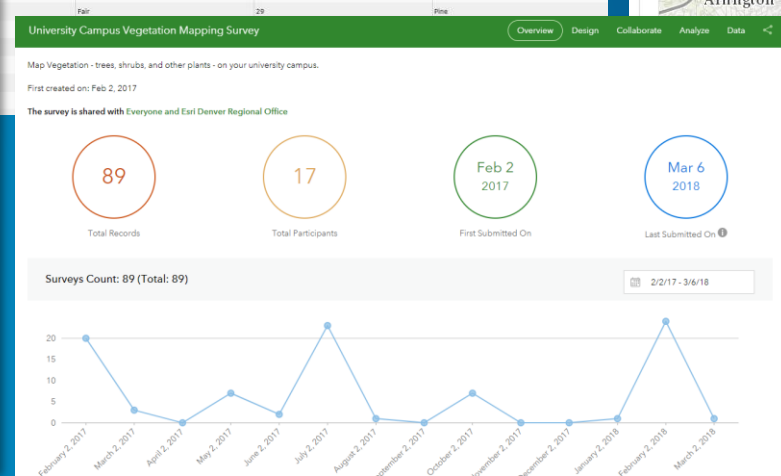
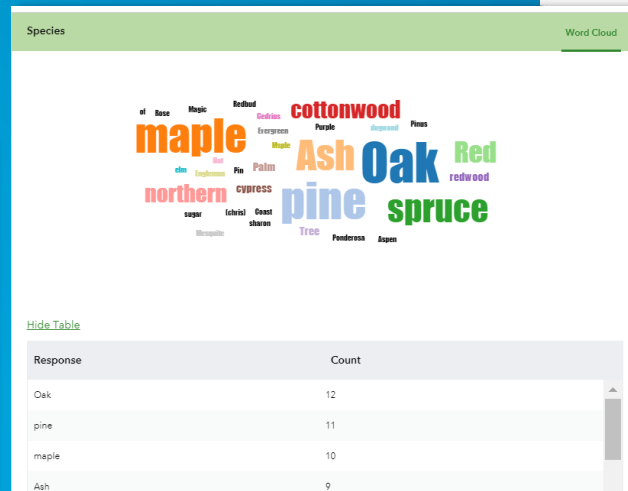
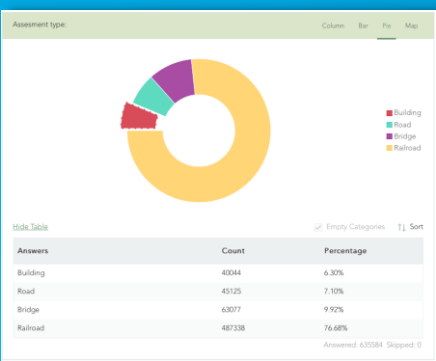
Map Vegetation - trees, shrubs, and other plants - on your university campus.

Condition	Height in Meters	Species
Good	7	Purple Ash
Fair	5	Maple
Fair	30	Pandora
Fair	25	Pine

What is the severity of the damage?

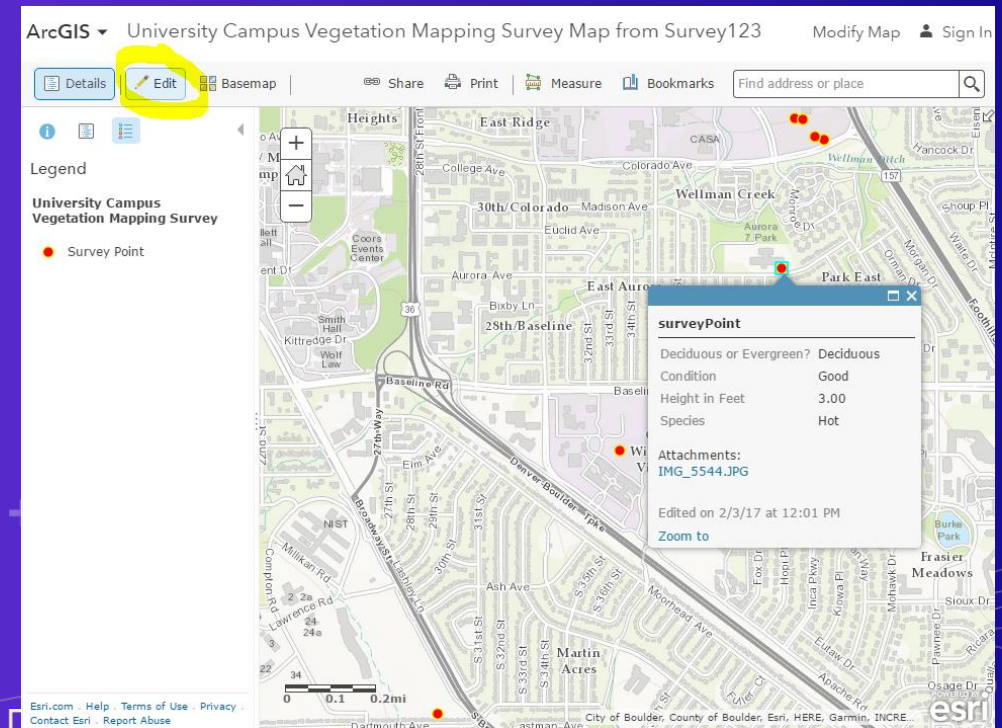
Column Bar Pie Map

A map of Arlington, Washington, showing various streets and landmarks. Red dots indicate the locations of damage assessments.



Yes, you can!

- Download Survey123 data
- Use Survey123 with higher precision GPS
- Citizen Science enable your surveys
- Use the Survey123 app or NOT use it! (the app looks a bit nicer than the web browser display, and the app allows for off-line data collection)
- Add data to your web map in a browser



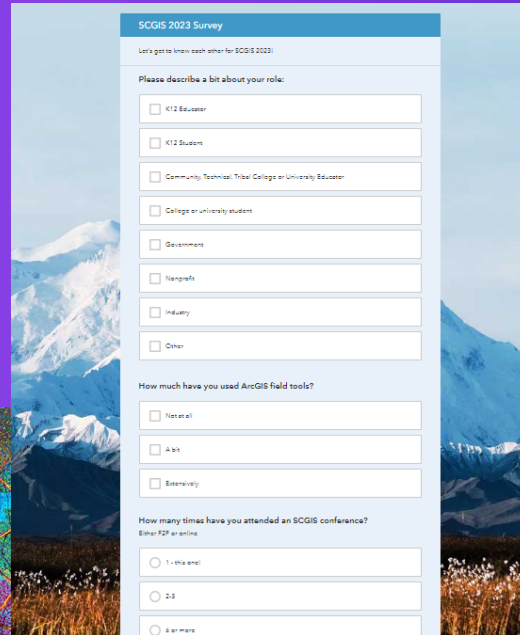
Survey and dashboard of our workshop participants

Survey:

<https://survey123.arcgis.com/share/8a25d34b60fd4475b43d26f3eb427903>

Dashboard:

<https://www.arcgis.com/apps/dashboards/a14da7c948a74c528ddd3c1587576866>



SCGIS 2023 Survey

Let's get to know each other for SCGIS 2023!

