Geosyntec consultants

When and Why to Add Mobile Field Tools to Your Information Management System (IMS)

Mandy Willingham | 06 October 2022

Data Management Methods for Complex Sites
Northwest Remediation Conference
Northwest Environmental Business Council

Information Management Systems

Environmental data are increasingly being managed in IMSs and creating significant value

INTERSTATE TECHNOLOGY REGULATORY COUNCIL ITRC

Environmental Data Management Best Practices

Team Leaders: Doug Morrison (New York DEC) & Brian Pointer (North Carolina DENR)

Effective data management serves as the foundation for accurate data analyses, data visualization, and sound decision-making. However, in the broad environmental community there is currently a lack of standardized and consistent data management practices necessary to ensure rapid access to high quality data, and to minimize the risks involved in making costly business and regulatory decisions. The goal of the team is to seek consensus on the current patchwork of guidelines for data management to develop Environmental Data Management Best Practices that can be applied across a wide spectrum of environmental data. The Team aims to be a platform for the integration and cohesion of data management policies across environmental disciplines and programs through online implementation trainings and community forums.

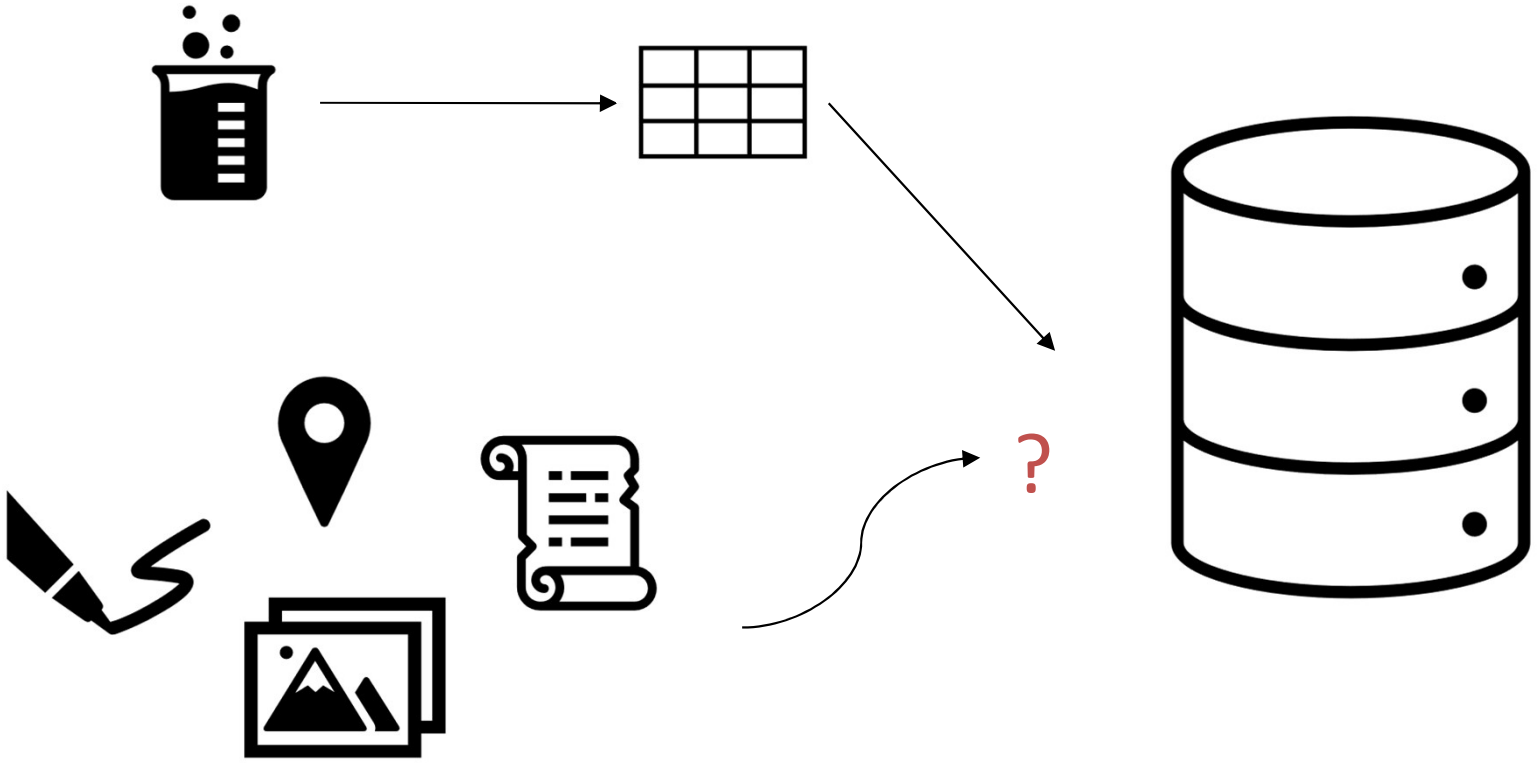
What is an IMS?

