GIS for Improved Management of Your Assets

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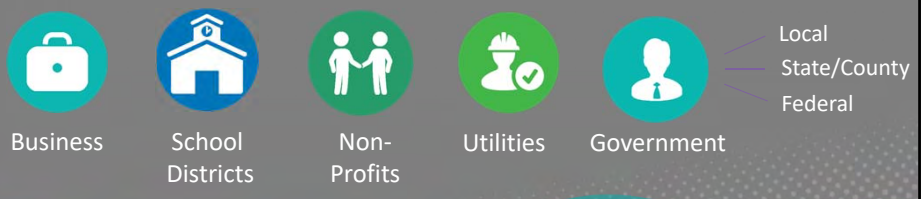
A Little About FLO

- Employee Owned
- Located in Portland and Seattle
- Experts in the design, implementation and use of GIS & data analytic solutions



Topics

- Asset Management Systems (AMS/CMMS)
- Geographic Information Systems (GIS)
- Steps to ensure Successful Implementation

Asset Management

The process of maintaining and managing assets once acquired or built

Asset Management

AM Process Sophistication:

- Identify and locate
- How to maintain
- How to track condition
- Identify likelihood and impact of failure
- Evaluate consequences of failure

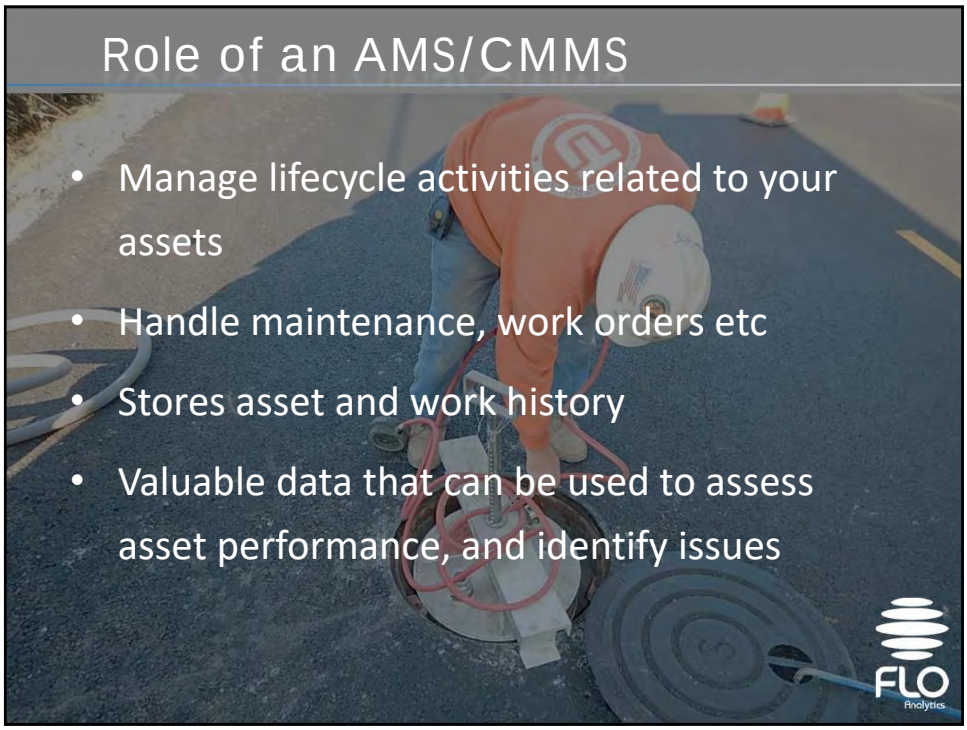
Asset Management

Goal:

Limit failure and sustain service at lowest cost

- $$ Savings through targeting efforts, improving decision making and optimizing asset life

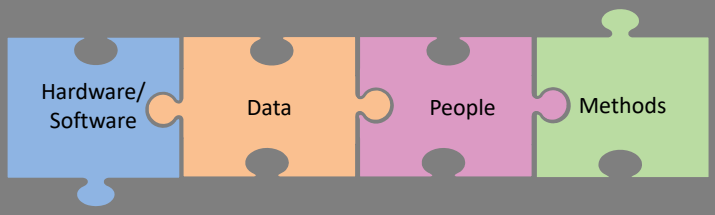
Role of an AMS/CMMS



- Manage lifecycle activities related to your assets
- Handle maintenance, work orders etc
- Stores asset and work history
- Valuable data that can be used to assess asset performance, and identify issues

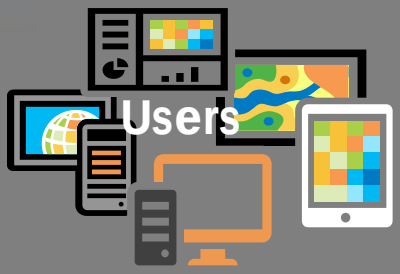
Geographic Information System

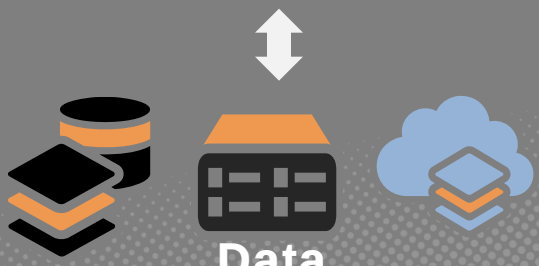
A system to gather, manage and analyze spatial data



