An Evaluation of Electronic Field Data Collection **Solutions:** Lessons Learned

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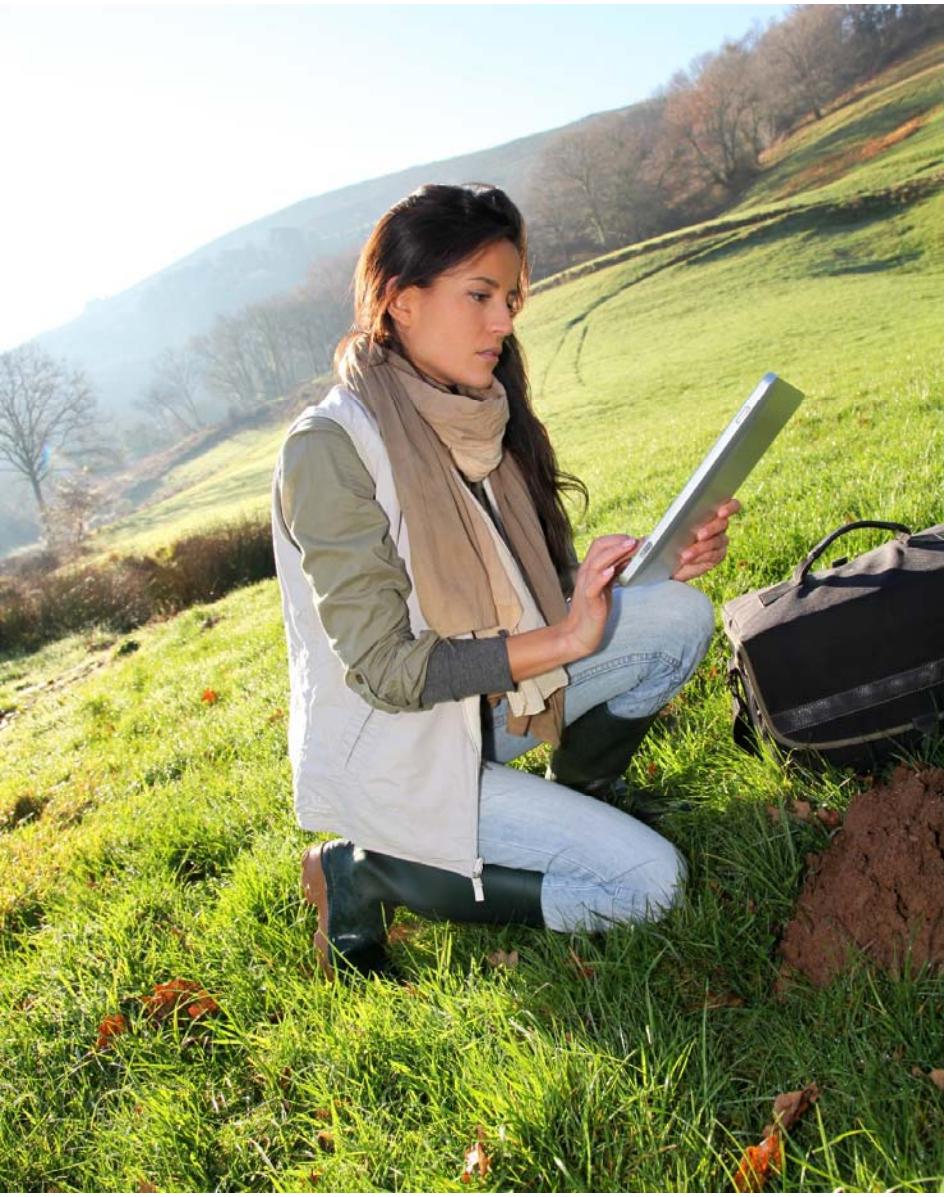

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Eliminate transcription, reduce typographical errors