- Single source of data
- Allows for control of quality and integrity of data
- Used for easy coordination by multiple users
- Used for multiple analysis and visualization end-points

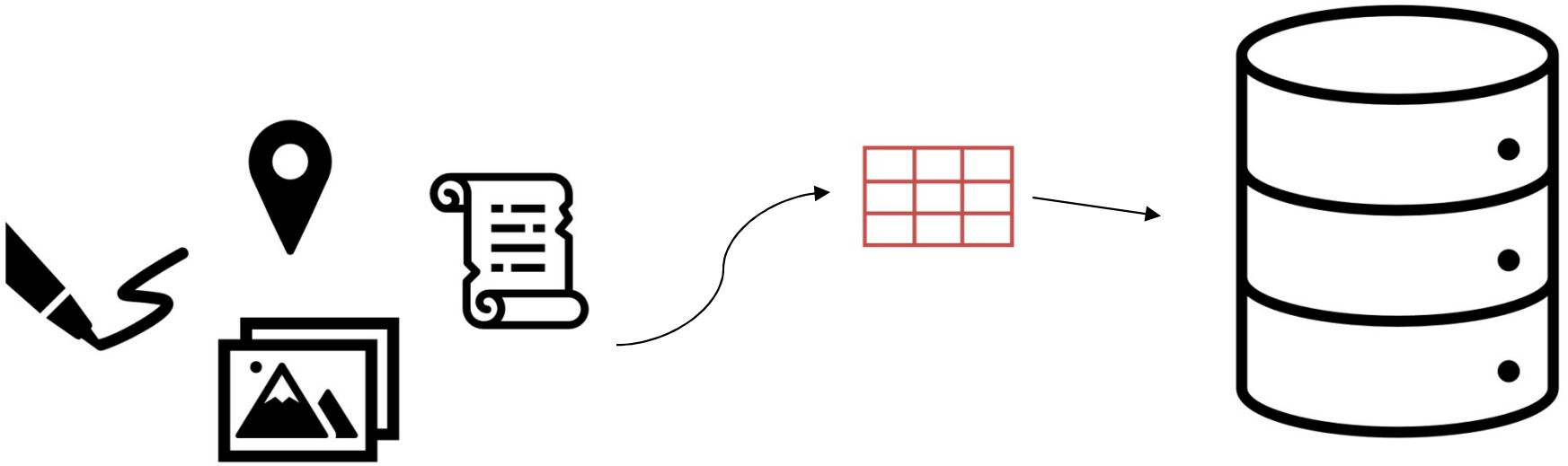
Easy way to leverage the value of the data

