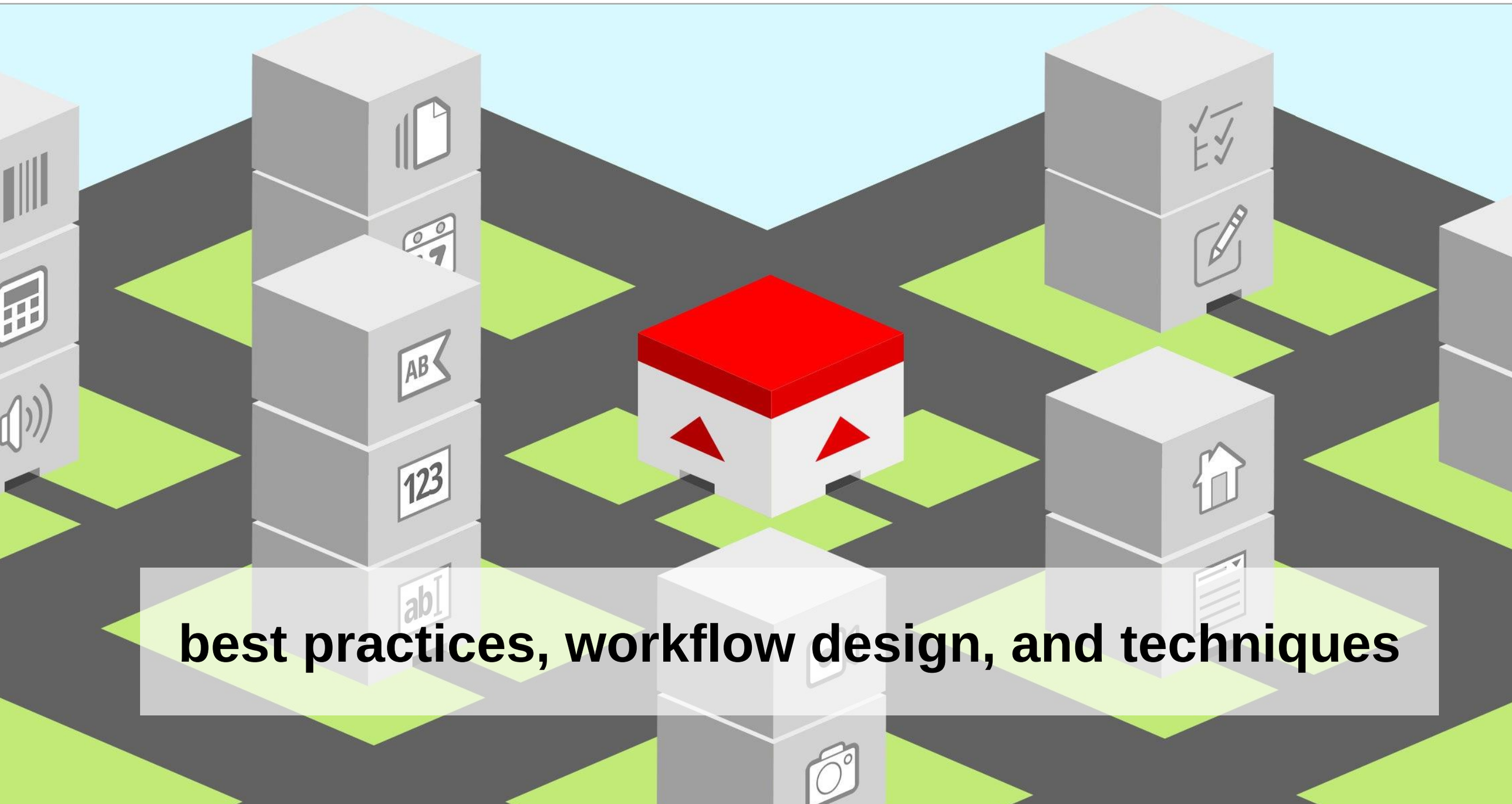
Automating Field Data Collection

Coleman McCormick
EVP, Fulcrum

Automating Field Data Collection



best practices, workflow design, and techniques

Coleman McCormick

EVP, Fulcrum

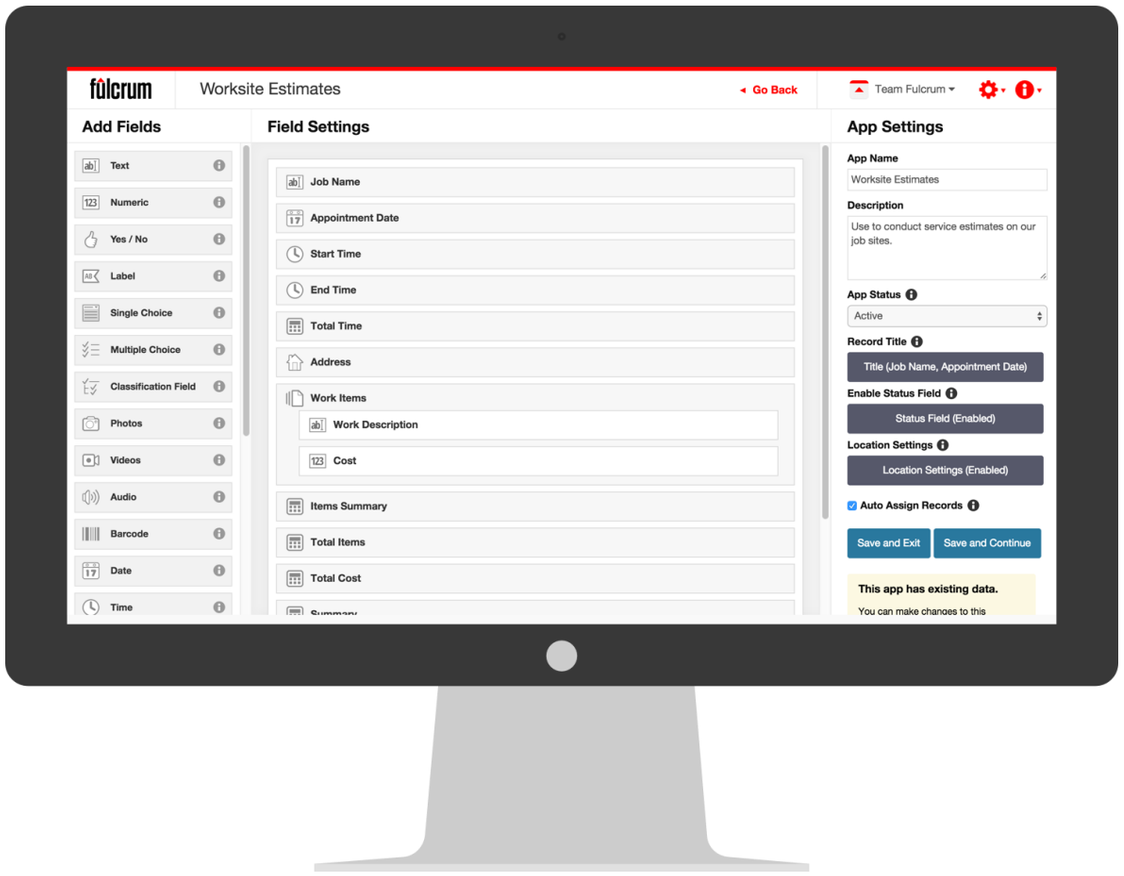
coleman@fulcrumapp.com

@colemanm

fulcrum

mobile location leverage

Build forms on cloud



Deploy to mobile

About me

12 years in mapping / GIS

7 years developing software products

Work with companies + organizations worldwide on business process, data management, software

