Enhancing Asset Management with a GIS Program

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presentation overview

- Definitions
- It's all about your assets
- Components of a GIS
- Why use GIS for asset management?
- How can a GIS be used?
- GIS for office operations
- GIS for field operations
- How to get started
- GIS Investment
Asset Management

“Asset management is maintaining a desired level of service for what you want your assets to provide at the lowest life cycle cost. Lowest life cycle cost refers to the best appropriate cost for rehabilitating, repairing, or replacing an asset. Asset management is implemented through an asset management program ....”

**it's all about your assets**

<table>
<thead>
<tr>
<th>Infrastructure</th>
<th>Data</th>
<th>Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Pipes</td>
<td>• Asset locations</td>
<td>• Administration</td>
</tr>
<tr>
<td>• Valves</td>
<td>• Asset “attributes”</td>
<td>• Management</td>
</tr>
<tr>
<td>• Manholes</td>
<td>• Inspections</td>
<td>• Office support</td>
</tr>
<tr>
<td>• Treatment Plants</td>
<td>• Condition</td>
<td>• Operators</td>
</tr>
<tr>
<td>• Booster Stations</td>
<td>• Maintenance</td>
<td></td>
</tr>
</tbody>
</table>
definitions

GIS | Geographic Information System

“A geographic information system (GIS) lets us visualize, question, analyze, and interpret data to understand relationships, patterns, and trends ... making better decisions about location ... maintaining records about the status and change of geography.”

ESRI
components of a GIS

Spatial mapping
Data underlying the map
How you access and use the data
why use GIS for asset management?

• You get to know your utility assets!
  • **What** you have
  • **How many** you have
  • **Where** they are at
  • **What condition** they are in

• Be more organized
• Daily /weekly mission planning
• Easily take your system data into the field
• Streamline inspections to save time and money
• Track preventative maintenance to determine return on investment

*Don’t sweat the small stuff … Map it!*
how can a GIS be used?

GIS for Engineering
- Field mapping (GPS)
- Desktop mapping / analysis / design
- Printed paper maps

GIS for Utility Operations and Planning
- Online mapping apps (GoogleEarth, ArcGIS Explorer, ESRI ArcGIS Online)
- Scheduling field operations (work orders)
- Capital improvement planning

GIS for Field Operations
- Atlas Mapping (rugged hard copy map books)
- PA 1-Call (as-built drawing or dimensional sketches)
- Digital inspections and preventative maintenance (smartphone / tablet)
GIS for office operations

Map helps you drill down to your system info

Office Operations

- Create / Assign Work Order
- Specialized Queries
- Edit Existing GIS Data
- Field Photos
- As-Built Drawings
- Inspection Information
- Pop-ups & Data Tables
- Mapping
GIS for office operations
GIS for office operations
GIS for office operations
GIS for office operations
GIS for office operations
GIS for office operations
GIS for office operations
GIS for office operations

Waymart Area Authority | Sanitary Sewer

Query

Specify parameters for this task:

- Barrel Material is [ ] Unknown

- Use spatial filter to limit features

- Add result as operational layer

Clear Results
GIS for office operations
GIS for field operations

Field Operations

- Fire Hydrant Flushing
- Fire Hydrant Replacement
- Perform PA 1-Call
- Valve Exercising
- Respond to Complaints
- Leak Detection Survey
- Meter Replacement
- Manhole Inspection

Map guides your field operations
ESRI COLLECTOR APP

INSPECTION MAP ON IPHONE
ZOOM INTO MAP FOR BETTER DETAIL
TOOLS IN “MORE”
- BOOKMARK
- LAYERS
- MEASURE
- BASEMAP
STREETS BASEMAP
CLICK ON A FEATURE (MANHOLE, PIPE, PARCEL, ETC)

HIGHLIGHTS FEATURE

POP-UP AT BOTTOM
CLICK ON POPUP TO GET MANHOLE INFORMATION

Location
Lat: 41.581292° Long: -75.409440°
Edited by Iburkert an hour ago

Manhole: 49

Manhole Number
49

Manhole Type
Gravity

Subbasin
2

Drainage Path
Outside

Depth to Invert (in)
98

FC: Adjust (in)
10

FC: Size (in)
30
Map

Details

- Location
  Lat: 41.581292° Long: -75.409440°

FC: Cover
Regular

FC: PPH
Yes

FC: Insert
No

FC: Numb of Holes
2

FC: Hole Size (in)
1

Barrel Material
Precast Concrete

As-Built 1 (Link)
“VIEW”
OPENS LIST
OF PREVIOUS
INSPECTIONS
<table>
<thead>
<tr>
<th>Details</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MH Inspection: September 5, 2005</strong></td>
<td></td>
</tr>
<tr>
<td>Manhole Number</td>
<td>49</td>
</tr>
<tr>
<td>Inspector</td>
<td>Bryon Killian</td>
</tr>
<tr>
<td>Inspection Date</td>
<td>September 5, 2005</td>
</tr>
<tr>
<td>Weather</td>
<td>Dry</td>
</tr>
<tr>
<td>Ground Surface</td>
<td>Asphalt</td>
</tr>
<tr>
<td>FC: Lettering</td>
<td></td>
</tr>
<tr>
<td>Sewer</td>
<td></td>
</tr>
<tr>
<td>FC: Condition</td>
<td>Good</td>
</tr>
<tr>
<td>Barrel Condition</td>
<td>Good</td>
</tr>
</tbody>
</table>
“NEW” STARTS
A NEW
INSPECTION
FOR THAT
MANHOLE

