# Advanced Survey123
# Tips & Tricks
# To Enhance Your Mobile Field Operations

**32nd Annual**
**South Central Arc User Group Conference**
May 3-5, 2022
Fort Worth, TX

Chris Akin, GISP
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**Chris Akin, GISP**
Senior GIS Manager
Dallas, TX

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STAR WARS DAY™
MAY THE 4TH
BE WITH YOU
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# OUTLINE

- What is Survey123?
- Basic Functionality
- Advanced Functionality

# ABOUT LANGAN

**Integrated Engineering Solutions**
One-Stop Shop

**50+**
Years in Business

**37**
Locations

**1400+** Employees

Projects in
**100+**
Countries

**100+**
Awards

Technical Excellence  Practical Experience  Client Responsiveness

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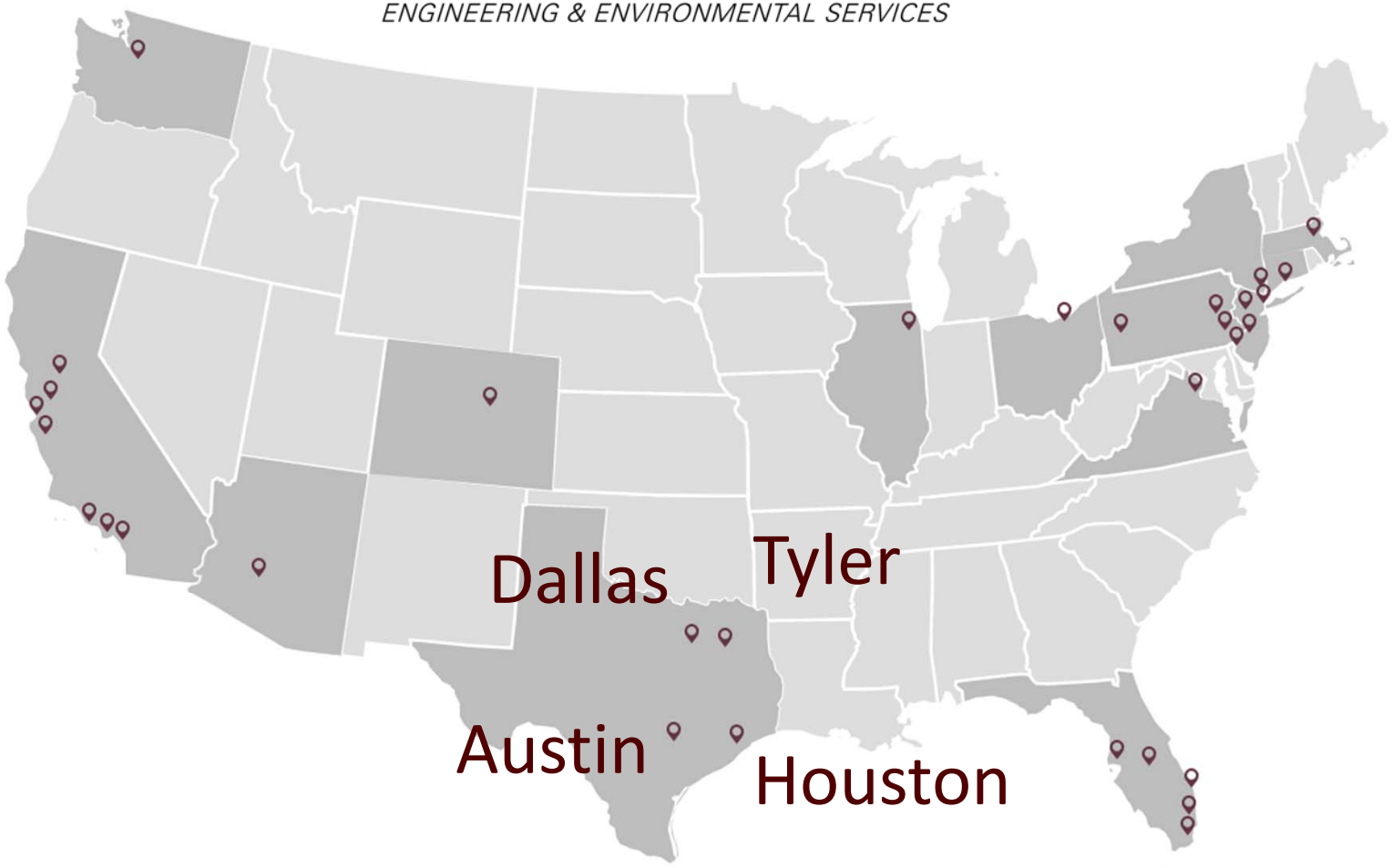
ENGINEERING & ENVIRONMENTAL SERVICES



# GEOSPATIAL & DIGITAL SOLUTION SERVICES

## GIS Mapping and Analysis

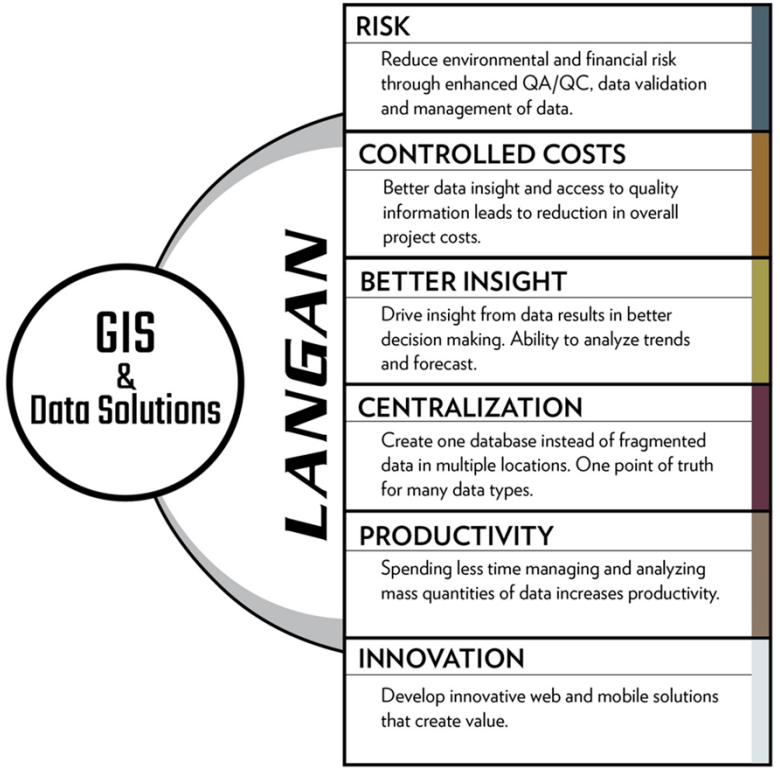
- Field Data Collection / Real-Time Mapping
- Site Analysis
- Data Interpretation, Management and Analysis

## Data Visualization

- Data Dashboards and Web Viewers
- Historical Data Acquisition
- Spatial and Non-Spatial Data Integration
- Map-Based Document Management

## Custom Solutions

- Process/Workflow Development
- Enterprise Software Integration
- Litigation Support
- Asset Management

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# DEVELOPMENT SERVICES

## Advanced Solutions

- Process Automation
- IoT / Real-Time Data Capture & Reporting
- AI / Machine Learning

## Custom Tools

- Web & Mobile Application Development
- Custom Viewers & Websites
- Interactive Data Exploration

## IT Infrastructure Support

- System Architecture Design & Implementation
- Enterprise Systems Integration
- Data Extract, Transform & Load (ETL) Services

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# WHAT IS SURVEY123?

# INTRO TO SURVEY123

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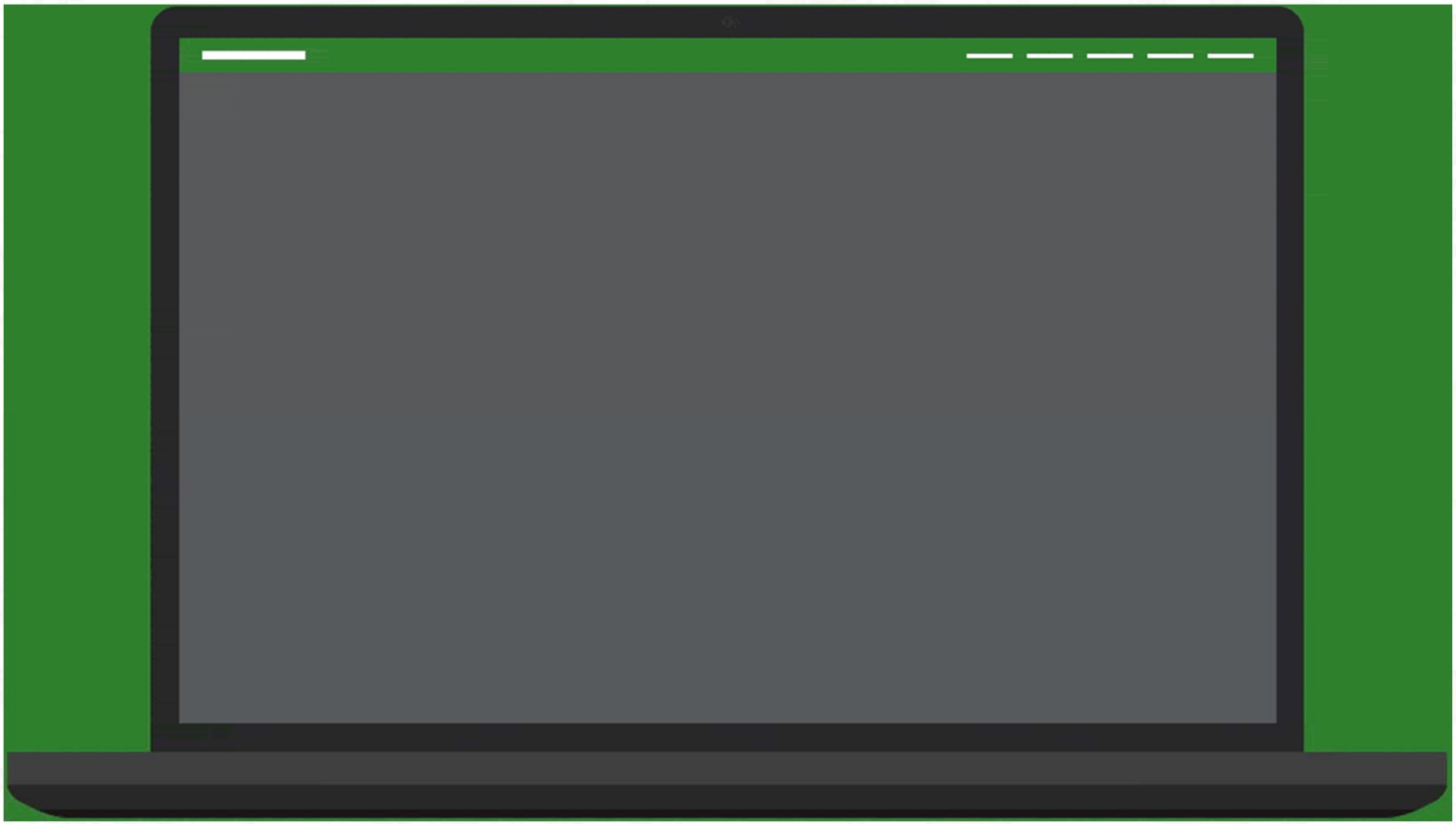
# INTRO TO SURVEY123