Please describe a bit about your role:

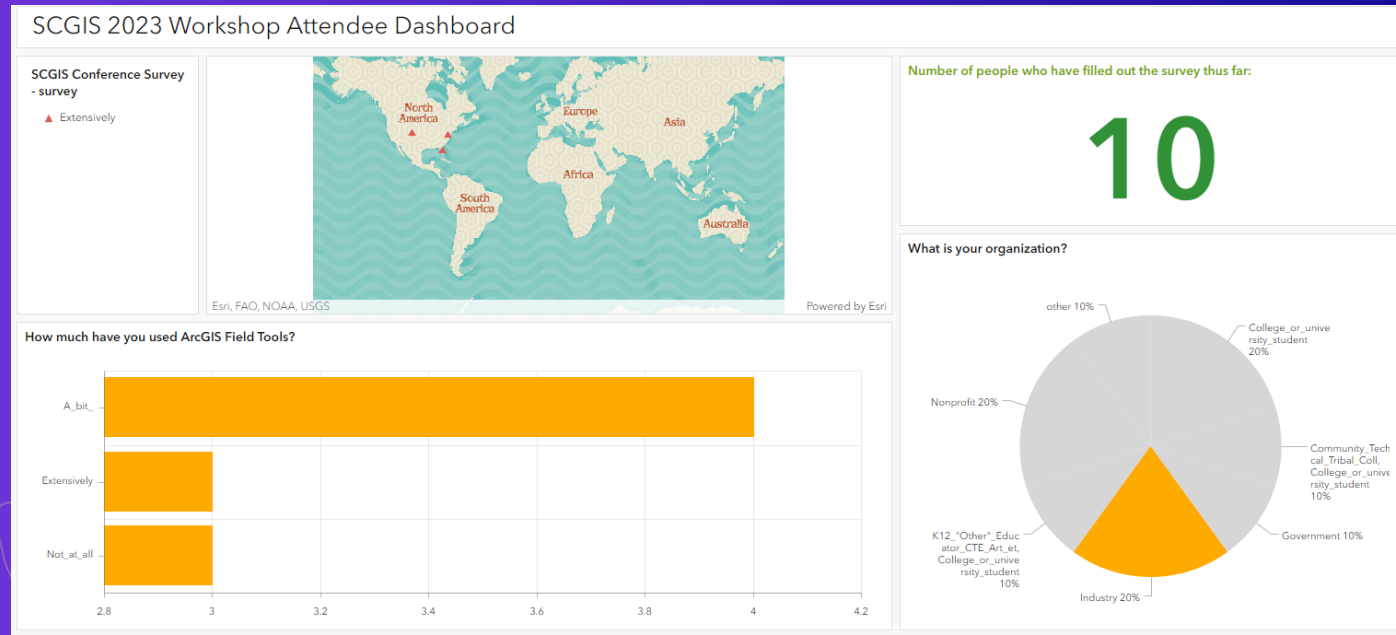
- K12 Educator
- K12 Student
- Community Technical, Tribal, College or University Educator
- College or University student
- Government
- Nonprofit
- Industry
- Other

How much have you used ArcGIS field tools?

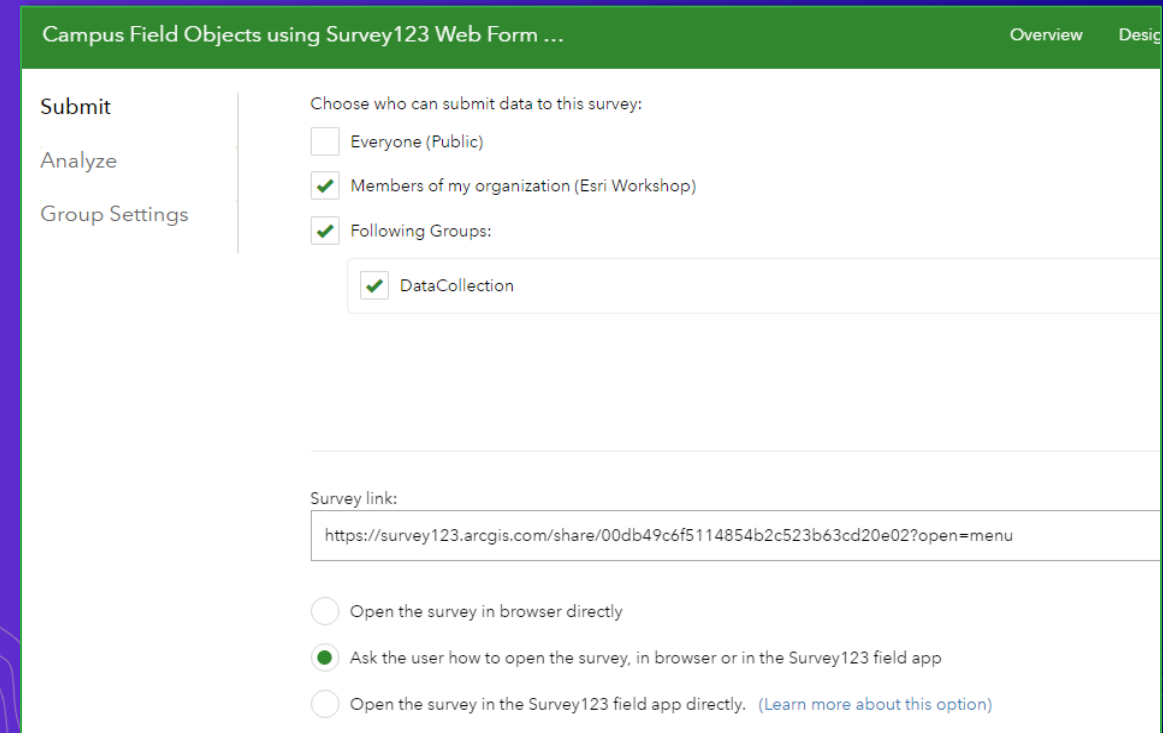
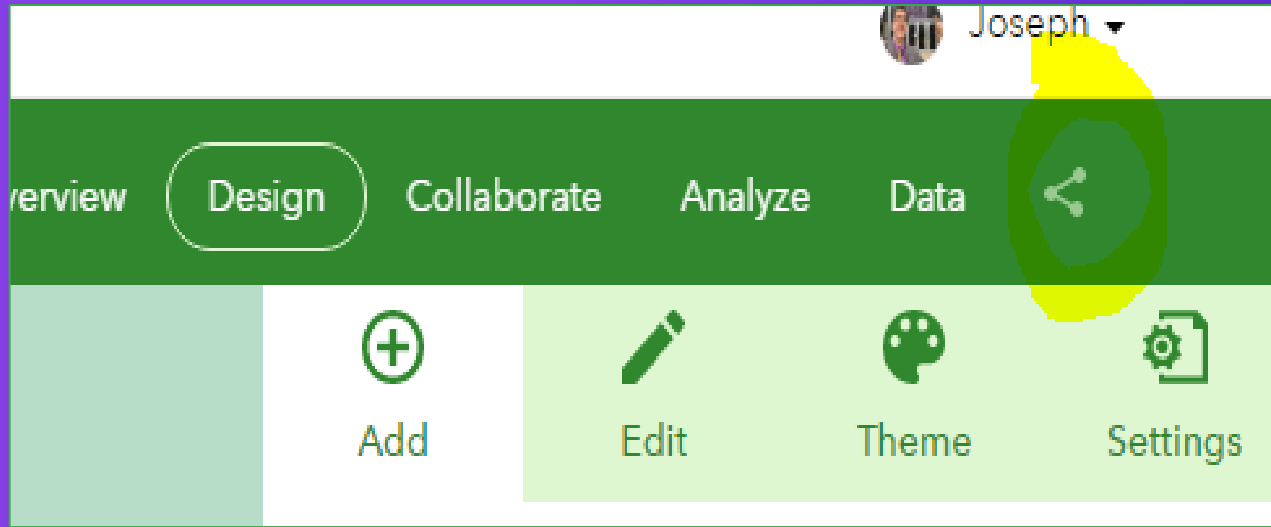
- Never at all
- A bit
- Extensively

