MOBILE & WEB GIS
Improving Data Collection & Sharing
Suzanne M. Zitzman, GISP  
Maser Consulting P.A.  
Principal/Discipline Leader of GIS Asset Management Services

- Over 32 years experience in asset and facility management programs
- Geographic Information System Professional (GISP), Geomatics Certification, Rutgers University
- Manages nationwide GIS Asset Management Division
- Servicing state, county and local governmental clients, utility authorities, energy and educational institutions

Customer Loyalty through Client Satisfaction
Mount Laurel Township MUA, New Jersey

Started with GIS in early 2000s

GIS was desktop based & limited to the office

Field inspections were paper based

GIS Needs Assessment was completed in 2016

MUA desired to:
- Migrate to a mobile & web based GIS
- Improve spatial accuracy of existing GIS data
- Increase usability of GIS for end users
PROJECT
OVERVIEW

Design GIS Program & Data

Create and Share Web Maps
- ArcGIS Online
- ArcGIS Desktop

Initial Field Data Collection
- Mobile Device & GNSS Receiver
- Collector for ArcGIS

Complete Field Inspections
- Workforce for ArcGIS
- Survey123 & Collector for ArcGIS

Review and Analyze Data
- Operations Dashboard
DESIGN GIS PROGRAM & DATA
DATA CREATION

- Data, maps, & apps are typically created in ArcGIS Desktop
- Geodatabase Structure
  - Points, lines, & polygons
  - Related tables
  - Domains
- Data Storage
  - Hosted with ArcGIS Online or ArcGIS Enterprise
CREATE & SHARE WEB MAPS
ARCGIS ONLINE (AGO) SETUP

- Cloud-based GIS platform
  - Create maps & layers
  - Share content
  - Perform analysis

- Organizational Account
  - Share content with members of an organization
  - Link to other AGO organizational accounts
CREATING WEB MAPS

- Feature layers
  - Symbology
  - Attributes
- Related tables
  - Inspection data

Mobile & Web GIS
INITIAL FIELD DATA COLLECTION
CONFIGURE GNSS & MOBILE APPLICATIONS

- Fields for tracking GPS metadata
- Eos Tools Pro
  - Satellites, RTK, Alarms
- Collector for ArcGIS
  - Accuracy requirements
- **Equipment**
  - Receiver/Antenna
  - Mobile Tablet
  - Rod/Pole
- Bluetooth connection to mobile tablet
COLLECTOR FOR ARCGIS

- Points & attributes
- Updating locations vs. Collecting new features
- Related tables
COLLECTOR FOR ARCGIS

Working online & offline

1. Prepare Data
2. Publish Service
3. Author Maps
4. Download map to device
5. View, Query and Edit
6. Synchronize Changes

Mobile & Web GIS
**SURVEY123 FOR ARCGIS**

- Simple & intuitive web-based forms
- Collect new or update existing assets
- Online or offline access

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### Mobile & Web GIS

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<table>
<thead>
<tr>
<th><strong>Valve Inspection Form</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Inspection Date:</strong> *</td>
</tr>
<tr>
<td>October 8, 2018</td>
</tr>
<tr>
<td><strong>Inspected By:</strong> *</td>
</tr>
<tr>
<td>- Mike Kolody</td>
</tr>
<tr>
<td>- Rob Kriskowski</td>
</tr>
<tr>
<td>- Sam Firmisich</td>
</tr>
<tr>
<td>- Megan Johnson</td>
</tr>
<tr>
<td><strong>Valve ID:</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Valve Size:</strong></td>
</tr>
<tr>
<td>- 3&quot;</td>
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<tr>
<td>- 4&quot;</td>
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<td>- 6&quot;</td>
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<td>- 54&quot;</td>
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<tr>
<td><strong>Valve Type:</strong></td>
</tr>
<tr>
<td>- Ball</td>
</tr>
<tr>
<td>- Butterfly</td>
</tr>
<tr>
<td>- Cone</td>
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<td>- Gate</td>
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<tr>
<td>- Plug</td>
</tr>
<tr>
<td>- Roundway</td>
</tr>
<tr>
<td>- Other</td>
</tr>
<tr>
<td>- Unknown</td>
</tr>
<tr>
<td><strong>Location Notes:</strong></td>
</tr>
<tr>
<td>Add any location specific notes here...</td>
</tr>
<tr>
<td><strong>Turns to Open/Close</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Overall Valve Condition:</strong></td>
</tr>
<tr>
<td>- Like New</td>
</tr>
<tr>
<td>- Good - No Issues</td>
</tr>
<tr>
<td>- Functional - Attention Required</td>
</tr>
<tr>
<td>- Not Functional</td>
</tr>
<tr>
<td><strong>General Comments:</strong></td>
</tr>
<tr>
<td>(Include any observed issues, repair/attention required, or if replacement is necessary)</td>
</tr>
<tr>
<td><strong>Field Sketch</strong></td>
</tr>
</tbody>
</table>