Control of observational language

Reduce missing\ overlooked required information Qualify Data objectives

Real time relay of critical information

Types and Purpose of Digital Data Collected

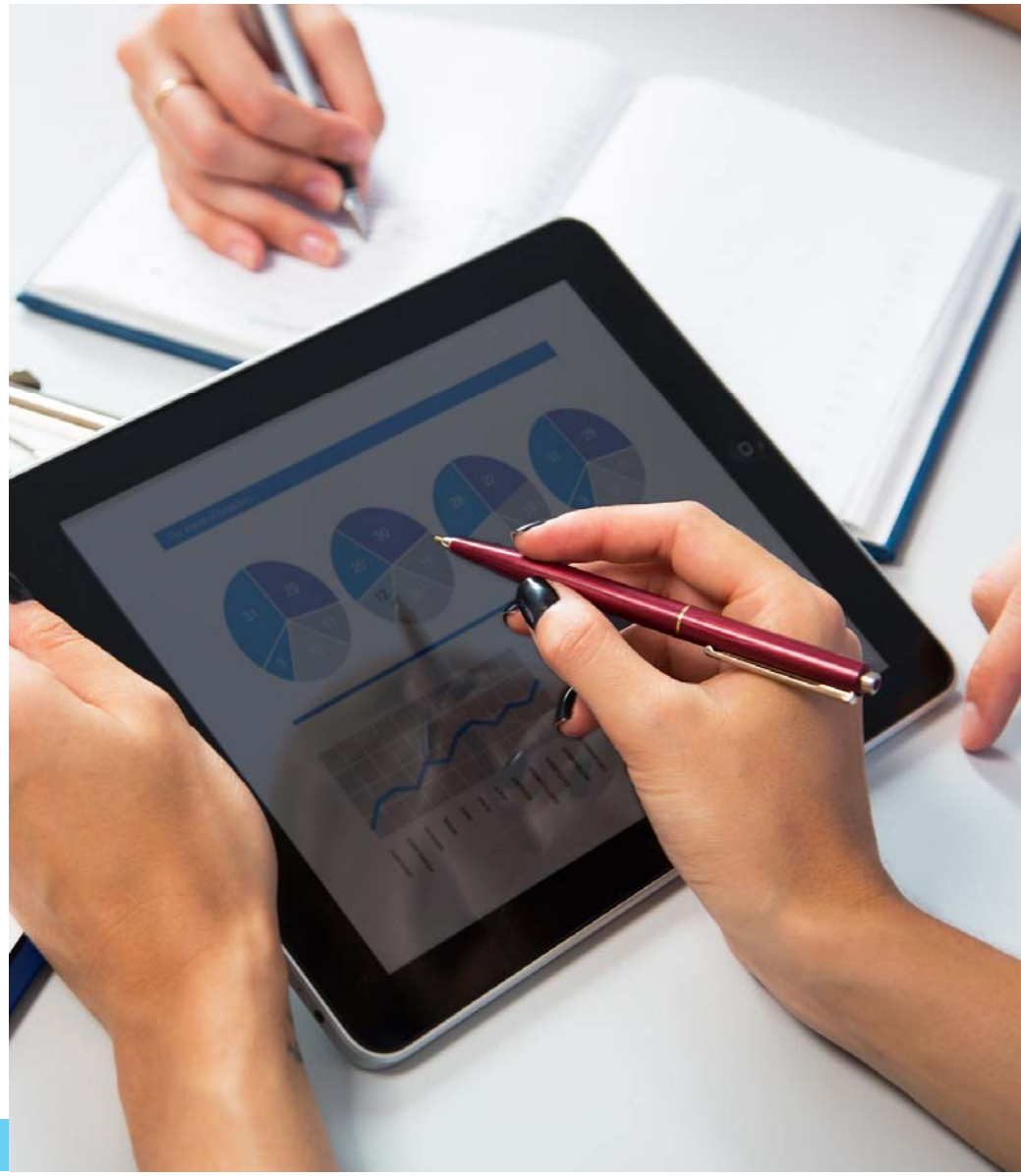
Paper-like forms

- Standardized paper space in appearance
- No or limited data use beyond form filling
- Generally signatures and record of approval are very important
- The form itself is a deliverable
- Examples – pdf with fields, html page, check out signature

