Using Survey123 for ArcGIS for Instruction and Research

Joseph Kerski, PhD GISP

jkerski@esri.com
Today’s workshop

1. Introduction: Esri apps, Survey123, why use it?
2. How to create surveys.
3. Add data to an existing survey.
4. Create your own Survey123 using web method, and share it in a web map.
3. Collect data into your survey.
Why use mobile GIS-enabled tools?

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

Can you name this location?
ArcGIS Apps Bring the Power of Location to Everyone

Extending the Reach of GIS

Across Organizations and Beyond
Survey123 for ArcGIS

- Form-centric field data collection
- Leverages Smart forms
- Analyze results immediately

Download on the
App Store

Android App
Google Play
Why Smart Forms in ArcGIS?

• **Reduce Errors**
  • During Data Capture
  • Transcribing data from paper to digital

• **Boost Field Data Capture productivity**
  • Precompute responses
  • Associate photos with alphanumeric data

• **Data: From the field to the office in Real Time**
• **All data captured is georeferenced**
What makes a form ‘Smart’?

• Types of questions
  - Text, Integers, Dates, Time, Signatures, Photos, Scales
  - Multiple Choices, Single Choice Lists, Barcode, Sketch

• Form Logic and Validation
  - Skips, Cascading Selects, Default Expressions
  - Pre-Computed Responses, Mandatory questions, Favorite answers
  - Use reference data

• Look and Feel
  - Groups, Multiple pages, Notes, Media
  - Multiple-Language Support, Themes, Hints
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

Bird Sightings
What bird can you see near you?
- Crow
- Eagle
- Kingfisher
- Robin
- Sparrow
- Tit
- Woodpecker
- Wren

Click the audio button on the right to hear the sound of each bird.
Authoring forms: 2 Methods

• Quick → **Web Designer**
  - Interactive WYSIWYG user experience

• More functionality → **Survey123 Connect**
  - XLS Forms based; use with a spreadsheet editor
  - Supports more advanced logic and validation
Manage your surveys

Survey123 for ArcGIS

Joseph's Surveys

Create a New Survey

Search

All surveys

Survey of 2017 Solar Eclipse

Pedestrian Friendliness

19 June 2017 Campus Facility

19 June 2017 New EdUC...

Cloud Observations

Pedestrian Counts 2

Vegetation Mapping at a...

Pedestrian Counts
Examine survey results: Via charts, tables, and maps
Species

Word Cloud

- maple
- cottonwood
- ash
- oak
- pine
- spruce
- northern
cypress

Hide Table

<table>
<thead>
<tr>
<th>Response</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oak</td>
<td>12</td>
</tr>
<tr>
<td>Pine</td>
<td>11</td>
</tr>
<tr>
<td>Maple</td>
<td>10</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
</tr>
</tbody>
</table>
Reporting tools

- Understand data submission patterns
- Create detailed survey reports
- Aggregate survey data
- Selectively download data
Yes, you can download the Survey123 data

- If you want to use it in ArcGIS Pro, SAS, Tableau, R, Excel
- To have a back-up of the data
- For enterprise integration with Oracle, Microsoft SQL Server, etc.


Yes, you can integrate Survey123 with higher precision GPS


Survey123 can also automatically capture some location metadata as described here: [https://community.esri.com/groups/survey123/blog/2016/11/03/extracting-information-from-geopoint-questions](https://community.esri.com/groups/survey123/blog/2016/11/03/extracting-information-from-geopoint-questions)

To extract specific GNSS metadata such as numSatellites, VDOP, HDOP etc, then, combine Collector for ArcGIS with Survey123 for ArcGIS as described here: [https://community.esri.com/thread/195790-survey123-high-accuracy-gps-data-collection-oh-my](https://community.esri.com/thread/195790-survey123-high-accuracy-gps-data-collection-oh-my)

Or wait for Survey123 version 3.0, which will include direct connectivity to external GNSS receivers.

Survey123 is Citizen Science Enabled

Survey123 allows for forms to be added to by anyone; that is, truly crowdsourced. The resulting map can be shared with anyone; so that anyone with the URL will be able to open the map.