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COMPLETE FIELD INSPECTIONS
WORKFORCE FOR ARCGIS

- Mobile GIS solution for better coordination of the workforce in the field
- Real-time connection between field workers & office staff
- Integrate with ArcGIS software & mobile applications
**WORKFORCE PROCESS OVERVIEW**

**PROJECT OWNER**
- Create Project
- Configure map
- Define assignment types
- Define user roles

**DISPATCHER**
- Create Assignments
- Send to Workers
- Track Workers & Assignment status in real time

**MOBILE WORKER**
- Complete assignments using mobile device
- Get notified of new assignments
- Use Collector or Survey123

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Workforce Project: Hydrant and Blow Off Flushing and Inspection 2018

About this Project
Workforce project for hydrant and blow off flushing and inspection for 2018

Users: 5
3 Mobile Workers, 2 Dispatchers

Assignments: 1797
145 Completed, 1652 Assigned, 0 Unassigned

Maps:
- Dispatcher map
- Worker map

Configure the maps used by this project.
Workforce Project: Hydrant and Blow Off Flushing and Inspection 2018

App Integration

App integrations maximize the efficiency of your mobile workers by providing directions and the maps and forms needed to complete their work. More info

Collector for ArcGIS
 Assignment type Hydrant Flushing is integrated to the Hydrant Flushing and Hydrant Valve Inspection 2018 map
 Assignment type Blowoff Flushing is integrated to the Water Main Dead End Inspection 2018 map

Explorer for ArcGIS
 Navigator for ArcGIS
 Survey123 for ArcGIS
DISPATCHER VIEW

My Projects > Workforce Project: Hydrant and Blow Off Flushing and Inspection 2018

Assignments

- Hydrant Flushing
  - Hydrant: F3-05, 182
    - 6 months
- Hydrant Flushing
  - Hydrant: F3-02, 181
    - 6 months
- Hydrant Flushing
  - Hydrant: F2-01, 185
    - 6 months
- Hydrant Flushing
  - Hydrant: F3-04, 180
    - 6 months
- Hydrant Flushing
  - Hydrant: F4-10, 166
    - 6 months
- Hydrant Flushing
  - Hydrant: F4-11, 240
    - 6 months

1797 assignments  Showing 1-50  Next
ASSIGNMENT DETAILS

My Projects → Workforce Project: Hydrant and Blow Off Flushing and Inspection 2018

Hydrant Flushing
Hydrants: J9-12, 365
Priority | Due: October 20, 2019, 8:00 PM
Dispatcher: GIS Admin MLTMUA

ASSIGNED | Water Crew

Created: September 05, 2018, 1:20 PM by GIS Admin MLTMUA

ID: 365
J9-12

Attachments
Add an attachment using drag and drop or by selecting a file.
WORKFORCE MOBILE VIEW
ADDITIONAL FUNCTIONALITY

Workforce Project: Hydrant and Blow Off Flushing and Inspection 2018

- Working
- On Break
- Not Working

Hydrant Flushing
Hydrants: C11-07, 560
Due May 2, 2020 at 8:00 PM

Location Tracking
View where your workers have been when their status is set to Working. The interval determines how often the worker’s location is recorded.

Select Option
Collect at Assignment

Mobile & Web GIS
REVIEW & ANALYZE DATA
OPERATIONS DASHBOARD FOR ARCGIS

- Configurable web app that provides a real-time operational view of people, services, & assets
- Fully integrated with your GIS data
- Control who sees the dashboard – Your team, organization, or the public
CREATING A DASHBOARD

Create dashboard
Add elements
Set layout
Build interactivity
Save, test, & share
STATUS OF FIELD WORK

Mobile & Web GIS
ANALYZE DATA

- Review & analyze data
- Export to table format
BEST PRACTICES & LESSONS LEARNED

- Treat field operations as defined projects when possible
- Socialize the benefits of GIS
- Engage & involve the team in the GIS process
- Get the right hardware & software
- Implement an end user training program
- Collect your data once
COMPLY WITH THE WQAA

GIS

- GPS locate hydrants & valves
- Perform inspections of valves & hydrants
- Store maintenance & inspection records
- Analyze your system
- Export data & tables for the Asset Management Plan
GIS

- A tool for staff in the office or field
- Improves organizational efficiency & information sharing
- Benefits users with different roles and responsibilities
- Helps organizations comply with the WQAA
- Improves decision making
THANK YOU
Any questions?

Suzanne Zitzman, GISP
Phone: (732) 239-0493
Email: szitzman@maserconsulting.com
Twitter: @suezitzman