Types and Purpose of Digital Data Collected

Data Collection

- Numerical and textual data to be uploaded into a specific database structure
- The form is not necessarily a deliverable in itself
- Open ended in terms of number of observations\pictures etc.
- Examples – Access Database, XML documents, Survey Monkey, custom solutions



Current Technologies Reviewed

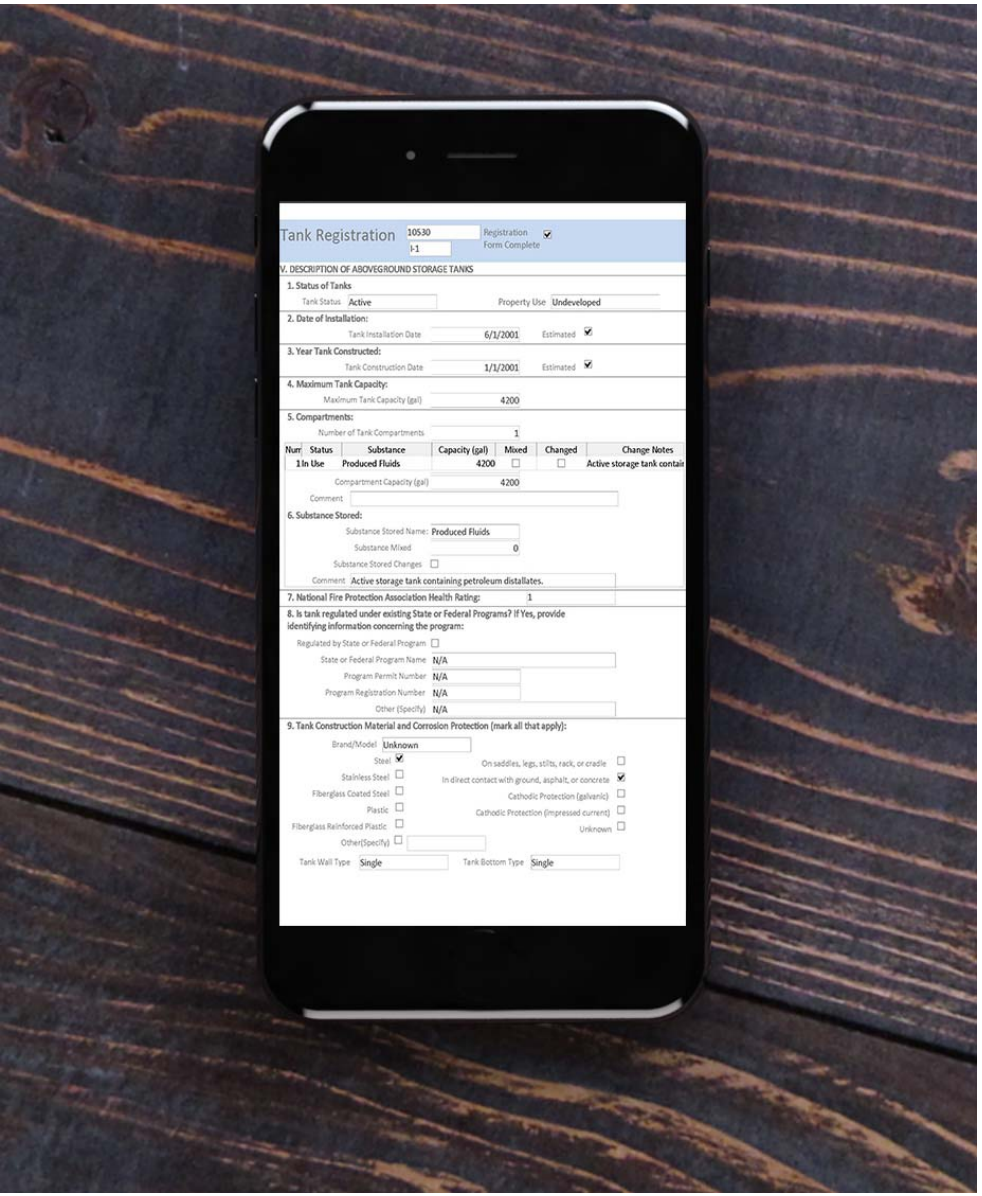
- Vendor Developed
  - Earthsoft's EDGE
  - ESRI Survey123
  - ESRI Collector for ArcGIS
  - Mi-Forms
  - Qnopy
- Internal Developed
  - MS Access Forms
  - Distributed Excel Files
  - Web based – Sharepoint forms