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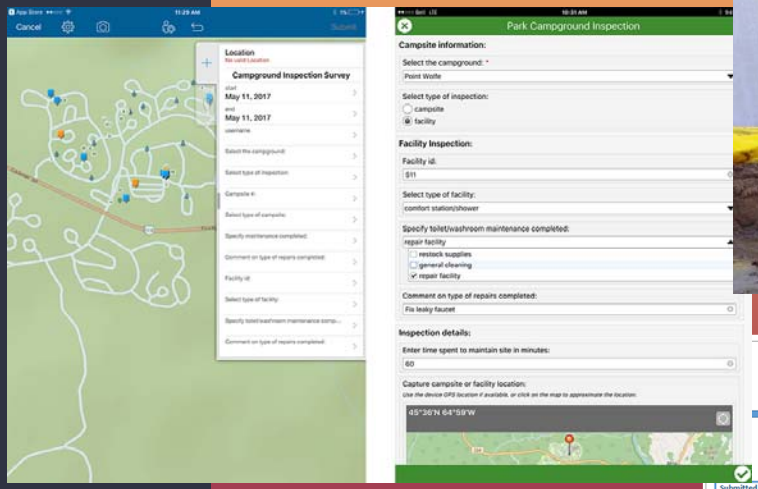
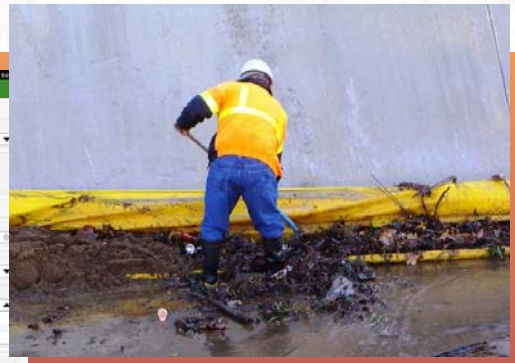
# SURVEY123 BASICS

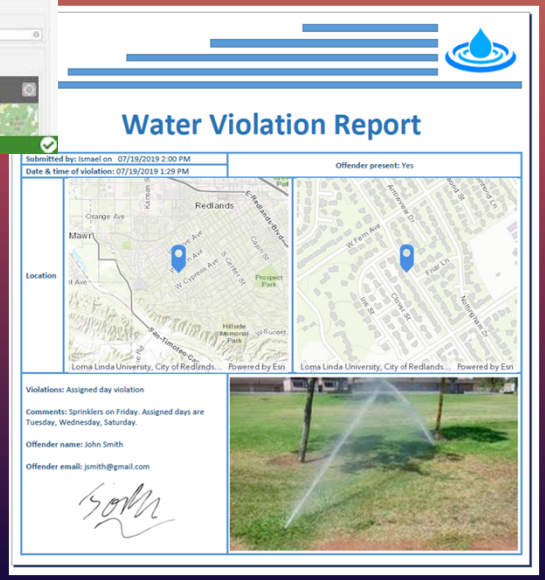
- Data Collection Application
- Form-Based
- Allows for Disconnected Collection
- Report Generation











# SURVEY123 VS. FIELD MAPS

## SURVEY123

- Form-Based First (“Smart Forms”)
- Complex Data Collection Rules Possible
- Custom Reports
- Flexibility May Equal Complexity

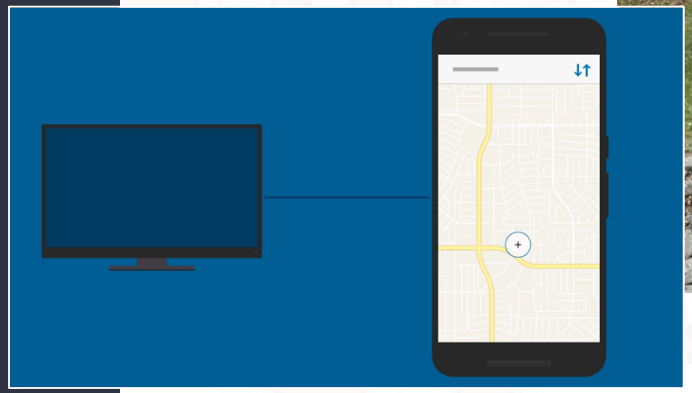
## FIELD MAPS/COLLECTOR

- Map-Based First
- Simple Data Collection Rules
- Other Tools for Reporting
- Simplicity

- Mobile Data Capture Applications
- Collects Any Attribute, Photo, etc.
- Web Services Can Feed Into Esri Stack/Web Maps

# MOBILE ACCESSIBILITY

- Phone and Tablet Access
- Authoritative Data
- Real-Time Updates
- Field and Office Access
- Restricted User Permissions



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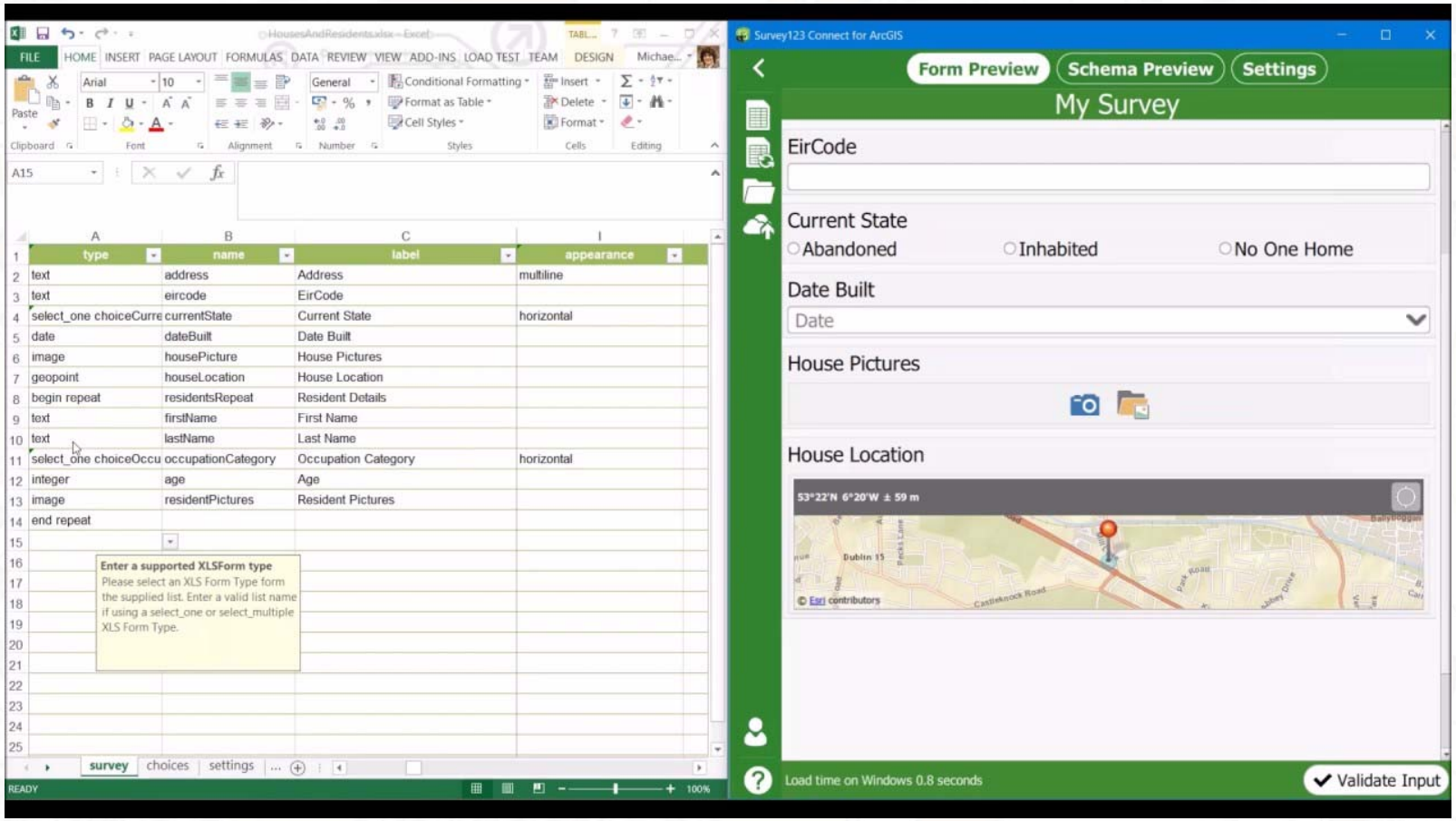
# BASIC FUNCTIONALITY