How many times have you attended an SCGIS conference? Either K2F or online

- 1 - 5th grad
- 2-4
- 5 or more



+ How to citizen science enable your surveys



2 ways to create a Survey123


Today we will use this method



Create a New Survey

Using the web designer


- Get started quickly
- Best for simple surveys
- Author your survey graphically



Get Started

Using Survey123 Connect

- Using a desktop application
- Full smart form capabilities
- Author through XLSForms (spreadsheet)



Get Started

How to create a survey using Survey123 Connect (Excel) method

1. [Survey123.arcgis.com](https://survey123.arcgis.com) > Build survey using Survey123 Connect.
2. Build survey using worksheets.
3. Publish survey to ArcGIS Online; test; create map from survey; save; share.
4. Collect data in the field using Survey123 app on smartphone (or web browser if crowdsourced).

type	name	label	hint
date	<u>ReportDate</u>	Date	
time	<u>ReportTime</u>	Time	
begin group	basic	Collect Field Data:	
<u>select_one LivNonLiv</u>	LivNonLiv_1	Living or <u>Non Living</u> ?	
<u>select_one ObjectType</u>	ObjectType_1	Select Object Type:	
end group			
integer	<u>Height_m</u>	<u>Height_m</u>	Give height in meters rounded to nearest integer
<u>geopoint</u>	Location	Location	
image	Photograph	Photograph	

<u>list_name</u>	name	label	image	<u>label::language1</u>	Object
<u>LivNonLiv</u>	Living	Living			
<u>LivNonLiv</u>	<u>Non_Living</u>	<u>Non Living</u>			
<u>ObjectType</u>	tree	tree			Living
<u>ObjectType</u>	shrub	shrub			Living
<u>ObjectType</u>	<u>other_living</u>	other living			Living
<u>ObjectType</u>	chair	chair			<u>Non_Living</u>
<u>ObjectType</u>	bench	bench			<u>Non_Living</u>
<u>ObjectType</u>	trashcan	trashcan			<u>Non_Living</u>
<u>ObjectType</u>	<u>other_nonliving</u>	other nonliving			<u>Non_Living</u>

Open a web browser and go to this survey for campus vegetation mapping:

<https://bit.ly/2pbnWDT>



Campus Vegetation Mapping

Map Vegetation - trees, shrubs, and other plants - on your campus.

Deciduous or Evergreen? *
Indicate whether the plant is deciduous or evergreen.

-Please Select-

Condition *
Indicate how healthy the plant is:

Good

Height in Meters *
Indicate the height in meters to nearest integer.

Please input a number between 1 and 150

Species
Indicate the tree species (maple, ash, locust, spruce, etc.)

Location *

A map interface showing a satellite view of a campus area. A blue pin is placed on a tree. A search bar at the top says "Find address or place". Below the map, it shows "USDA, FSA | San, NARS, Garmin" and "Powered by Bing". Coordinates are displayed as "Lat: 40.00392 Lon: -105.26684".

Lat: 40.00392 Lon: -105.26684

Submit Photograph Here
Submit your photograph here (max size = 10 MB)

[Click here to upload image file. \(<10MB\)](#)

After filling in fields, verify results that you have submitted are on this map:

<https://arcg.is/1bPeTG>

ArcGIS ▾ A University and School Campus Vegetation Mapping Survey Map

Details | Edit | Basemap | Share | Print | Measure | Bookmarks | Find address or place

Legend

University Campus Vegetation Mapping Survey

- Survey Point

(1 of 2)

surveyPoint	
Deciduous or Evergreen?	Evergreen
Condition	Fair
Height in Meters	29.00
Species	Pine

Attachments:
[image.jpeg](#)

Edited on 2/3/17 at 12:00 PM

[Zoom to](#)

Let's build this example: Survey, ArcGIS Online Map, Story Map, Dashboard

<https://community.esri.com/community/education/blog/2019/08/27/how-walkable-is-your-community>

What is the Walkability of this Location?

What is the Walkability of this location?