Management

Roadblocks to Efficient Systems

Issues


Will this solve all the data collection issues?
Can we reduce the overall cost of the project?
It shouldn't cost much to develop because we already have paper forms.



Case Study

Tank Inspection Forms

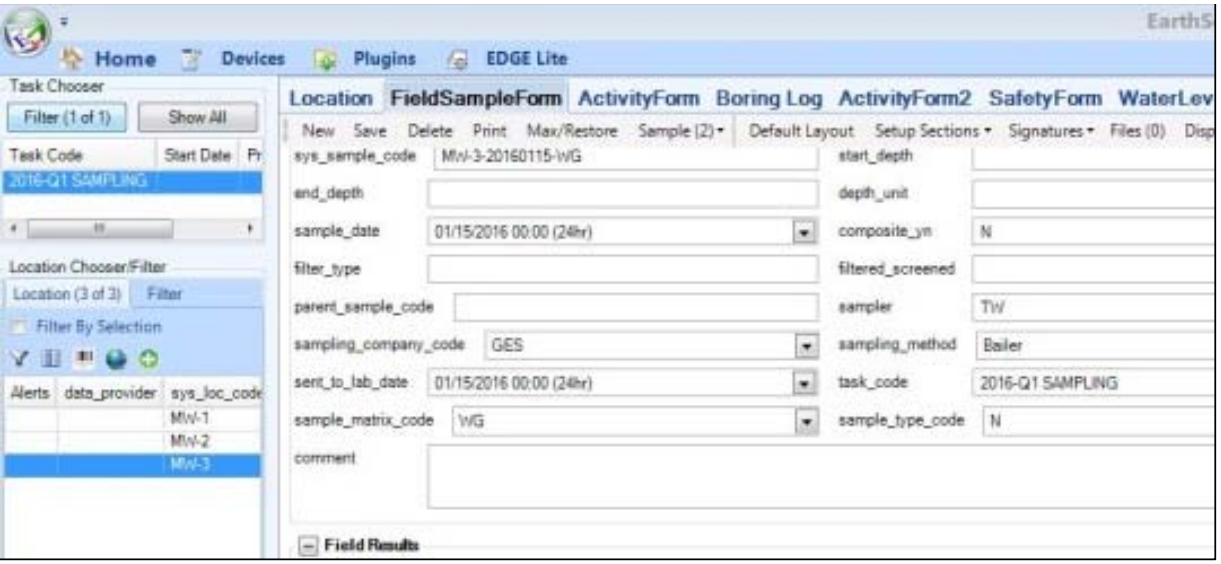
- No existing data structure adequately addressed field data collection or data upload needs
- Regulatory requirements for website submittal did not allow batch uploading
- Field form needs to be flexible during production to accommodate additional client requests
- Costs for development were presented along with estimate for increase in efficiency in submittals