# 2 WAYS TO CREATE

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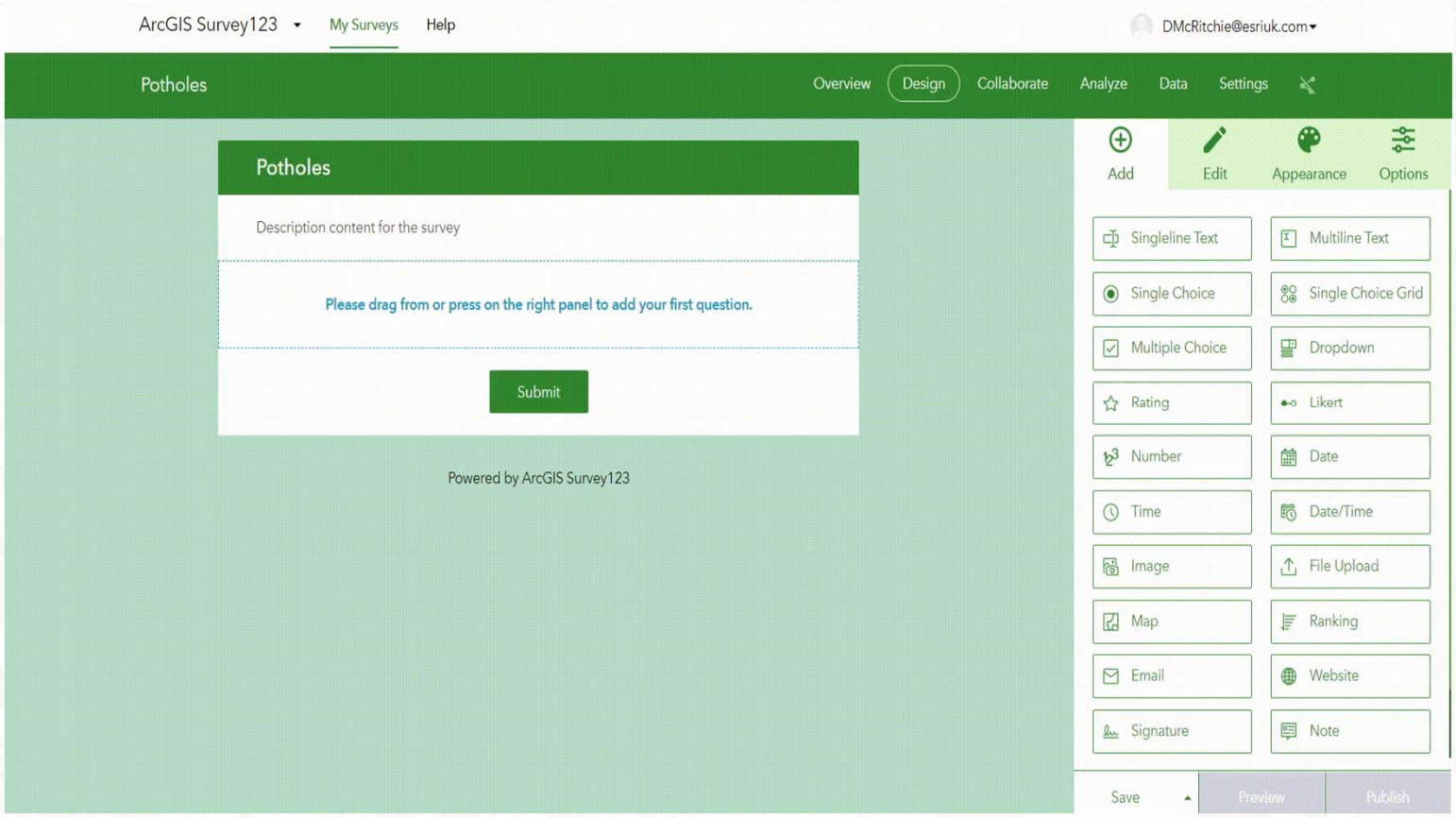
# WEB DESIGNER = WYSIWYG

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# INTEGRATION TO WEB MAPS

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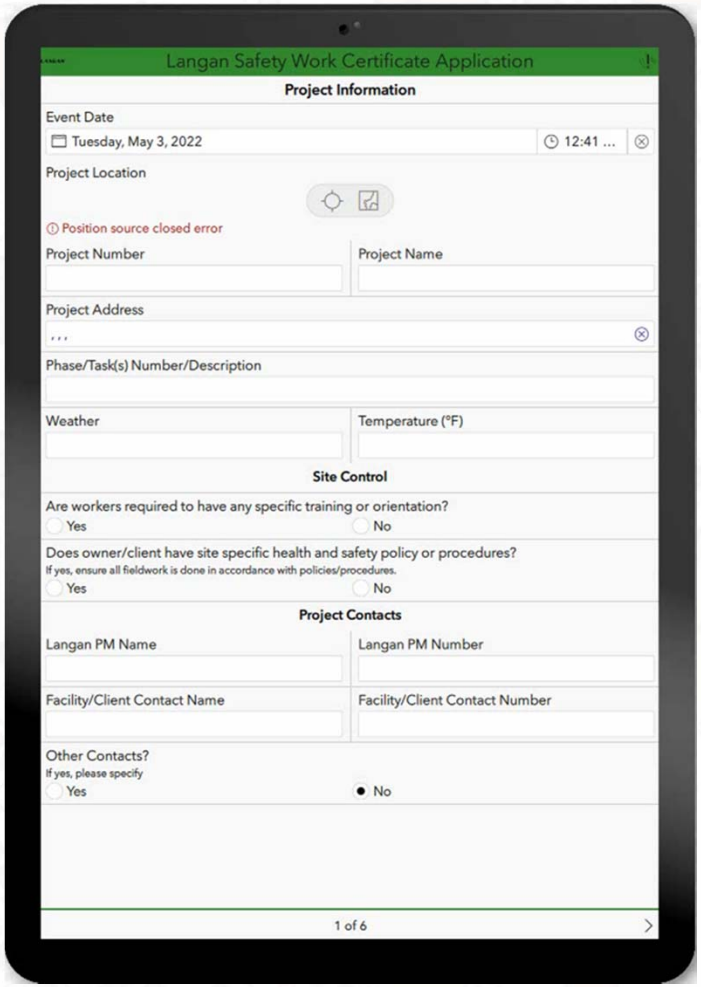
# ADVANCED FUNCTIONALITY

# WHERE ARE WE GOING

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# SCRATCHING THE SURFACE

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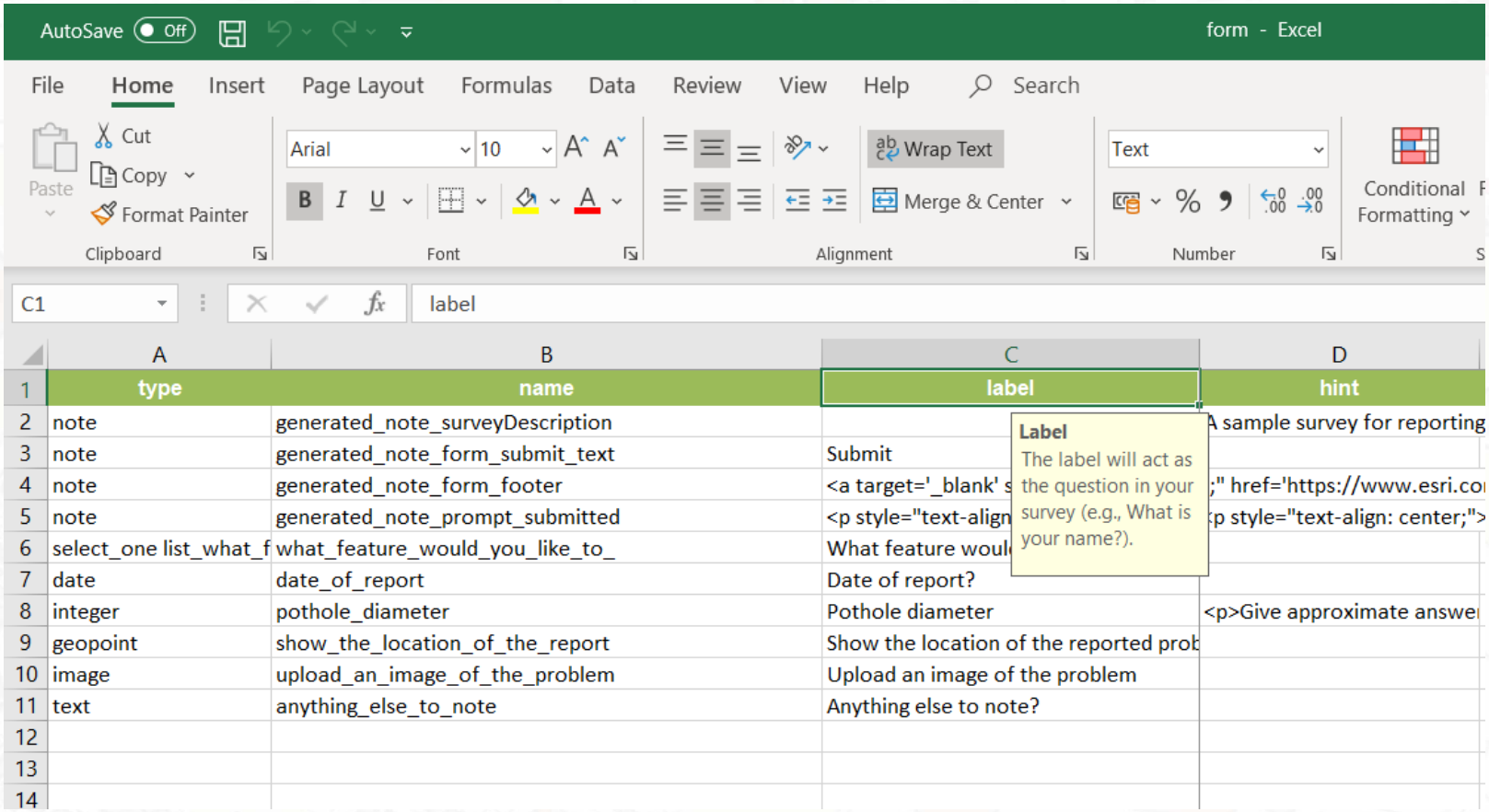
# SURVEY123 CONNECT




