Fall NEARC Conference
November 5-8, 2017 | Newport, RI

Mary Susan Knauss
Senior Transportation Analyst
NYS Department of Transportation
New State Contract Item

All Roadside Assets to be spatially located and inventoried.

AGOL – Collector

As Built Data in Real Time
The Summer we made it to the Cloud
Assets are not Static

How do we capture the change?

**Working Assumptions:**

- The Regions are the primary collectors of asset data
- Current business processes are not capturing the state changes
- Current Inventories are not robustly supporting the asset lifecycle thru planning, design, construction or maintenance processes.

**Working Solution:**

- Analysis and revise the business processes
- Agree on a Data schema
- Integrate access and updates across departments
- Deliver the data using GIS for reuse in analysis, et al.

Progress in Asset Management_20131205
• A basic management measure for a physical asset.
• Quality Practices are used to drive Life Cycle Costs down.
• Changes in business processes result
• Repeat until 6 Sigma is reached

Life Cycle Cost

One time and Recurring Costs over the Expected life of the Asset

ISO 9000
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Mary Susan Knauss, GISP
Getting it all on a map:

• Improves decision making
• Provides specific and detailed information to Design & Construction
• Multiyear projects can be tracked

Examples:

• Rustic Guide Rail Replacement
• Bi-Annual Sign Replacement Contract
• Provides a shared User Interface
• Access to shared enterprise data
• Supports decision making on all three tiers of Management Information Systems.
What are the elements of a Life Cycle Cost for an asset class?

• What
• Where
• How Many
• Expected Life
• Install Date
• One Time Cost
• Recurring Cost
• Other measures

What assets can we do that for?

P:\Miscellaneous\PPD-Asset Management
Survey Item in D Contract

Edit at the Desktop

Automated Collection

Inspections using Check In Check out
• Provides a shared User Interface
• Access to shared enterprise data
• Supports decision making on all three tiers of Management Information Systems.
GIS geodatabases exist for:

- Bridges
- LCIS
- RIS
- Signals
- Overhead Signs
- Traffic Count
- Emergency Callouts
- Traffic Investigations
- Major Commercial Permits
- Record Plans
- Small Culverts
- PVMS
- PSS
- Stormwater Outfalls

Makes all of the Information ACCESSIBLE

- Asset Attributes
- Work Flow Status
- User Log
- Source link and metadata
- Record Plans
- ADA Stamp
- SEQR
DATA SCHEMA AND DATA COLLECTION
✓ Access to shared enterprise data
  ✓ More productive work flow
✓ Provides a shared User Interface
  ✓ Reduces training needs
✓ Supports Decision Making
  ✓ More Efficient Collaboration
• Provides a shared User Interface
• Access to shared enterprise data
• Supports decision making on all three tiers of Management Information Systems.
Effective Operation Support Systems reflect workflow

- Planning – Cost/Benefit Analysis – ideally ROI
- Design - Capital costs
- Construction - Asset Acceptance
- Maintenance - Recurring costs
- Permits – Changes
- Design – Improved Specifications
• Provides a shared User Interface
• Access to shared enterprise data
• Supports decision making on all three tiers of Management Information Systems.
Business Needs

• Manage FHWA Compliance
  • “assessment and management method”

• Support Workflows
  • New Construction; Contracts
  • Structures Inspections; Cantilever & Spans
  • Traffic & Safety; Work Tickets
  • Maintenance; “replace in kind and in place”

• Emergencies and “Priority Interrupts”
Continuous Collaboration
Improved Productivity

The First Five

• Bespoke maps and layers
  – Design Report, SEQR, Assets, Documents, Record Plans

• Penetrates Program Area IT Silos
  – Site Manager Current Construction Contacts

• Aggregates Information for C3/COP use
  – RSDA, Road Service Callouts, CAMCI viewer
Life Cycle Cost

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Mary Susan Knauss, MSIS
What is an Asset?

From Wikipedia:

“In financial accounting, assets are economic resources. Anything tangible or intangible that is capable of being owned or controlled to produce value and that is held to have positive economic value is considered an asset. Simply stated, assets represent ownership of value that can be converted into cash (although cash itself is also considered an asset).”

The balance sheet of a firm records the monetary value of the assets owned by the firm. It is money and other valuables belonging to an individual or business. Two major asset classes are tangible assets and intangible assets. Tangible assets contain various subclasses, including current assets and fixed assets. Current assets include inventory, while fixed assets include such items as buildings and equipment.”

Seems straight forward until…..

http://en.wikipedia.org/wiki/Asset_management_(disambiguation)
Seems straight forward until…..
http://en.wikipedia.org/wiki/Asset_management_(disambiguation)

By this definition:
Asset Management is managing the citizens investment in transportation.

“Investment management is the professional management of various securities (shares, bonds and other securities) and assets (e.g., real estate) in order to meet specified investment goals for the benefit of the investors. Investors may be institutions (insurance companies, pension funds, corporations etc.) or private investors (both directly via investment contracts and more commonly via collective investment schemes e.g. mutual funds or exchange-traded funds).”
The success of Services and Utilities is determined by geography

- What distinguishes services businesses from product businesses is their geographical dependency.
- What distinguishes a utility service is that there is no practical alternatives.
Assets represent ownership of value that can be converted into cash.