What we do

Software shop in St Petersburg, FL

Mobile forms — web, iOS, Android

Workforce management

Automation & streamlining of data collection

SaaS subscription service

Worldwide customer base

field data automation ✦ ✦ fulcrumapp.com/iaao

Field collection use cases

- Appraisals
- Damage assessments
- Code enforcement
- Public works
- Asset management
- On and on…

Agenda

Goals and objectives in collecting data

Brief history of data collection

A look at **workflow**

Friction and its causes

Techniques

Some **examples** of automation in action

Ideals + Goals

i need to collect some data.
what does “success” look like?

What’s the ideal process?

- Think about goals and objectives
- What questions need answering?
- Who are the stakeholders? (Who’s asking the questions?)
- Interviews — understand the “why” of the requirements
- Paint the picture
- Tasking your field workforces

start by defining the successful final result, and work backwards!

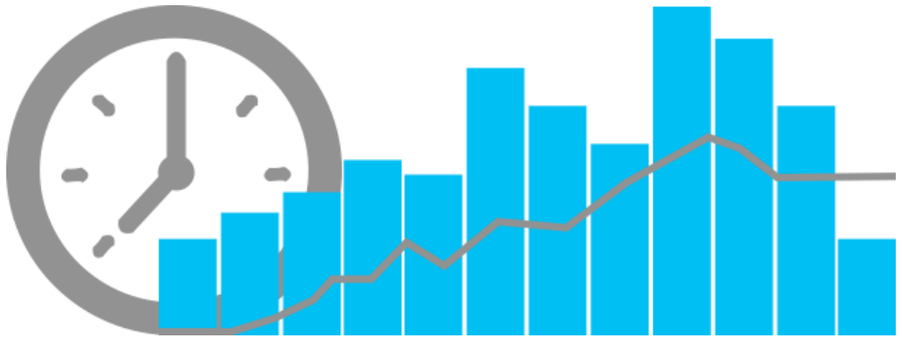
amazing how many customers I consult with can't clearly define the goals + objectives

need consensus on goals from bottom to top

bit.ly/amazon-product-dev

On-Demand

- Leadership wants answers to questions *now*, not 3, 6, or 12 months later
- Reporting on specific data views — the data I want, when I want it



Other key goals

- **Cost savings** — fieldwork is *expensive*; room for huge savings
- **Reliability** — critical data can't be wrong, costs incurred with unreliable inputs or systems
- **Speed** — decisions can't be made without the data in hand!
- **No duplication** of effort!

A Brief History

a rapid evolution in technology

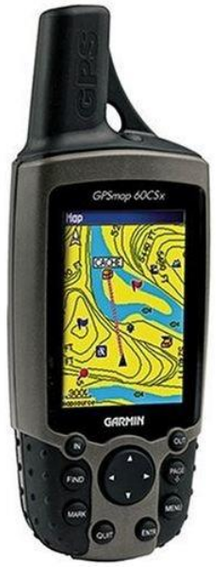
field data automation ✦ ✦ fulcrumapp.com/iaao

Pen and paper, notes, transcription

pain

time between collection + decision = wide gap

Then we advanced, sorta



Finally!

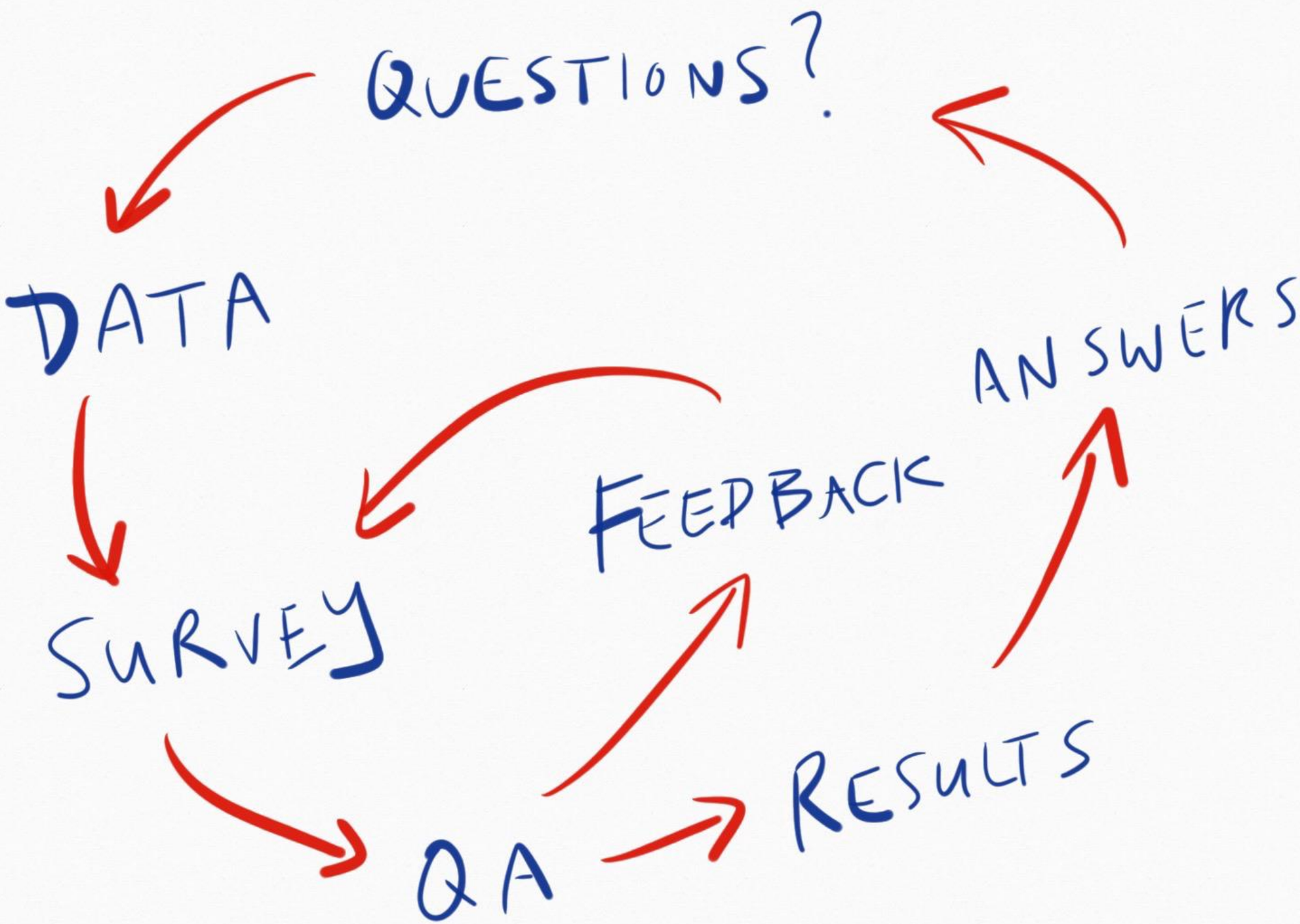
Integrated sensors
Mobile computing
Low cost
Ease of use

