AssetWORKS

Best Practices of GIS Applications in Asset Management

Data, Performance Measurement and Target Setting

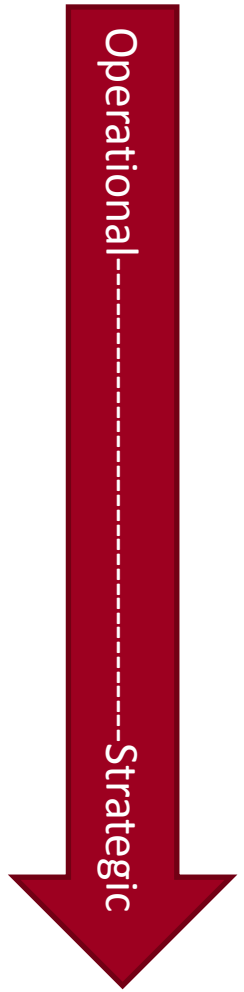
INFRASTRUCTURE | FLEET | FUEL | MOTOR POOL | GPS | RTLS

Overview

- **Core GIS Data Requirements**
  - Who creates the data?
  - Who maintains the data?
- **Data Governance**
  - Internal Data Workflows
  - Externally Collected Data
- **Integrating GIS and Asset Management Systems**

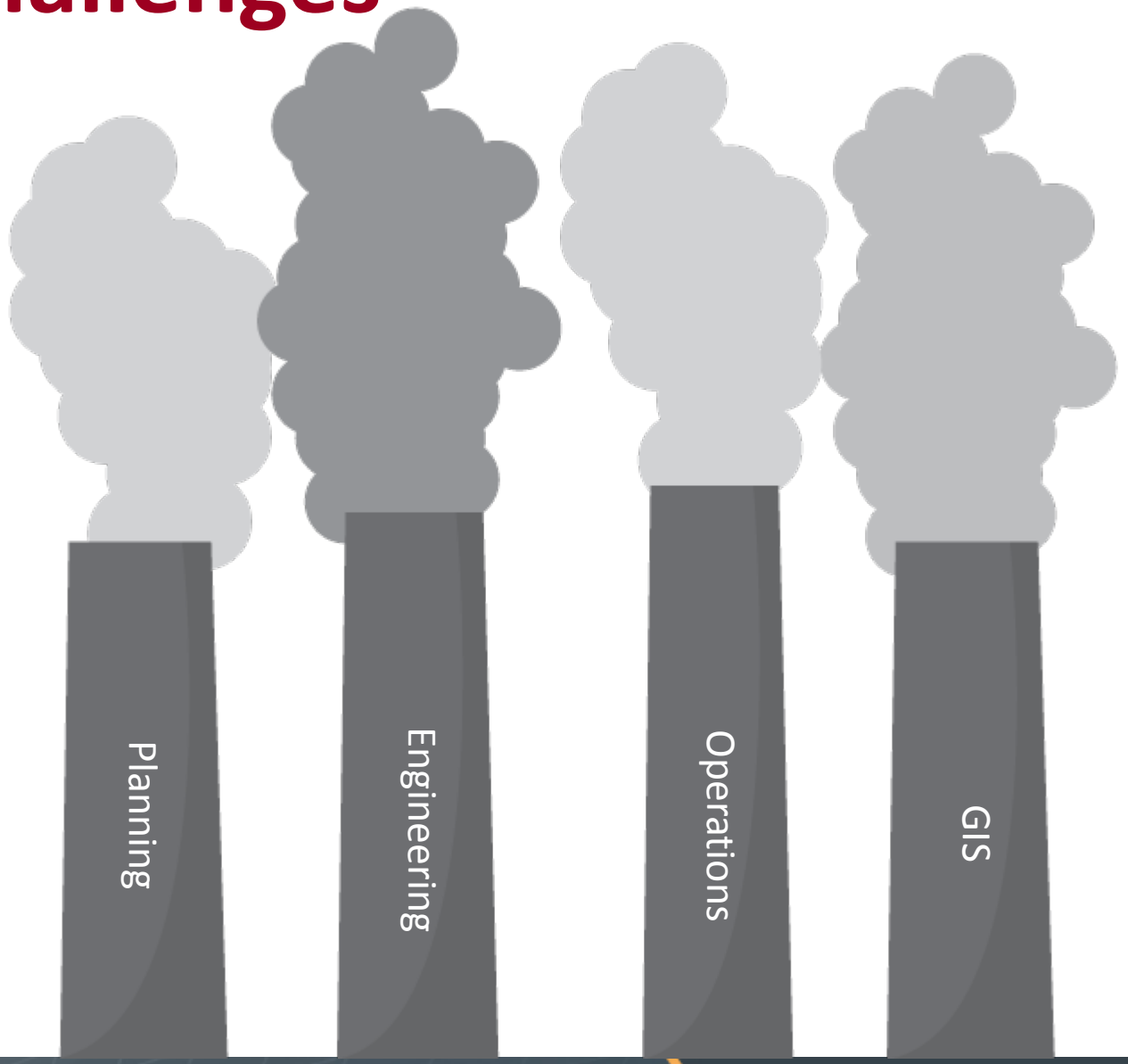
Core Asset Management Data Requirements

- **Static Unique ID**
  - Don’t rely on system generated row IDs
- **Materials/Type**
  - Age and fail differently, key in monitoring asset performance
- **Age**
- **Criticality**
- **Expected Life**
- **Economic Value**



