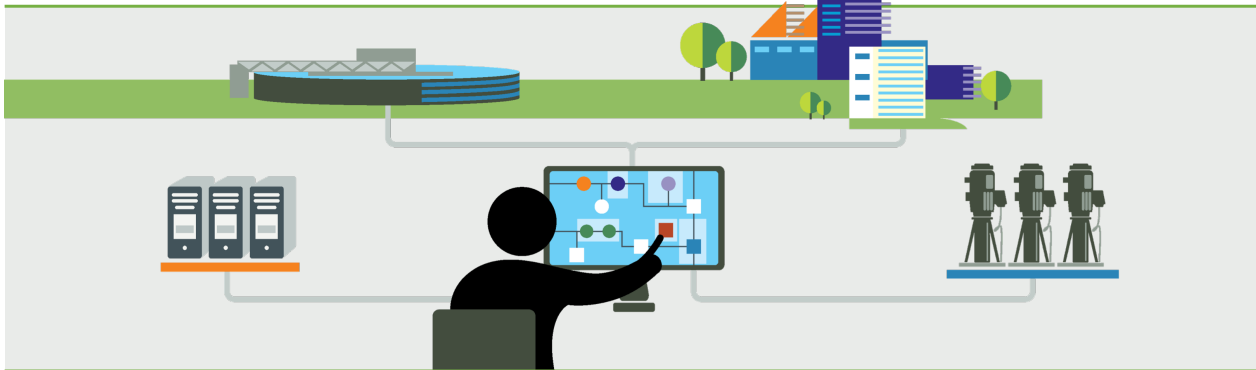


# Smart Utility Then and Now

Kevin Stively, P.E., PMP, PEng, National Smart Utility Services Leader



2018 TACOMA PNWS-AWWA



## Organizations face significant challenges



Aging  
assets



Budget  
limitations



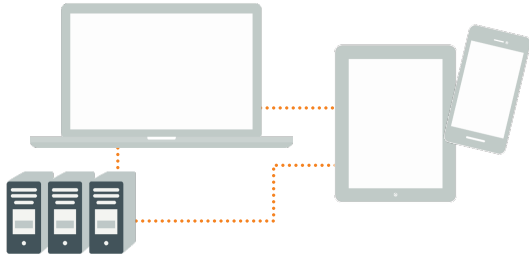
Stricter  
regulations



Knowledge  
transfer needs

# The waves affecting “automation”

## Technologies have changed



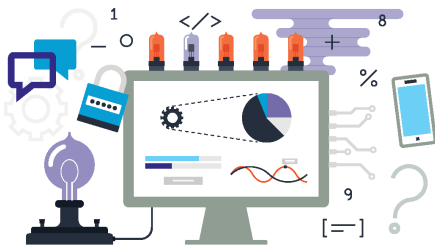
- New ways to instrument and obtain data
- Improved communication networks
- Improved battery technologies
- Operational technology adopts standard business technology protocols
- Cybersecurity landscape

## Workforces are changing



- Staff is eager to learn
- Workspace has evolved to needing constant real time information
- Rapid career changes of staff
- Increased level of comfort leveraging automation

## Market Changes

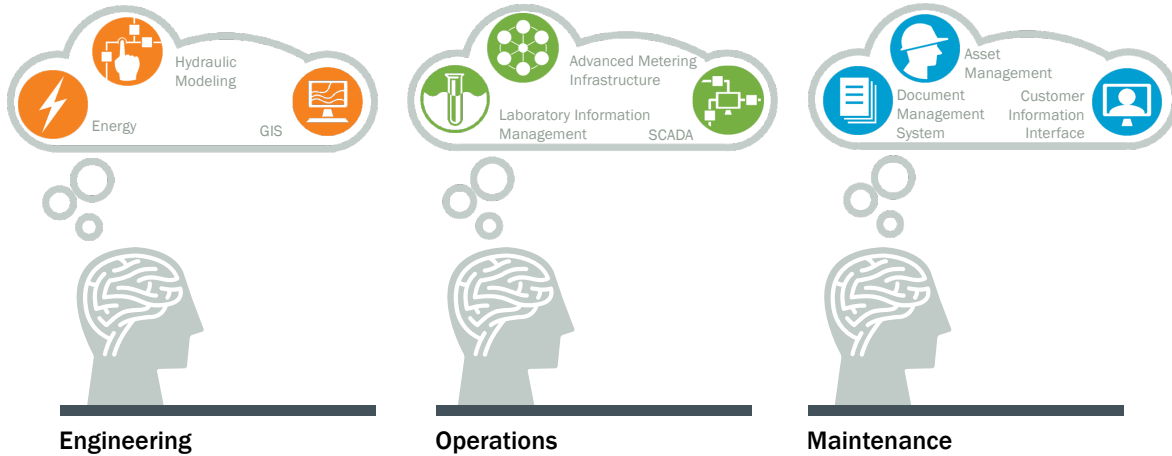


- Sensor companies
- Analytics companies
- Communications and security
- Operations strategies

