INVEST IN YOUR ASSET INVENTORY TO REAP A RETURN ON INVESTMENT: A MODEL

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PRESENTERS

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- **Joel Eastman, GISP**
  Director of Planning, Programming & Real Property
  Georgia Department of Defense
- **Chris Ogier**
  Owner, Foundation Spatial Associates
  formerly with Spicer Group, Inc.
## Project Overview

- GIS Utility Collection: Provide SUE QL B/C Services
- GPS/GIS Data Collection –
  - Natural Gas
  - Water
  - Storm Water
  - Industrial Waste Water
  - Sanitary Sewer
  - Electric
  - Telecom
- 49 of 60 + locations for Army and Air Units

### Data Dictionary

<table>
<thead>
<tr>
<th>Feature Class</th>
<th>Description</th>
<th>Unique PK Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>camera_surveillance_point</td>
<td>The location of a video camera used for surveillance purposes.</td>
<td>AG camp</td>
</tr>
<tr>
<td>comm_antenna_point</td>
<td>The location of a communications antenna.</td>
<td>AG coap</td>
</tr>
<tr>
<td>comm_coaxial_line</td>
<td>A transmission line that consists of a tube of electrically conducting material surrounding a central conductor held in place by insulators that is used to transmit telegraph, telephone, and television signals of high frequency.</td>
<td>UG cocl</td>
</tr>
<tr>
<td>comm_duct_line</td>
<td>Any linear component of a path for cable routing.</td>
<td>UG codl</td>
</tr>
<tr>
<td>comm_fiberoptic_line</td>
<td>Thin transparent fibers of glass or plastic that are enclosed by material of a lower index of refraction and that transmit light throughout their length by internal reflections.</td>
<td>UG cofl</td>
</tr>
<tr>
<td>comm_handhole_point</td>
<td>A chamber, just below the earth's surface, too small for a man to enter, in the route of one or more cable runs where cables may be accessed.</td>
<td>UG cohp</td>
</tr>
<tr>
<td>comm_manhole_point</td>
<td>A subsurface chamber, large enough for a person to enter, in the route of one or more duct runs, and affording facilities for placing and maintaining the runs, conductors, cables, and associated apparatus.</td>
<td>UG comp</td>
</tr>
<tr>
<td>comm_pedestal_point</td>
<td>An above-ground enclosure providing access to buried plant.</td>
<td>AG copp</td>
</tr>
<tr>
<td>comm_pullbox_point</td>
<td>A box with cover used as an aid for pulling cable.</td>
<td>UG cobb</td>
</tr>
<tr>
<td>comm_riser_point</td>
<td>A pipe-like structure used for the vertical conveyance of cable.</td>
<td>UG corp</td>
</tr>
<tr>
<td>comm_telephone_booth_point</td>
<td>The location of one or more outdoor telephones either in an open air bank or enclosed within a booth or other enclosure.</td>
<td>AG cop</td>
</tr>
<tr>
<td>comm_vault_point</td>
<td>A special structure for transitioning the outside cable plant from horizontal orientation to vertical orientation in preparation for termination on the distribution frame.</td>
<td>UG covp</td>
</tr>
<tr>
<td>satellite_point</td>
<td>Communications Satellite. Used to retransmit signals from space.</td>
<td>AG cstp</td>
</tr>
<tr>
<td>speaker_point</td>
<td>A device that converts an electrical signal into sound. Generally used as part of a public address, giant voice, or mass notification system.</td>
<td>AG spep</td>
</tr>
</tbody>
</table>
PROJECT BACKGROUND

- “Statewide” initiative
- 49 sites including Army National Guard Main Headquarters in Marietta, GA (Clay)
- Average age of sites is 48 years old
- Over 800 acres
- 12 month schedule
**PROJECT OBJECTIVES**

- To develop a comprehensive utilities GIS database.
  - Accuracy
  - Connectivity
  - Asset Evaluation

**PROJECT TEAM ROLES**

- Above Ground -- Clark Nexsen Inc.
- Underground -- Spicer Group Inc.
- Project Management & Site Planning Logistics -- Clark Nexsen Inc.
PROJECT METHODOLOGY