- Pedestrian Friendly
- Pedestrian Unfriendly

Map data © OpenStreetMap contributors, CC-BY-SA | Esri, FAO, NOAA, USGS. Powered by Esri.

1 of 3

The last 3 points submitted to the survey.

This point was rated as Excellent for Pedestrians

What percentage of surveyed points are pedestrian friendly and

- Pedestrian Unfriendly 23.03%
- Pedestrian Friendly 74.86%
- Other 2.12%

Last update: 29 seconds ago

1042

— Total number of surveys submitted as of 8/15/2022

5

data points were added last month.

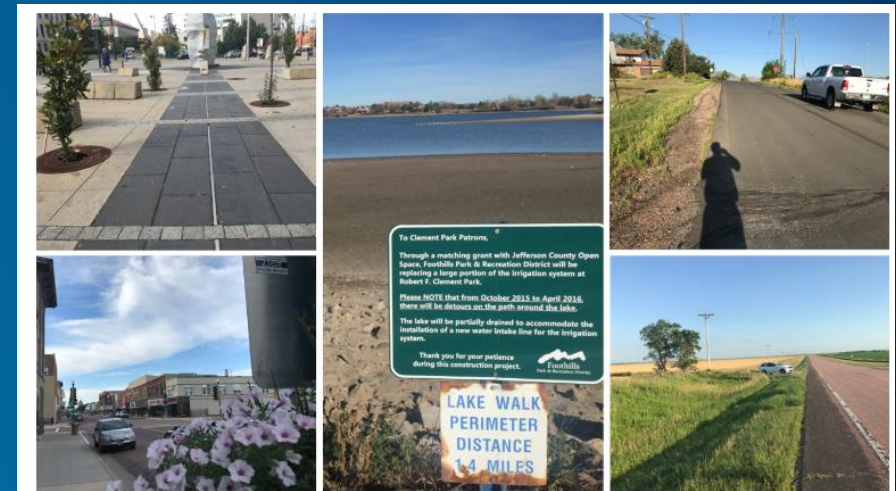
Would you consider these locations to be walkable or not? Why?

What are the characteristics of the site?

Coastal Alley around the beach - excellent for walking	621
Former road now turned to walking an biking alley	307
No Path Or Sidewalk	232
Poor Surface Condition	204
Dangerous Cross Traffic	186
Obstructions Branches Snow Etc	164
velobiking	164

Top 3 months for surveys

August, 2019	Number of Surveys: 188
November, 2021	Number of Surveys: 65
September, 2019	



A selection of walkability images submitted to the storymap.



Let's go to work!

This lesson is organized in 4 parts:

Part 1: Creating a field survey using Survey123.

Part 2: Creating and analyzing a map from your survey data.

Part 3: Creating a dashboard from your survey data.

Part 4: Creating a storymap from your field data.

1. Create Survey

[1a]. <https://survey123.arcgis.com> > Sign in

[1b]. Create new survey > Use the web designer > Get Started > Provide some metadata (name, tags, summary): Walkability Survey | Walkability, pedestrians, smart cities | A survey to assess if and how different areas in a community are walkable. > Create.

[1c]. Design the survey.

[1c]. Design the survey.

(1) Add question #1: **Single Choice**: Pedestrian Friendly or Unfriendly? Create 2 choices: Pedestrian Friendly, and Pedestrian Unfriendly. Make 2 choices only. Make this a required question. > Save.

(2) Add question #2: **Likert**. Label: Rate the walkability of this site. For “items” indicate: Horrible for pedestrians, Not ideal for pedestrians, Neutral, Good for pedestrians, Excellent for Pedestrians. > Save.

(3) Add question #3: **Multiple Choice**: Label: Tick all characteristics that describe the site: Dedicated path or sidewalk, Wide path or sidewalk, Poor surface condition, Dangerous cross traffic, No path or sidewalk, Obstructions: Branches, snow, etc., Unsafe. 7 characteristics total. Do not allow “Other”. > Save.

(4) Add question #4: **Map**. Label: Where is the site located? Set Default Map to “OpenStreetMap”. Tick “Ask for device’s location when opening this question.” For the map’s location, set the scale and location where you anticipate you will collect the most data. > Save.

(5) Add question #5: **Image**. Label: Submit a photograph of the site. > Save.

- [1d]. Preview the survey. Close. If necessary, make adjustments. When satisfied, > Publish.
- Go to **Collaborate** tab > Tick: Ask the user how to open the survey, in browser or in the survey123 field app. Then, under “who can submit to this survey?” share at least with your organization, or groups within your organization.
- Under “What can submitters do?”, tick “add and update records”. Before leaving this screen, copy the “arcg.is” link near the top of the Collaborate page under “Link.” Example: <https://arcg.is/0z1vfu>. At bottom of screen > Save.
- [1e]. **Test** it! Add 1 point to your survey.

2. Create map

[2a]. Open a new browser tab > Go to www.arcgis.com > Sign in > Go to Content, My Content. In list of folders on left, find the folder (beginning with “Survey” in the title) with your new survey. This folder will contain a form, a feature layer (hosted, view), and another feature layer (hosted). Click on feature layer (hosted) and examine the metadata. Fill in summary and description as “Walkability survey feature layer.” >

[2b]. In upper right, Open in Map Viewer. Pan and zoom the map to your study area. Verify that your added point exists. If desired, change basemap. Change style to Pedestrian Friendly or Unfriendly. Under Options > Unique Symbols, choose symbols that contrast with each other.

[2c]. Save your map and provide some metadata. Share your map with everyone using the resulting URL.

We have data – now what?

Having the data isn't the goal. And having your data mapped is not the end goal, either.

The goal is answering a question, solving a problem, and understanding something in a deeper or richer way. And communicating what's been learned.

