



## *2017 ESRI International User Conference*

Utilizing Collector for ArcGIS for Military Munitions Investigation

Matt Held

# Introduction

## Baywest GIS Staff

- Matt Held
  - GIS Professional for 18 years
  - Worked in Environmental GIS for 15 years
  - Specializes in Military Munitions Remediation
  - Live in Denver, Colorado

# Military Munitions Remediation

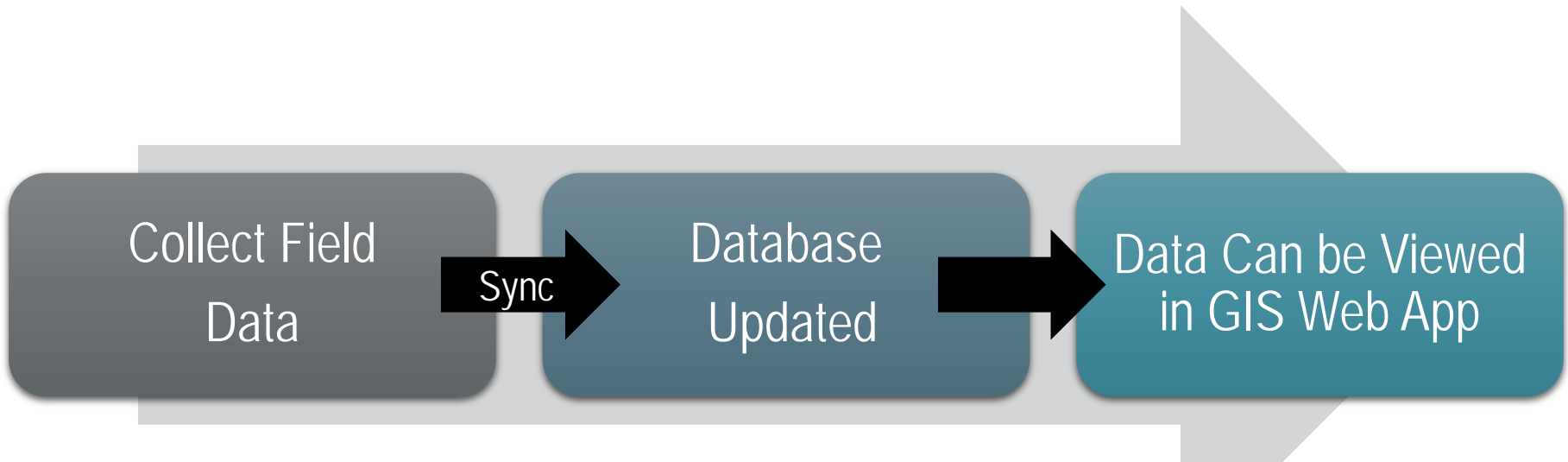
## Geophysical Investigation

- Goal
  - To find and remove MEC (Munitions and Explosives of Concern)
  - Utilize Geophysical Equipment to locate Anomalies
  - Anomalies are then Investigated

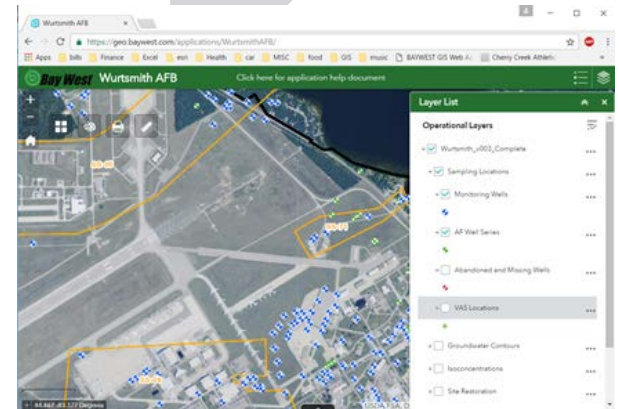


# GIS Strategy

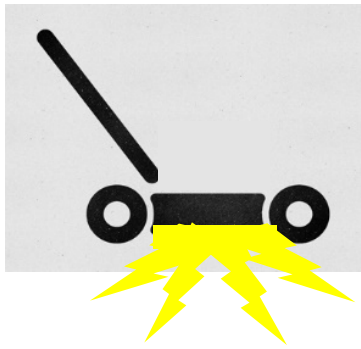
## Cradle to Grave Data Collection and Presentation



