

ASSET MANAGEMENT



Live Long and Prosper



Southeast Stormwater
Association Conference

October 9, 2019





AGENDA

1. Introduction and Background

- a. What is an asset?
- b. What is asset management?
- c. The current state of our assets.

2. A New Philosophy

- a. Why asset management?
- b. Are we doing asset management?
- c. How are we doing asset management?

3. Steps to Asset Management

- a. WERF 10 Step Process
 - b. Six Key Ingredients to Success
 - c. Asset Management Strategies
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What is an Asset?

- An Asset is..... A resource with economic value
- Not all assets are worth managing
- Give consideration to:
 - Asset value vs. management cost
 - Potential Return on Investment



I'm giving her all she's got, Captain!

- Chief Engineer Scotty



Run to Failure Mode:

- **Routine nuisance flooding**
- Road failures & structural damages
- Delays in emergency response
- Increased work disruptions
- Negative community perception
- Reduced confidence in community leadership
- **Inadequate budgets**
- Reduced business and commerce
- Non-compliance with regulatory requirements
- **Reactionary response mode**



You canna change the laws of physics!

- Chief Engineer Scotty



- Aging infrastructure
 - Built in 50's & 60's
 - Life of pipe
- Increasing demands on capacity
 - Built out watersheds
 - Continued growth
- Renewed focus on flooding / level of service
- Value of investment
 - Replacement costs (\$100M - \$500M)
 - Cost of maintenance & repair



Live Long and Prosper.