Analyze



*Map Viewer in
ArcGIS Online*



ArcGIS Pro

Communicate



*ArcGIS
StoryMaps*



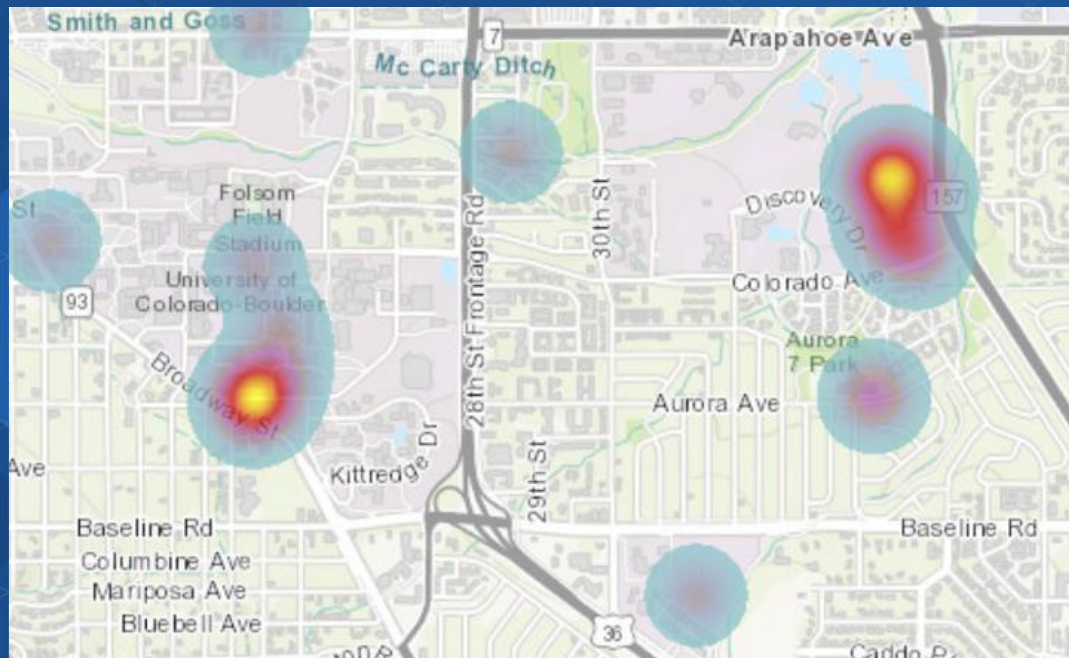
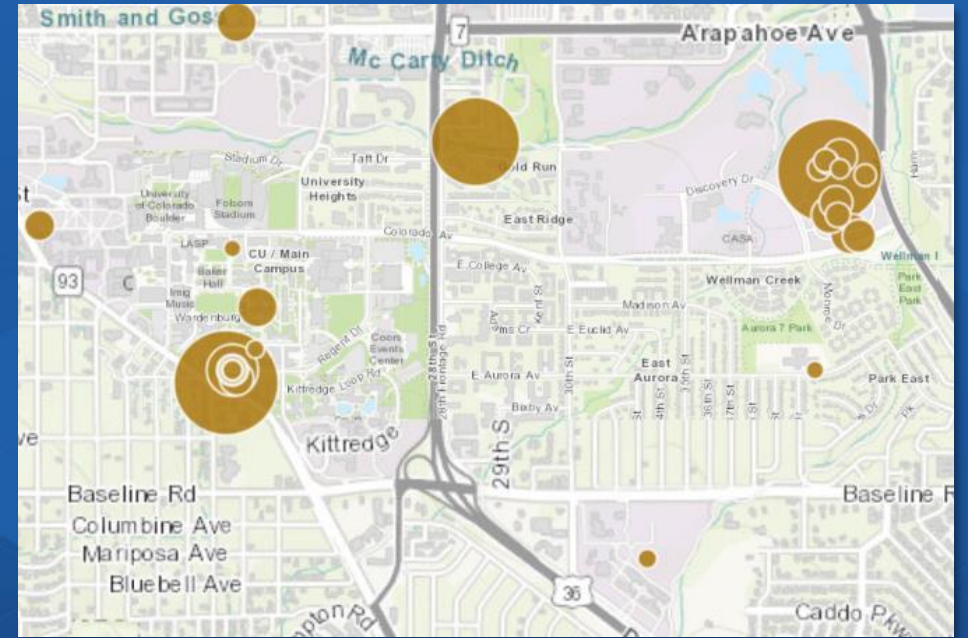
*ArcGIS
Dashboards*

Spatial Analysis

- Symbolize, classify your data on maps
- Investigate statistically significant hotspots
- Proximity, routing, overlay, and other map

analysis tools

- Add and analyze additional data



Not only is it important to ask questions and find the answers, as a scientist I feel obligated to communicate with the world what we were learning.

- Stephen Hawking

Analyze

Communicate



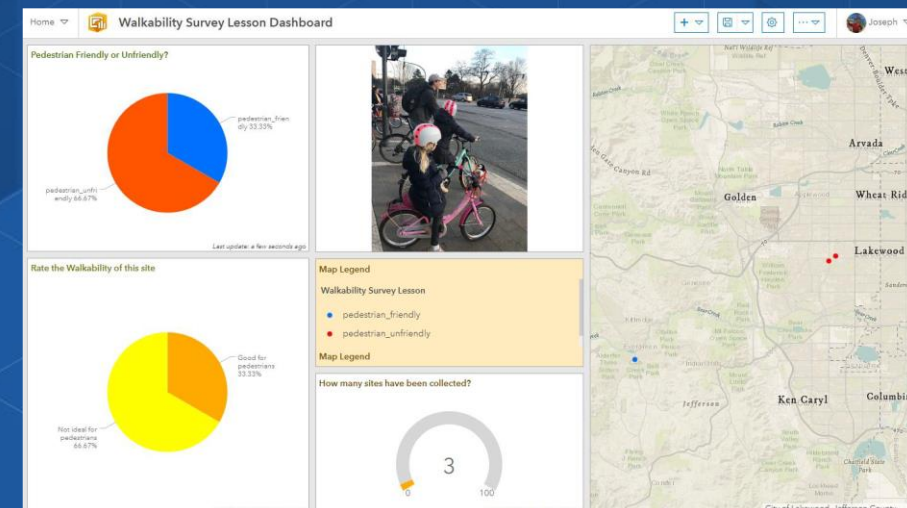
3. Create a Dashboard

A dashboard allows you and others to quickly visualize your survey results in a series of maps and graphs.

[3a]. While viewing your web map, > Share > Create a web app > Dashboard. Provide a title such as Walkability Survey Dashboard. Tick “share this app in the same way as the map.” > Done.

[3b]. Edit your dashboard. Use + sign > Pie chart > Select Walkability survey > Grouped Values > Pedestrian Friendly or Unfriendly? Take default colors. Use + sign > Add another pie chart > Select walkability survey > Grouped Value > Rate the walkability of this site. Use + sign > Add map legend. Use + sign > Add gauge. Use + sign > add image. If you need an image, you can use the author’s image on: https://live.staticflickr.com/7805/33263417808_640912b3bf_w.jpg.