Historic challenges

- **Error-prone** — handwritten, hard to QC, clunky
- **Time-consuming** — lots of duplication, revisits to fix mistakes
- **Delays** — reporting + aggregation takes days or weeks
- **Difficult to integrate** — needs transcription / cleanup

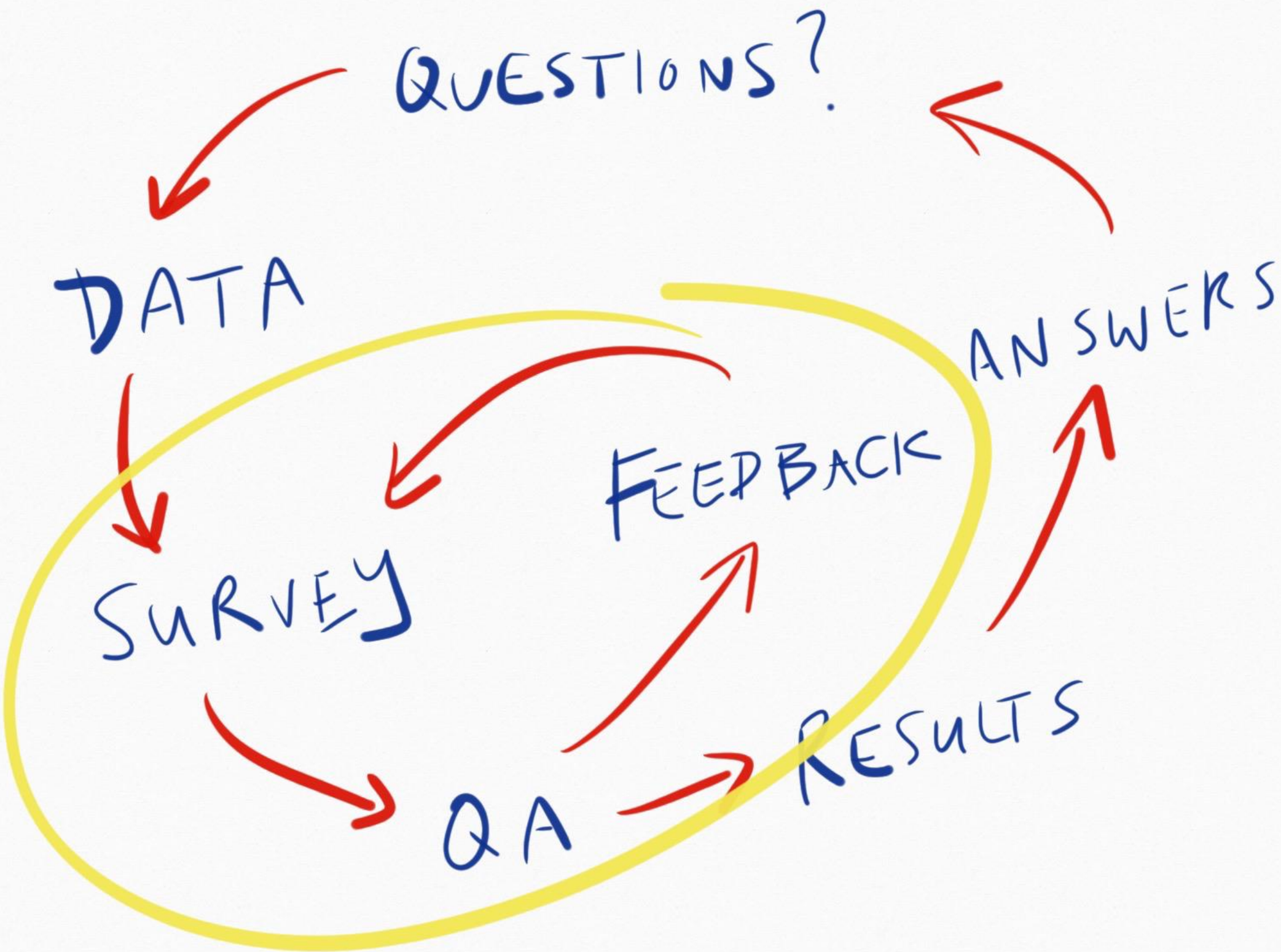
Workflow

understanding, designing, iterating


QUESTIONS?
DATA
SURVEY
QA
RESULTS
FEEDBACK
ANSWERS

Start at the beginning

- What questions need answering?
- What data do I need to get those answers?
- Who are the stakeholders?
- How will we get the needed info?