- ROI through data visibility, new capabilities, integrations and efficiencies

GIS Technology

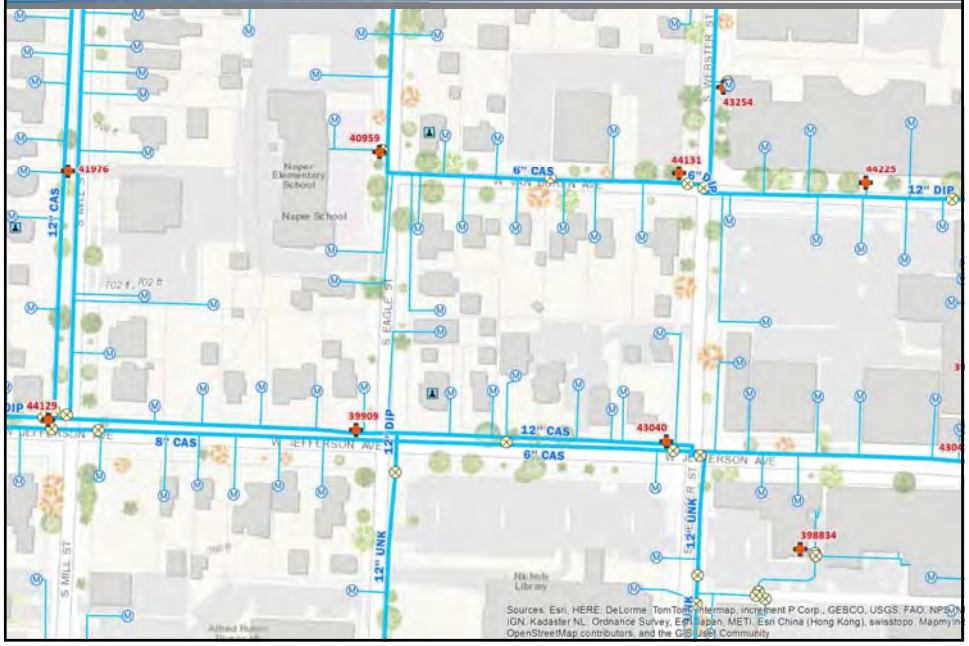




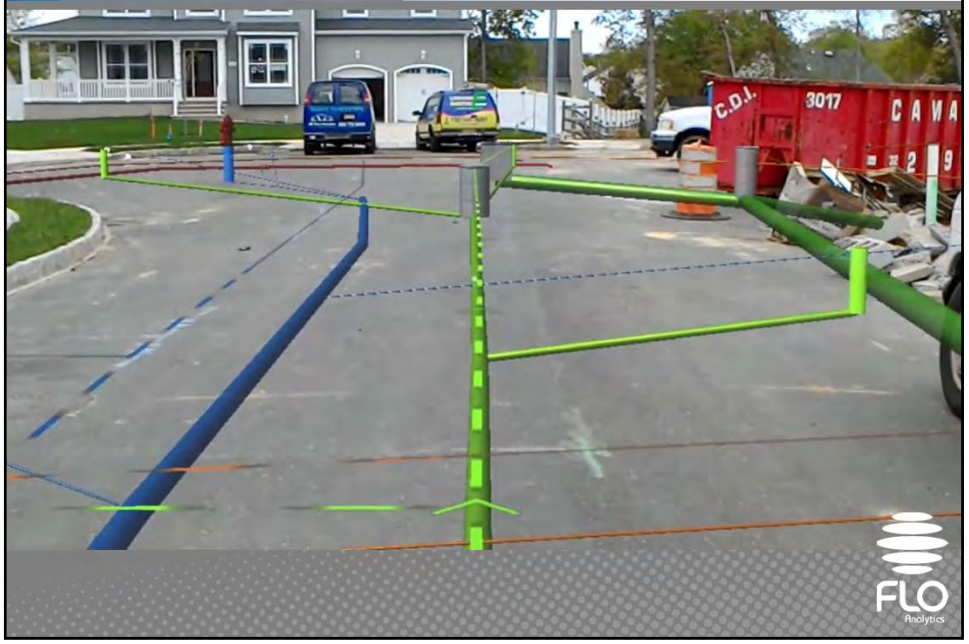
Role of GIS

- Manage asset location, see related information (addresses, etc)
- Planning, design and construction
- Visualize assets by attributes – see condition across the network
- Analysis –asset failures, nearby assets, analyze consequences

AMS and GIS



GIS enables



Common "barriers"

- Complexity
- "We are too small"
- Unsure about GIS
- Costs too much
- Personnel and Skillsets
- Data Availability
- Not sure where to start!