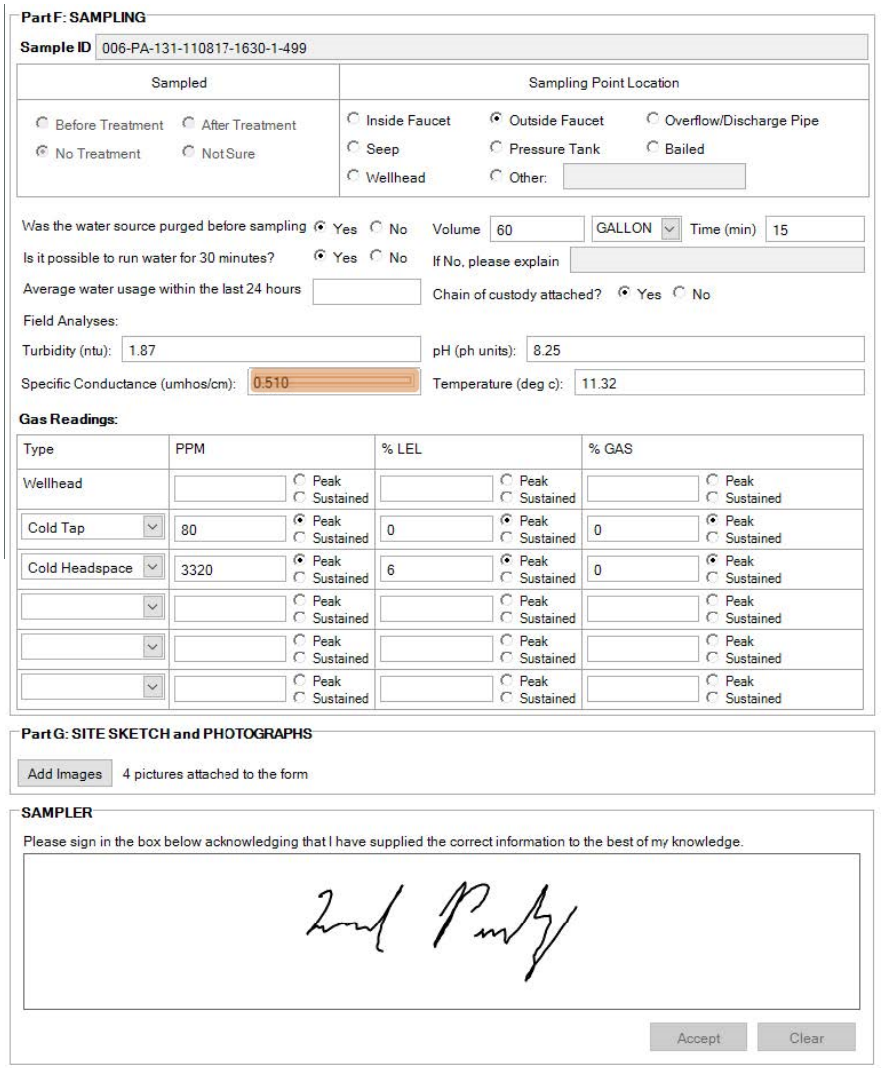
Solutions


Great question!
The efficiencies gained should result in a better quality product not necessarily an overall cheaper product.
Let's make sure we're all on the same page. What are data quality objectives?

Workflows

Roadblocks to Efficient Systems





Case Study

E&P Groundwater Sampling Forms

- Presented in similar format and size as existing paper forms
- Added real time checking of values as the forms were populated
- Eliminated data transcription and QC
- Thorough documentation of and training for QA processes. Identified downstream use of the data and better way to record information.

Lessons Learned and *Better* Practices

Issues can arise when…

- The digital application is based on receipt of paper forms
- The QA/QC process is poorly defined and/or documented
- The purpose of collected information is poorly defined
- The data collection process lacks structure

There's a better way!

