Asset Management
Why, How and When: New Tools Case Study

City of Eagan Case Study
What is Asset Management?

The coordinated activities of an organization to realize value from assets

- Involves the balancing of costs, opportunities and risks against the desired performance of assets to achieve the organizational objectives
- In PW focus is on **Physical Assets**

An Asset Management System (AMS) is the technology to support Asset Management
What does AM include?

- Asset inventory
- Work order management
- Citizen engagement
- Performance prediction
- Creating budget scenarios
- Permitting
- Planning
- Risk management
Developing a Strategy

- Set Vision
- Set High Level Goals
- Identify Needs
- Build consensus
- Get Funding
- Adopt Road Map
- Implement EAM
Vision Statement

The Asset Management System is a simplified, user friendly, accessible, and predictive tool that establishes future budgets, supports financial analysis, coordinates cost effective preventative actions, improves workflows, and integrates all City of Eagan Departments. The AMS is designed to be user-friendly and provide real time information for critical tasks, complex management decisions, and enhanced customer service.
Asset Management in Eagan

Extensive expertise
- Managing assets
- In divisional asset management
- Technical expertise in GIS/AMS

History with multiple systems

Lived life on the bleeding edge

Silo’d
- Varying levels of success
- Ownership

Solid GIS foundation
ONE SIZE DOES NOT FIT ALL

FLEET  UTILITIES  PARKS  STREETS
How do we get there?

- Risk Management
- Governance
- Technology and infrastructure
- Staffing
- Integration / Streamline Workflows
- Education / Training
Governance

- Adopt a formal governance model
  - Staff commitment is more important than software

- Form a steering committee
  - Centralize funding
  - Stop building new silos

- Adopt an EAM road map

- Eliminate underperforming silos
  - Based on the EAM Vision
### Asset Evaluation Framework

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<td>Guard Rails and Fences</td>
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<td>Streets Service Requests/Work Orders</td>
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<td>Fleet</td>
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<td>2</td>
<td>1</td>
<td>1.3</td>
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<td>Water (infraMAP)</td>
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<td>3</td>
<td>1</td>
<td>2</td>
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<td>2</td>
<td>2.4</td>
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<td>Utility Service Requests/Work Orders</td>
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<td>3</td>
<td>2</td>
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<td>3</td>
<td>2</td>
<td>3</td>
<td>2.8</td>
<td>2.7</td>
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- **Predict Perf.**: 1 - 1.5 Fully Supported
- **Real Time**: 1.6 - 2.5 Partially Supported or Supported by Software and not currently utilized
- **SR / WO Costs**: 2.6 - 3.0 Not Supported
<table>
<thead>
<tr>
<th>Task</th>
<th>YR 1</th>
<th>YR 2</th>
<th>YR 3</th>
<th>YR 4</th>
<th>YR 5</th>
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<tr>
<td><strong>Technology and Infrastructure</strong></td>
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<tr>
<td>Purchase Enterprise Asset Mgmt Software</td>
<td>$55,000</td>
<td>$15,000</td>
<td>$10,000</td>
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<tr>
<td>Implement Enterprise Asset Mgmt Software</td>
<td>$60,000</td>
<td>$40,000</td>
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<td>Software Maintenance</td>
<td>$50,000</td>
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<td>$75,000</td>
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<td>Update Mobile Hardware</td>
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<td>$4,520</td>
<td>$4,520</td>
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<td>$1,440</td>
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<td>Contingency</td>
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<td><strong>Total</strong></td>
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<td>$119,520</td>
<td>$79,520</td>
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<td><strong>Staffing</strong></td>
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<td>Collect Guard Rail and Fence Data</td>
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<td>Collect Retaining Wall Data</td>
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<td></td>
<td>$15,000</td>
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<td>Data Collection for Parks</td>
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<td>Other Data Collection</td>
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<td>$20,000</td>
<td></td>
<td>$15,000</td>
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<td><strong>Total</strong></td>
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<td>$157,500</td>
<td>$133,000</td>
<td>$106,000</td>
<td>$109,000</td>
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<tr>
<td><strong>Integration / Streamline Workflows</strong></td>
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<td></td>
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<tr>
<td>Standardize Integrations</td>
<td>$4,200</td>
<td></td>
<td></td>
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<td>Streamline access for Public Projects</td>
<td>$2,500</td>
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<td></td>
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<tr>
<td>Integrate Streets (Lightweight)</td>
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<td>$1,200</td>
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<tr>
<td>Integrate or Migrate Utilities</td>
<td>$9,600</td>
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<tr>
<td>Evaluate/migrate streets to the EAM</td>
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<td><strong>Total</strong></td>
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<td>$5,000</td>
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<td><strong>Education and Training</strong></td>
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<td></td>
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<td>Information Program</td>
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<td>Post Go-Live Training</td>
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<td>Fleet Training</td>
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<td>National Conferences</td>
<td>$5,000</td>
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<td>$313,740</td>
<td>$302,820</td>
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Results