- First Officer Spock

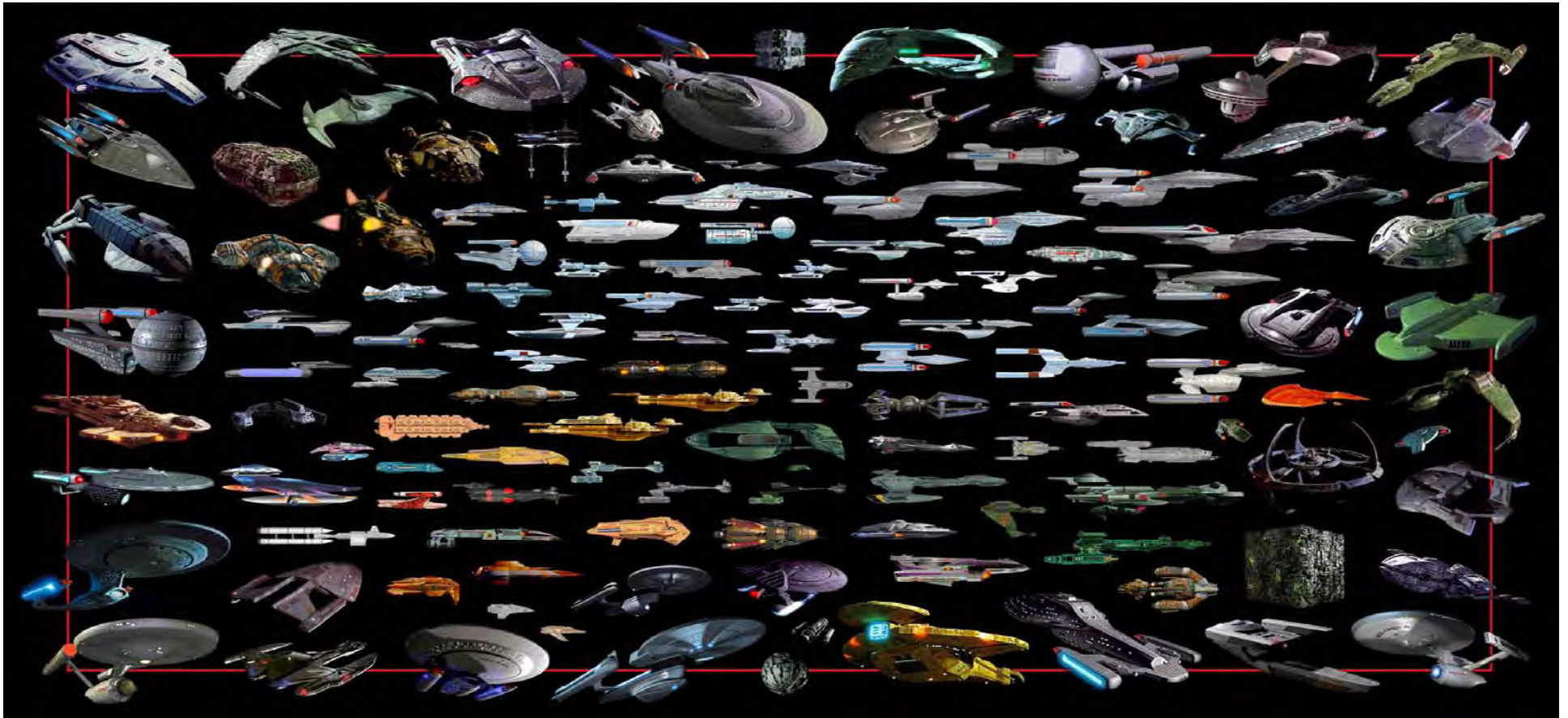


A new philosophy that;

1. Provides for predictive maintenance rather than reactive
2. Accurately projects future budget, material and resource needs
3. Accounts for capacity and water quality issues
4. Manages system risks
5. Focuses on critical assets
6. Effectively manages work loads/ schedules

Asset Management





Asset Management means optimizing the value of an asset:

It takes a “whole life cycle” approach to delivering the best value for the money, while ensuring risks are understood and managed as part of a total picture.

Resistance is Futile...

- Robotic Aliens



Why Asset Management:

- ✓ Defined, defensible budgets and CIP lists
- ✓ Proactive, predictive operations work plans
- ✓ Risk based approach to repair/replacement (most critical first)
- ✓ Wholistic approach to system operations (capacity, structural integrity, efficient O&M)
- ✓ Increased system service levels
- ✓ Long term cost savings



She's fully automated, a Chimpanzee
and 2 trainees can run her... - Chief Engineer Scotty



Are we doing asset management?

- ✓ Stormwater System Inventory
- ✓ CCTV (*Closed Circuit Television*)
- ✓ CMMS (*Computerized Maintenance Management System*)