You can choose to **not** share your survey with everyone, in which case, those wishing to add data to the survey need to have an ArcGIS Online account, be logged in, and have the Survey123 for ArcGIS app on their smartphone. Other advantages to using Survey123 app:

1. The Survey123 app looks a bit nicer than the web browser display.
2. The Survey123 app allows for off-line data collection.
You can also add data directly on the map in a web browser:
How to citizen science enable your surveys
2 ways to create a Survey123

Today we will use this method.
Create Survey using Survey123 Connect (Excel) method

1. Survey123.arcgis.com > Build survey using Survey123 Connect

2. In Excel, 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).
<table>
<thead>
<tr>
<th>type</th>
<th>name</th>
<th>label</th>
<th>hint</th>
</tr>
</thead>
<tbody>
<tr>
<td>date</td>
<td>ReportDate</td>
<td>Date</td>
<td></td>
</tr>
<tr>
<td>time</td>
<td>ReportTime</td>
<td>Time</td>
<td></td>
</tr>
<tr>
<td>begin group</td>
<td>basic</td>
<td>Collect Field Data:</td>
<td></td>
</tr>
<tr>
<td>select_one</td>
<td>LivNonLiv</td>
<td>Living or Non Living?</td>
<td></td>
</tr>
<tr>
<td>select_one</td>
<td>ObjectType</td>
<td>Select Object Type:</td>
<td></td>
</tr>
<tr>
<td>end group</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>integer</td>
<td>Height_m</td>
<td>Height_m</td>
<td>Give height in meters rounded to nearest integer</td>
</tr>
<tr>
<td>geopoint</td>
<td>Location</td>
<td>Location</td>
<td></td>
</tr>
<tr>
<td>image</td>
<td>Photograph</td>
<td>Photograph</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>list_name</th>
<th>name</th>
<th>label</th>
<th>image</th>
<th>label::language1</th>
<th>Object</th>
</tr>
</thead>
<tbody>
<tr>
<td>LivNonLiv</td>
<td>Living</td>
<td>Living</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LivNonLiv</td>
<td>Non_Living</td>
<td>Non_Living</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ObjectType</td>
<td>tree</td>
<td>tree</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ObjectType</td>
<td>shrub</td>
<td>shrub</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ObjectType</td>
<td>other_living</td>
<td>other living</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ObjectType</td>
<td>chair</td>
<td>chair</td>
<td></td>
<td></td>
<td>Non_Living</td>
</tr>
<tr>
<td>ObjectType</td>
<td>bench</td>
<td>bench</td>
<td></td>
<td></td>
<td>Non_Living</td>
</tr>
<tr>
<td>ObjectType</td>
<td>trashcan</td>
<td>trashcan</td>
<td></td>
<td></td>
<td>Non_Living</td>
</tr>
<tr>
<td>ObjectType</td>
<td>other_nonliving</td>
<td>other nonliving</td>
<td></td>
<td></td>
<td>Non_Living</td>
</tr>
</tbody>
</table>
Survey123 Demo and Hands-on
Open a web browser and go to this form that has been set up with Survey123 for campus vegetation mapping:

https://survey123.arcgis.com/share/933b03f8109e411cab344453dbd7a865 or http://bit.ly/2pbnWDT,

which looks like the form shown here.
1. Fill in the 4 fields, pan the map or enter an address or a city, and place the placemark on the location of your tree. If you have a photograph online of that tree that either you have taken or have permission to use, download it to your computer and submit it at the bottom of the form.

2. Visualize results that you and your classmates have submitted, on this map: http://esriurl.com/campusvegsurvey123map (or http://arcg.is/2I0UL2O). Photos, if they exist, will be listed as “attachments”: 
Activity – Survey123

• Create your own survey
  - Sign into Survey123 website
  - Create a new survey with the Web Designer
1. Date. Label: Date. Hint: Fill in the date when you collected the data. Default Value: Select “Submitting Date.” Save.


4. Number > Label: Height (m). Hint: Indicate height to nearest meter. Default value: 1. This is a required question. Must be an integer. Set Min/Max value: Min = 1. Max = 30. Save.

Final steps

1. Preview your survey.
2. Publish your survey.
3. Share your survey.
4. Create a web map from your survey.
5. Share the web map.
In the field or in the classroom, point to the following URL to add data to campus vegetation survey:

https://survey123.arcgis.com/share/933b03f8109e411cab344453dbd7a865
or
http://bit.ly/2pbnWDT,
The End Goal

Not points on the map, but understanding the phenomenon, spatial patterns, linkages, trends in the data you are collecting.

Hence, spatial analysis.
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
Use the 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.html?id=856da9aeb6944e3da2384906c7139dea
Esri Training:  http://www.esri.com/training

(1) Teaching with GIS – Field Data Collection Using ArcGIS.
(2) Survey123 for ArcGIS.  http://survey123.arcgis.com

Esri MOOCs:
http://www.esri.com/mooc
-- including Do-it-Yourself-Web-Apps

GeoNet:
https://community.esri.com/groups/survey123
Using Survey123 for ArcGIS for Instruction and Research

Joseph Kerski  jkerski@esri.com