Successful Implementation

- Strategic Planning
- Organizational Use
- Data and Inventory
- Data Maintenance
- Integration and Analytics

Strategic Planning

Levels of service

Key Performance Indicators

A vision of what you would like to do with your ideal system

- Data, Tools
- Workflows and Processes
- Decision Making
- Efficiency and savings

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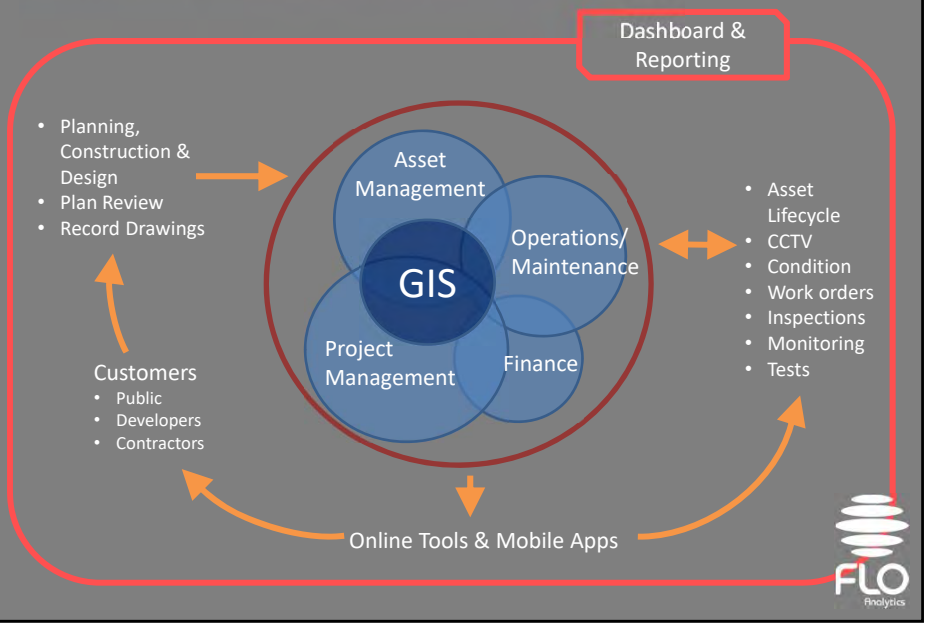
Strategic Planning - Vision



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Strategic Planning

- Make specific goals
  - Key objectives
  - Address an issue and identify business value
    - Front desk staff able to answer queries directly
    - Field Staff have up to date information
    - Departments sharing data
    - Integration between systems to remove duplicated efforts

Assess your Current Resources

- Software and hardware
  - Servers, Databases
  - Self-host or cloud?
  - GIS/Asset management
  - Other key software

Current Resources

- Staff skills and responsibilities
- What Data you have and how you get it
  - CAD
  - Paper
  - Institutional Knowledge

Current Resources

- Budget
  - ROI
  - Funding
- Other departments

Workflows and detail

- Define…workflow for key processes
- Measure…time/cost/customer service/quality
- Analyze…pain points, obsolete steps, opportunities
- Improve…available technology
- Monitor…dashboards

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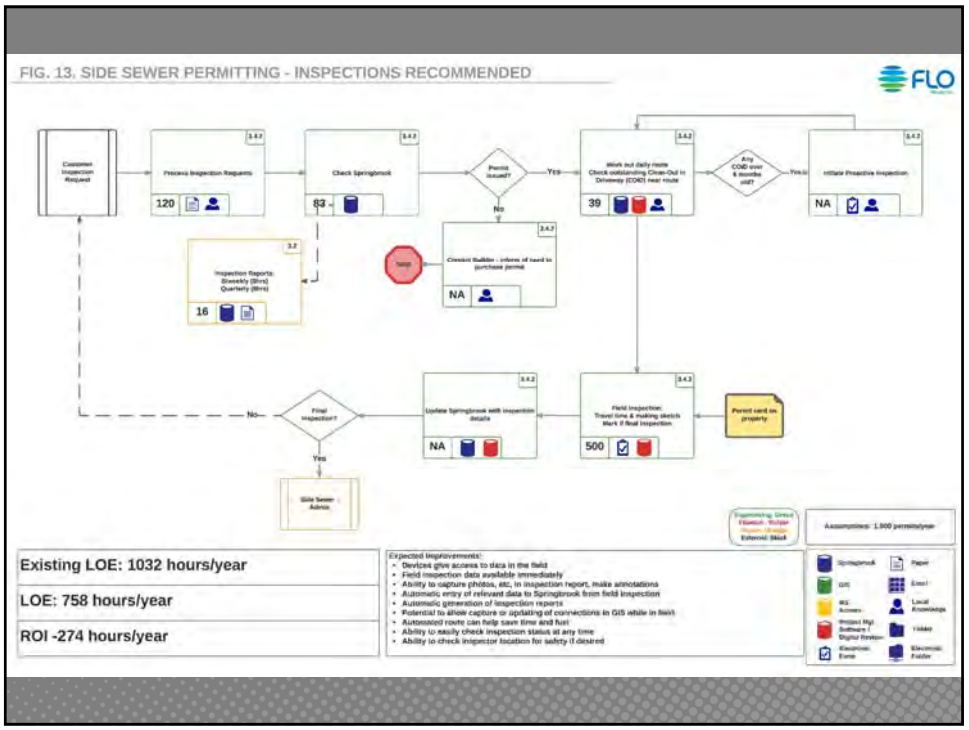