Adjust the size, placement, and add titles to the elements in your dashboard. An example of what your dashboard could look like:



4. Create a Story Map

A storymap allows you, with multimedia and interactive web maps, to tell the story about the problem you are studying, along with possible solutions.

[4a]. Go to: <https://storymaps.arcgis.com> > Sign in. Using application launcher > Story Map > Create New Story.

[4b]. Insert the following items into your story map.

[Title] How walkable is your community?

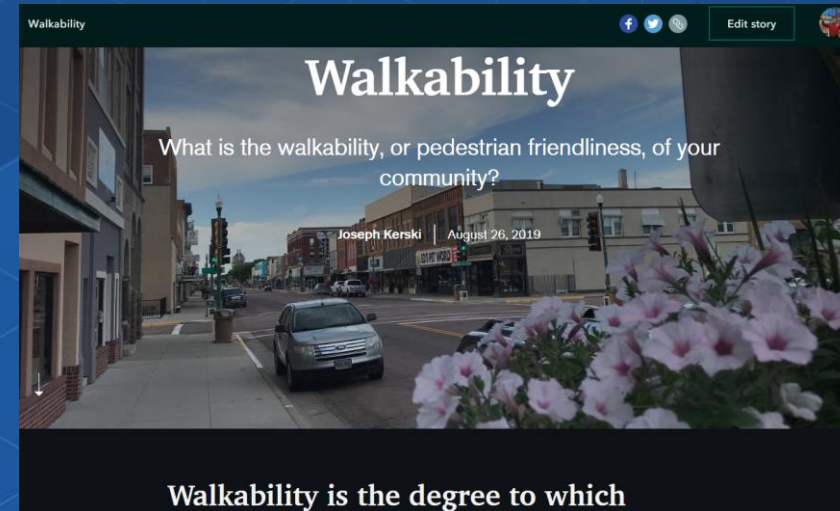
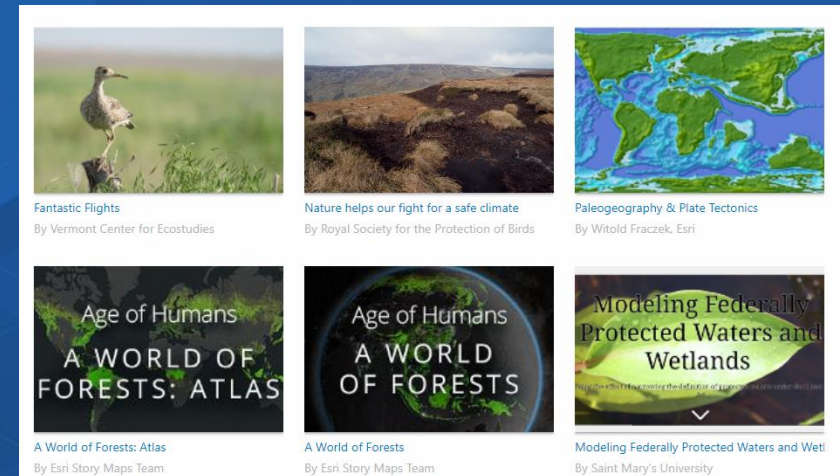
[Subtitle]

A survey and map showing the degree of pedestrian friendliness of your community.

[Cover image: Lakewood Photograph #1 or your own photo.]

[Byline]

By < your initials > | Today's Date



[Quote]

“The General Theory of Walkability explains how, to be favored, a walk has to satisfy four main conditions: it must be useful, safe, comfortable, and interesting.”

— Jeff Speck, Walkable City: How Downtown Can Save America, One Step at a Time.

[Paragraph]

Walkability is the degree to which pedestrians, including those in wheelchairs, on bicycles, scooters, and in any other non-vehicle mode, feel safe and able to traverse their community. Whether one wants to walk in a community depends on many factors, such as social norms, safety, personal preferences, and other factors. This study focuses on the physical challenges or lack of challenges that pedestrians face. For pedestrians using wheelchairs or pushing strollers, walkability can also be influenced by curb cuts, stairs, or obstacles on the sidewalk.

[Paragraph] Connecting Surveys, Maps, and Apps :- Author: Joseph J. Kerski, PhD GISP, Esri :- Page **7** of **9**

What is the walkability on a street or path in your own community? Submit your own point using the link below:

[Button]

Text in button: **Click to Submit Survey Point.**

Link in button: Find the URL for your Survey123 about walkability and insert it here. Or, use the author's survey here: <https://arcg.is/1nKevj>

[Paragraph]

The results of this survey, with data gathered from pedestrians around the world, can be visualized on the map below.

[Map]

Open a separate tab in your browser and go to www.arcgis.com > Sign in if necessary > search for your ArcGIS Online map showing the results of your walkability survey. Once you find the map, under the thumbnail, click "Add to Favorites." Or, use the author's web map, here:

<http://www.arcgis.com/home/webmap/viewer.html?webmap=f2c79a4332be488fb15a2254a3bf901e>

Go back to your browser tab where you are editing your story map.

[Map]

> My favorites > select the walkability map, which should now appear in your favorites from the previous step.

Zoom in to the largest scale such that all 3 walkability survey points are visible > Place Map.

Overwrite the default caption with the following text: Map showing walkability survey points. Your map should look like this, below. Your users will be able to interact with it.

[Embed]

Add a link to your Dashboard. Or use the author's dashboard:

<https://www.arcgis.com/apps/opsdashboard/index.html#/f4e5ce79b4bb4ffc8b29e1c73629bfce>

Change the dashboard caption to: Walkability survey responses.

When done, the dashboard should be embedded into your storymap. Your users will be able to interact with it.

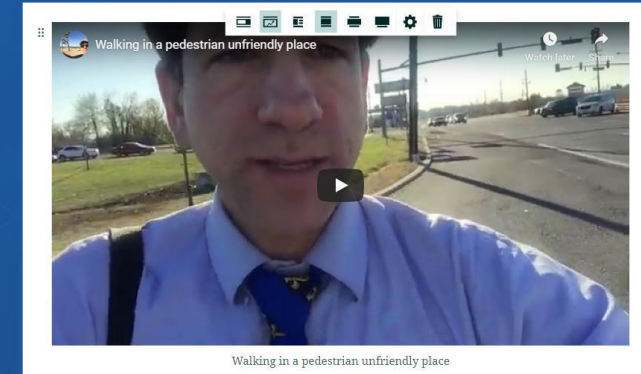
[Heading] Would you say the following location is walkable?

[image] Use the Lakewood Colorado #1 image (or your own image).