- Fully funded EAM plan
- Organizational understanding and buy in
- Risk management plan
- Vendor short list
- Road Map
  - Enterprise-wide Work Orders
  - Priority assets
Questions?
So You Say You Want an Asset Management Program...

Where do you Begin???
What is the Goal?
What is the Goal?

- Inspections - Data Entered in the Field
- Asset Condition
- Proactive Maintenance Planning
- Financial Planning
- Tracking Issues and Follow Through
- Public Works Director
- City Engineer
- IT Director
- GIS Technician
Who Needs It?

Everyone!!!
Maplewood Departments

- All Public Works Divisions
  - Engineering
  - Streets
  - Storm
  - Sanitary
  - Park Maintenance
  - Fleet
- Parks and Recreation
- Finance
- Administration
Contractors & Developers
The Road To Asset Management

- So You Say You Want an Asset Management Program...
- What Assets Do You Have?
- Research
- Development for Such Organizations
- A Wave of Support
- Implementation
- Demonstration for the Asset Team
What Assets Do You Have?

- Ask Yourself:
  - What do you want to track?
  - What do you want to inspect?
  - What do you need to know?

- Maplewood - 35 Different Assets
The Road To Asset Management

So You Say You Want an Asset Management Program...

What Assets Do You Have?

Research

A Wave of Support

Implementation

Demonstration for the Asset Team
Research

- What options are there
- What are other cities using
- Visit with neighboring cities
- Visit with consultants
- Research the web

PC Based or Web Based
Technology
Interface
PC Based
or
Web Based

What Solution Works Best for You???
Technology

- What hardware do you need
- Is there a mobile solution?
- Cost of mobile data
Interface

Intuitive
- Easy to teach
- Easy to use
- Same look and feel for all assets
Demonstration for the Asset Team

- Other Cities
- Consultants
- Web Demonstrations
- Live Demonstrations
The Road To Asset Management

- So You Say You Want an Asset Management Program...
- What Assets Do You Have?
- Research
- Demonstrations for the Asset Team
- Implementation
- A Wave of Support
- Demonstrations for Each Department
Demonstrations for Each Department

- Live Demonstrations
- Setup sessions for specific asset groups
- Tailor presentation to each audience
The Road To Asset Management

- So You Say You Want an Asset Management Program...
- What Assets Do You Have?
- Research
- Implementation
- A Wave of Support
- Demonstration for the Asset Team
- Improvements for the Entire Organization
A Wave of Support

How Can We Live Without it?
Implementation

- Start with your end users
- Involve them early!!

- Be prepared to do a lot of data cleanup
- Take time and do it right
The Road To Asset Management

So You Say You Want an Asset Management Program...

What Assets Do You Have?

Research

A Wave of Support

Implementation

Demonstration for the Asset Team
Keeping an Asset Registry Up-to-Date
Observation and Documentation of Utility Assets during Reconstruction

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Agenda

- IAM Conceptual Asset Management Model
- Asset Registry
  - How we use ours?
  - Quality of an Asset Registry
- Lifecycle Delivery
- Why attempted to keep an Asset Registry up-to-date
- Brief Project Description
- Benefits
- Summary
IAM’s Conceptual Asset Management Model

What is an Asset Registry?

- Data / Information
  - Spreadsheet
  - Computerized Maintenance Management Software / Asset Management Software
  - GIS
  - Record Drawings
- Location and other Attributes

How we use (mobile) GIS at PW?