Selection

- What functions/tools will help you achieve your objectives?
- Return on Investment
  - Direct
  - Indirect
- Timeframe to see benefits

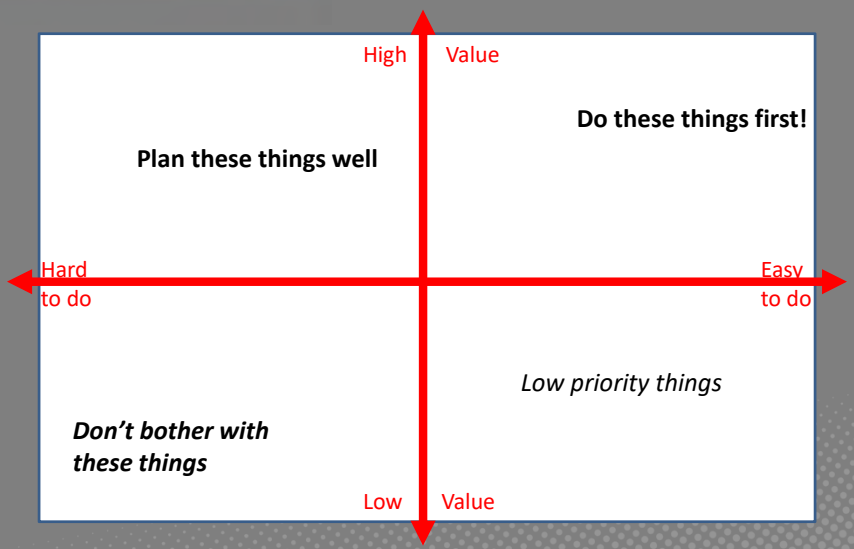
GIS questions to ask an AMS vendor

- "Describe how you integrate GIS data"
- "Do you have an option to synchronize data between the AMS and GIS?"
- "Are there any special requirements around GIS data formats or schemas?"

Considerations

- Total Cost of Implementation
- Field crews: Workflow changes, available tools, devices?
- Office staff: What data and tasks?
- Do you have any existing software or data formats that may be affected?

Plot to plan



Data Inventory

- Priority Task
- GIS First
- Data Sources
  - GIS
  - CAD/Electronic
  - PDF
  - Paper
  - Staff

Data/Inventory

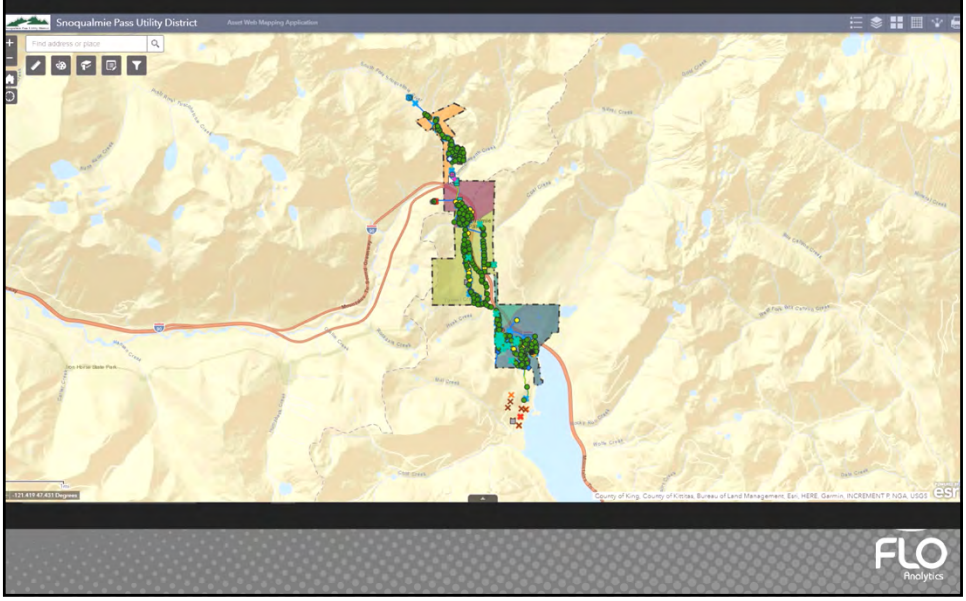
- Establish asset inventory and locations
  - Attributes/Schema
  - Field capture
  - Records capture
  - Markup

City of Kelso

Snoqualmie Pass Utility District

- No existing GIS data
- Location of assets unknown or difficult to find (snow)
- Entire utility system was mapped in 2.5 working days
  - ✓ 657 features
  - ✓ 19 feature types
  - ✓ Down to 3" accuracy