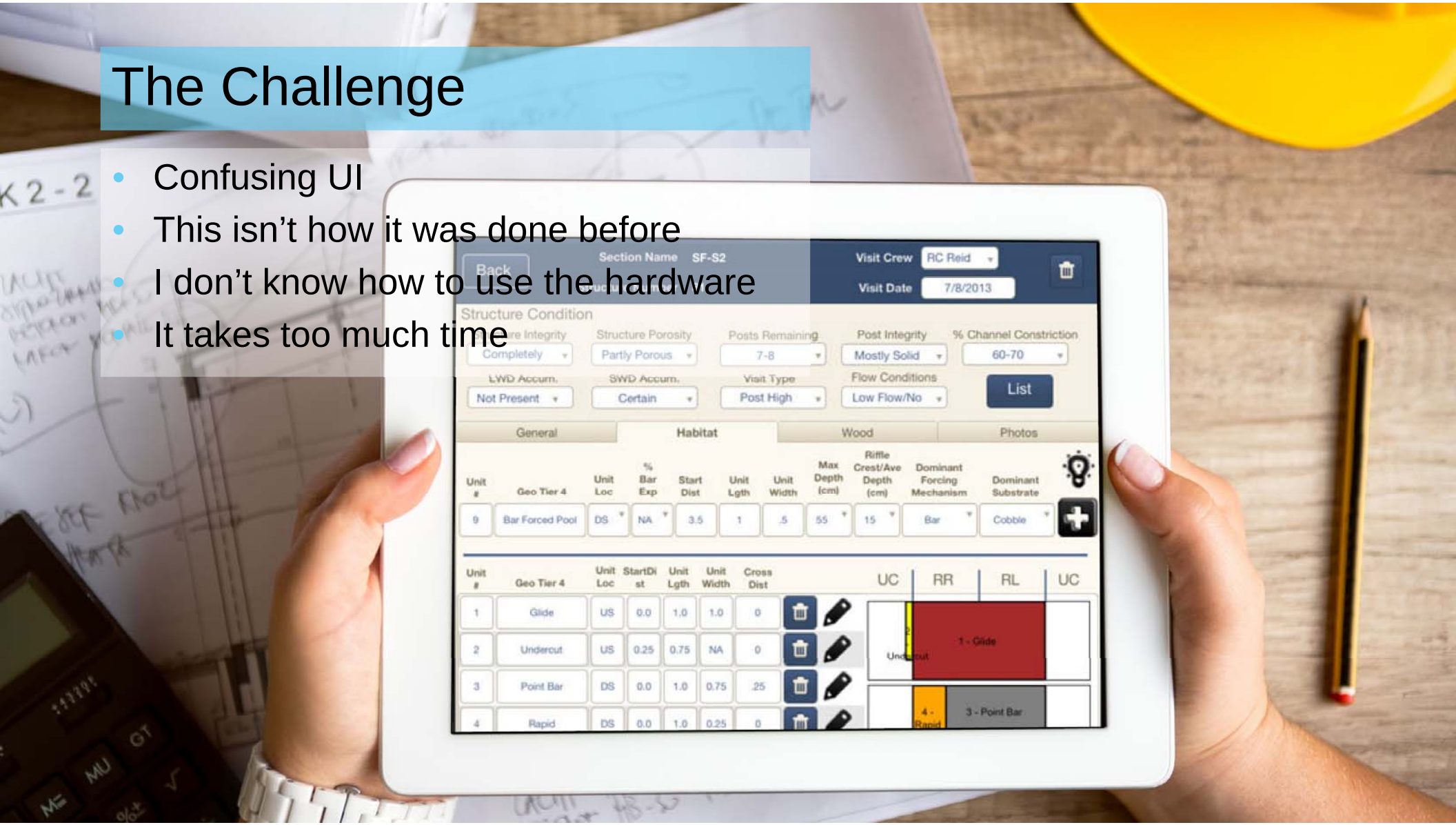
- Review and adjust the workflow to best use digital collection for collating and organizing structured data
- Minimize unstructured and\or redundant data requirements
- Take advantage of the opportunity to create better QC\QA process

Field Staff

Roadblocks to Efficient Systems

The Challenge

- Confusing UI
- This isn’t how it was done before
- I don’t know how to use the hardware
- It takes too much time