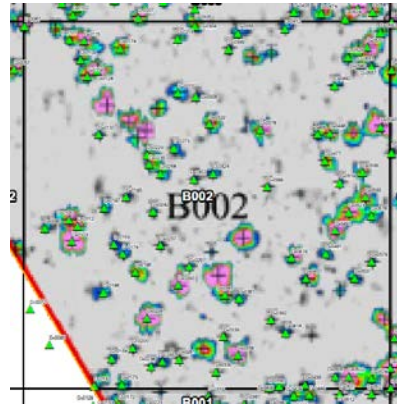
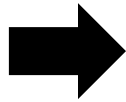
- Seamless Data Collection to Data Visualization



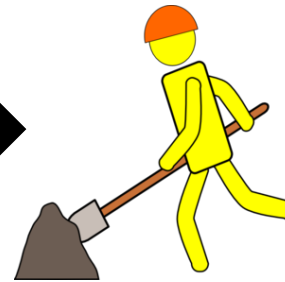
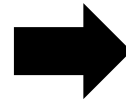
# Military Munitions Field Process



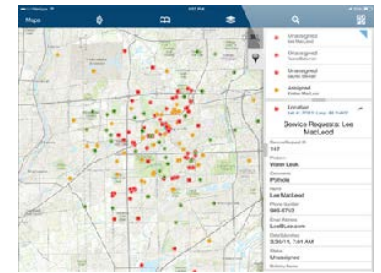
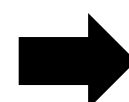
Collect Geophysical Data



Process Geophysical Data  
And Generate Anomalies



Investigate Anomalies



Record  
Investigation Results

# Needs for Field Data Collection

- Needs High Accuracy GPS
- Utilize a Relational Database
  - One Anomaly can produce Multiple Items (One to Many Relationship)
- Data must be sync'd to Baywest Server (No Cloud)
- Need ability to collect Photos and link to Item Finds
- Need ability to work offline (Many sites do not have cell/data coverage)
- Needs to be Easy to Learn
  - Dropdown Menus
  - Constraining Inputs (such as number only fields)
- Background Imagery/Maps

# GPS Hardware

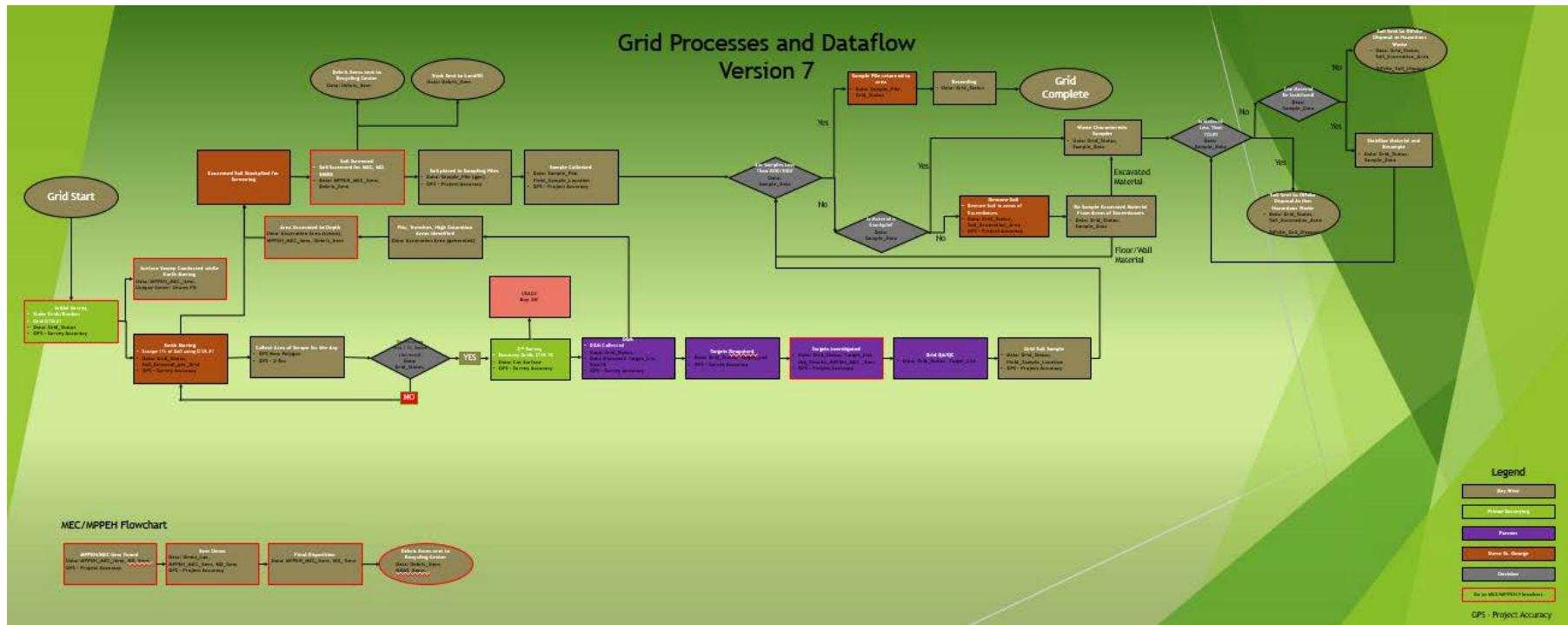
Gradually moving away from Trimble Handheld units

