Leveraging GIS-based Technology and Business Analytics to Support More Effective Asset Management

Jayson Brennen, GISP
Like it Or Not... We Are Now a Technology-Driven Society

- It’s a Mobile World
- Immediate Access Required
- Predict Problems & Visualize Results
It’s Also… The Rise of the Data-Driven Organization

Decisions Based on Data

Big Data & Internet of Things
The Data Lifecycle – Industry Trends

1. Data Collection & Asset Inventory
2. Data Access and Visualization
3. Business Intelligence - Dissecting Data to Help Make Decisions

Latest & Upcoming Technology Trends
Data Collection & Asset Inventory
ArcGIS Online or Portal - Leveraging to Support Asset Inventory and Assessment

Esri’s Cloud-Based Offering

- **Publish** Data to the Cloud
- **Consume** via Desktop, Web, and Mobile Apps
- **Visualize** results to support Decision Making
ArcGIS Online or Portal
Cloud GIS Environment

ArcGIS.com
Explorer App
Collector App
Survey 123 App
Dashboard
Workforce
Insights
Case Study

Execution of a Hydrant Asset Inventory and Flushing Program With ArcGIS Online
Hydrant Inspection and Flushing Program
* Prepared Data Back at the Office
Hydrant Inspection and Flushing Program

* Pushed/Referenced Data to ArcGIS Online
Hydrant Inspection and Flushing Program

* Prepared Mobile Apps for the Field

Explorer

Collector

Survey 123
Hydrant Inspection and Flushing Program

* Sent Crews into the Field
Collector – What the Person in the Field Sees
Hydrant Inspection and Flushing Program

* Tracked Progress Back at the Office
1576

Flushing - Percent Complete

Legend

- Hydrants 2017 - Hydrantsflushed
  - Have Not Completed
  - Yes
  - No

- Hydrants 2017 - All Hydrants
  - Have Not Completed
  - No
  - Yes
Hydrant Inspection and Flushing Program

* Implemented Repair Program

<table>
<thead>
<tr>
<th>HYDRANT_ID</th>
<th>Date Flushed</th>
<th>Hydrant Issues</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>H054-012</td>
<td>4/6/2016</td>
<td>Hydrant Broken</td>
<td>Out of service</td>
</tr>
<tr>
<td>H034-034</td>
<td>4/11/2016</td>
<td>Hydrant Broken</td>
<td>Shut off deep won’t close</td>
</tr>
<tr>
<td>H035-017</td>
<td>4/9/2016</td>
<td>Hydrant Broken</td>
<td>Hydrant won’t shut down. Turned off deep.</td>
</tr>
<tr>
<td>H044-018</td>
<td>4/14/2016</td>
<td>Hydrant Broken</td>
<td>No water</td>
</tr>
<tr>
<td>H064-015</td>
<td>4/30/2016</td>
<td>Hydrant Broken</td>
<td>Not working</td>
</tr>
<tr>
<td>H058-020</td>
<td>4/26/2016</td>
<td>Hydrant Broken</td>
<td>Water coming up from base of hydrant.</td>
</tr>
<tr>
<td>H007-003</td>
<td>3/31/2016</td>
<td>Hydrant Broken</td>
<td>Blue hydrant is either off or broken.</td>
</tr>
<tr>
<td>H030-009</td>
<td>3/28/2016</td>
<td>Hydrant Broken</td>
<td>Shut off at gate shaft broken</td>
</tr>
<tr>
<td>H064-043</td>
<td>4/29/2016</td>
<td>Hydrant Broken</td>
<td>Shut off deep</td>
</tr>
<tr>
<td>H048-028</td>
<td>4/11/2016</td>
<td>Hydrant Broken</td>
<td></td>
</tr>
<tr>
<td>H062-026</td>
<td>4/25/2016</td>
<td>Hydrant Broken</td>
<td>Would not even turn open</td>
</tr>
</tbody>
</table>
One Quick Example…

Summary of Results

1,600 Hydrants Inspected & Flushed

5 Weeks Timeframe

30%* Estimated Reduction in Time

“big savings in logistics and program execution”
ArcGIS Online or Portal Summary

Simple

Practical

Can Add Higher Accuracy GPS
There Are Other Options

* US Navy Asset Management Program
Data Access & Visualization
Several Practical ArcGIS Online or Custom Apps Available Today
Coming Soon.... Mixed & Augmented Reality
Coming Soon.... Mixed & Augmented Reality

Esri
AuGeo
Business Intelligence
Business Intelligence is a technology-driven process for analyzing data and presenting actionable information to help organizations make more informed decisions.
Making Sense of a MOUNTAIN of Data
Turning DATA into KNOWLEDGE so Organizations can MAKE DECISIONS
Many Good Business Intelligence Software Platforms

1. Blend Data from 345+ Sources
2. Enrich and Manipulate the Data
3. Load Data Into Tableau (One-Time or Scheduled)

Maximize Your Investment in Data

Esri Insights

Microsoft Power BI
The Next Trend.... Business Analytics

- Track Progress
- Compliance Reporting
- Business Analytics
- Project Problems
- Project Tracking
Water Works Energy Consumption Dashboard

KPIs
- Facility Count: 58
- Billing Cycles (Months): 29
- Total Usage (kWh): 20.89M
- Electricity Cost: $2.67M
- Demand Charges: $410K
- Total Electricity Cost: $3.08M

Energy Cost by Facility
- Facility Details
  - Facility Name: Armory Booster Station
    - Facility Type: Booster Station
    - Energy Consumption (kWh): 158,653
    - Total Electricity Cost: $21,176.23
    - Total Demand Charges: $0.00
    - Total Cost: $21,176.23
  - Facility Name: Atherton Commons
    - Facility Type: Booster Station
    - Energy Consumption (kWh): 25,159
    - Total Electricity Cost: $4,702.81
    - Total Demand Charges: $0.00
    - Total Cost: $4,702.81
  - Facility Name: Autumn Woods
    - Facility Type: Booster Station
    - Energy Consumption (kWh): 72,999
    - Total Electricity Cost: $12,183.56
    - Total Demand Charges: $0.00
    - Total Cost: $12,183.56

Facility Energy Consumption & Cost

Energy Cost Heat Map

CDM Smith
Comments and Opinions

- Many have the software and may not realize it.
- The technology is there to greatly support utility management.
- Maximize your investment in data by applying the right technology.

Questions
Jayson Brennen
brennenjd@cdmsmith.com

This is not Rocket Science!
Discussion
Contact Information

Jayson Brennen | brennenjd@cdmsmith.com