Site Recon & Project Description (Section 3.2.2.1)							
Date Completed:				Inspector(s):			
Weather:		Wind (mph)		Temp (F)			
Project Address:	1401 Charlotte Ave., Nashville, TN						
Land Area (Acres):							
Buildings (List):							
Car Wash:				Auto Repair:			
Areas observed:							
Access Limitations:							
On-Site Interview							
Name:			Relation to Site:				
Contact Info:			# Years at Site:				
Aware of any past environmental testing / studies / concerns:							
Utilities							
Utility	In area	At Site	Status	Comment			
Potable Water							
Process Water							
Storm Sewer							
Electric							

Well
Public
Surface
Unknown

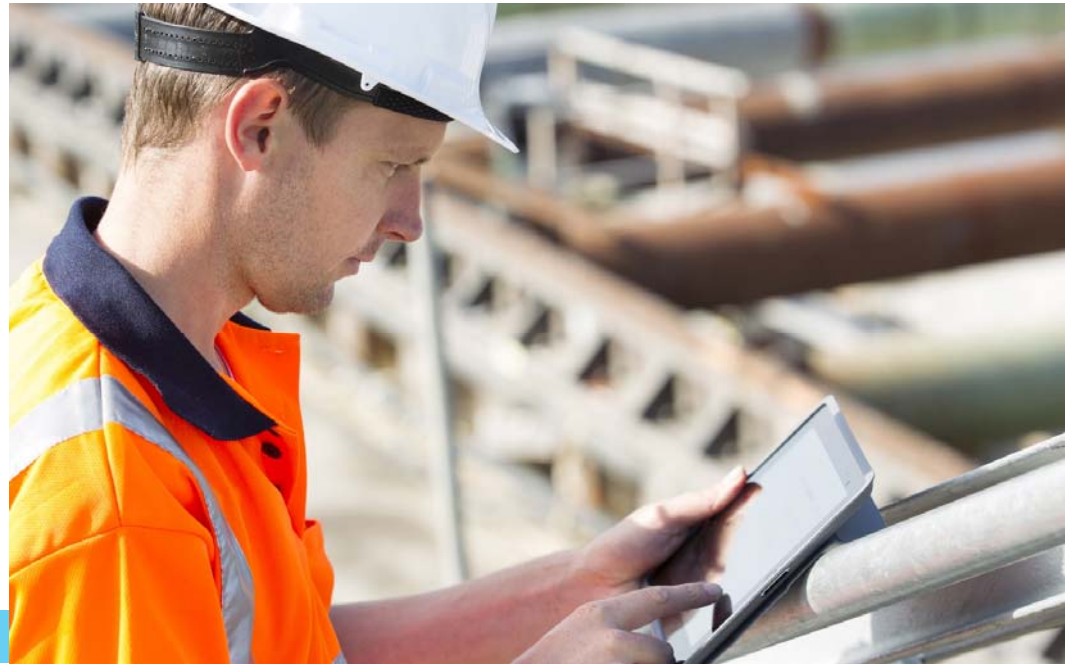
Case Study

Phase I Environmental assessments

- Nationwide scope (700+ sites), disparate hardware
- Well defined information requirements
- Delivery to 3rd party for final report collation
- Integration into existing work order system

Solutions

- Present senior field staff with example\demo interface
- Sell on the benefit of use
- Simplify\automate forms



Key Findings

Key Questions for Successful Implementation

Questions to consider during planning and preparing for digital field data collection…

- What is the purpose of collecting field data?
- What downstream decisions are made based on the field data?
- What has been missed in historical data collection? What is actually needed? Are the number of observations, photos, etc. fixed or open?
- What is the final deliverable? How is it submitted?
- Who needs to review forms before final submittal?
- What decisions must be made by field staff based on observations? What information must have controlled data entry?

Benefits of Digital Data Collection

Eliminate transcription, reduce typographical errors

Control of observational language

Reduce missing\ overlooked required information
Qualify Data Objectives

Real time relay of critical information

THANK YOU.

Questions & Answer

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