Data Exchange

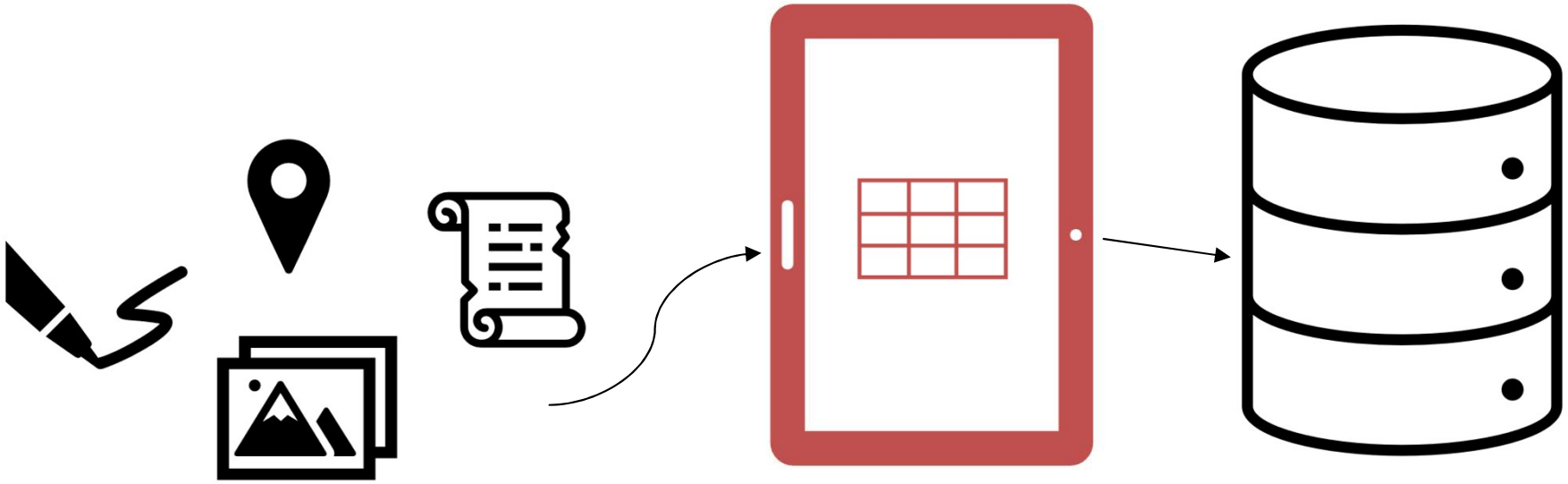
How do you best get data into the IMS?