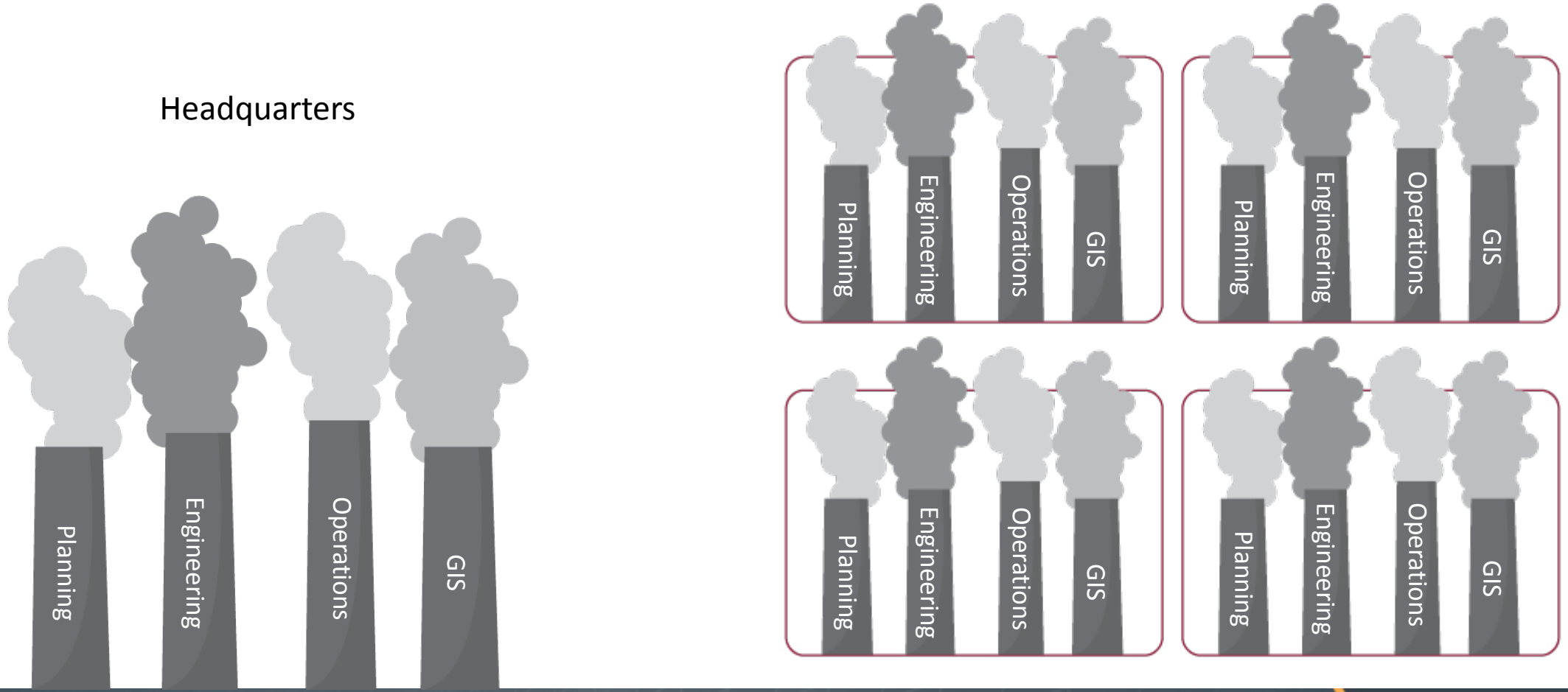
Data Challenges

- A typical stovepipe organizational structure:



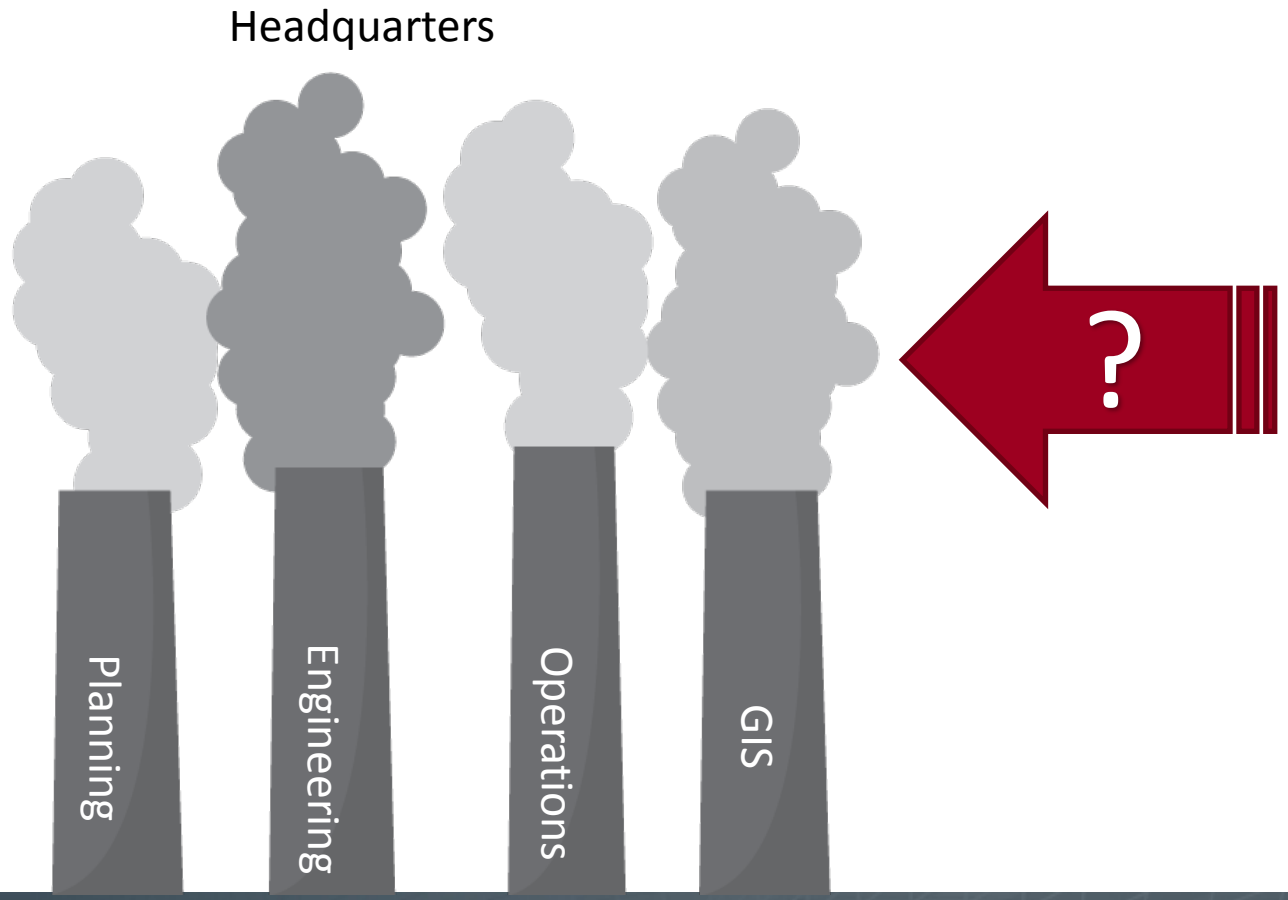
Data Challenges

- **The stovepipe multiplied by district, the problem multiplied.**



Data Challenges

Data collection in a stovepipe organization



District 1

- Paper forms for sign retro reflectivity
- Access database for catch basin inspections
- Excel file for accident-damaged wall inspections

District 2

- Excel file for sign retro reflectivity
- Paper forms for catch basin inspections
- Access database for accident-damaged wall inspections

Data Challenges

- **Other issues with data collection in a stovepipe organization:**
  - Do you have data or information?
  - Who uses the data you collect?
  - Does this data support operational and strategic decision making?

The Sufficiency Rating (SR) for the Skagit River Bridge was 53.8. Was that unsafe?

FHWA Bridge and Tunnel Programs
A presentation to the AASHTO Subcommittee on Bridges and Structures
April 22, 2015
Joseph Hartmann

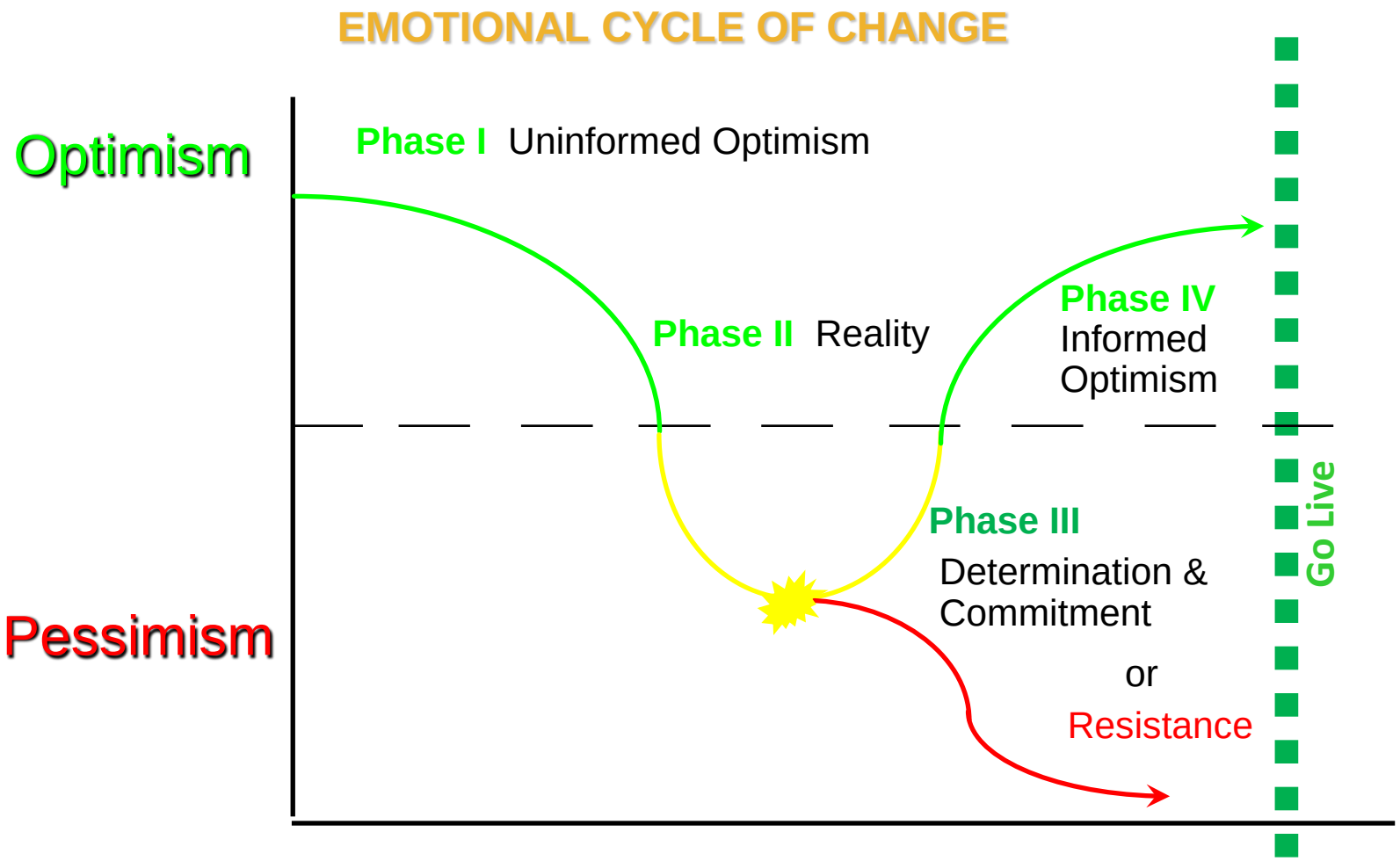
Communicating these Challenges

- **Uncoordinated data collection in a stovepipe organization:**
  - Duplicates effort to re-enter data from paper forms
  - Requires extra effort to standardize and integrate
  - Exposes the organization to increased risk
    - Data latency
    - Errors in transcription
    - Errors in data processing
    - Loss of detail during standardization and integration
    - Collecting data that does not support decision making