| | A | B | C | D |
|---|---|---|---|---|
| 1 | type | name | label | hint |
| 2 | note | generated_note_surveyDescription | | A sample survey for reporting |
| 3 | note | generated_note_form_submit_text | Submit | |
| 4 | note | generated_note_form_footer | <a target='_blank' s | ;" href='https://www.esri.co |
| 5 | note | generated_note_prompt_submitted | <p style="text-align | p style="text-align: center;"> |
| 6 | select_one list_what_f | what_feature_would_you_like_to_ | What feature woul | |
| 7 | date | date_of_report | Date of report? | |
| 8 | integer | pothole_diameter | Pothole diameter | <p>Give approximate answe |
| 9 | geopoint | show_the_location_of_the_report | Show the location of the reported prob | |
| 10 | image | upload_an_image_of_the_problem | Upload an image of the problem | |
| 11 | text | anything_else_to_note | Anything else to note? | |
| 12 | | | | |
| 13 | | | | |
| 14 | | | | |

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# READY TO GET CRAZY??

## SURVEY

| | | | |
|---|---|---|---|
| type | start | acknowledge | url |
| name | end | calculate | printer |
| label::[language] | today | geotrace | thousands-sep |
| hint::[language] | deviceid | geoshape | bearing |
| guidance_hint::[language] | username | begin_group | vertical |
| constraint | subscriberid | end_group | no-ticks |
| constraint_message::[language] | simserial | begin_repeat | rating |
| required | phonenumber | end_repeat | picker |
| required_message::[language]] | email | ${variable_name} | distress |
| default | audit | . | month-year |
| relevant | select_one [choices] [or_other] | field-list | year |
| read_only | select_multiple [choices] [or_other] | table-list | no-calendar |
| calculation | select_one_from_file [file] | minimal | ethiopian |
| repeat_count | select_multiple_from_file [file] | label | islamic |
| image | select_one_external | list-nolabel | coptic |
| audio | text | autocomplete | new |
| video | integer | likert | new-front |
| image::language | decimal | horizontal | new-rear |
| audio::language | date | compact | annotate |
| video::language | time | compact-n | draw |
| appearance | datetime | quick | signature |
| instance::attribute | geopoint | quickcompact | maps |
| bind::attribute | background-audio | image-map | hide-input |
| body::attribute | file | numbers | streets, terrain, satellite, [other] |
| body::accuracyThreshold | note | multiline | placement-map |
| parameters | barcode | | |

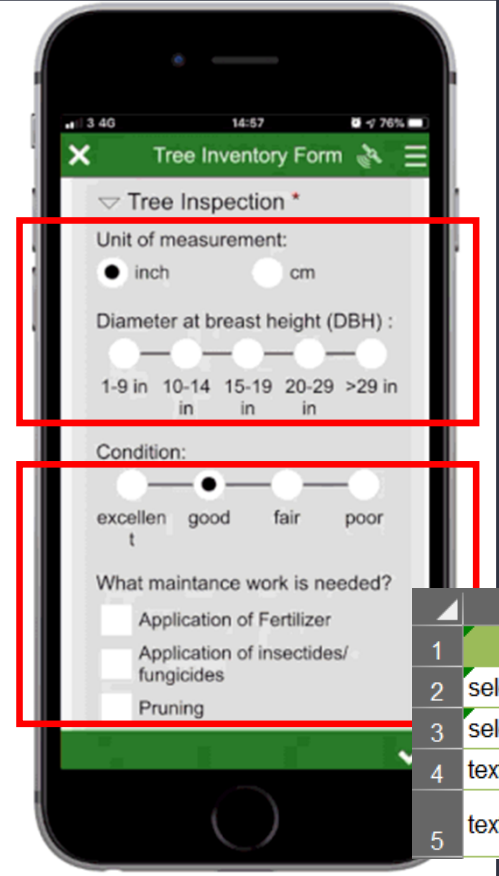
## CHOICES

| |
|---|
| list name |
| name |
| label::[language] |
| media |
| [filter_category_name] |

## SETTINGS

| |
|---|
| form_title |
| form_id |
| public_key |
| submission_url |
| default_language |
| style |
| version |
| instance_name |

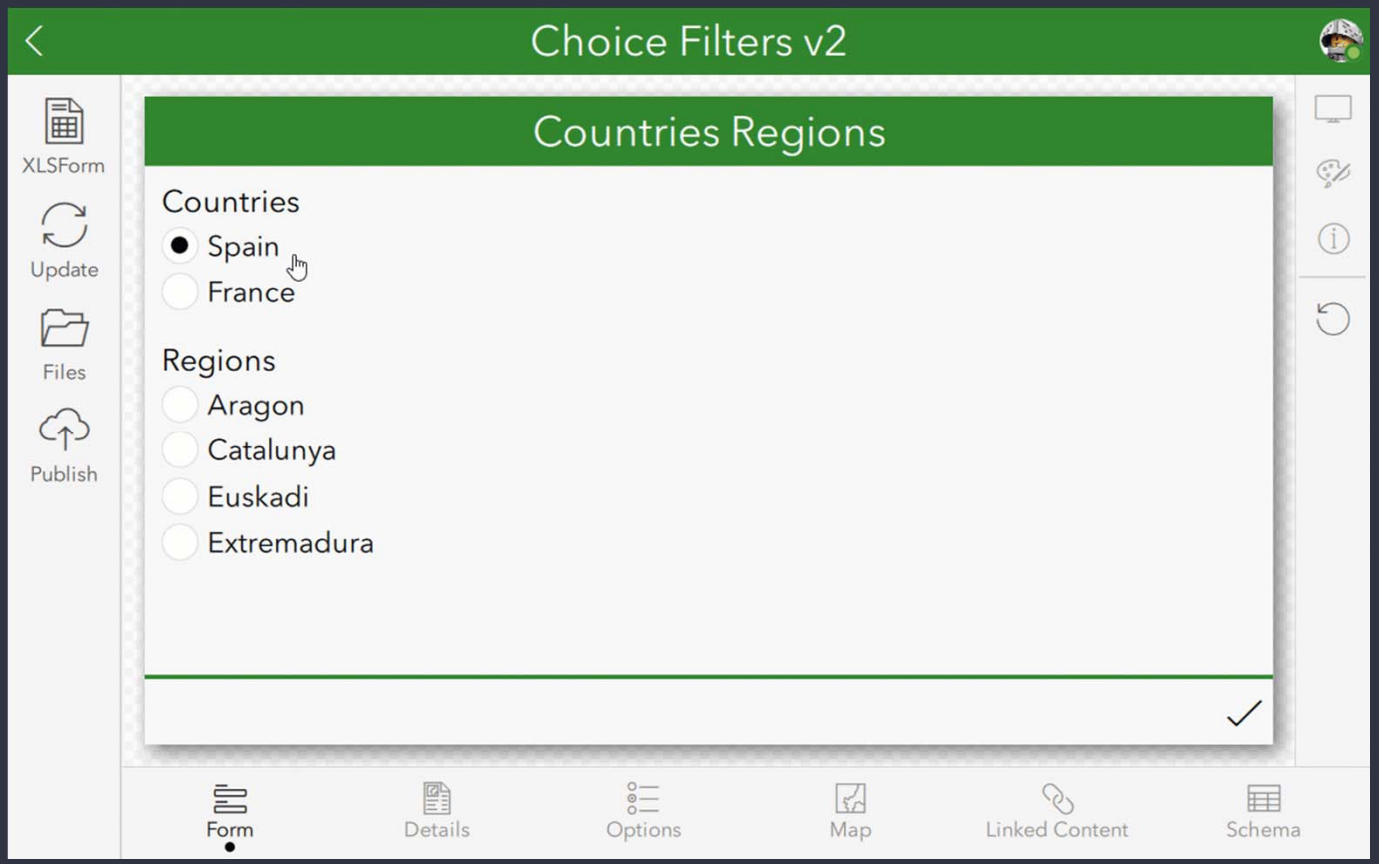
# FIELD RELEVANCY




| | A | B | C | L |
|---|---|---|---|---|
| 1 | type | name | label | relevant |
| 2 | select_one yes_no | work_complete_indicator | Is work complete in this zone? | |
| 3 | select_one yes_no | zone_inspected_indicator | Has the zone been inspected? | ${work_complete_indicator} = 'yes' |
| 4 | text | who_inspected_zone | Who inspected the zone? | ${zone_inspected_indicator} = 'yes' |
| 5 | text | work_remaining | What work is remaining to be completed in this zone? | ${work_complete_indicator} = 'no' |