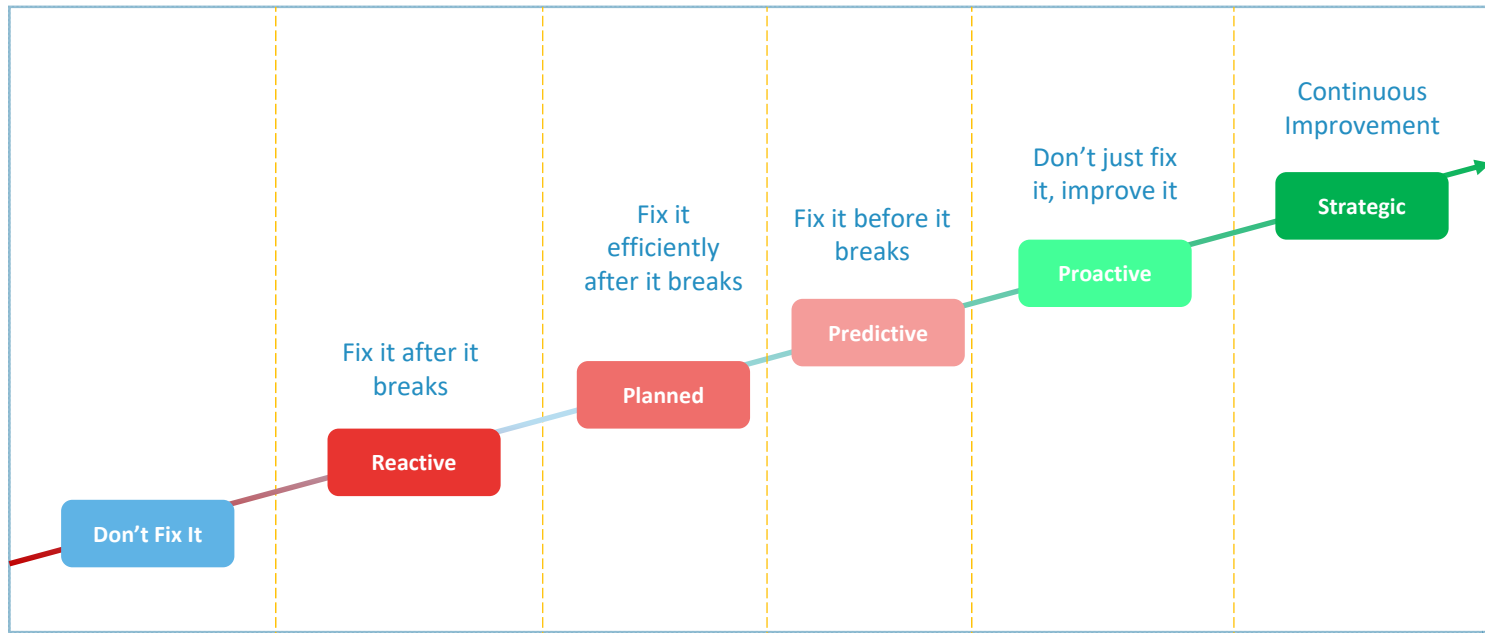
"Just because you have Tachyon Flow and a Warp Drive Polarity Inducer doesn't mean you have the Starship Enterprise."



To Boldly Go Where No Man Has Gone Before...

- Star Trek Narrator

Performance Measures



Rewards:

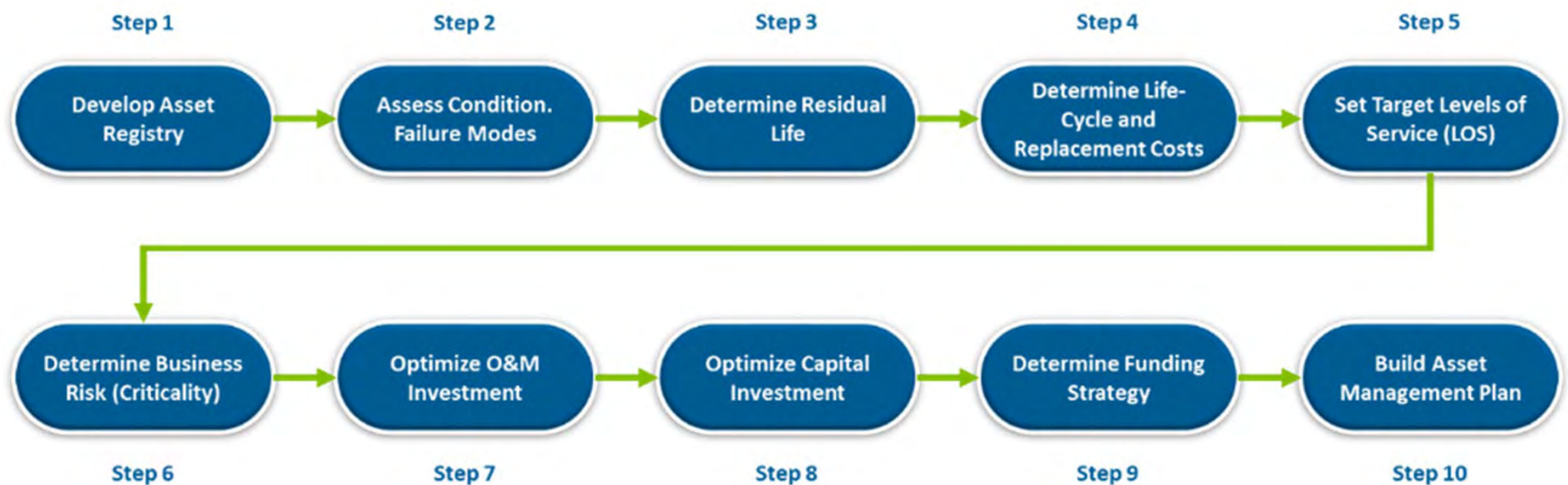
Motivator:

Behavior:

Short Term Savings	Overtime Heroes	No Surprises Competitive	Competitive Advantage	Best in Class
Meet Budget	Breakdowns	Avoid Failures	Uptime	Growth
Decaying	Responding	Org. Discipline	Org. Learning	Inventing

Nuclear Wessels...

- Pavel Checkov

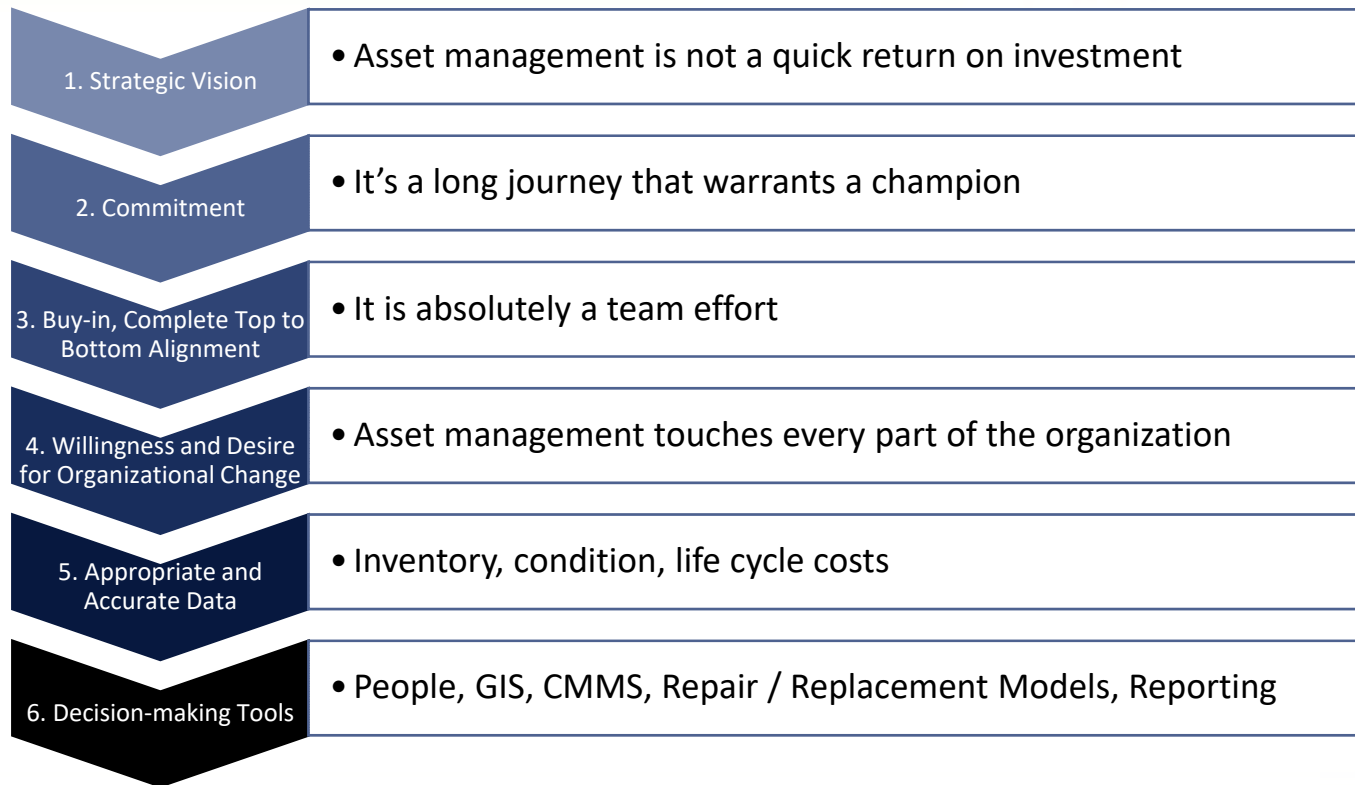


From WERF 10 Step Process to Asset Management



Admiral, we're wasting precious time...

- Pavel Checkov



Make it so...

- Captain Picard

1. Initial Planning
 - a. Set Program Goals
 - b. Establish / document Asset Management Policies
 - c. Create Implementation Strategies
 - d. Set Priorities for Data Collection
2. Data Collection
 - a. Inventory
 - b. Condition
3. Obtain & Implement Appropriate Tools
 - a. GIS
 - b. CMMS
 - c. Repair / Replacement Models
4. Develop Plans of Action
 - a. Individual Asset Management Plans
 - b. Repair / Replacement Plans
 - c. CIP Plans



This is the Garden Spot of Ceti Alpha VI...

- Pavel Checkov



Set Policies and Create Strategies:

Policies: Establish an asset management program in alignment with city / county goals.

Examples:

- ❖ Asset Management Program
- ❖ Service Levels
- ❖ Service Extents

Strategies: Provide the direction for major components of the program.

Examples:

- ❖ Service Levels
- ❖ Asset Management Plans
- ❖ Risk Analysis (Criticality)
- ❖ Life Cycle Planning
- ❖ Data Collection
- ❖ Data Management / Analysis
- ❖ Performance Measurement / Reporting
- ❖ Continual Improvement



Well, you know what they say, Lieutenant. Be careful what you wish for. You might get it.

- Communications Officer Uhura



Define Service Levels:

Functional (Strategic) LoS → Defines community expectations for how the stormwater system will function.

- Pipes should convey the 10-year storm event
- Culverts should convey the 25-year storm event
- No structural flooding during the 100-year storm event

Operational (Tactical) LoS → Defines maintenance actions needed to ensure the Functional LoS.

- Inspect 20% of critical assets annually
- Clean “problem areas” immediately prior to and after significant storm events
- Replace the entire system every 100 years

Short-term vs. Long-term goals

Multiple service levels based on funding



Insufficient facts always invite danger.

- First Officer Spock



Prepare a System Inventory:

- ❖ Understand what you are collecting and why
- ❖ Collect all that you need, but don't overload the database with unnecessary data
- ❖ Consider the needs of the software tools you will use for management and evaluation of the data



In critical moments, men sometimes see exactly what they wish to see.

- First Officer Spock



Prepare a Condition Assessment:

- ❖ Various ways to assess and score
 - ❖ NAASCO
 - ❖ Custom
- ❖ Don't have to assess entire system to start
 - ❖ Prioritize areas based on quick pole camera assessment
- ❖ Consider different technologies



Kaaaaahn!!!!

- Captain Kirk



Prepare a Risk Assessment:

- ❖ Likelihood of Failure (LoF)
 - ❖ Condition
 - ❖ Age
 - ❖ Other criteria
- ❖ Consequence of Failure (CoF)
 - ❖ Size
 - ❖ Location
 - ❖ Other criteria

Likelihood	Medium	High	High	Extreme
	Low	Medium	High	Extreme
	Low	Medium	High	High
	Low	Low	Medium	Medium
	Low	Low	Low	Medium
Consequence				

