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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

- Collect Field Data → Sync → Database Updated → Data Can be Viewed in GIS Web App
Military Munitions Field Process

1. Collect Geophysical Data
2. Process Geophysical Data and Generate Anomalies
3. Investigate Anomalies
4. 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
Projects
Implementing Architecture

Field Productivity

High Level of Inaccuracy and Data Inconsistencies

Previous Field Data Management

Proposed Field Data Management

- Preperation
- Field
- Office
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 issue syncing the database if 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

Customer-Focused Environmental & Industrial Solutions
5 Empire Drive, St. Paul, MN 55103
24-hrs: 1-800-279-0456
www.baywest.com
Matt Held
  - mheld@Baywest.com
Questions?