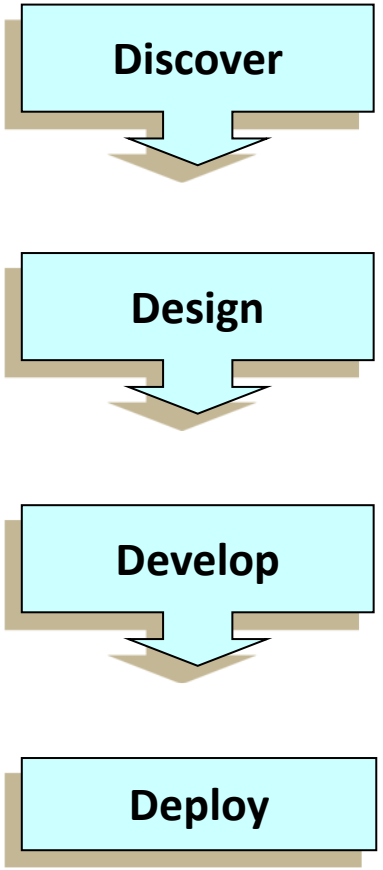
Typical Project Phases

- Enthusiasm
- Disillusionment
- Panic and Hysteria
- Search for the Guilty
- Punishment of the Innocent
- Praise and Awards for the Non-Participants