QUESTIONS?
DATA
ANSWERS
SURVEY
FEEDBACK
QA
RESULTS

Friction

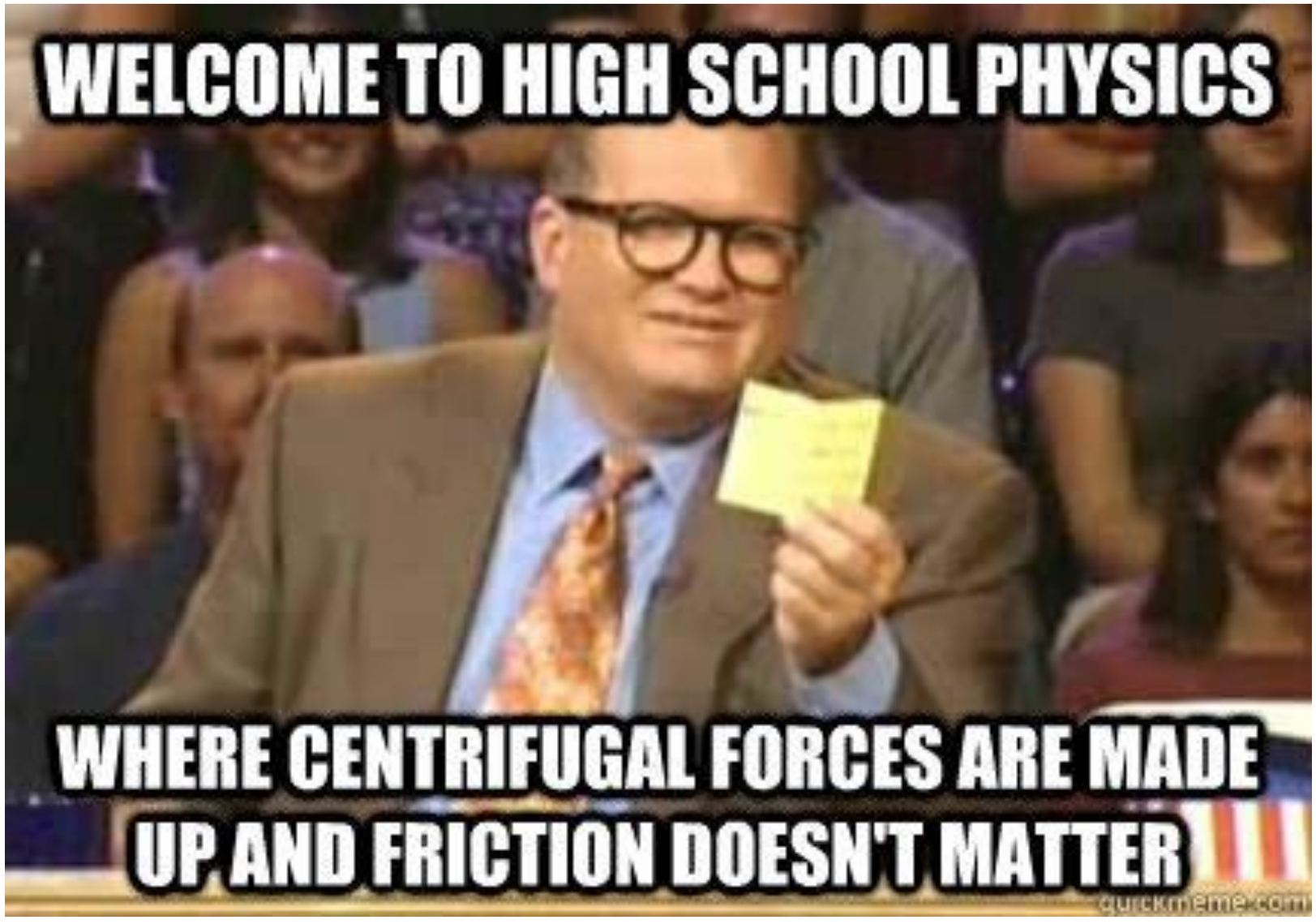
the source of our data management pains

field data automation ✦ ✦ fulcrumapp.com/iaao

Common sources of **friction**

- **Technology** — tools are too complicated, systems over-designed, “solution looking for a problem”
- **Work** — complexity of the work, steps in the workflow
- **Human factors** — compliance, need-to-know, organizational silos

There is ***always*** some friction in the workflow



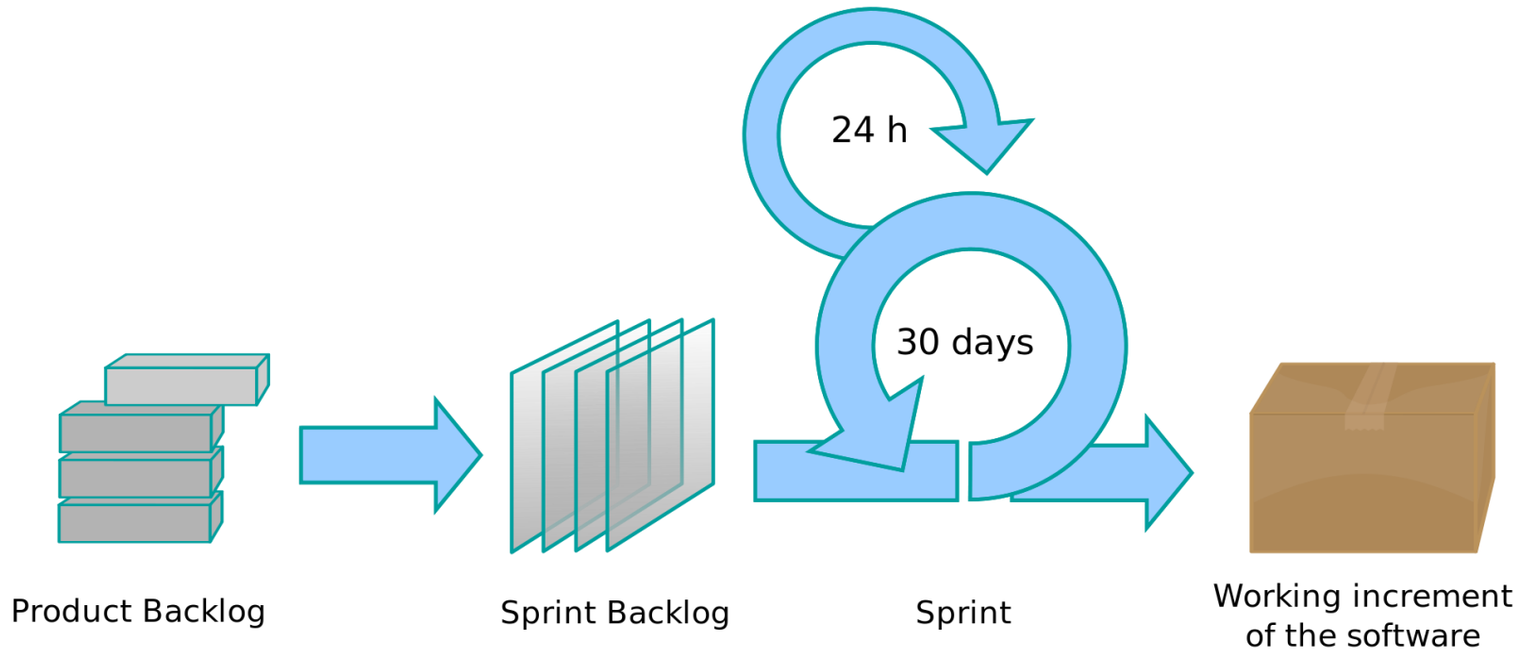
It’s not all ***bad***, but we should reduce what we can control

Treat the **sources**, not the **symptoms.**

If not, your workflow becomes a patchwork of workarounds.