[Video]

Add "Walking in a Pedestrian Unfriendly Place" video in New Jersey by the author, Joseph Kerski at this URL: <https://youtu.be/wEmZiDv7BjM>

The video should appear as embedded content.



[Separator] [Paragraph]

Story Map by < your initials > using lesson provided by Joseph Kerski, Esri, as an introduction to Survey123, web maps, operations dashboards, and story maps.

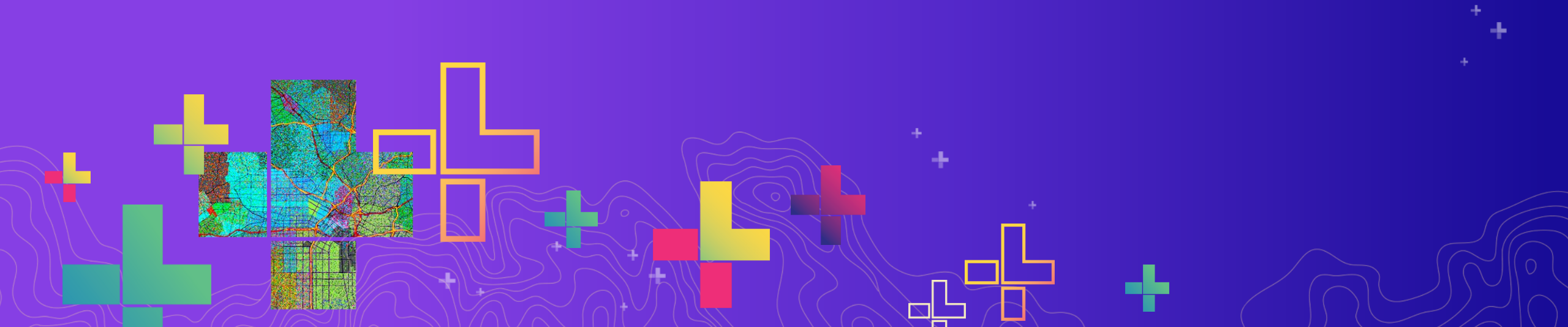
[Separator]

[4c]. When satisfied, preview your story map, test it, publish, and share. The author's story map is here: <https://storymaps.arcgis.com/stories/7afc60296c424214b0be2221232a8346>

This Lesson

Connecting surveys, maps, dashboards, storymaps:

<https://community.esri.com/community/education/blog/2020/03/13/lesson-connecting-surveys-maps-dashboards-and-story-maps>



Keep learning!

Keep in touch with periodic "What's New" in each of the tools.

Lessons and Tutorials: <https://www.esri.com/training>

Story Map: <https://esriurl.com/appsinschools>

The screenshot displays the ArcGIS Blog page titled "What's new in ArcGIS Field Maps". The page features a grid of training modules and lessons. The modules include:

- Collect geological data with ArcGIS Field Maps** (1 hr 1 min): Learn how to collect mineralogical data in the field using Field Maps.
- Capture emotions and the urban environment** (1 hr 30 min): Build a QuickCapture app to capture infrastructure and emotional reactions in a psychogeographic exploration of a city.
- Official Statistics Modernization GIS Curriculum** (40 hr): Covering every stage of the census process, these tutorials teach you how to plan your work, conduct field data collection, monitor your operations, and disseminate your authoritative data, all using ArcGIS.
- Get started with location tracking in ArcGIS Field Maps** (36 min): Use location tracking in Field Maps to know where your mobile workforce is in real time and understand where they've been.
- Convert a paper census form to a digital survey** (45 min): Create a form in ArcGIS Survey123 to collect census data from mobile devices.
- Edit features to create enumeration areas** (1 hr): Create and modify features that will guide census workers in Zambia.
- Analyze track data captured in Field Maps** (1 hr 10 min): Analyze the patterns of mobile workers and visualize where they've been using ArcGIS Pro.
- Try data collection in ArcGIS Field Maps** (1 hr 1 min): Create a map for data collection and use Field Maps to configure the map and capture data in the field.

Additional content visible includes a "LEARNING PLAN" for "Collect Data in the Field Using Apps" (7 Courses, 18 items) and three video lessons: "ArcGIS Field Maps: Migrating Maps" (60 Minutes, Free), "ArcGIS Field Maps: Enabling Asset Collection Workflows", "Introduction to ArcGIS Field Maps", and "ArcGIS Field Maps: Location Tracking Basics" (59 Minutes, Free).

Keep learning!

Recent Higher Ed Chat recording on this

topic: https://mediaspace.esri.com/media/t/1_x372uids

Esri Canada's de-mystifying essay:

<https://resources.esri.ca/getting-technical/demystifying-arccgis-field-data-collection-apps>



Connect these tools—GIS is a platform!

Embed a survey in a story map!

[The Top 10 beautiful Ports](#)

Use a survey in a dashboard!

Learn Lesson:

[https://www.arcgis.com/home/item.](https://www.arcgis.com/home/item.html?id=856da9aeb6944e3da2384906c7139dea)

[html?id=856da9aeb6944e3da2384](https://www.arcgis.com/home/item.html?id=856da9aeb6944e3da2384906c7139dea)

[906c7139dea](https://www.arcgis.com/home/item.html?id=856da9aeb6944e3da2384906c7139dea)

The screenshot shows a web-based GIS application interface. At the top, the title reads "Happy GIS Day! Can You Name the Top 10 Most Beautiful Ports of the World?". Below the title is a navigation bar with tabs labeled "Start Here", "Port #1", "Port #2", "Port #3", "Port #4", "Port #5", "Port #6", "Port #7", "Port #8", and a hamburger menu icon. The main content area is split into two panels. The left panel contains a survey form with the following text: "prize. The deadline to complete the survey is **November 13th**. Winners will be announced during the **GIS Day Celebration on November 14th**. Thanks for participating and enjoy!". Below this is a question: "What is your name or your team's name?*" with a subtext: "First and Last Name (If you are working as a team, please include at least one of the team member's name)". There is an empty text input field. Below that is another question: "What is the name of Port #1" with a radio button next to the text "Tacoma". The right panel shows a map of the world with numerous colored dots representing ports. A legend titled "LEGEND" and "Ports of the World" is overlaid on the map, showing four categories: "Large port" (red dot), "Medium port" (orange dot), "Small port" (blue dot), and "Very small port" (yellow dot). The map also features standard GIS navigation controls like a home button, zoom in (+), zoom out (-), and a scale bar. At the bottom right, there is a "POWERED BY" logo for Esri, HERE, Garmin, NGA, USGS, and Esri.