Cycle of Change



4-D Methodology



Build understanding of BPA

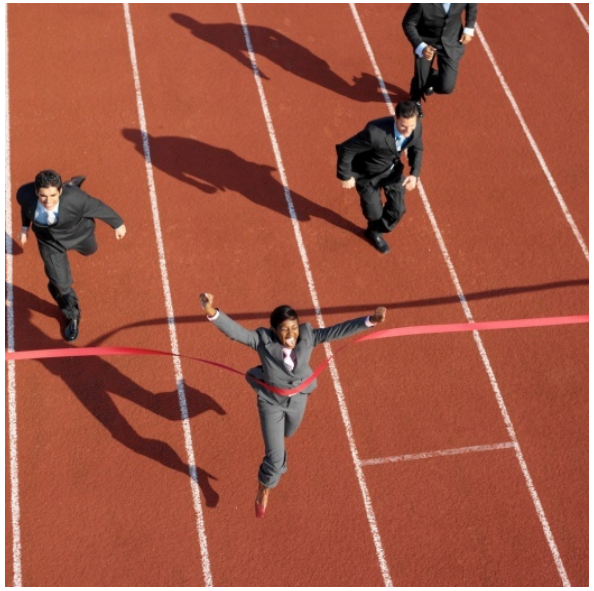
Design the future state

Build the solution

Deliver the solution

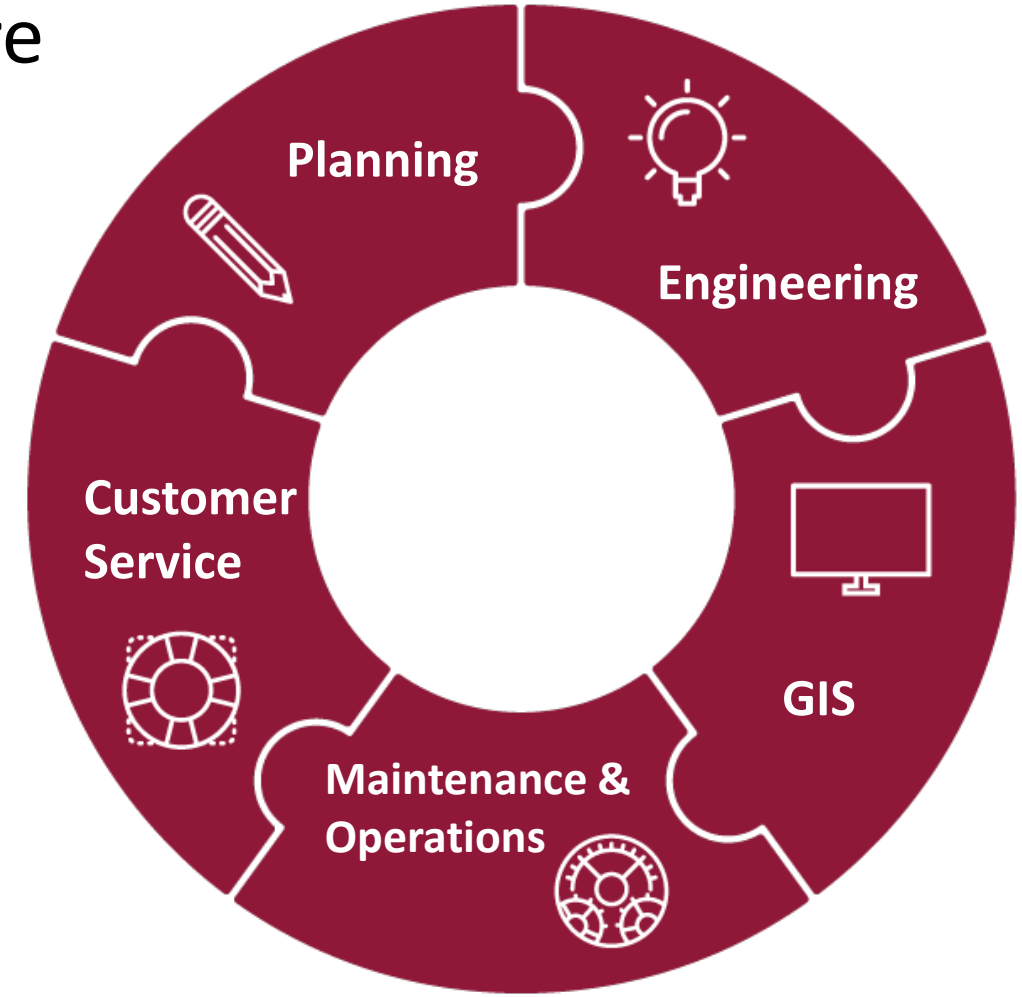
Critical Success Factors

- Sponsorship and ownership
- Involvement
- Communication
- Sharing information
- Simplification
- Acceptance of change
- Teamwork
- Common realistic expectations



Typical Project Process

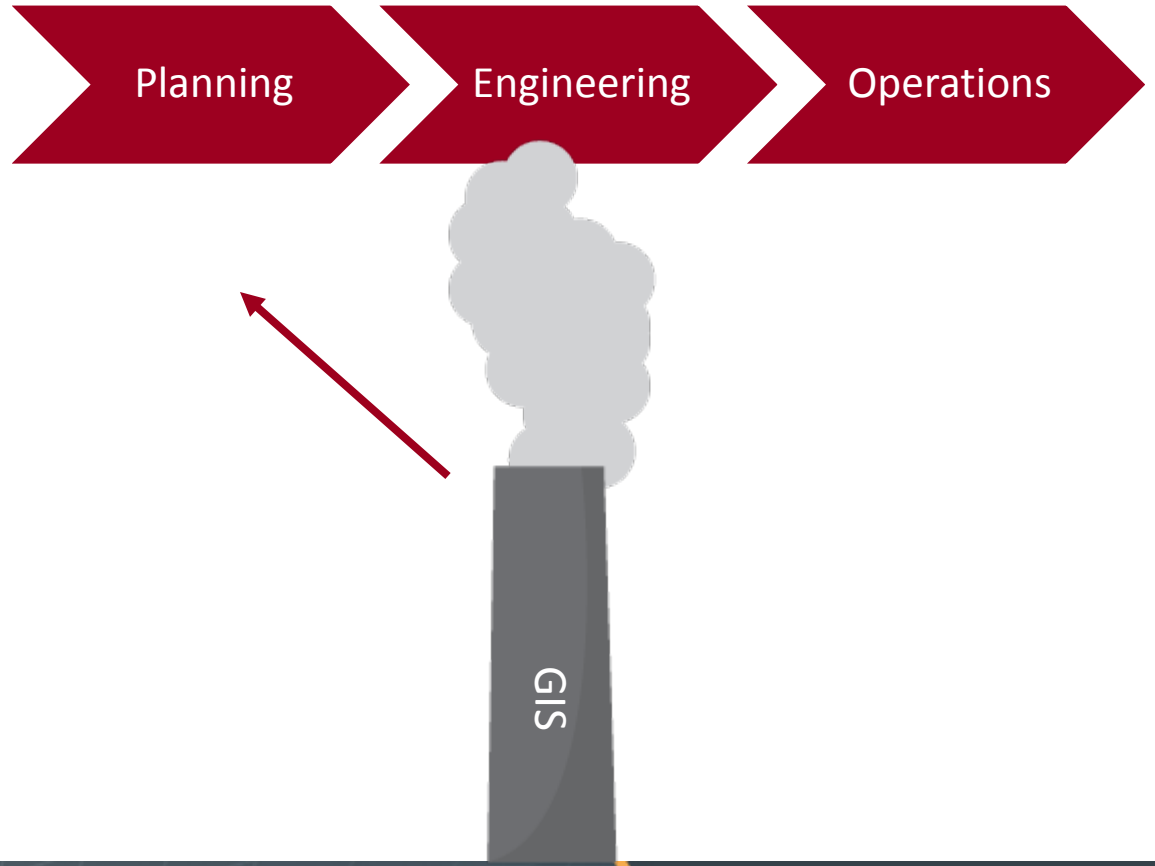
- Planners solve issues of the future
- Engineers work on how
- Operations and Maintenance keeping it working



Internal Workflow

A project from the GIS perspective:

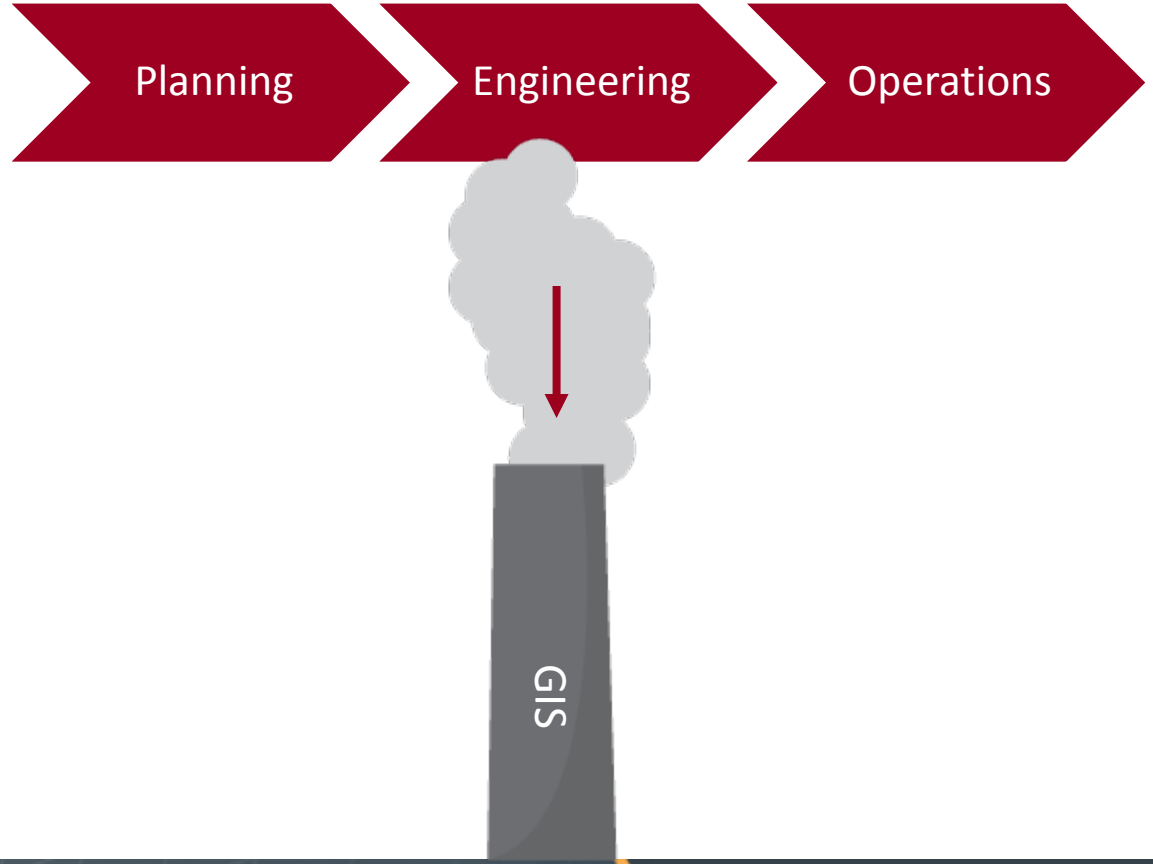
- How many people would a new connector serve?
- How many acres of wetland are within the project area?
- We need a map for a public information meeting!



Internal Workflow

A project from the GIS perspective:

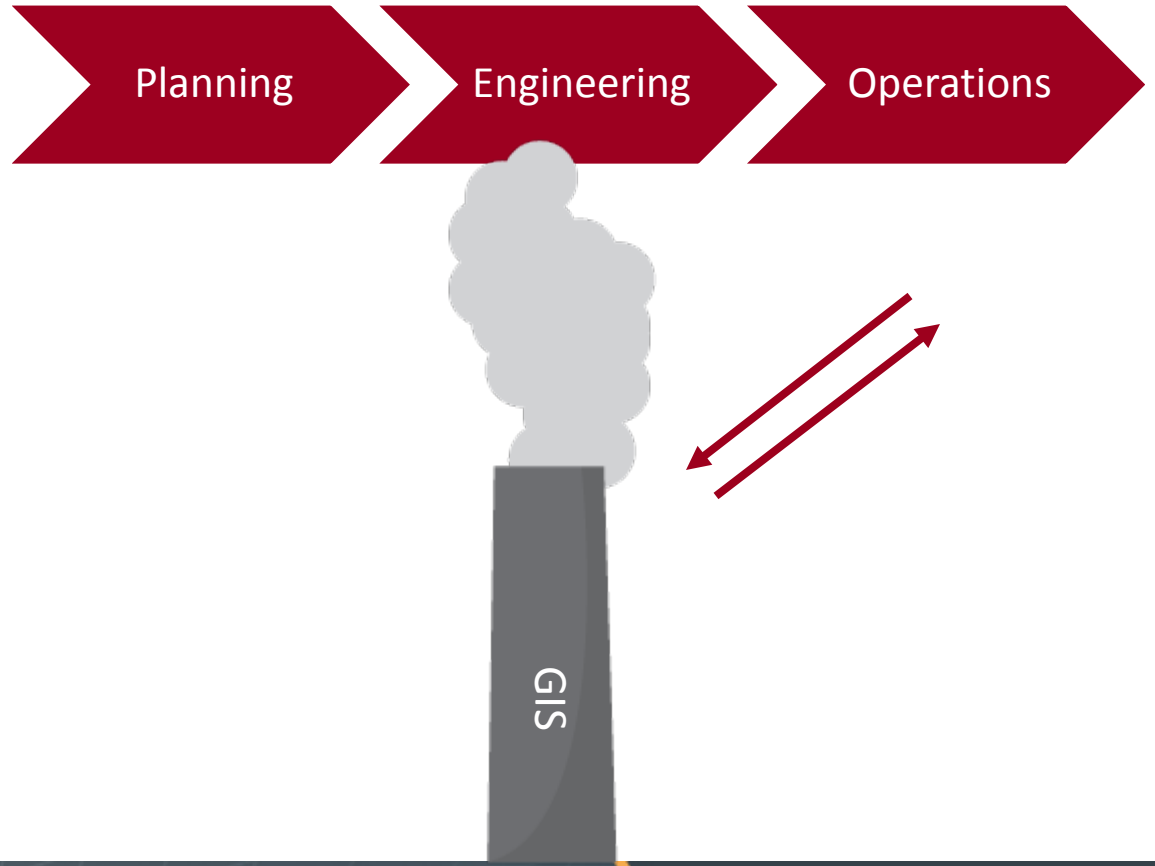
- Here are the 50% design drawings!
- Here are the final design drawings!
- Here are the as-built surveys!