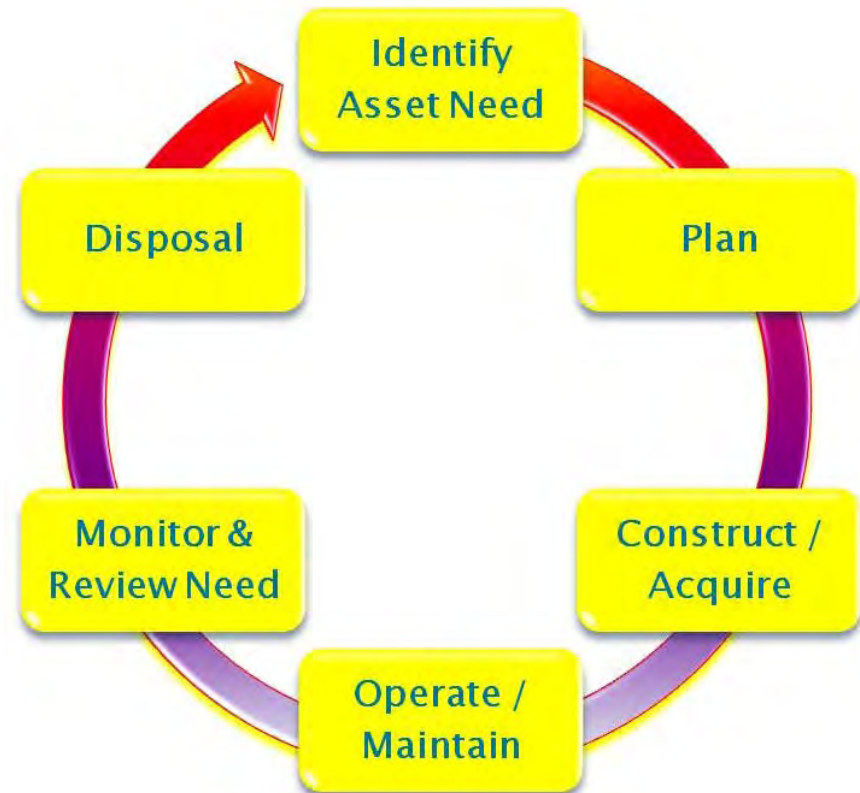


When the personality of humans is involved,
exact predictions are hazardous. - Dr. McCoy



Perform Life Cycle Planning:

- ❖ “Cradle to Grave” and all associated costs
 - ❖ Needs analysis
 - ❖ Planning and design
 - ❖ Construction or acquisition
 - ❖ O&M costs
 - ❖ Rehab or Renewal/Replacement costs
 - ❖ Disposal costs



Without the freedom of choice there is no creativity.

- Captain Kirk

Develop Asset Management Plans:

❖ Individual Plan per Asset Type

- ❖ Regulatory & Legislative Requirements
- ❖ Inventory & Condition
- ❖ Maintenance Actions & Schedules
- ❖ Data Management
- ❖ Objectives & Measures
- ❖ Level of Service (LoS) Goals
- ❖ Performance Assessment
- ❖ Future Demand
- ❖ Lifecycle Management
- ❖ Current Methods & Tools
- ❖ Risk Management
- ❖ Financial Plan
- ❖ Process Improvements
- ❖ Communications & Reporting



Oh, I'll have "Mr. Adventure" eating out of my hand, sir.
And I'll see you at the rendezvous.

- Communications Officer Uhura



Create Performance Measures and Reporting:

- ❖ What is success and how do you measure it?
 - ❖ Meet your LoS
 - ❖ Budget \$\$
- ❖ Standardized metrics across assets or specific to stormwater assets?
- ❖ What is your timeline for success?
- ❖ What do you need to report on?
 - ❖ City/County Manager and/or Council vs. Citizens
 - ❖ Accountability and Transparency
- ❖ Regulatory and Legislative Requirements



All right, we're lost. But we're making good time.