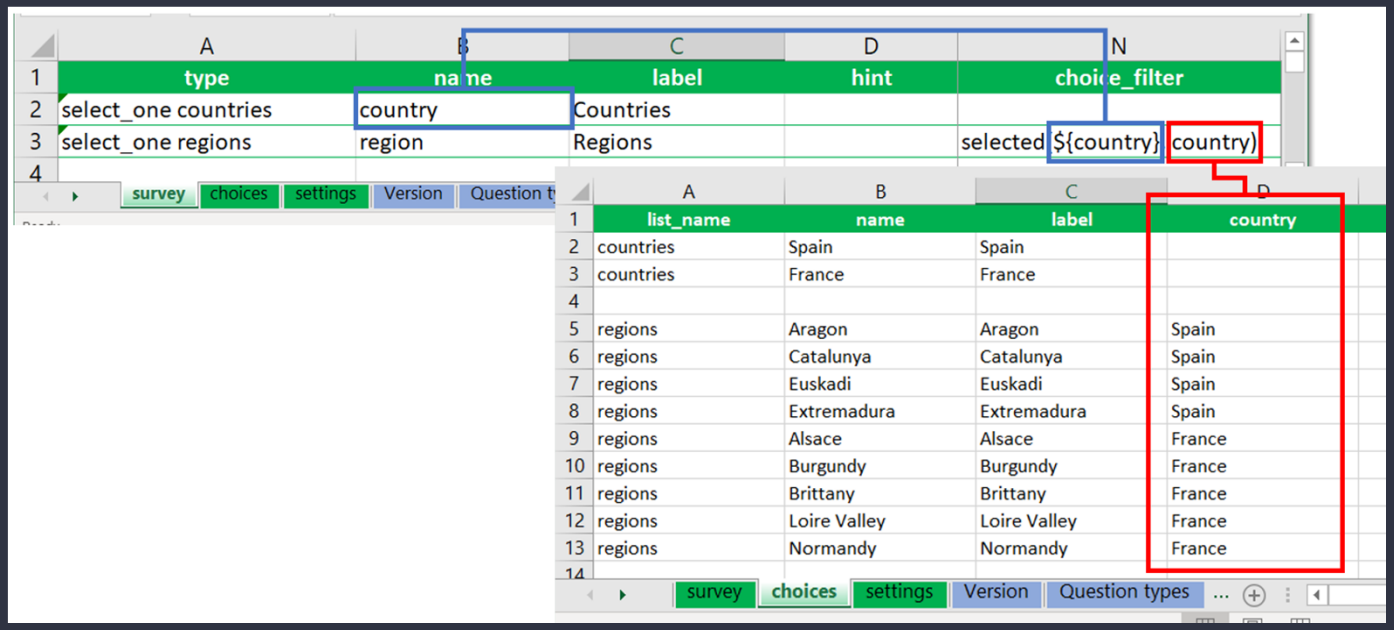
- Conditionally change questions based on previous sections
- Hide by default, show if something selected
- Returns if TRUE

# CHOICE FILTERING




- Filter down by large list
  - (All counties versus just Texas)

# CHOICE FILTERING



| | A | B | C | D | N |
|---|---|---|---|---|---|
| 1 | type | name | label | hint | choice_filter |
| 2 | select_one countries | country | Countries | | |
| 3 | select_one regions | region | Regions | | selected ${country} country) |
| 4 | | | | | |

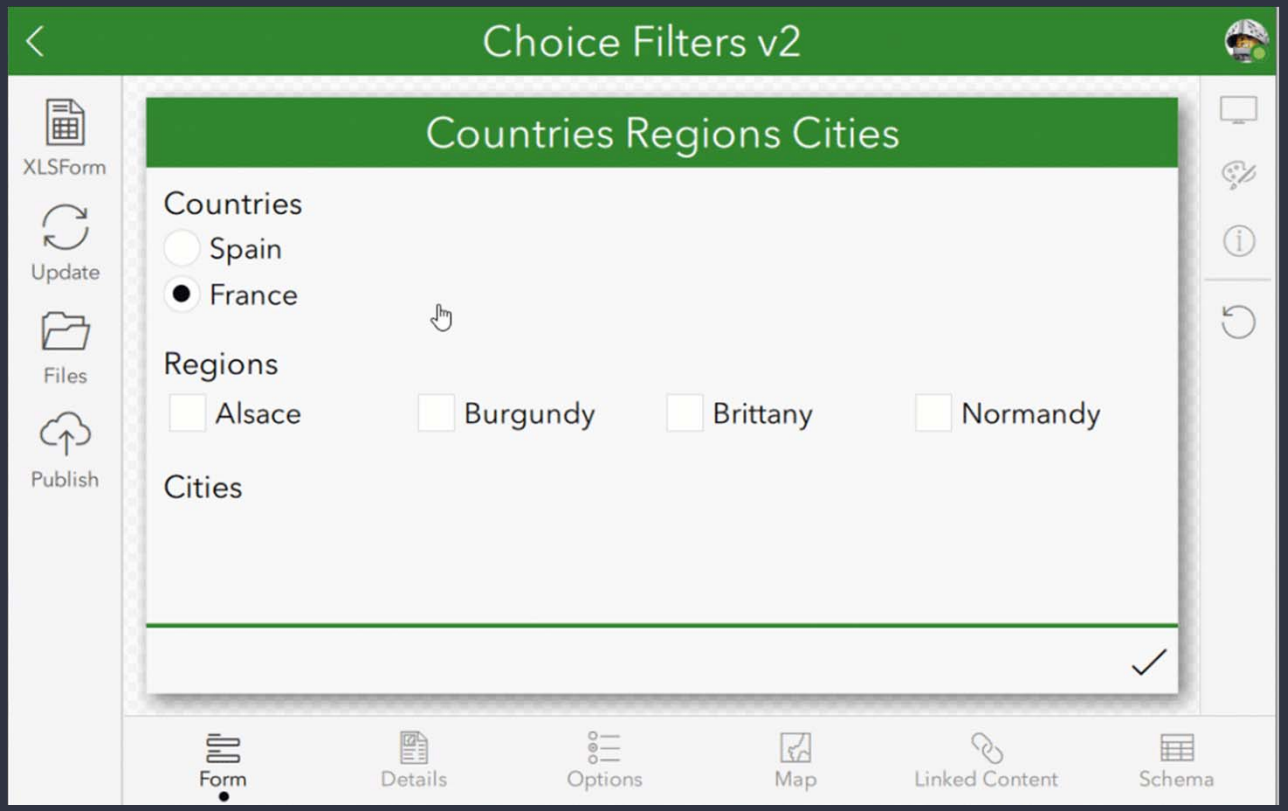
survey | choices | settings | Version | Question t

| | A | B | C | D |
|---|---|---|---|---|
| 1 | list_name | name | label | country |
| 2 | countries | Spain | Spain | |
| 3 | countries | France | France | |
| 4 | | | | |
| 5 | regions | Aragon | Aragon | Spain |
| 6 | regions | Catalunya | Catalunya | Spain |
| 7 | regions | Euskadi | Euskadi | Spain |
| 8 | regions | Extremadura | Extremadura | Spain |
| 9 | regions | Alsace | Alsace | France |
| 10 | regions | Burgundy | Burgundy | France |
| 11 | regions | Brittany | Brittany | France |
| 12 | regions | Loire Valley | Loire Valley | France |
| 13 | regions | Normandy | Normandy | France |
| 14 | | | | |

survey | choices | settings | Version | Question types

- xxx

# CHOICE FILTERING

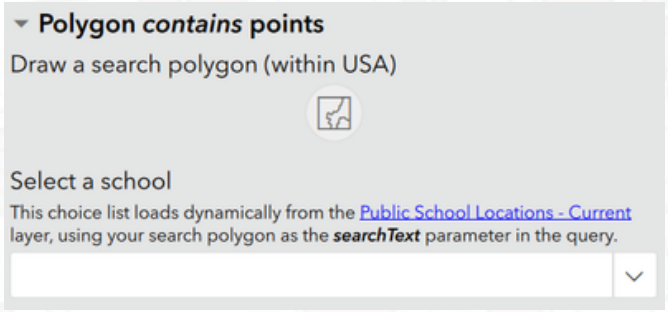


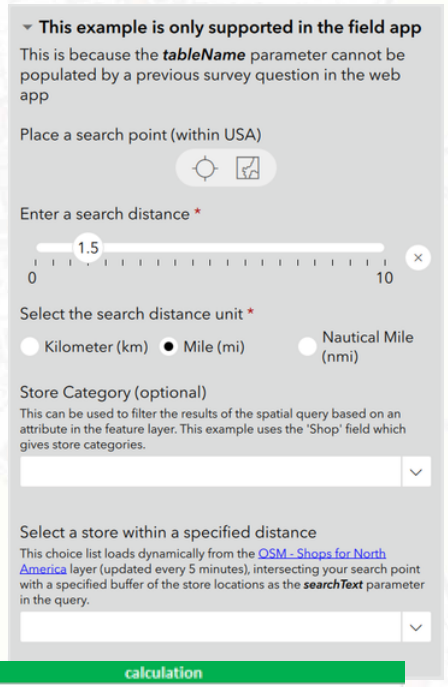

- Sub Categories and Multiple Choices Allowed

# SEARCH

| type | name | label | appearance |
|---|---|---|---|
| select_one us_states | state | Select a US state | search("state?url=https://services.arcgis.com/P3ePLMYs2RVChkJx/ArcGIS/rest/services/USA_States_Generalized/FeatureServer/0") |