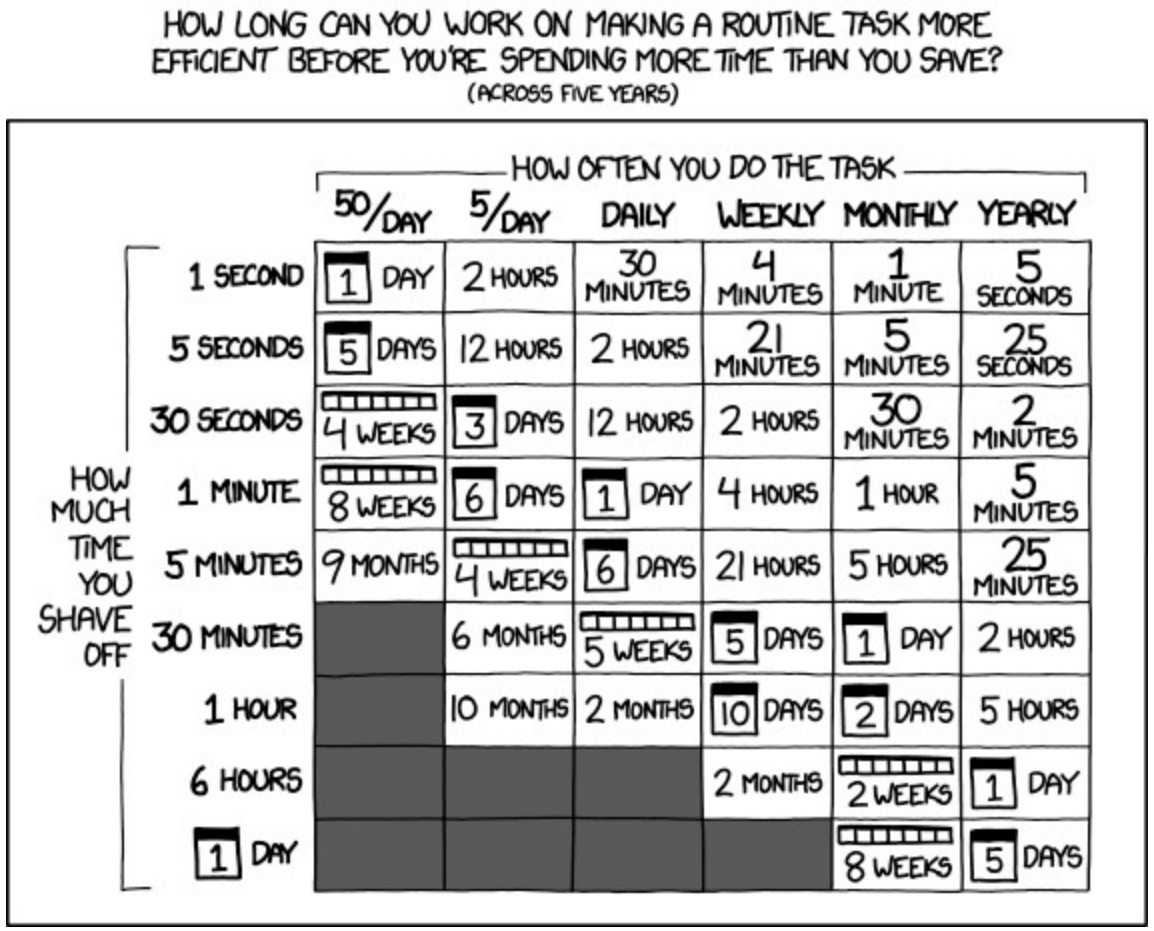
Digitize and Standardize



Mobile Apps



Cost



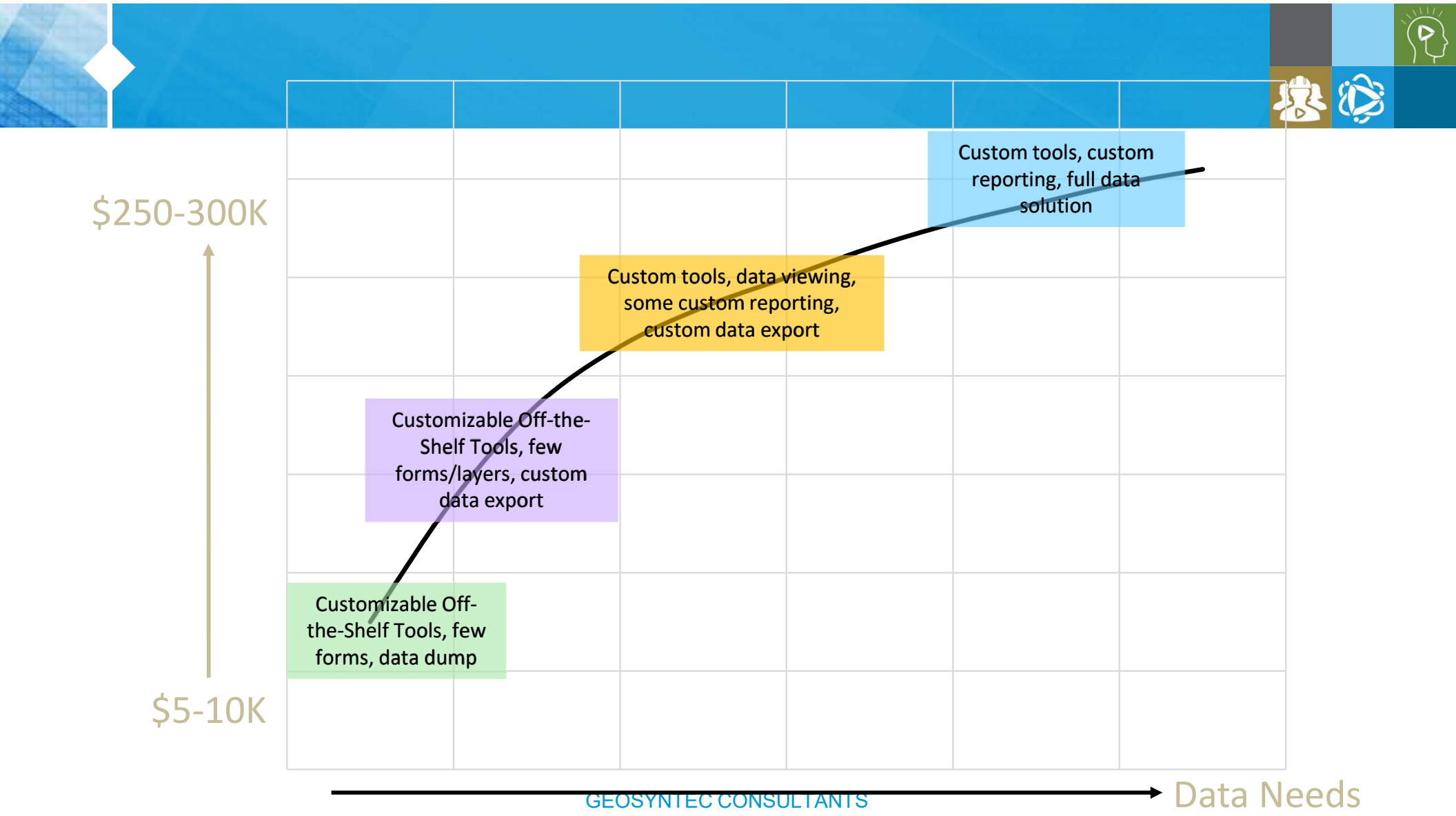
https://xkcd.com/1205/

Building a System Cost - Examples

Low Cost

High Cost

- Off-the-shelf mobile apps (App Store)
  - Photo captions
  - Maps to navigate with your blue dot
- Customizable off-the-shelf mobile apps (often add-on to software subscriptions but can be stand-alone)
  - ESRI Collector, ESRI Survey123, ESRI FieldMaps
  - QGIS QField
  - EQuIS Collect
  - gINT Collector
- Custom mobile apps (developer time, testing)
  - Build it, own it, maintain it
  - Call a full-service provider


$250-300K
$5-10K
Customizable Off-the-Shelf Tools, few forms, data dump
Customizable Off-the-Shelf Tools, few forms/layers, custom data export
Custom tools, data viewing, some custom reporting, custom data export
Custom tools, custom reporting, full data solution
Data Needs

Hardware

Field Frustrations

- Data entry is now a field task, in addition to data collection
  - Can slow down production rates for complex forms like boring logs or speed up production rates for simple forms like photo captions
  - Can prevent side-notes, off-hand observations, or less thorough notes by requiring typing without a keyboard and limiting field notes to a rigid field form
  - Data still need to be reviewed for quality control, can often be as big of a task as transcription would be