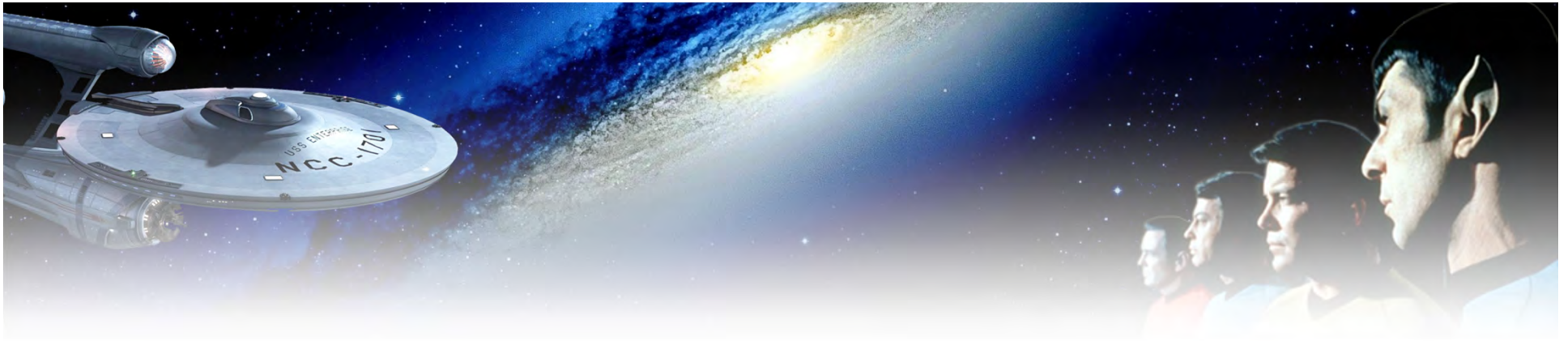
— Sulu



Provide for Continual Improvement:

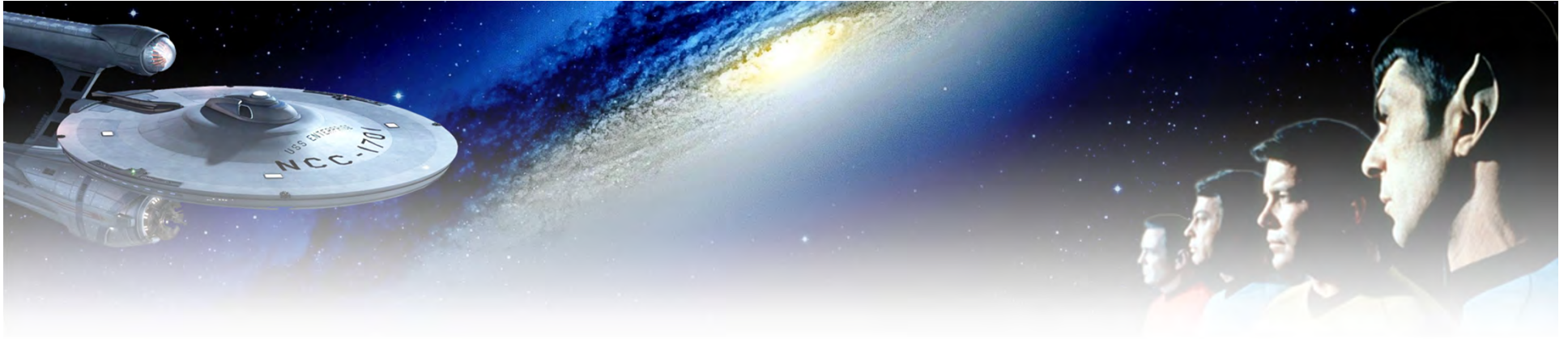
- ❖ Review asset management plan, at least annually, and look for ways to improve
- ❖ If you don't ever review the plan and status of goals, you don't know if you are on track or not
- ❖ Long term view of asset performance & cost
- ❖ Connection between investments & expected results





Why Asset Management:

- ❖ Credibility with community leadership and citizens
- ❖ Reliable, defensible budgeting
- ❖ Keep pace with deteriorating infrastructure
- ❖ Efficiency in operations and maintenance

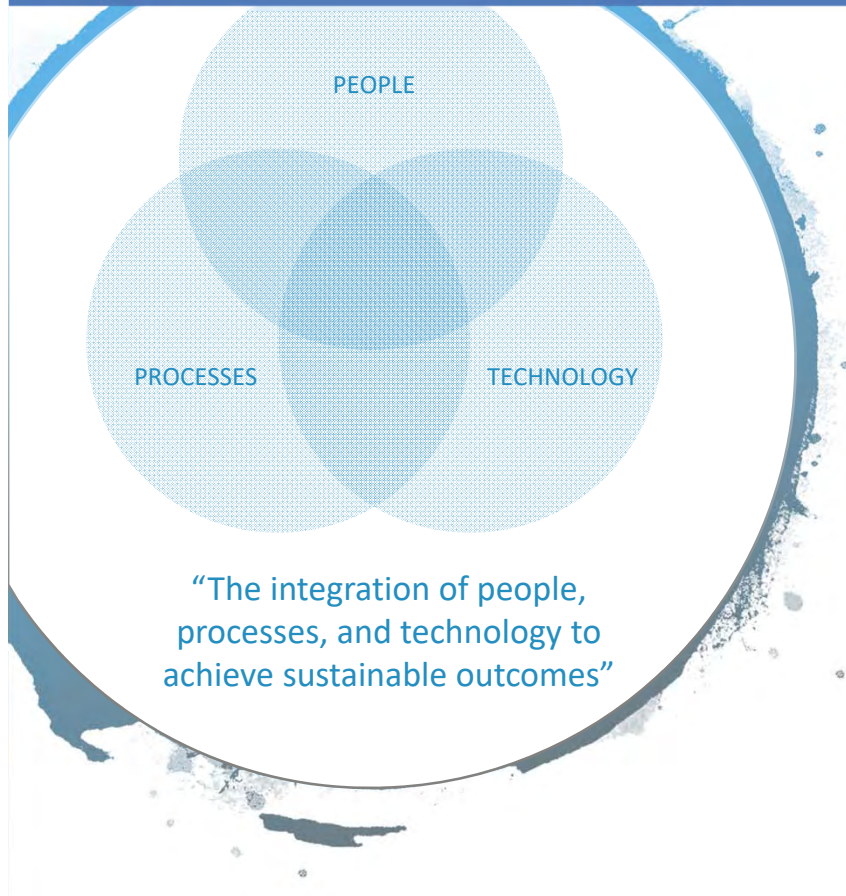


Asset Management Builds Confidence that:

- ❖ the information presented tells the whole story
- ❖ the needs are being met at the right balance of cost
- ❖ the resources are being used as efficiently as possible
- ❖ your community is finding better ways to do work

I know you'll whip her into shape, Scotty.
You always do...

- Communications Officer Uhura



- Educate
- Develop multiple champions
 - Stormwater
 - Operations
 - Engineering
 - Finance
 - Administration
- Align policies, strategies, & plans with community goals
- Collect good, appropriate data
- Develop tools to manage, evaluate, and report data
- Integrate people, processes, and technology
- Optimize the value of your stormwater assets

"Beam me up, Scotty."



Questions?

Stormwater Asset Management News

- ASCE/WEF O&M of Stormwater Controls Manual

- To be released in 2020
- Chapter 6 is on stormwater asset management
- Need of peer reviewers



- WRF/SWI Stormwater Strategic Asset Management Targeted Collaborative Research Project

- To start in 2020
- National research project to develop stormwater asset management tools and guidance materials
- Need for additional partner communities



THE
Water
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For more information on both projects contact Mark Van Auken of the SESWA Communications Committee: 919.415.2305, mark.vanauken@arcadis.com