- Dynamically Search for Potential Values
- CSV, Feature Services, etc.
- Allows choices to be managed outside of Survey123
- Attribute AND spatial queries!




```
search('school?url=https://services1.arcgis.com/Ua5sjt3LWTPigjyD/arcgis/rest/services/Public_School_Location_201819/FeatureServer/0', 'contains', '@geoshape', ${search_poly})
```

| type | name | label | appearance | calculation |
|---|---|---|---|---|
| geopoint | search_point2 | Place a search point (within USA) | | |
| range | search_distance | Enter a search distance | | |
| select_one distance_unit | search_distance_unit | Select the search distance unit | horizontal | |
| calculate | search_url | This question concatenates the URL string to include the search distar | | concat("store?url=https://services6.arcgis.com/Do88DoK2xjTUCXd1 |
| select_one us_stores_cat | store_cat2 | Store Category (optional) | autocomplete | |
| select_one us_stores | store2 | Select a store within a specified ( | autocomplete search(${search_url}, 'intersects', '@geopoint', ${search_point2}, 'shop', ${store_cat2}) | |

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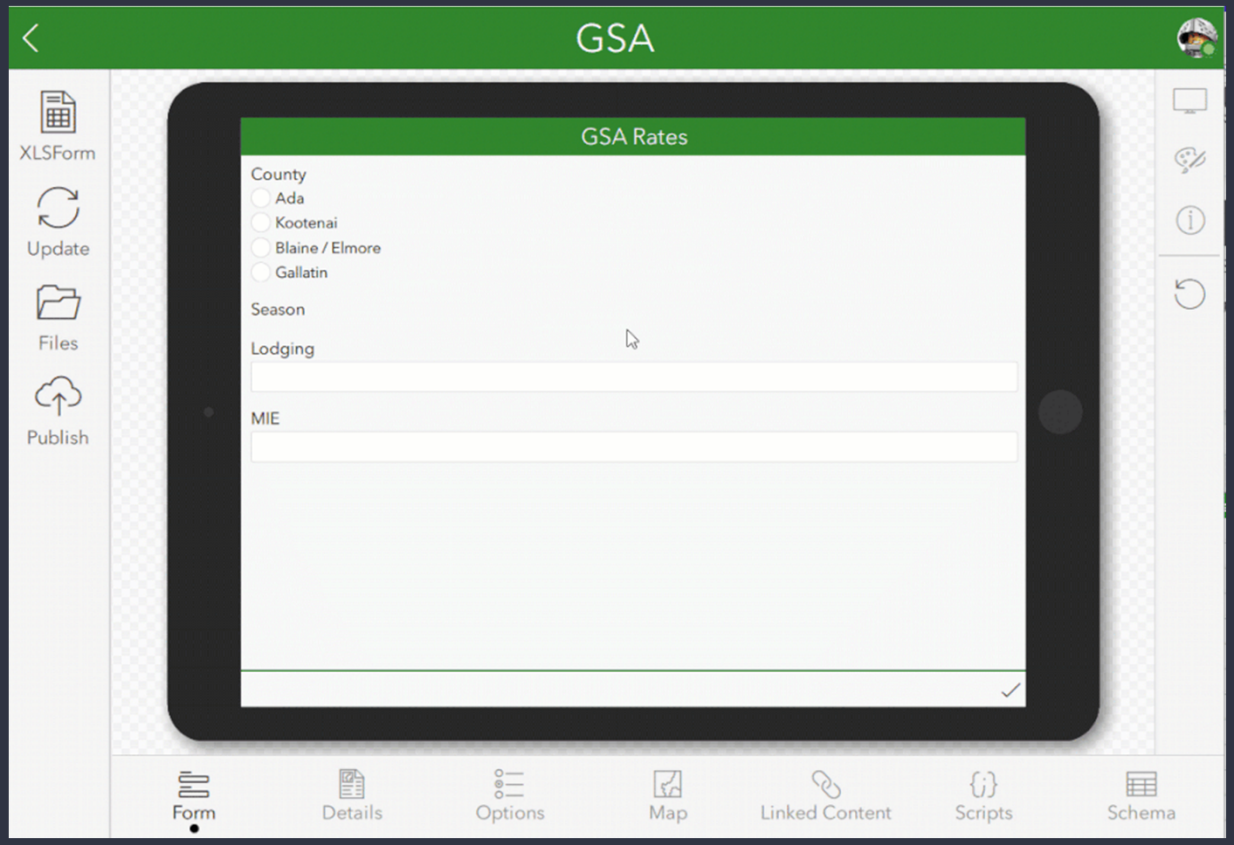
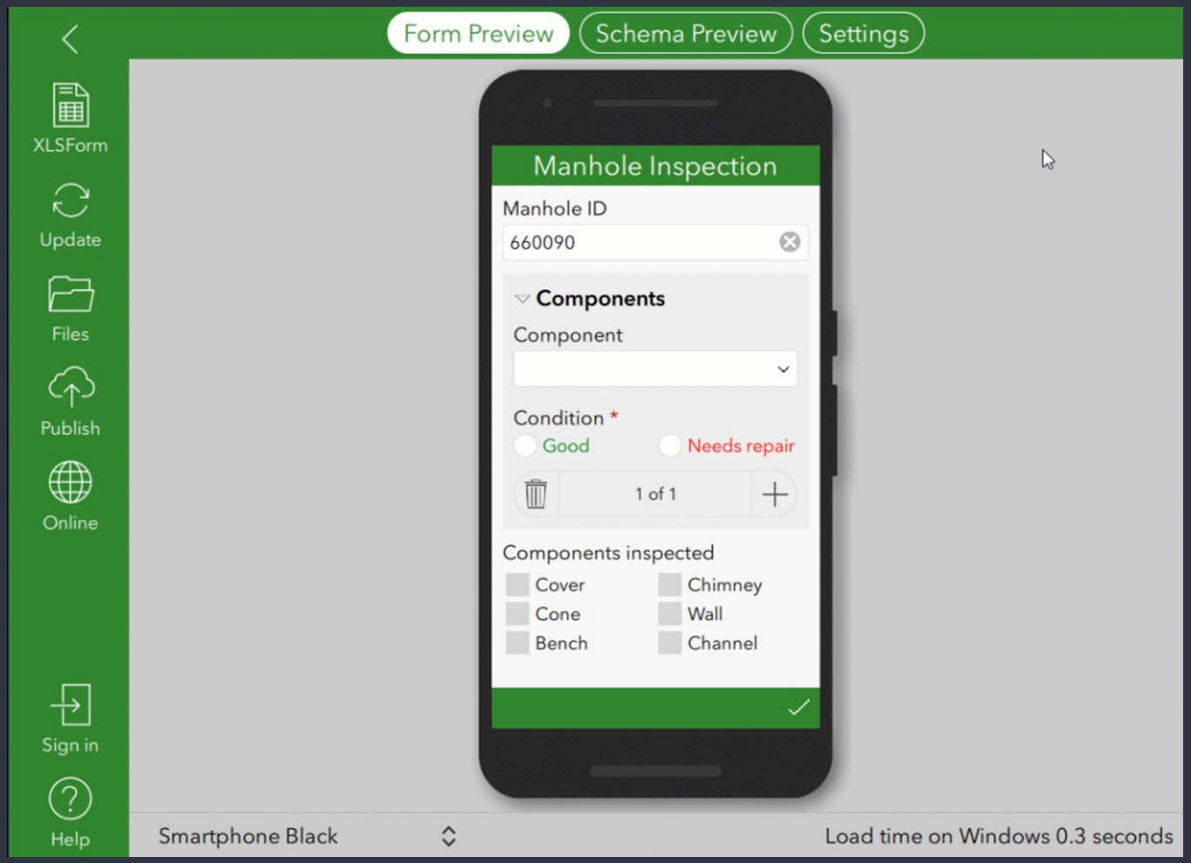
# PULLDATA()