Snoqualmie Pass UD Asset Inventory



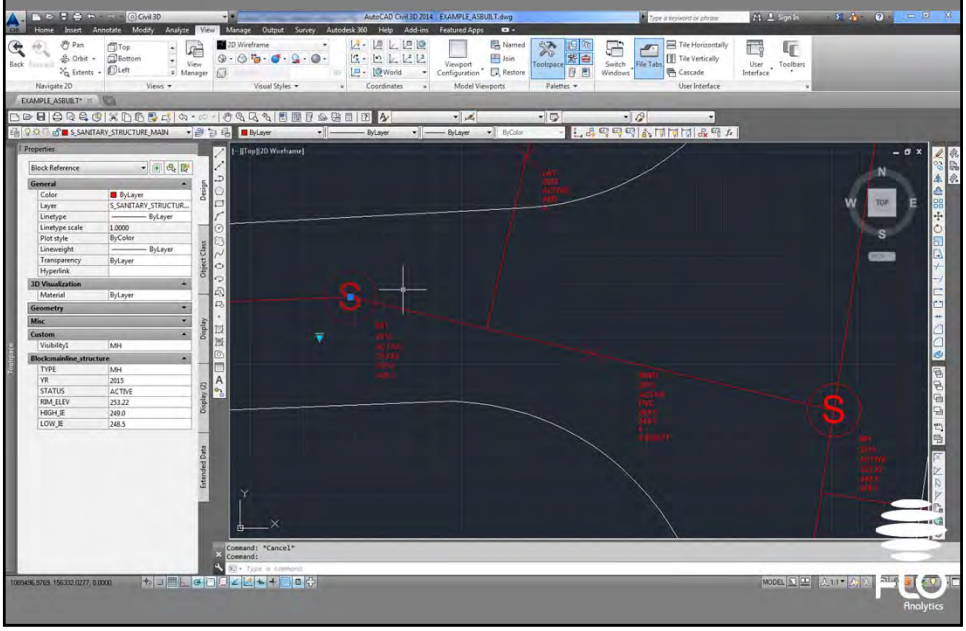
Data Maintenance

Ongoing corrections and verification

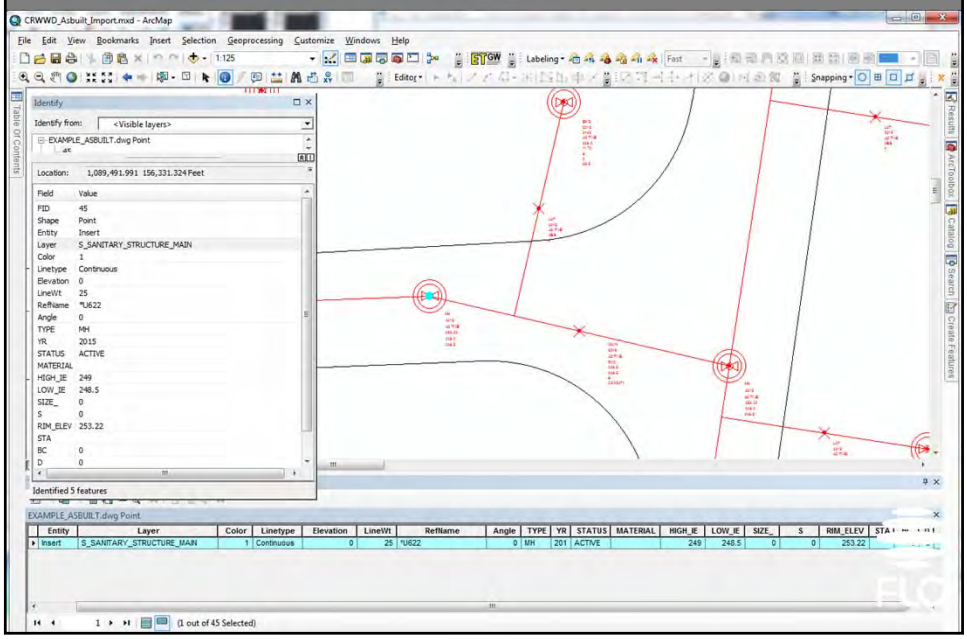
Data Maintenance

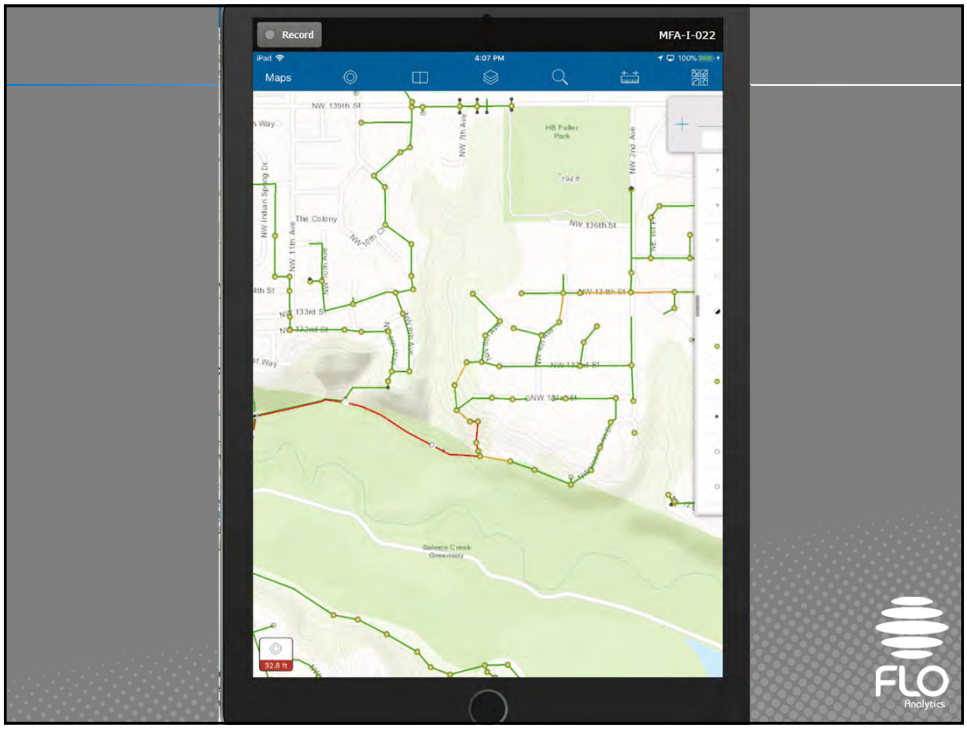
- What parts of the data will be updated by who?
  - location vs attribute
- What processes will you need to use?
  - As-builts (standards)
  - Field updates

CAD as-built



CAD as-built in GIS





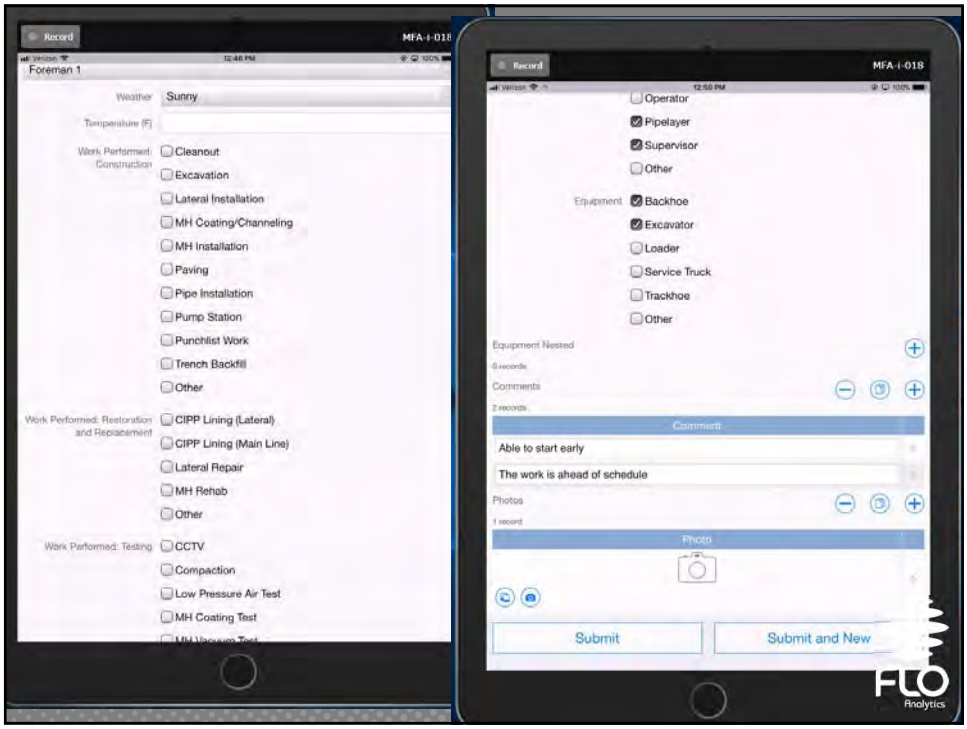
Integration

Combining data from different sources to provide a unified view

- Get the information required to do the job effectively
- Streamline reporting and management activities

Integration

- Specialized systems tend to perform their tasks very well
- Making a specialized system do other tasks is possible, but often not optimal
- Connecting systems can help maximize the return
- There are a number of ways to connect systems, but they are not all equal