Analyze

- spatial analysis tools in ArcGIS Online
- spatial analysis tools in ArcGIS Pro

Communicate

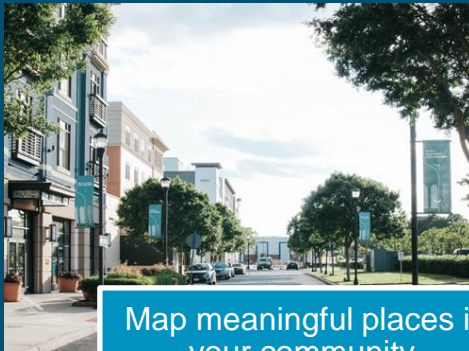
- Instant Apps
- StoryMaps
- Dashboards
- Embed maps in videos
- Articles/chapters/blog essays



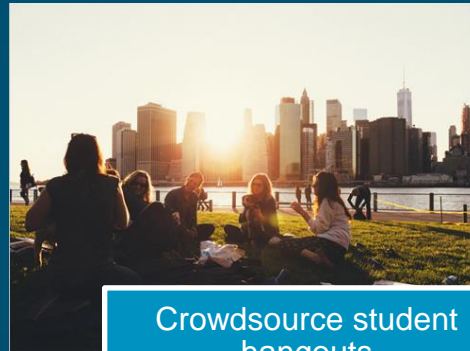
ArcGIS Tutorials

Step-by-step tutorials based on real-world scenarios

ArcGIS tutorials
featuring field collection
apps



Map meaningful places in your community



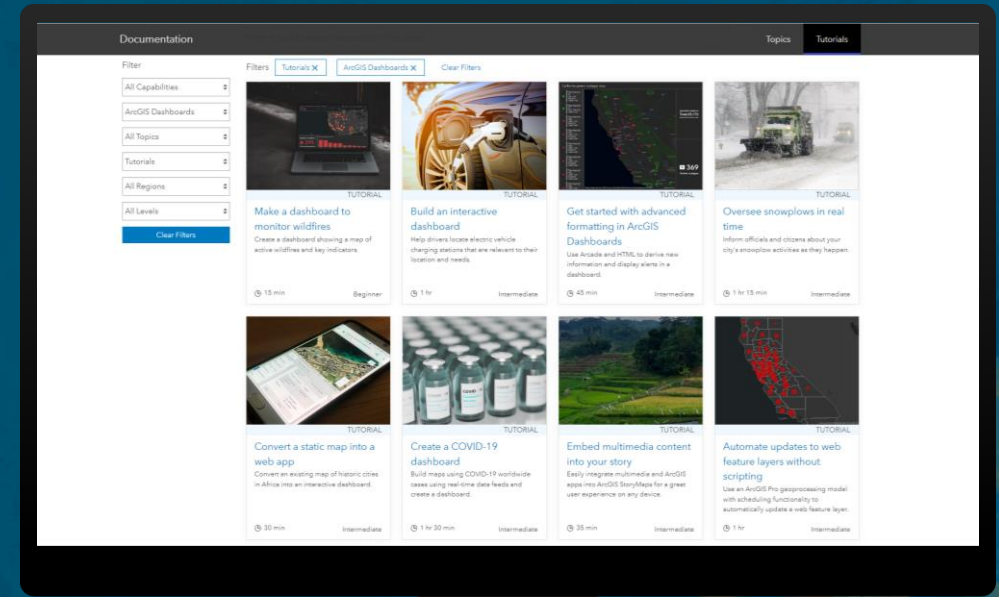
Crowdsource student hangouts



Map your community cleanup



Evaluate equitable drinking fountain distribution



<https://learn.arcgis.com>

ArcGIS Tutorials Series

Step-by-step tutorials based on real-world scenarios

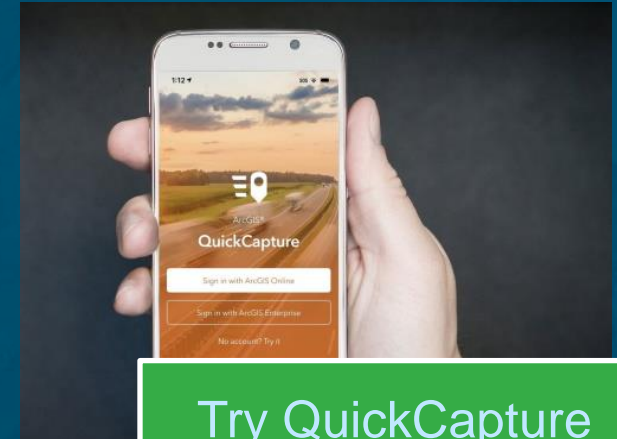
www.learn.arcgis.com



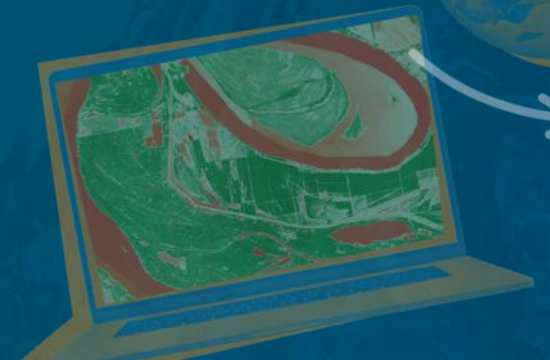
[Try ArcGIS Survey123](#)



[Try data collection in ArcGIS Field Maps](#)



[Try QuickCapture](#)



Keep learning!

Esri Training: <https://www.esri.com/training> (teaching with GIS, field data collection).

Esri Press: <https://www.esri.com/en-us/esri-press/overview>

Esri MOOCs: <http://www.esri.com/mooc> (especially - do-it-yourself web apps).

Esri Community space on Survey123: <https://community.esri.com/groups/survey123>

Esri Community space on Field Maps: <https://community.esri.com/t5/arcgis-field-maps/ct-p/arcgis-field-maps>

Esri Community space on QuickCapture: <https://community.esri.com/t5/arcgis-quickcapture/ct-p/arcgis-quickcapture>

Learn library of lessons: <https://learn.arcgis.com>

Choosing which app to use: <https://esriurl.com/appsinschools>

Comparing Two Field Data Gathering Tools: ArcGIS Field Maps and ArcGIS Survey123

Joseph J. Kerski, PhD GISP, Esri
jkerski@esri.com