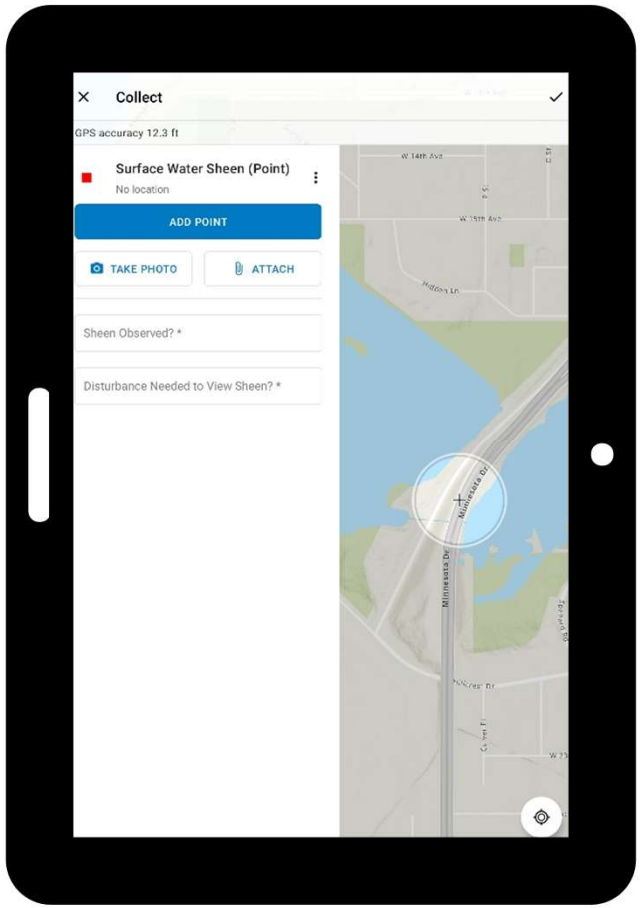
Field Frustrations

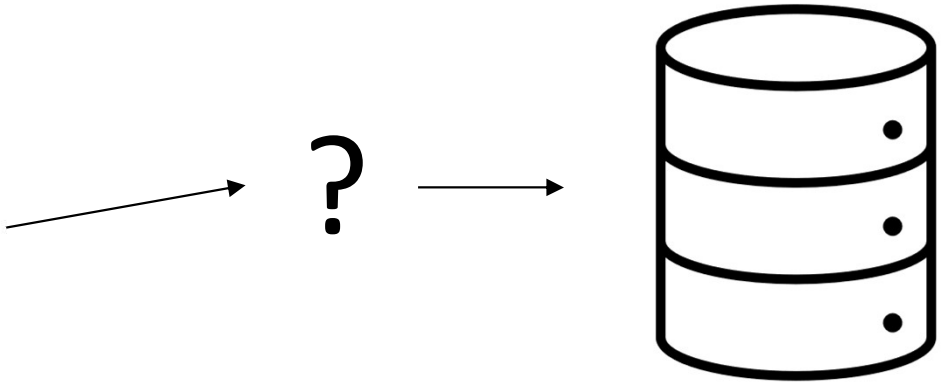
- Hardware isn't always perfect
  - Sun glare is a problem and can require additional shade covers; waterproof covers can work better than write-in-rain paper
  - Cold and rainy weather conditions may require gloves and stylus which don't always work well; talk-to-text not always possible in loud field situations
  - Battery life may not be long enough for a full field day, meaning a battery pack needs to be attached with a cord that can cause safety concerns
  - Small screens can cause eye strain; big screens can cause hand/wrist injuries

Field Frustrations

- Accommodating changes to field conditions
  - When unexpected conditions occur in the field, there can be no place to record it digitally causing a fall back to hand-written notes
  - Catch-all free-form notes fields are often added to accommodate any unknowns, but these then require untangling and organizing post-field, which can be more difficult to un-embed than handwritten notes
  - Reliance on connectivity for backup or synchronizing can mean issues with data security if connectivity is lost