Record
MFA-I-018
Foreman 1
Weather
Sunny
Temperature (F)
Work Performed: Construction
Cleanout
Excavation
Lateral Installation
MH Coating/Channeling
MH Installation
Paving
Pipe Installation
Pump Station
Punchlist Work
Trench Backfill
Other
Work Performed: Restoration and Replacement
CIPP Lining (Lateral)
CIPP Lining (Main Line)
Lateral Repair
MH Rehab
Other
Work Performed: Testing
CCTV
Compaction
Low Pressure Air Test
MH Coating Test
Operator
Pipelayer
Supervisor
Other
Equipment
Backhoe
Excavator
Loader
Service Truck
Trackhoe
Other
Equipment Nested
Comments
Able to start early
The work is ahead of schedule
Photos
Photo
Submit
Submit and New
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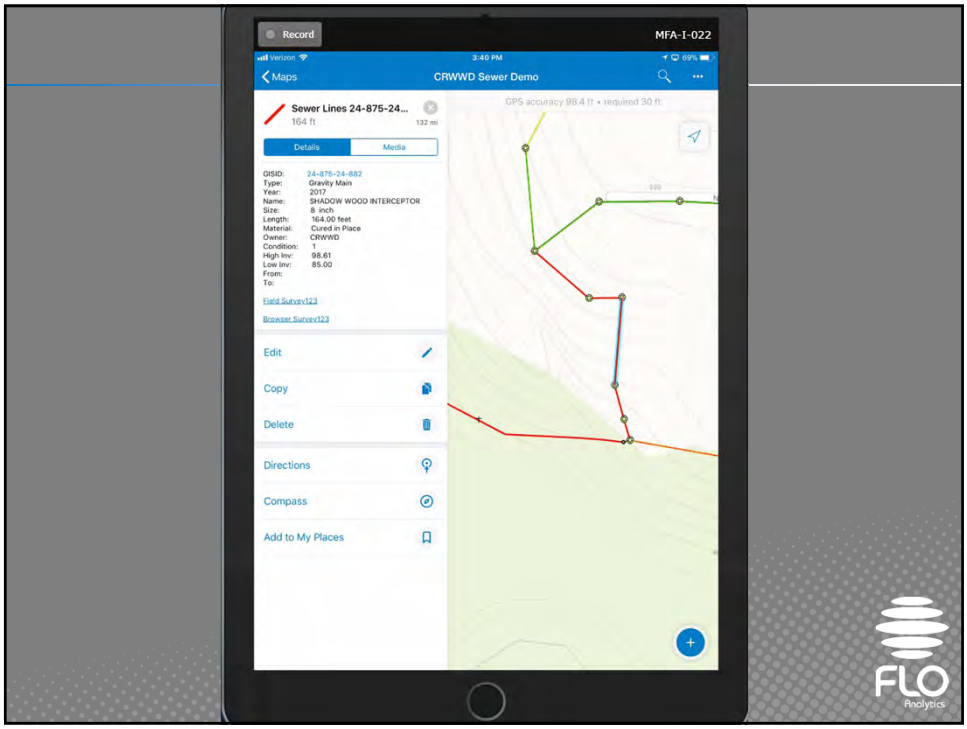
Record
MFA-I-022
Maps
CRWWD Sewer Demo
Sewer Lines 24-875-24...
164 ft
Details
Media
GISID: 24-875-24-882
Type: Gravity Main
Year: 2017
Name: SHADOW WOOD INTERCEPTOR
Size: 8 inch
Length: 164.00 feet
Material: Cured in Place
Owner: CRWWD
Condition: 1
High Inv: 98.61
Low Inv: 85.00
From:
To:
Field Survey123
Browser Survey123
Edit
Copy
Delete
Directions
Compass
Add to My Places
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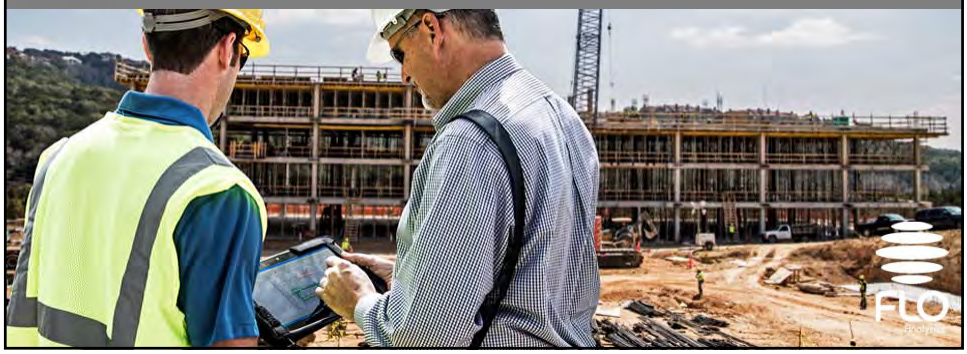
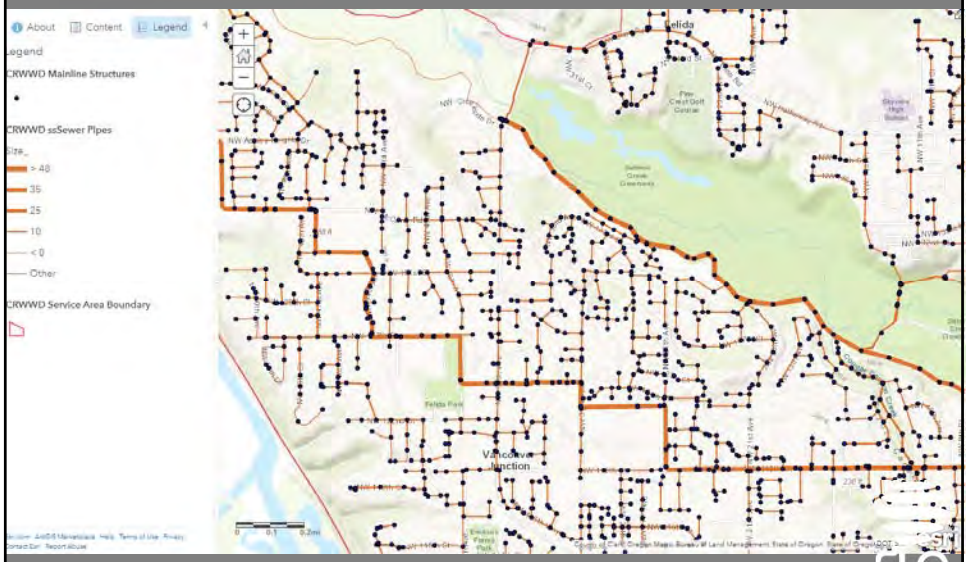
Data Visualization and use