- Previously used
  - Trimble Handheld Units (Geo 7x)
  - Excel on Surface Tablet or Paper
- New Hardware
  - Trimble R2 units
  - Getac T800 tablets
  - Running Windows so we can still Utilize Terrasync





# Process Flowchart/Database Design





# Implementing Collector

## Database Setup

- Register Database
- Generate Features and Relationships in Database
  - \*More Success with Generating New Feature Layers than Importing Existing Ones
- Generate Domains
- For Each Feature Layer
  - Add Global ID's
  - Enable Archiving
  - Create Attachments

# Implementing Collector

## Map Setup

- Put Together MXD with Data
  - \*Label Features in MXD if you want them to Label in Collector
- Share as Service or Overwrite Service (File>Share As>Service)
- Capabilities Mapping and Feature Access
- Feature Access has Create, Delete, Query, Sync and Update checked
- Analyze for Errors
- Publish

# Implementing Collector

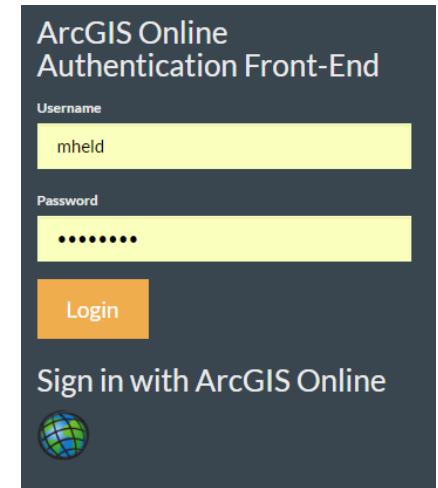
## Collector Setup

- Copy url for Feature Server
- Sign in to Arcgis.com
- My Content>Add Item>From the web
- Paste URL and give the Map some tags, click add item
- Share Service with Project Group
- Open in Map Viewer
- Set up Web Map
  - Change Basemap
  - Rename Layers
  - Redo Symbology
  - Label Layers
- Save Web Map
- Naming Convention
  - [Project]\_[index#]\_MAP\_description
- Share Map

# GIS Web App

## Interactive GIS Web Application

- Website that allows users to view GIS Information
  - Spatial Data
  - Tabular Data
- Numerous advantages over printed Maps or PDFs
- Utilizes Baywest SQL Server Enterprise Database
- Online Help Document
- Need Credentials to access site
- Project Managers & Team and perform real time quality control