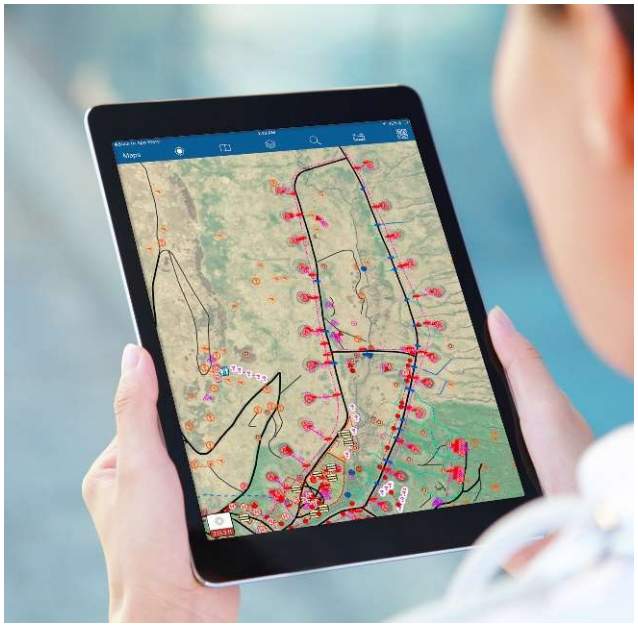
Data Exchange to IMS





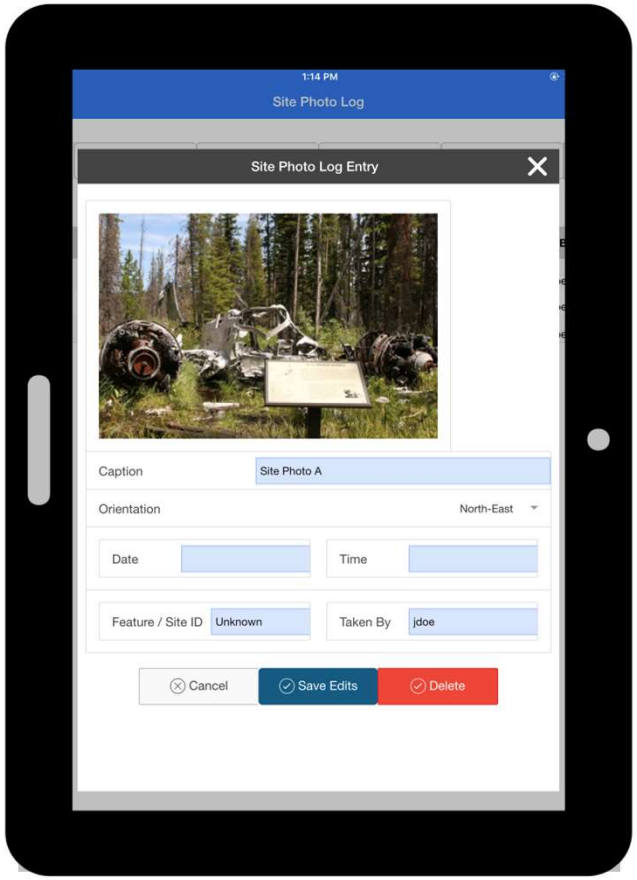
Yes to Mobile Apps!

- On-site decision making and/or real-time data needs for stakeholders
- Large volumes of data, especially in short collection timeframe
- Many different data sources / data types that usually have separate work-flows
- Rapid turn-around for reporting



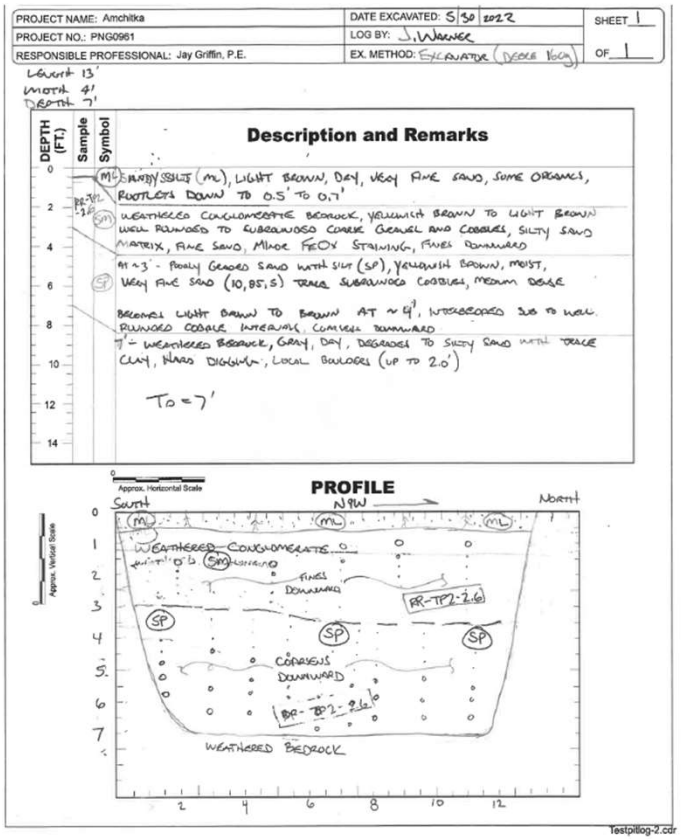
Probably Yes to Mobile Apps

- Routine, standardized, repetitive field tasks
- Data submittals required to be electronic
- Multimedia data sources in large volumes (like photographs or video)
- Where field data are needed for integration with other data sets for analysis/use in reporting



Maybe Not Worth It

- One-off small projects
- Paper documents are needed for archival purposes
- Single data type used for a single output
- Experienced field staff that are late-technology adopters
- No existing OTS or COTS readily available



Default Yes, but Consider No

- IMSs are incredibly powerful and provide great advantages for environmental data
- Mobile apps can solve the problem of getting unstructured, un-transcribed field data into an IMS

BUT:

- Costs
- Field frustrations
- App data export to IMS import

Must be understood to leverage the many advantages