- Maps
- Field/mobile tools

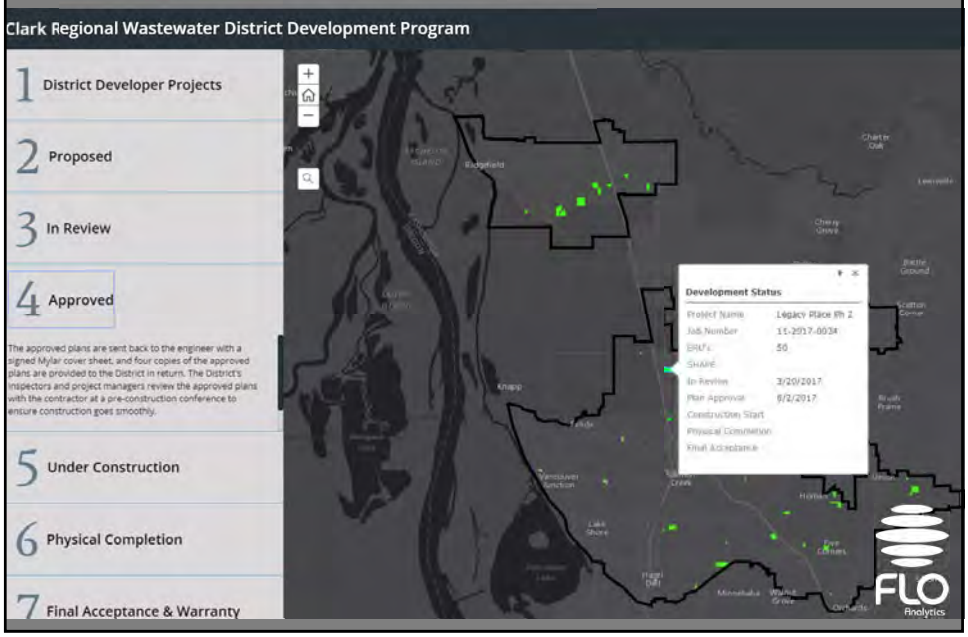


Overviews

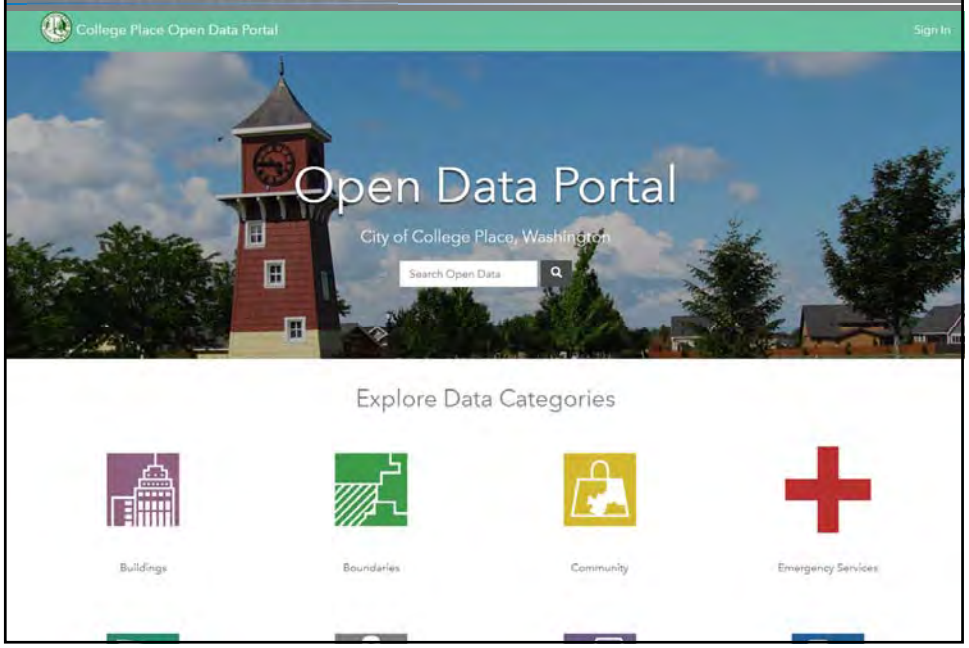


Detailed Asset Maps

Summary and status



Data Sharing



Summary

- Start with a general vision and some goals
- Tie these to activities and ROI
- Get your data in shape and plan to maintain it.
- Integrations can offer high ROI
- Visualize and use the data

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