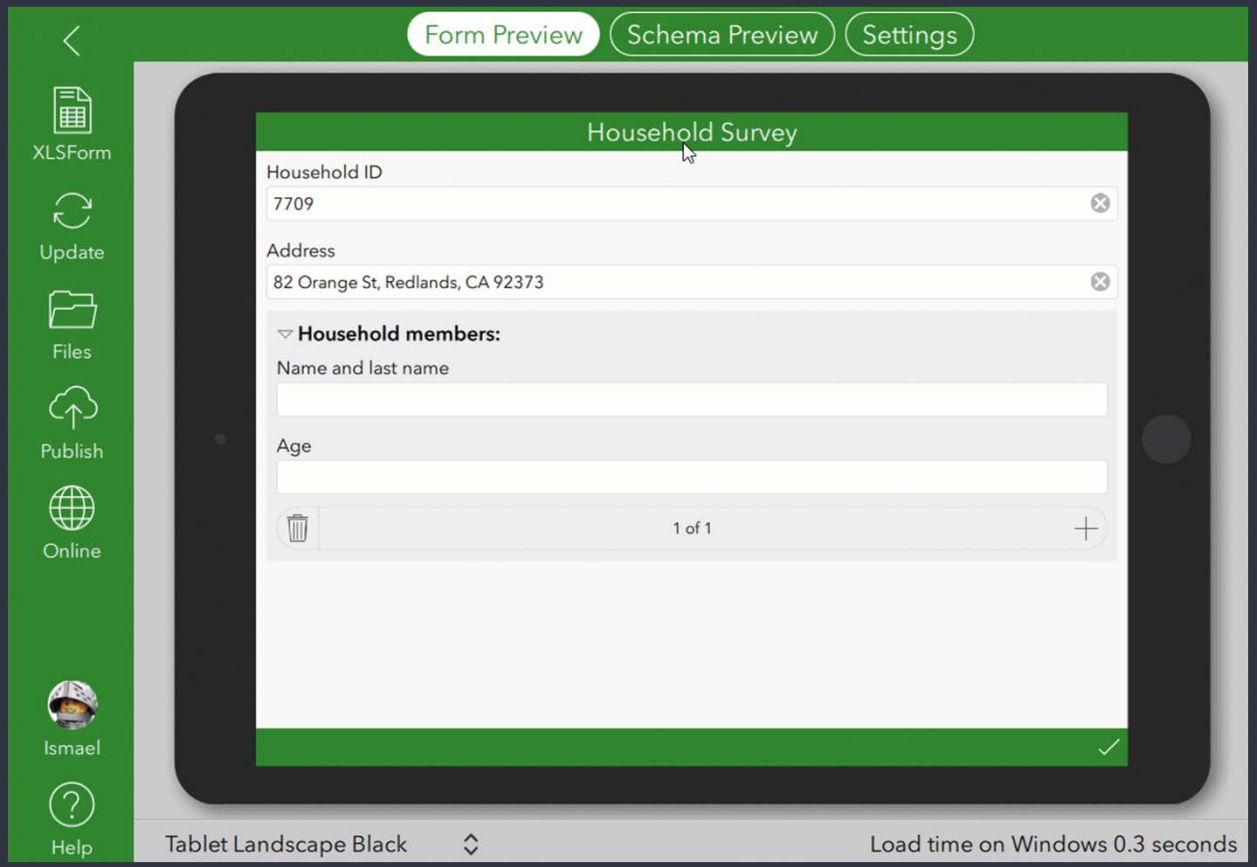

- Prepopulate answers
- From CSV, feature layers, external APIs, etc.
- Examples:
  - Enter Project number, get PM, client, date, etc.
  - 3rd party API for weather

# REPEATS



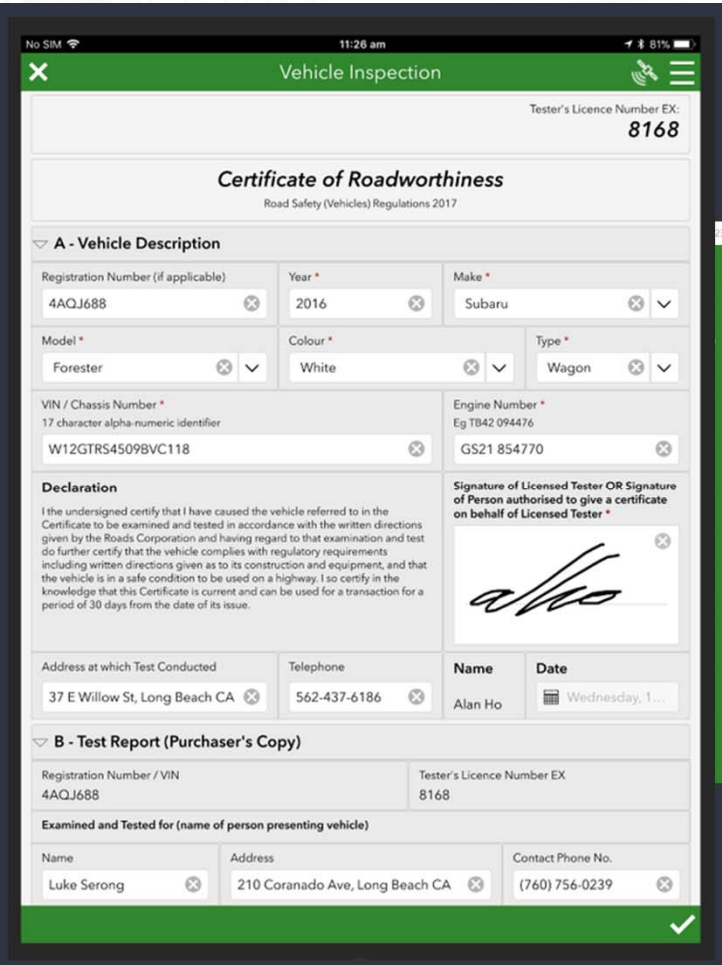

- Ability to create related records for existing location
- Examples:
  - Multiple photos and notes of same area
  - Multiple inspections
  - Multiple elements to collect