FORM-DRIVEN
DATA
COLLECTION
PICK LISTS

Inspector

<No value>

Bryon Killian

Raymond Kolacek

Curt Tran
**DATE PICKER**

```
<table>
<thead>
<tr>
<th>Month</th>
<th>Day</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>12</td>
<td>2012</td>
</tr>
<tr>
<td>February</td>
<td>13</td>
<td>2013</td>
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<tr>
<td>March</td>
<td>14</td>
<td>2014</td>
</tr>
<tr>
<td>April</td>
<td>15</td>
<td>2015</td>
</tr>
<tr>
<td>May</td>
<td>16</td>
<td>2016</td>
</tr>
<tr>
<td>June</td>
<td>17</td>
<td>2017</td>
</tr>
<tr>
<td>July</td>
<td>18</td>
<td>2018</td>
</tr>
</tbody>
</table>
```

Today
 difficult to open hatch
ATTACHMENTS

TAKE A PICTURE

OTHER EXISTING PICTURE OR FILE
TAKE A PICTURE
INSPECTIONS ARE UPLOADED IN REALTIME OR CAN SYNC LATER IF HAVE SPOTTY CELLULAR COVERAGE
REVIEW THE INSPECTION YOU JUST COMPLETED

<table>
<thead>
<tr>
<th>MH Inspection: April 15, 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manhole Number</td>
</tr>
<tr>
<td>Inspector</td>
</tr>
<tr>
<td>Inspection Date</td>
</tr>
<tr>
<td>Weather</td>
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<td>FC: Lettering</td>
</tr>
<tr>
<td>FC: Condition</td>
</tr>
<tr>
<td>Barrel Condition</td>
</tr>
</tbody>
</table>
Very Good
Barrel Condition
Very Good
Invert Debris
Heavy
Invert Debris Type
Construction
Comments
difficult to open hatch
Photo 1 (Link)
Photo 2 (Link)
Photo 3 (Link)
Attachments
Photo2.jpg
1911.3 KB
CLICK ON PHOTO TO VIEW
CLICK PLUS SIGN ICON TO ADD A NEW MANHOLE
PICK WHAT YOU WANT TO DO FROM A LIST
### FORM-DRIVEN DATA COLLECTION

**Location**
No valid Location

**Manhole:**
- **Manhole Number**
- **Manhole Type**
- **Gravity**
- **Subbasin**
- **Drainage Path**
- **Depth to Invert (in)**
- **FC: Adjust (in)**
- **FC: Size (in)**
- **FC: Cover**
how would I get started?

**Step 1**
Decide what operations you want to perform.
Have a purpose in mind before you start. Popular tasks include manhole inspections, leak detection surveys, valve exercising, hydrant flushing, hydrant replacement, and accessing digital work orders.

**Step 2**
Decide whether you want to work online or offline.
Online apps allow you to use your cellular service to access your data in the cloud, and data changes are made in real time. Offline apps are good for areas with spotty cellular coverage, and allow data to be synced with your database when back at the office.

**Step 3**
Pick the office and field device(s) you want to use.
Your GIS apps should be optimized to fit on your desktop, laptop, tablet, smartphone, and/or GPS screen.
what happens next?

Step 4
Have your system data compiled into a GIS.

Your GIS inventory can be built from existing CAD drawings and/or field data collection, or by using your existing GIS as a starting point.

Step 5
Your GIS will be transferred to the cloud.

The office and field GIS apps will include your system map, specialized map navigation tools, inspection and maintenance forms, your organization's logo, and secure access to protect your data.

Step 6
Get trained on how to use the office and field apps.

Personalized field training and SOP documents will empower your staff to use your GIS from day 1.
## Example of typical costs

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>ESRI ArcGIS Online Account</td>
<td>$2500/year for 5 licenses*</td>
</tr>
<tr>
<td>ArcGIS Collector App</td>
<td>Free (assumes purchase of AGOL)</td>
</tr>
<tr>
<td>Consulting services:</td>
<td></td>
</tr>
<tr>
<td>- Format GIS data for AGOL</td>
<td>$0 – $5000+</td>
</tr>
<tr>
<td>- Append existing pix and drawings</td>
<td>$0 – $5000+</td>
</tr>
<tr>
<td>- Configure online maps</td>
<td>$1000 - $3000 / map</td>
</tr>
</tbody>
</table>

*may require purchase of additional AGOL credits for photo and drawing storage “in the cloud”*
Thank you!

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