Iteration

- Incremental reflection + improvement
- Look at whole workflow, seek frictions, test new methods to reduce, re-deploy, re-test
- Scrum!

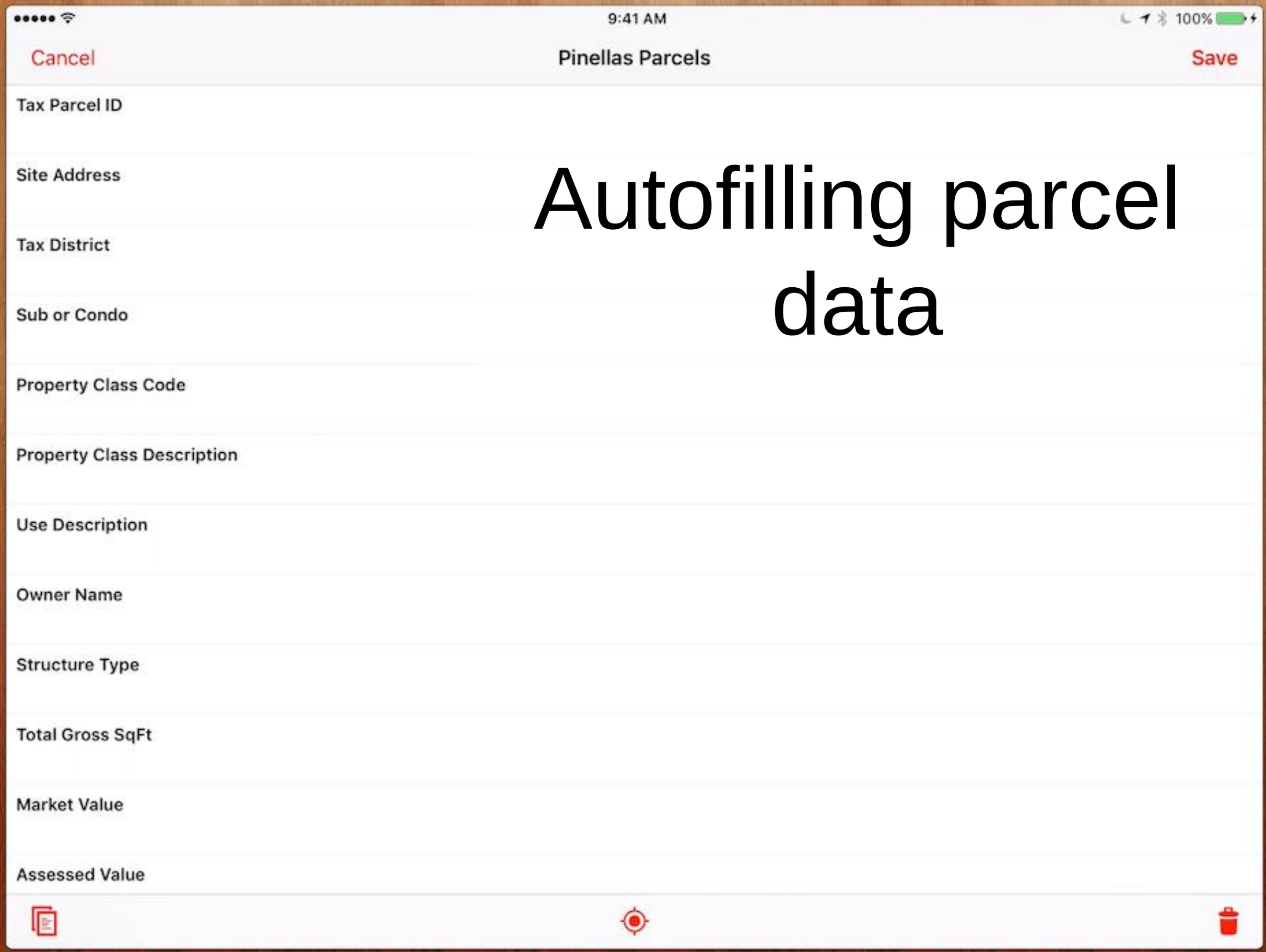


A Few Techniques

demonstrating ways to reduce friction
(with tech)

Some samples of what this looks like

- Autofilling data
- Real-time QA
- StreetView integration
- Capturing weather data