- Networks are natural monopolies having inseparable components
- Revenue streams stand in for “sale price” as the measure of value created

International Accounting Standards Board[^5] "An asset is a resource controlled by the enterprise as a result of past events and from which future economic benefits are expected to flow to the enterprise."[^6]

NYSDOT has no pricing mechanism which makes Asset Management Practices a poor fit at the Executive System Level
Value Analysis

### Signage

<table>
<thead>
<tr>
<th>Condition/Multiplier</th>
<th>Avg. Value</th>
<th>2016</th>
<th>2017</th>
<th>Differential</th>
</tr>
</thead>
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<tr>
<td></td>
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<td>#</td>
<td>#</td>
<td>#</td>
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<tr>
<td><strong>Lump Sum Value</strong></td>
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<td></td>
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<tr>
<td>Excellent</td>
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<td>Good</td>
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<tr>
<td>Fair</td>
<td>0.5</td>
<td>50</td>
<td>50,000.00</td>
<td>80</td>
</tr>
<tr>
<td>Replace</td>
<td>0.25</td>
<td>25</td>
<td>131,250.00</td>
<td>90</td>
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<tr>
<td><strong>Total</strong></td>
<td></td>
<td>297</td>
<td>259,920.00</td>
<td>260</td>
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</table>

*Sherburne average est. replace cost = $1500*

### Culverts

<table>
<thead>
<tr>
<th>Condition/Multiplier</th>
<th>Avg. Value</th>
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<th>2017</th>
<th>Differential</th>
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</thead>
<tbody>
<tr>
<td></td>
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<tr>
<td><strong>Lump Sum Value</strong></td>
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<td>Excellent</td>
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<tr>
<td>Good</td>
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<tr>
<td>Fair</td>
<td>0.5</td>
<td>118</td>
<td>136,690.00</td>
<td>117</td>
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<tr>
<td>Replace</td>
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<td>33,570.00</td>
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<tr>
<td><strong>Total</strong></td>
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<td>346</td>
<td>$488,347.50</td>
<td>348</td>
</tr>
</tbody>
</table>

*Sherburne average est. replace cost = $1500*

*Note: Culvert VALUES are based on length and diameter and NOT THE AVERAGE REPLACE COST. The culvert average replace cost, above, is based on the cost of REPLACING ALL culverts with D = 2ft or less. Signage is based on an average value of $150 per sign.*

### Culvert Cost Analysis

- **Purchasing length:**
  1. Rounded up to nearest 10 feet
  2. Ex. Culvert of 42′ = 50′ purchasing length

- **Unit cost based on diameter**:
  - D = 2ft or <2ft is estimated at $50/ft
  - Add $25/ft to cost for increasing diameter
  - Ex. For D = 4 ft, Unit Cost = $100/ft

- **Current Value**
  - Current value = multiplier X replace cost
  - (Multiplier is based on condition)
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Mary Susan Knauss, Girl Scout
What’s in a name?

Unique Asset Identification using USNG Coordinates

Elisabetta T. DeGironimo, GISP
GUID Versus USNG

- A **universally unique identifier** (UUID) is a 128-bit number used to identify information in computer systems. The term **globally unique identifier** (GUID) is also used.

  00112233-4455-6677-8899-aabbccddeeff
USNG In Use

• Smart phone apps
  • GPSs

usngmarker.org
Common Language Location Identification

- **CLLI code** (sometimes referred to as **CLLI name** or **COMMON LANGUAGE Location Identifier Code**, and often pronounced as *silly*) is a Common Language Information Services identifier used within the North American telecommunications industry to specify the location and function of telecommunications equipment or of a relevant location such as an international border or a supporting equipment location, like a manhole or pole.[1] Originally, they were used by Bell Telephone companies, but since all other telecommunications carriers needed to interconnect with the dominant Bell companies, CLLI code adoption eventually became universal. CLLI codes are now maintained and issued by Telcordia, which claims trademarks on the names "Common Language" and "CLLI".[1]

- CLLI codes are useful to telecommunications companies for ordering phone service, for the rating of call detail records for billing purposes, and to assist in tracing calls. CLLI codes are associated with Vertical and Horizontal coordinates (frequently abbreviated to "V and H coordinates"), which were developed by AT&T researcher Jay K. Donald to provide a relatively simple method of calculating distance between two network locations.[2] Various mileage-sensitive services are priced according to the V and H coordinates associated with the two endpoints' CLLI codes.[2][3]

- Wikipedia
SAR for Trooper 2

27 – 28 Sept 2008

SYSCOM: “I got 'em ... the last time I have 'em is at thirty-eight fifty-two seventeen and then seventy-six fifty-two twenty-six.” (38 52 17, 76 52 26)

(i.e. 18S UJ 376 039 or UJ 376 039 or UJ 3768 0395)

Although authorities had the precise location of the Trooper 2 crash site – first responders were delayed 1.5 hours in arriving on scene because of ineffective use of coordinates.
Latitude and Longitude

• Long maritime and aeronautical history
• Not x-y
• No standard grid size
• There are three (3) versions
  – DD-MM.mmm (NSARC standard version)
  – DD.ddd (GIS version)
  – DD-MM-SS (KSC Map911)
• Multiple versions cause confusion and result operational delays
  – Hurricane Katrina
  – Mayo Helicopter crash, Clay County, FL  {December 2011}
• It is not Florida’s designated coordinate system for land-based operations
18S UJ 376 039  crash site

In-line with a runway of Andrew’s Air Force Base