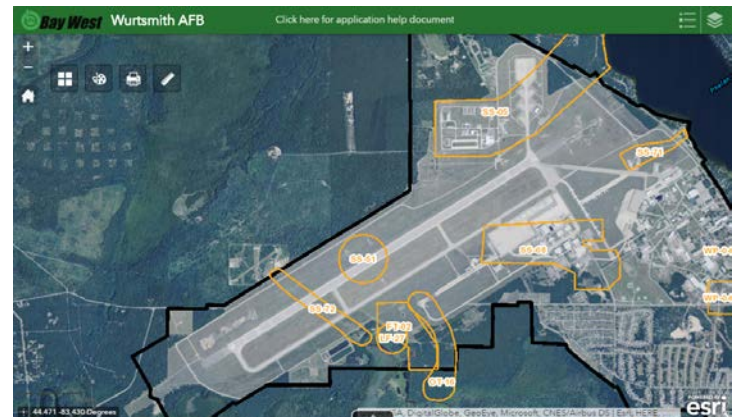

ArcGIS Online  
Authentication Front-End

Username  
mheld

Password  
••••••

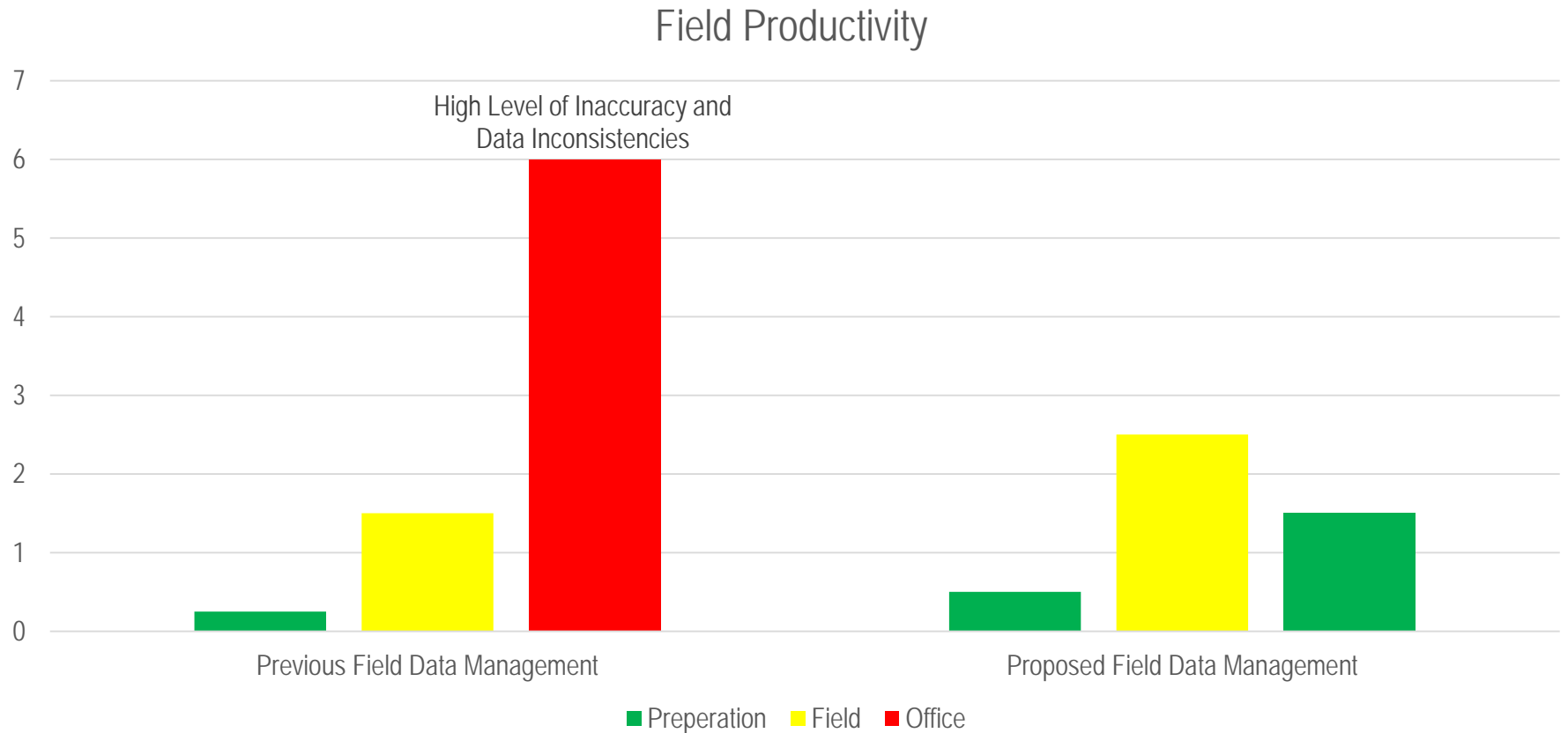
Login

Sign in with ArcGIS Online



# Projects

## Implementing Architecture



# Other Uses

- Environmental Investigation
- Wetland Delineation
- Underground Fuel Tank Investigation
- Site Recon/Proposals
- Sampling
  - Soil Sampling
  - Surface Water/Sediment Sampling
  - Groundwater Sampling

# Training

## The Key to Success

- The more training, the better
- Nothing beats hands on training in small groups
- For large projects, bring GIS staff to the field for project kickoff
- Training documents
- Free Online Training from ESRI



# Potential Problems

## What can go wrong

- Windows Sync Issue
  - Can be an issues Syncing the database is data is collected in both real-time and in offline mode.
  - ESRI Helpdesk quickly provided solution
  - Runtime database that can be copied off the tablet and converted to a File Geodatabase using ArcGIS
  - Solved by only collecting data in airplane mode
- Available Units
  - Only 4 R2/Tablet units are currently available
- Project Management
  - Must be dedicated to utilizing this technology
- Success!!!!
  - People Start to think you can magically solve all of their data collection needs

# The Future

- Collect Tracks in the Background
  - Will be available in next version
- More robust tabular collection similar to that of Survey 123

# Contact Info



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# Questions?