Autofilling parcel data

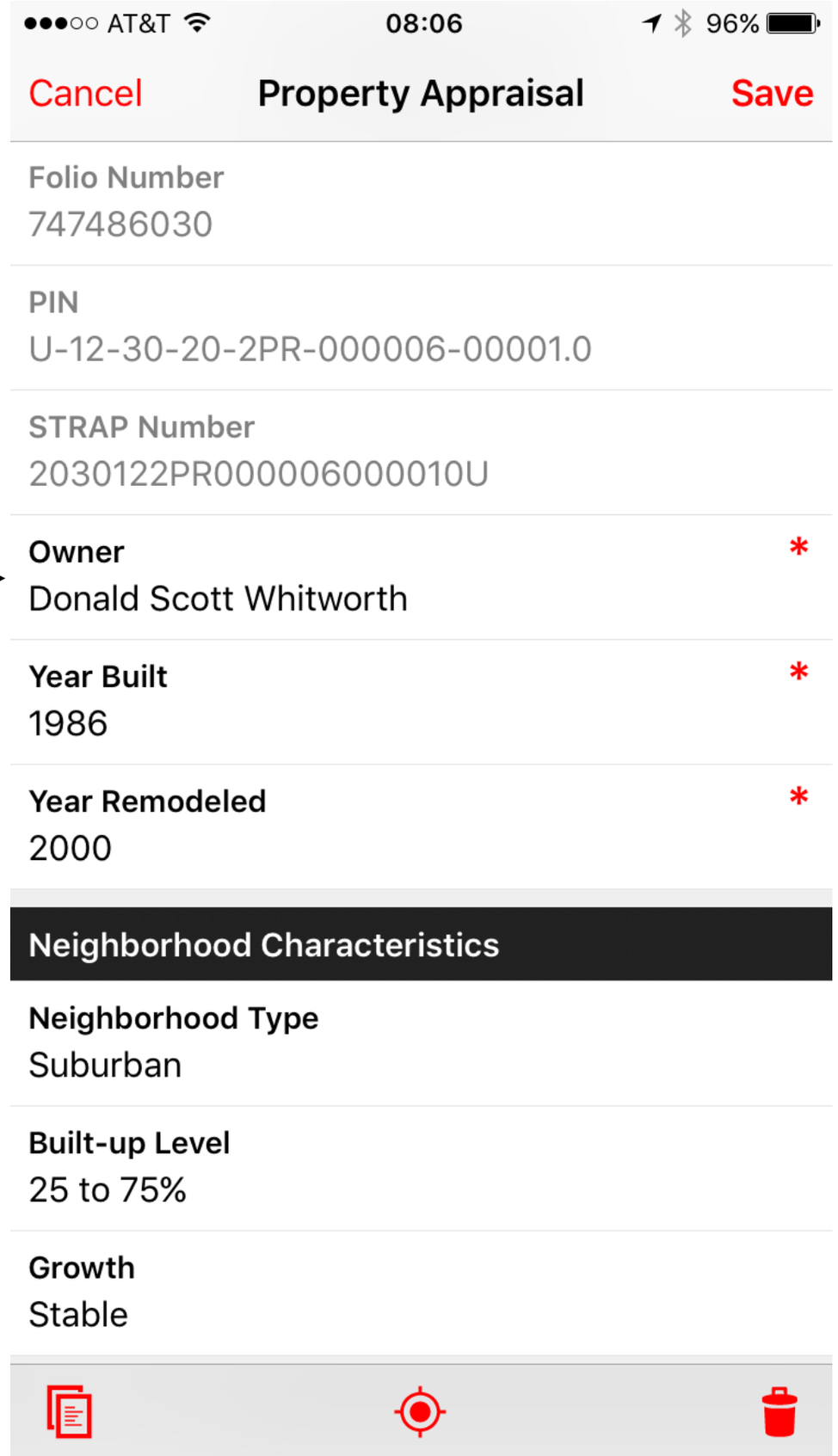
QA settings

read-only data

fields required for submission

validation

if-this-then-that conditions




09:41
100%
Property Appraisal
Callista Ave
Dunaire Dr
Natures Way Blvd
Greenmark Ln
Orangefield Pl
Turnberry St
Google

Live QA/QC

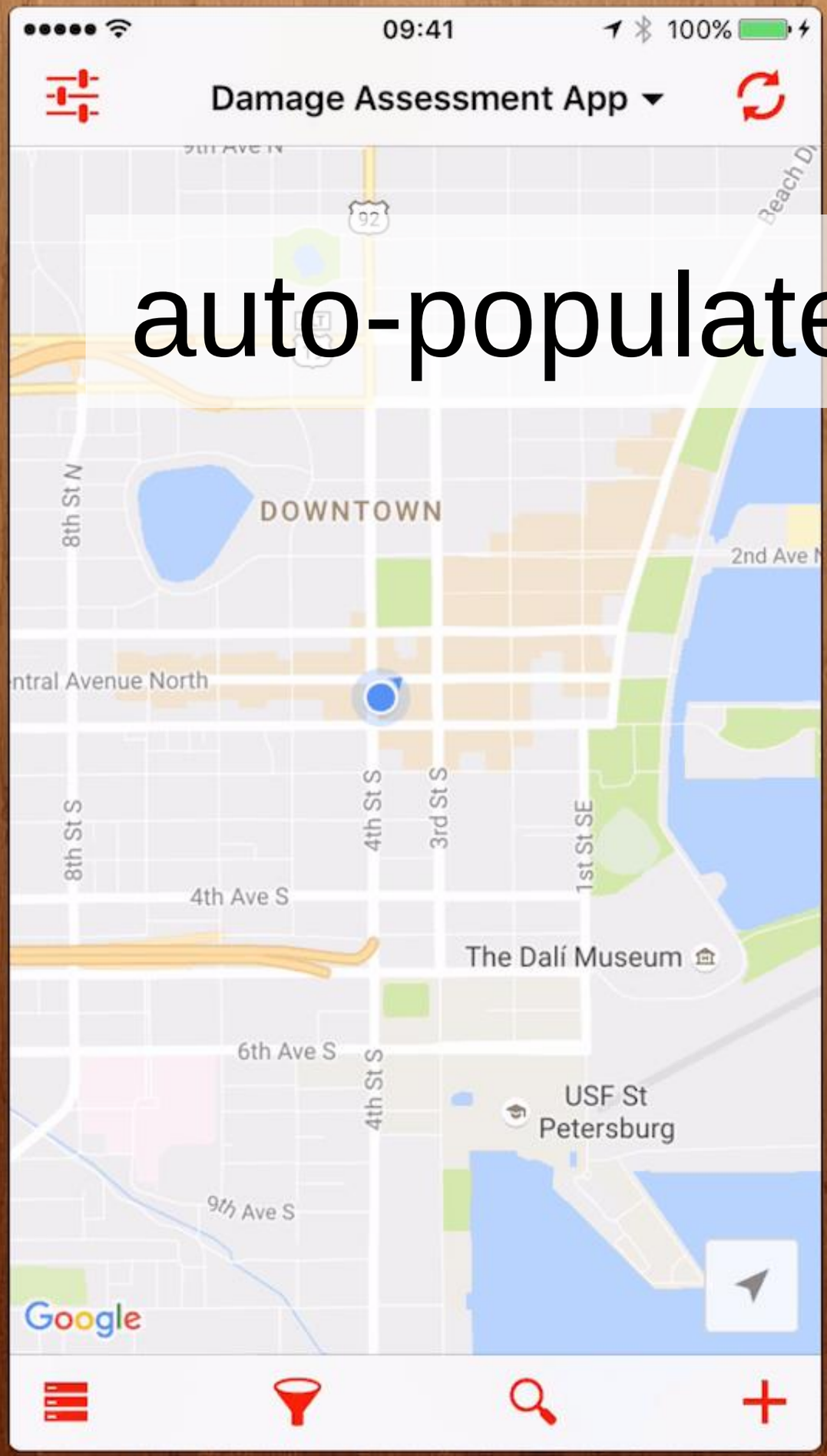
09:41 100%

Parcels

600 1ST ST N ST PETERSBURG 33...
No Status

8th Ave NE
2nd St N
5th Ave NE

Google StreetView



auto-populate weather

Audit trails + history

- History
- GPS locations
- Date / timestamp for work fact checking
- Digital toolchain can automate the “paper trail”