• View the Utility Infrastructure (Spatial Awareness)
  • Locations and Attributes of Utility System
  • Links to As-Builts / Record Drawings
  • Temporary water Status

• Updating status of Assets (Efficiency)
  • Open/Closed
  • Active/Removed
  • Update Locations (GPS)
  • Additions, Removals, Abandonment

• Work Management (Spatial Analysis)
  • Hydrant Inspections / Watermain Flushing
  • Valve Inspections
  • Break/Repair Locations
Quality/Accuracy of an Asset Registry
“Asset mapping: Forget what you think you know”

- Correlation between:
  - Belief in quality of record drawings
  - Frequency records are accessed

- Any guesses as to what the correlation was?

Quality of an Asset Registry

“Asset mapping: Forget what you think you know”

<table>
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<tr>
<th>Group</th>
<th>Belief in Quality of Record Drawings</th>
<th>Experience using Record Drawings</th>
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<tr>
<td>Senior Management</td>
<td>Good</td>
<td></td>
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<tr>
<td>Construction Management</td>
<td>Good</td>
<td>Rarely</td>
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<tr>
<td>Engineering CAD Designers</td>
<td>Good</td>
<td></td>
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<tr>
<td>Land Surveyors</td>
<td>Poor</td>
<td>Daily</td>
</tr>
<tr>
<td>Operations &amp; Maintenance</td>
<td>Not complete or accurate</td>
<td></td>
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</table>

Updating an Asset Registry

- Previously
  - Wait for As-Builts (Months to Years)
  - GPS exposed features after they are raised
  - Update GIS Points and Lines

- How does that fit with the Lifecycle of Assets?
IAM’s Conceptual Asset Management Model
Lifecyle Delivery

- When are we finished ‘Acquiring’ the asset?
- When do we begin to ‘Operate’ the asset?
- How has technology impacted this transition?
  - Real-time access to asset information

The Institute of Asset Management. Available at:
https://theiam.org/what-is-asset-management/anatomy-asset-management
Why keep our Asset Registry Up-to-date?

- Identified Lack of documentation or Lag time receiving record drawings
  - Private and Public Projects
- Questions about the Construction Process
  - Was it built to plan?
  - Are all features up to grade/exposed?
  - Where was it replaced and where was it abandoned?
- Increased use of Real-time GIS data (iPads)
  - All Utility Operators are using iPads in the field
  - Utility Locators
    - Locating with little to no data during construction
    - City's responsibility to locate abandoned features and every bend of sewer & water laterals
Project - Goals

- #1 – Improve the Quality/Accuracy of our Records
- #2 – Provide access to Updated records and drawings to utility staff
  - Even if it is just a plan
- #3 – Document what was constructed, not what was planned
Project - Who made the Updates and How?

- Hired an Inspector to be on-site for the duration of the Project
  - Chasing 1 or 2 Backhoes

- Updates GIS Attributes and record GPS positions with:
  - Trimble R2 Receiver (Sub Foot) paired with an iPad
    - ArcGIS Online
How we kept our Asset Registry up-to-date

- GPS Utility assets as they are installed
  - Observer on-site chasing 1 or 2 Backhoes

- Identify Houses/Services on Temporary or New Water during installation

- Provide construction information to Utility Operators in near real-time
Benefits / Wins?
Late night calls to on-call staff, easily water service identify responsibilities.
Win - Forgot to Open Valves

- Utility Operators update GIS Attributes of Assets in real time
- If we need to do a shut down, we will be aware of these closed valves
- Future Uses - Network Trace
  - Which valves to shut off?
  - Identify who needs to be notified

Win - Plan vs Construction
GV Installed to Isolate Main

Location Recorded in GIS

Not on plan, was not raised

Inspector Checked Notes

GV will be raised

Image Capture: Aug 2017 @ Google
https://www.google.com/maps/@44.9469146,-93.4928527,3a,75y,58.88h,76.14t/data=!3m6!1e1!3m4!1s5woNAlyAL6QTsETxp0lu6w!2e0!7i13312!8i6656
Summary - Did we accomplish our goals

- #1 - Improve the Quality/Accuracy of Records
- #2 - Provide access to updated records and drawings for utility staff to access
  - Have access to the plan until we receive the As-Built
- #3 - Document what was constructed, not what was planned
Questions?

Good. Let’s eat!