Effective Utility Management (EUM)
Key Operational Context Shifts
(2008→2016)

- 1. Accelerated Adoption of Automated and “Smart” Systems and Data Integration
- 2. Enhanced Customer Expectations and Public Awareness
- 3. Growing Climate Variability and Extremes
- 4. Expanded Challenges Associated with Employee Recruitment and Retention
- 5. Increased Focus on Resource Recovery
- 6. Continued Regulatory Requirements and Operating Condition Changes
- 7. Greater Consideration of Stormwater & Watershed Management
Sustainable US Urban Utilities

Practices
• Asset management
• Education & communication
• Financial management
• Green infrastructure
• Habitat/watershed protection
• Long-term resource plan
• Resource recovery
• Water conservation

Attributes
• Board support/political will
• Flexible staff
• Innovative culture
• Leadership
• Organizational commitment
• Staff training/development

http://scholarcommons.usf.edu/etd/6367/
Do you believe the adoption of smart water systems is an important practice for sustainable water utilities?

Do you have an opinion as to why this practice wasn’t highly ranked in the 2015 interviews and surveys?

Why Smart Water Systems Was Not Highly Ranked

- High costs
- Slow to adopt new tech
- Others' implementation challenges
- Don't have right staff
- Too much data / overwhelming
- System reliability
DC Water provides water and wastewater services to almost 1.4 million people (680,000 residents and 700,000 commuters) in the District of Columbia everyday; in addition to the 17.8 million visitors the Capital City receives each year.

With a total service area of approximately 725 square miles, DC Water also treats wastewater for approximately 1.6 million people in neighboring Jurisdictions (MD & VA).
An effective **Digital Utility** strategy has positive impacts across a range of stakeholders and processes both internal and external.

- **Benefits of the Digital Utility**
  - Better decision making
  - Ubiquitous access
  - Preventive & Predictive analytics
  - Real-time data
  - Automated workflows
  - Elimination of paper
  - Real-time monitoring & alerts
- **External Stakeholders**
  - Service improvements
  - Lower cost
  - Improved accuracy
  - Channel consistency
  - Enhanced self-service
  - Transparency
  - Efficient information exchange
  - Access to information anywhere & anytime
  - Common information for customers & employees
  - Automated workflows
  - Improved data quality
  - Improved performance
- **Employees & Contractors**
  - Integrated financial & operational data
  - Cost transparency
  - Reduced cost of operations
  - Predictive analytics
  - Better decision making
  - Ubiquitous access
  - Preventive & Predictive analytics
  - Real-time data
  - Automated workflows
  - Elimination of paper
  - Real-time monitoring & alerts
- **Financial**
  - Decision support
  - Integrated financial & operational data
  - Cost transparency
  - Reduced cost of operations
  - Predictive analytics

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**dc water is life**

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The Digital Utility is characterized by enabling capabilities that allow for proactive management of all aspects of the business. The Digital Utility thinks in the terms of a Systems View rather than a single application or transactional requirement. The lines of source systems blur for the Digital Utility as the focus shifts from collecting data to applying knowledge.
Last week...

What is the biggest opportunity for your utility when looking to incorporate big data, advanced technology?

Respond at PollEv.com/nacwa

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<th>Opportunity</th>
<th>Votes</th>
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<td>Cost Savings</td>
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Total Results: 40
Findings:

1. The value of open, shared, and integrated water data has not been widely quantified, documented, or communicated

2. Making existing public water data open is a priority

3. The appropriate architecture for an “internet of water” is a federation of data producers, hubs, and users
Digital Anacostia
AMR status
CIP projects
Hydrant status
SSOs
Water main breaks
Pipe materials
“IT shifting from answering questions to solving problems—quicker and more efficiently.”
1. **Duplicate closely** the current status of the Anacostia Watershed in a real-time, digital format to establish causal linkages to current stressors

2. **Model and monitor** progress of the watershed improvements achieved by our Clean Rivers Project

3. **Define data density and sufficiency** for water quality modeling and find economical ways of collecting and populating data

4. **Engage** a broad team of stakeholders with a range of complementary capabilities

5. **Connect** a successful digital twin with other digital models and systems of existing infrastructure, land use, and stormwater runoff

6. **Successfully translate** digital models for both river and lake systems
What is a Digital Twin?

A digital twin is a dynamic digital representation of an industrial asset, that enables companies to better understand and predict the performance of their machines and find new revenue streams, and change the way their business operates.
The Digital Anacostia

Laying the foundation for DC Water’s Digital Twin

https://nwis.waterdata.usgs.gov/md/nwis/peak?site_no=01649500&agency_cd=USGS&format=img