Automation in Action

examples from the field

Automation in action

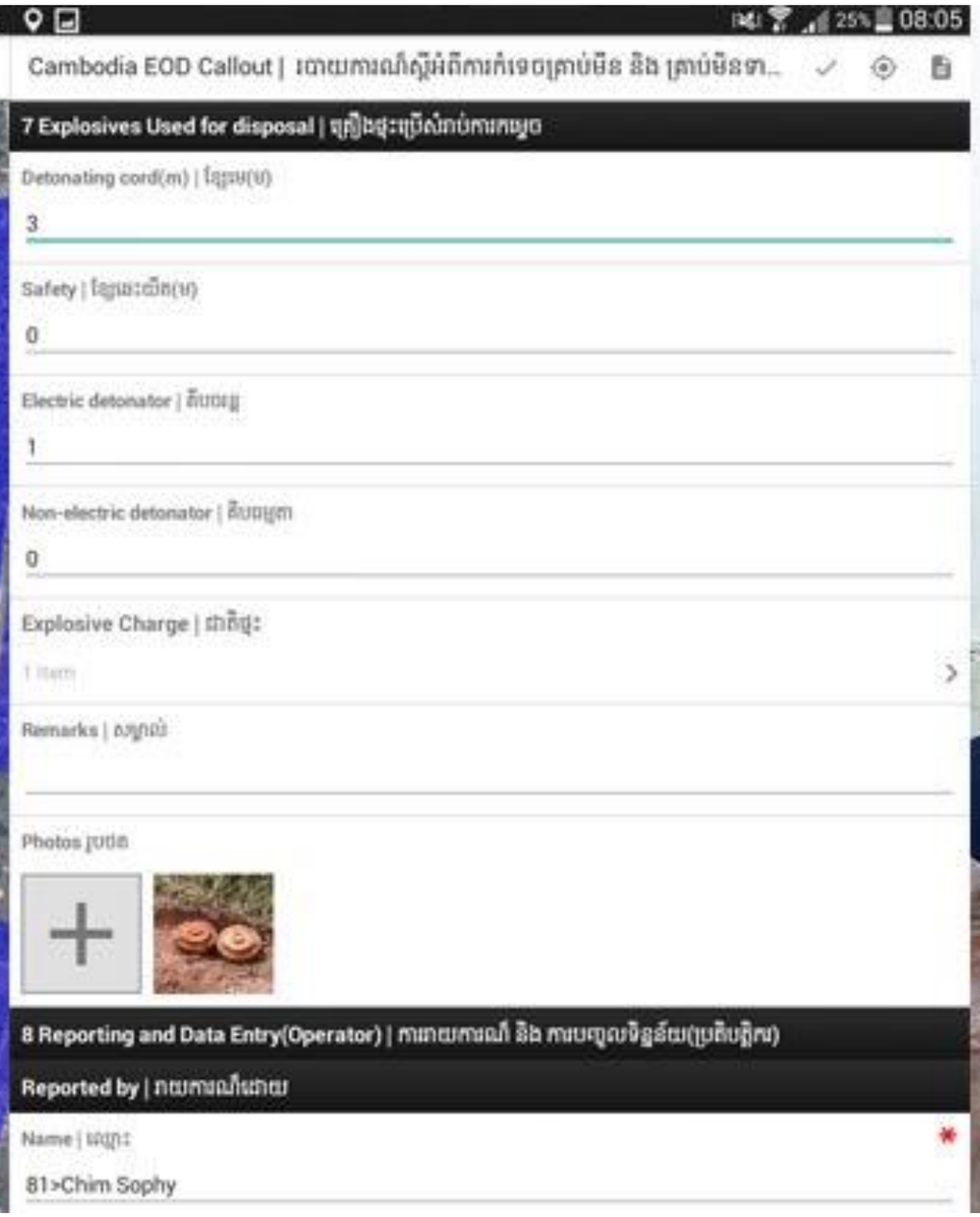
- A few diverse examples:
  - **Comcast**
  - **HALO Trust**
  - **Century Engineering**
- One closer to home:
  - **Lake County Property Appraiser**

Comcast

- Cable drop inspections
- From field to review to approval in minutes
- Reduction in revisits