Internal Workflow

A project from the GIS perspective:

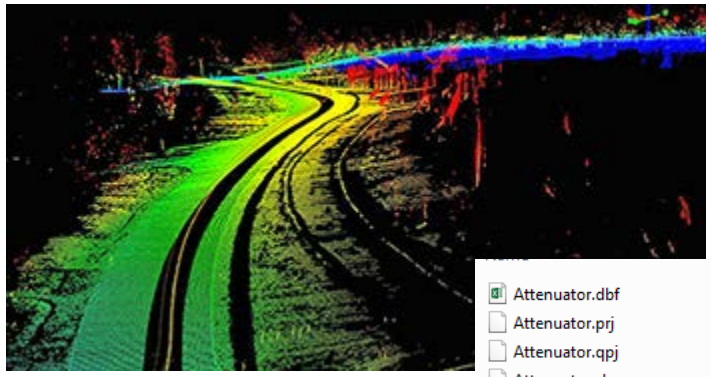
- We need a map of the proposed projects this year!
- This road is all wrong, it should look like…
- We resurfaced this road! You need to update the maps!



AssetWORKS

External Workflow

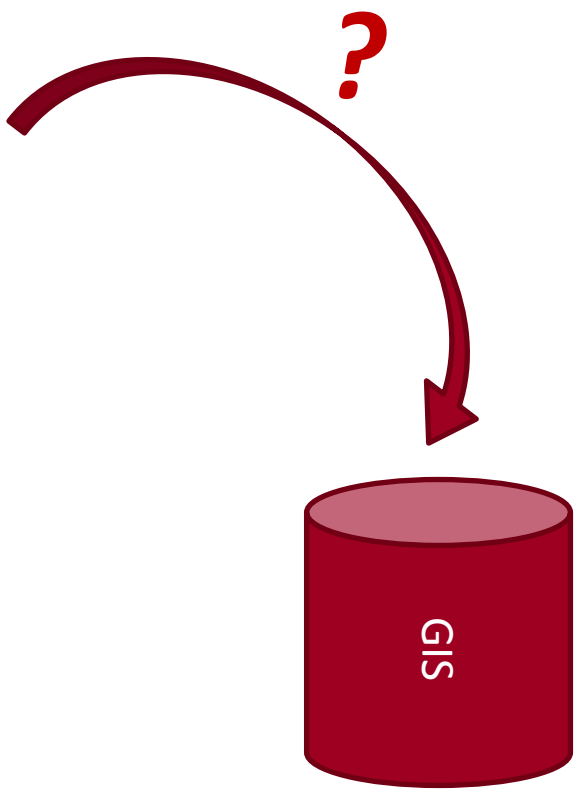
- We hired a new contractor for as-built surveys, you should update GIS.



File Edit Format View Help

```
12.23,136431.030,160719.529
12.23,136424.899,160700.612
12.24,136413.735,160686.570
12.25,136415.947,160683.634
12.25,136418.477,160736.782
12.26,136411.159,160680.470
12.27,136366.523,160736.227
12.27,136406.694,160677.068
12.27,136410.905,160680.825
12.28,136370.429,160725.261
36411.422,160680.098
36370.931,160724.449
36370.928,160724.496
36406.250,160677.458
36401.922,160673.495
36424.759,160728.222
```

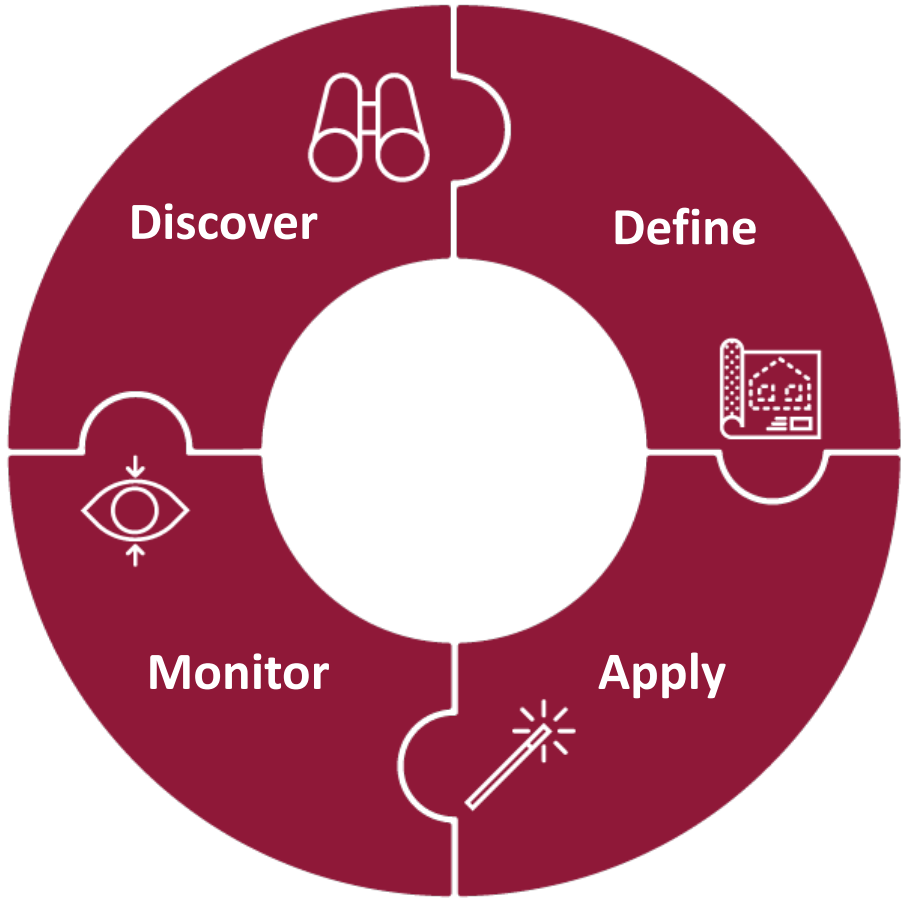
Attenuator.dbf	6/30/2014 1:55 PM	DBF File	529 KB
Attenuator.prj	6/30/2014 2:14 PM	PRJ File	1 KB
Attenuator.qpj	6/30/2014 2:14 PM	QPJ File	1 KB
Attenuator.sbn	6/30/2014 1:55 PM	SBN File	5 KB
Attenuator.sbx	6/30/2014 1:55 PM	SBX File	1 KB
Attenuator.shp	6/30/2014 1:55 PM	SHP File	140 KB
Attenuator.shp.xml	6/30/2014 1:55 PM	XML Document	267 KB
Attenuator.shx	6/30/2014 1:55 PM	SHX File	4 KB
Bridge.dbf	6/30/2014 1:55 PM	DBF File	528 KB
Bridge.prj	6/30/2014 2:14 PM	PRJ File	1 KB
Bridge.qpj	6/30/2014 2:14 PM	QPJ File	1 KB
Bridge.sbn	6/30/2014 1:55 PM	SBN File	5 KB
Bridge.sbx	6/30/2014 1:55 PM	SBX File	1 KB
Bridge.shp	6/30/2014 1:55 PM	SHP File	222 KB
Bridge.shp.xml	6/30/2014 1:55 PM	XML Document	268 KB
Bridge.shx	6/30/2014 1:55 PM	SHX File	4 KB
Channel.dbf	6/30/2014 1:55 PM	DBF File	229 KB