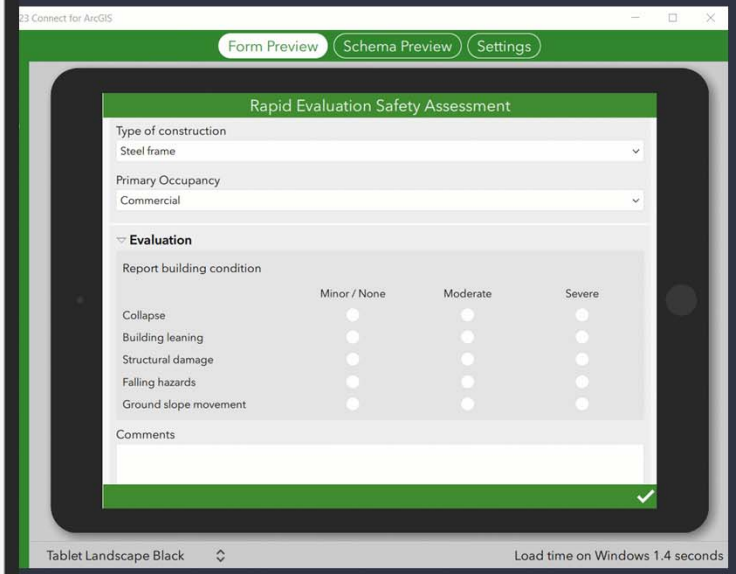
# REPEATS




- Also aggregation with Join, Sum, Min, Med functions

# UI/UX ENHANCEMENTS



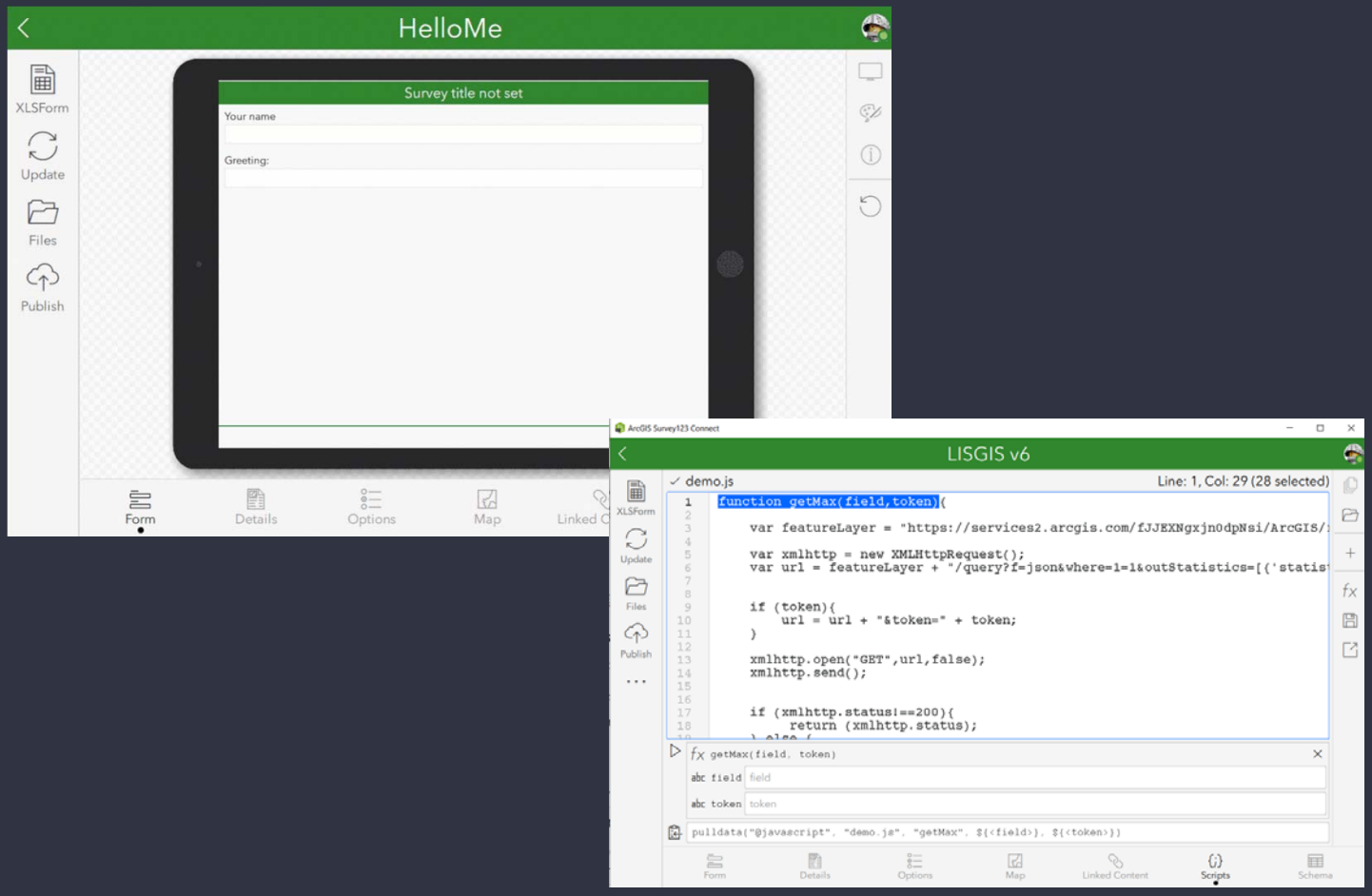




- Cleans up look and feel
- Easier to Use

- Pages
- Table lists
- Dynamic Grids

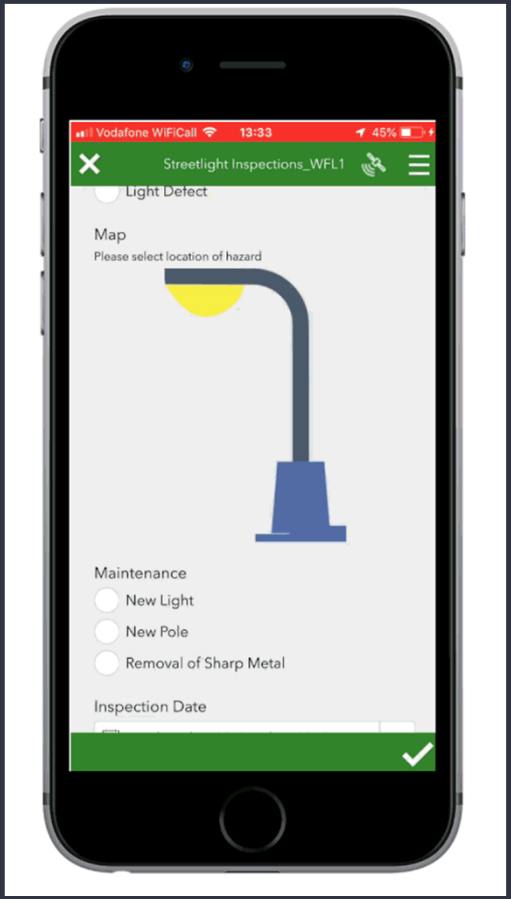
* Need to evaluate end users, how use, etc.

# JAVASCRIPT




- Extends Survey123
- Examples:
  - Complex data validations
  - Remove duplicates from lists (inspection dates, or inspect something twice)
  - Pull weather APIs
  - Spatial Join (select valves in construction zone)
  - Concat, Sum, etc.

# IMAGE-MAP



- Clickable images
- Scalable Vector Graphics (SVG) files
- Intuitive Data Collection
- Only in Field App, not Web

# SURVEY123-FIELDMAPS INTEGRATION

*arcgis-survey123://?itemID=89bc8c483e548e90Langan09495e78b&field:AssetID={asset}&field:Status=Good&center=32.9289,-96.9896*

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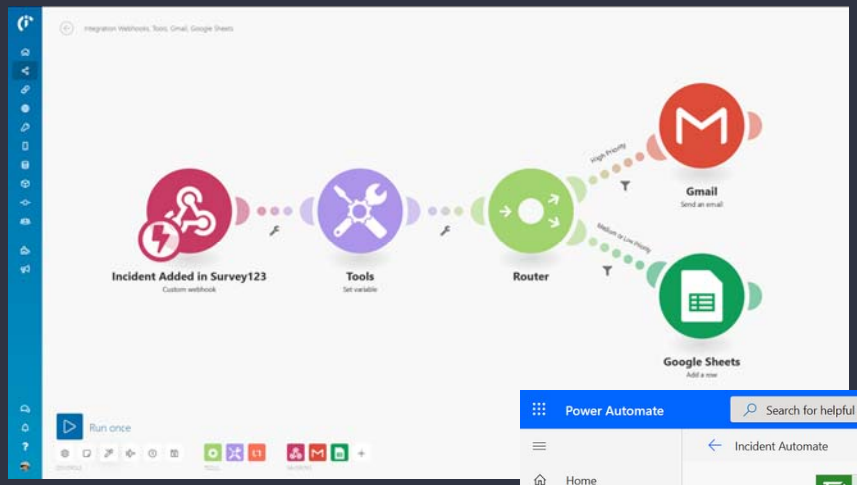
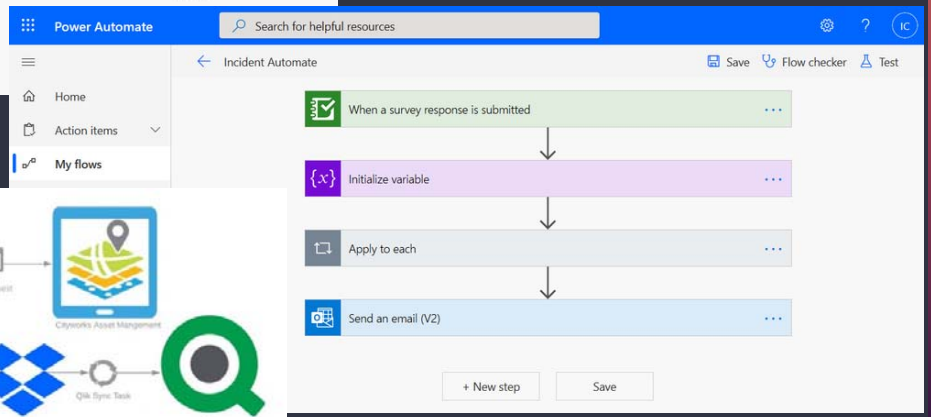
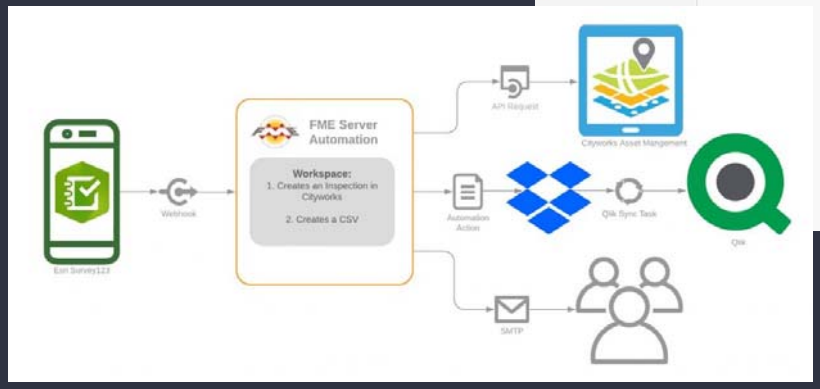
# ADVANCED INTEGRATIONS



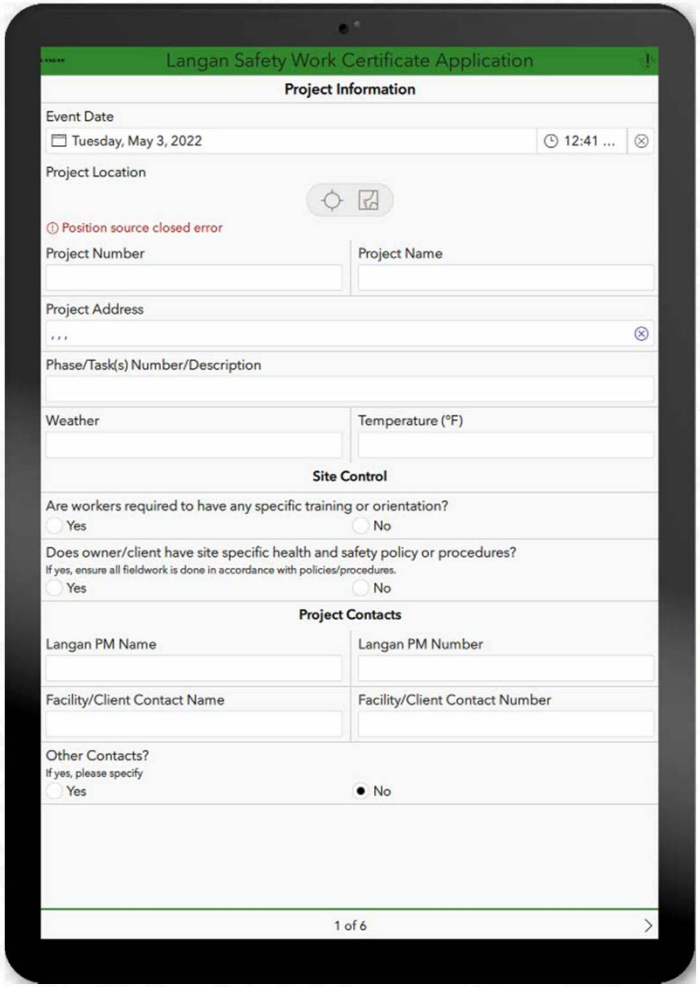




**Webhooks**

- Activate applications/process when Survey123 submitted
- Send emails, convert/format data, update DBs
- Possible Integrations:
  - MS Power Automate
  - Zapier
  - Tray.io
  - IFTT
  - Make (Integromat)
  - Safe FME

# PULLING IT ALL TOGETHER

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CHRIS AKIN, GISP

cakin@langan.com

Technical Excellence Practical Experience Client Responsiveness