- Templates created (MAGNET) for discipline specific collection on TOPCON Tesla GPS equipment
- Drop down selections for appropriate attribution for each feature class
- RTK Networks utilized: TopNet and eGPS
Site survey to establish control points
- Underground Scanning and Utility Identification (painted)
- Grid Maps with Aerial background to identify referenced targets and note new ones
- Image captured of each Feature
- Field Book to note FID and image numbering
- Feature and Attribution entered in GPS template
Typical Marked-up Map

- Draft linear overhead utilities and note function
- GPS points taken for discipline specific feature classes and attribution populated in tables
PROJECT METHODOLOGY

Control Points

- Site Control points established at each location and utilized by both teams to reconcile
- Image captured of control points for site reference
- Minimal of 3 points captured on each site.
The Technology Leverage

Location, Location, Location

- Efficiently Establishing Site Control From Datum was Critical to the Project’s Success
- GPS, Privatized Reference Stations (eGPS) Total Station Technology
- The latest in Survey Technology was utilized
- Underground Survey
  - LEVEL B
Great technology but highly susceptible and sensitive to underlying geologic conditions

GEORGIA SOILS = CLAY

High clay content in soils and substrate rendered most of GPR use and potential for the project as ineffective
THE ACOUSTIC SOUNDING TECHNOLOGY

- Great “of Age” technology for establishing underground connectivity from and to known existing point
- Fills in the Voids...or rather identifies them!
### Data Quality

**Field Book Notes**

- Field logs
- Checklists
- ArcGIS Data Reviewer
- Geometric Networks
- Visual QC
Gravity Systems
- Industrial Waste Water
- Sanitary Sewer
- Storm water

Non-Gravity Systems
- Potable Water
- Natural Gas
- Electrical
- Communications
GIS Driven Facility Management Process

1. Collect data
2. Database
3. Create Business Intelligence
4. Support Decision Making
5. Executive Direction
FHWA / Purdue Study / DEC 1999 -
https://www.fhwa.dot.gov/programadmin/pus.cfm#conclusions

- $4.62 in savings for every $1.00 spent on SUE.

- Qualitative savings
  - non-measurable
  - significant
  - may be many times more valuable than the quantifiable savings
GENERAL BENEFITS OF GEOSPATIAL TECHNOLOGY

- Increase in
  - Efficiency
  - Accountability
  - Productivity
  - Bottom line
- Greater visibility – equipment & maintenance ecosystem
- Identify problems early on, in a planning process / initiative
- Improved customer service
SYSTEM OF RECORD, GIS, AND FINANCIAL SUSTAINMENT $$

GIS Investment

• Utility GIS/GPS Data Collection
• SDSFIE database

Time Interval

• DoD – System of Record for Financial Sustainment
• PRIDE -- Program Resource Internet Database Environment

Sustainment Dollars

Benefits flow as $$$$
CHANGE IN ASSET INVENTORY QUANTITIES

COMMUNICATION LINES

<table>
<thead>
<tr>
<th>DATA SOURCE</th>
<th>MILES</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRIDE</td>
<td>5.65</td>
</tr>
<tr>
<td>GIS DATA</td>
<td>24.32</td>
</tr>
</tbody>
</table>

- Electrical Power Distribution Line, Overhead: 119452.92 miles
- Heat Gas Distribution Line: 23151.00 miles
- Water Distribution Line, Potable: 35954.00 miles
- Storm Drainage: 65258.37 miles
- Change in Asset Inventory Quantities
CHANGE IN SUSTAINMENT DOLLARS

- Electrical Power Distribution Line, Overhead: $6,224.46
- Heat Gas Distribution Line: $2,315.10
- Water Distribution Line, Potable: $5,003.58
- Post GIS Pride $$: $45,028.28
UPDATES MADE TO PRIDE FROM GIS DATA

- Asset Quantity capture increase - 169%
- Financial Sustainment increase - 51%
Benefits to Organization

How Business is done

GIS & EAM

Highest Inertia, Large Investment, Across the board Involvement and Long term thinking

Optimal balance of Process, Policy, People

Cost, Eff. & Quality services

Organization’s Challenges & Level of Effort

Scale of Impacts
CONTINUOUS PROCESS

- GIS DATA Currency -- Constant Monitoring and Measurement

- Data Driven Case to show increased Financial Sustainment as Return on Investment

- Better quantitative infrastructure decision making
WRAP UP VIDEO - JOEL EASTMAN, GISP
THANK YOU!