AssetWORKS

Data Governance

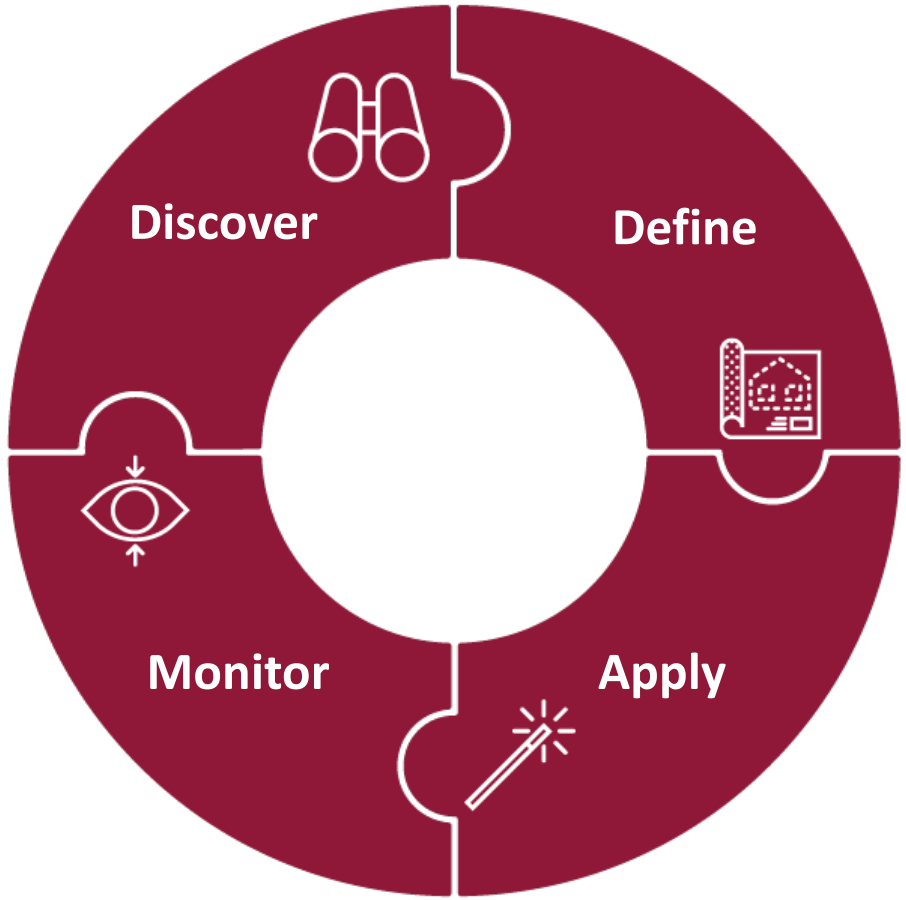
- **What is it?**
  - Systematic process that ensures data assets are formally managed
  - Typical vehicle is formal policies and data standards
- **What does it take?**
  - Executive champion
  - Collaboration
  - Persistence
  - Organizational Change



Data Governance

What do you get?

- Established policies and standards
  - Required fields, valid values
  - Spatial accuracy requirements
- Designated data stewards
- Know the cost to collect and maintain
  - Update frequency and priority
- A guide for internal and external data originators and maintainers



Integrating GIS and Asset Management Systems

- **A perfect marriage of:**
  - Core asset management data requirements
    - Static Unique ID
    - Materials/Type
    - Age
    - Criticality
    - Expected Life
    - Economic Value
  - Data governance
    - Formal Policies and Data Standards

Integrating GIS and Asset Management

- Utilize a common Static Unique ID to identify and update records in other systems
- Asset Management systems must have the ability to require, or at lease encourage, information flows from the field
- Collecting data once, at the source, removes risk of
    - Data latency
    - Errors in transcription
    - Errors in data processing

Integrating GIS and Asset Management Systems

- Enact data standards and policies as part of business workflows
- Maintenance and operations are an untapped resource:
  - Maintenance activities that affect Materials/Type or other attributes
  - Replacement of an asset
  - Condition assessments
  - Updates to the spatial location or alignment

Integrating GIS and Asset Management

- Asset Management systems must have the ability to require, or at least encourage, information flows from the field
- Collecting data as a part of a business workflow removes risk of
  - Loss of detail during standardization and integration
  - Collecting data that does not support decision making

Thanks!

- Mike Fallon
  - GIS Product Manager
  - Mike.Fallon@assetworks.com
- Kelley Ernsdorff
  - Director of Product Management
  - Kelley.Ernsdorff@assetworks.com

www.assetworks.com/eam