field data automation ✦ IAAO 2016 ✦ fulcrumapp.com/iaao

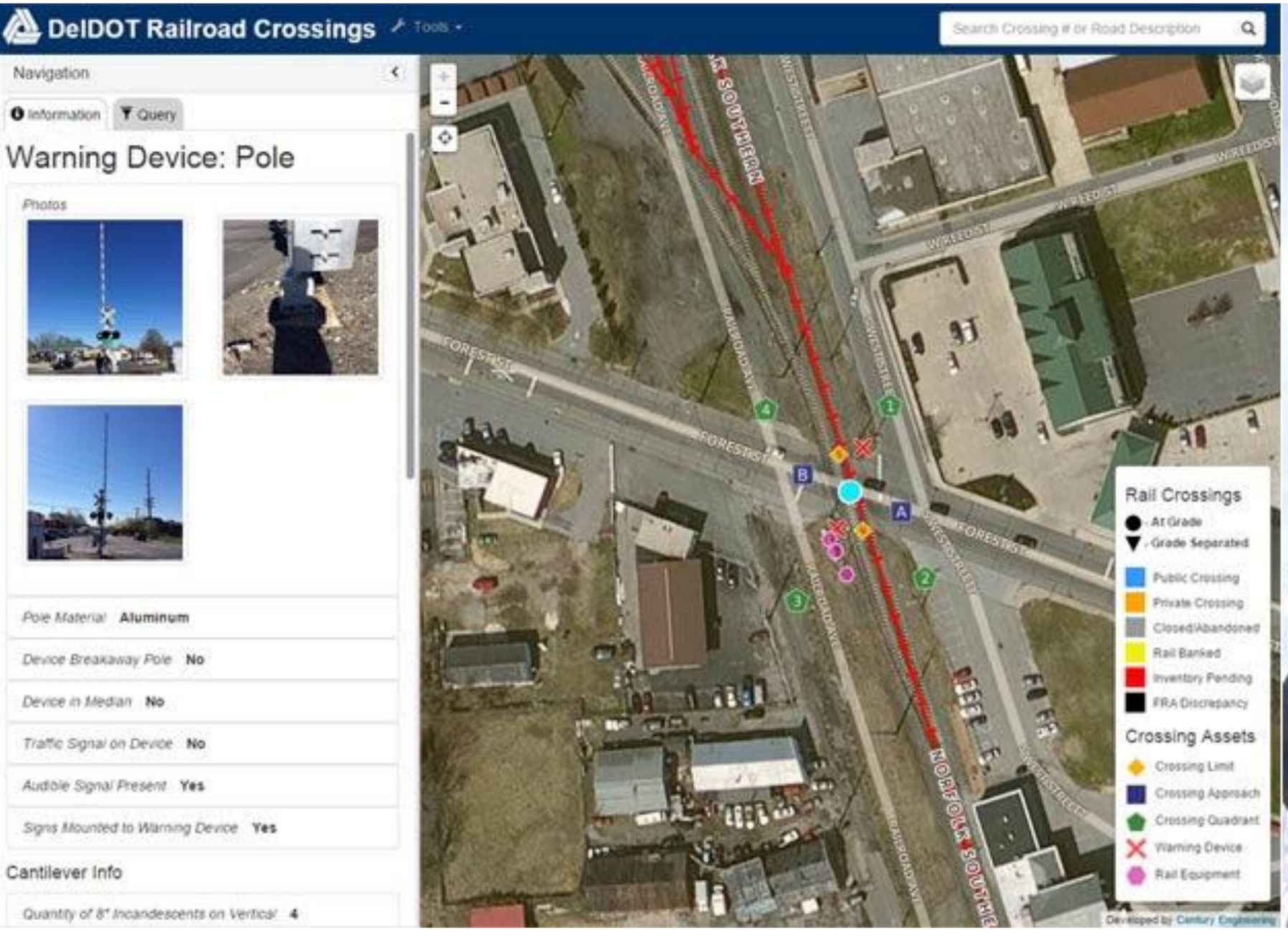
The HALO Trust



fulcrumapp.com/cases/halo-trust

field data automation ✦ ✦ fulcrumapp.com/iaao

Century Engineering



fulcrumapp.com/cases/century-engineering

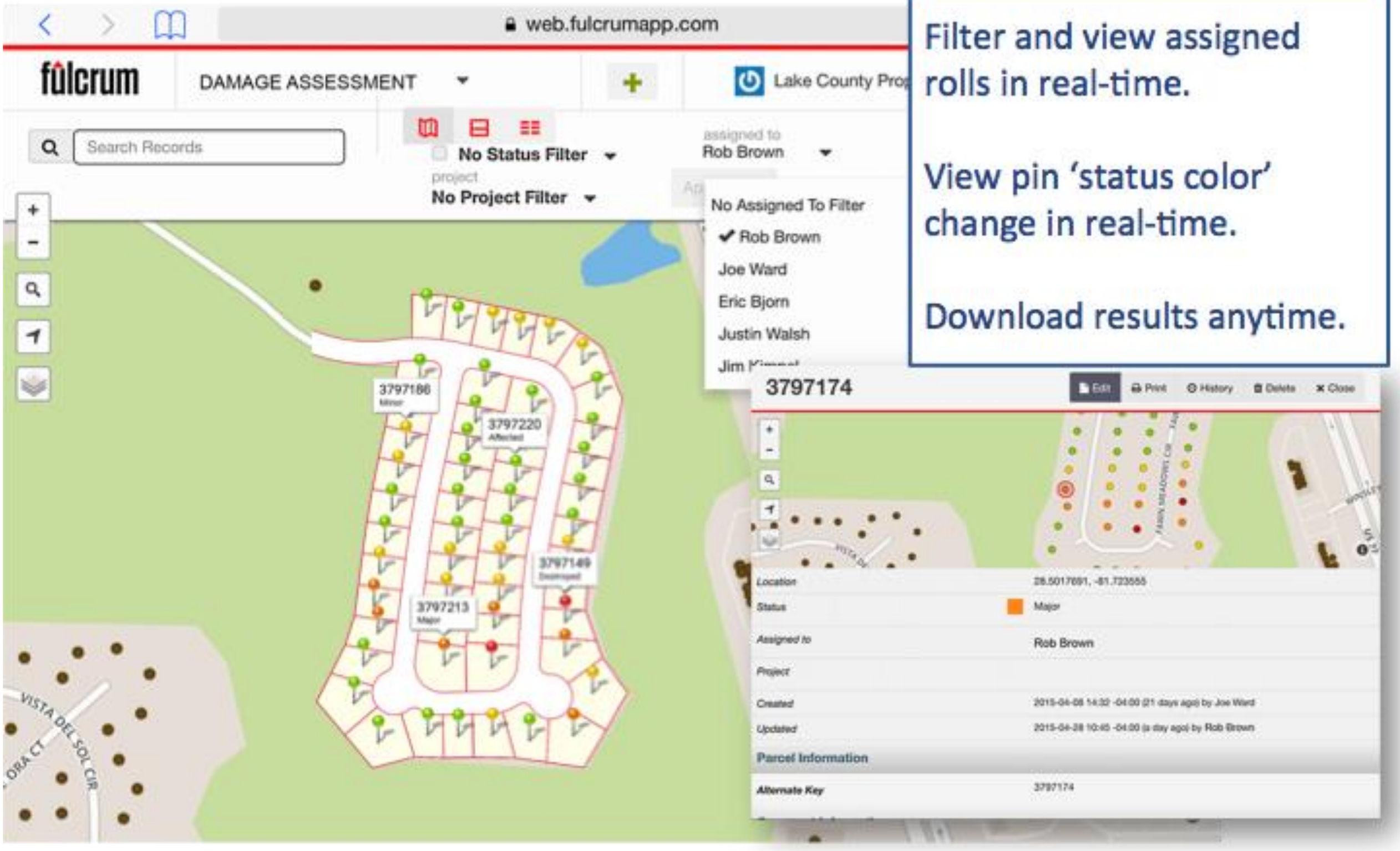
field data automation ✦ ✦ fulcrumapp.com/iaao

Lake County Property Appraiser

Michael Prestridge, Chief Deputy, Lake County Property Appreaser

- Damage Assessments
- Assessment forms link back to parcel base data
- Uploaded CAMA data to cloud for reference
- Satellite / street maps for quick context in the field
- Offline support keeps people working

field data automation ✦ ✦ fulcrumapp.com/iaao



field data automation ✦ ✦ fulcrumapp.com/iaao

Field Usage

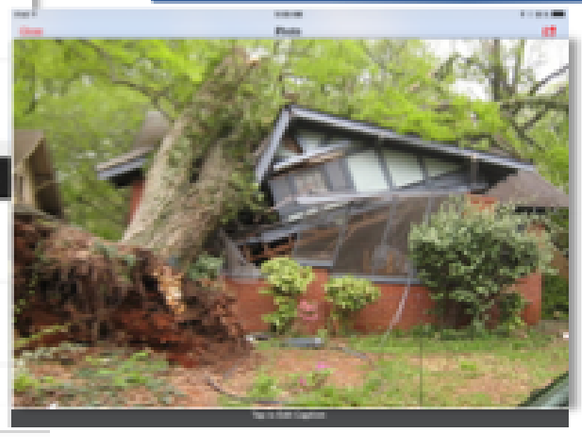
Status Dropdown:
Destroyed, Major, Minor, or Affected.
Color coded to FEMA colors.

Pre-populated CAMA data

Tap form to open drop-down menu.

"Override Value" field.

Add Photos.



Thanks!

Coleman McCormick

EVP, Fulcrum

coleman@fulcrumapp.com

Michael Prestridge

Chief Deputy, Lake County PA

mprestridge@lcpafl.org

fulcrumapp.com/blog

@fulcrumapp

field data automation ✦ ✦ fulcrumapp.com/iaao