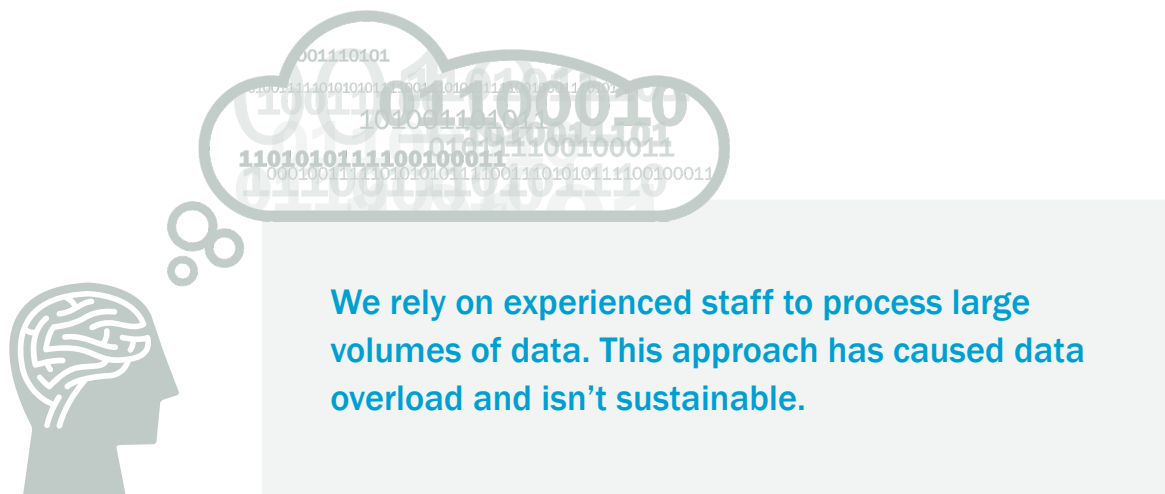
## Lower Cost!



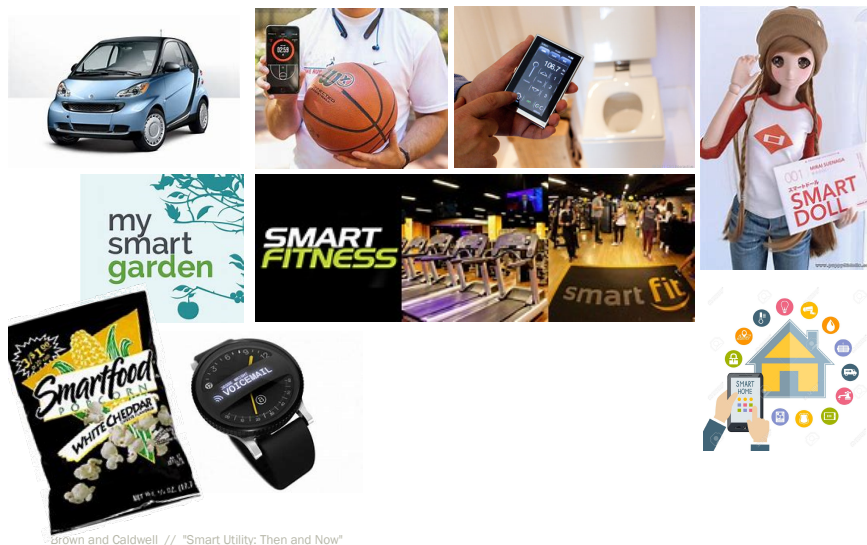
## Specialized department tools has created information silos



## Providing more data to staff has become overwhelming



## We live in a world where everything is “Smart”



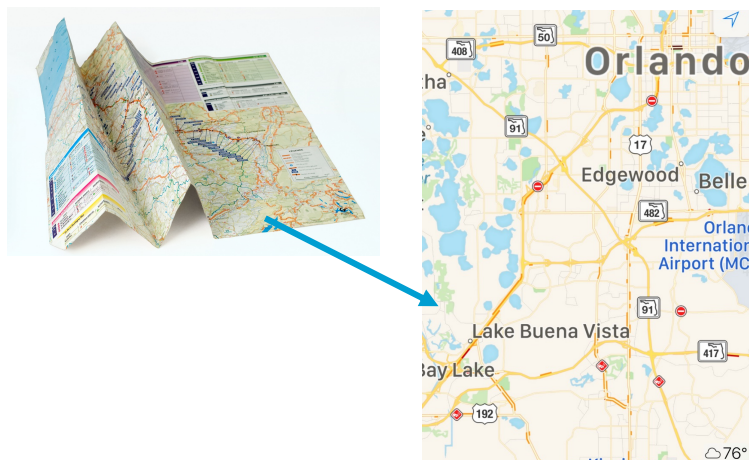
The term, "Smart" has a marketing feel like the adjectives "Green" or "Organic."

In the water sector do we even know what Smart is and how it is different than what has existed before?

## We live in a world where everything is “Smart”

### Maps have become smart

- GPS
- Road closures
- Crowdsourcing
- Weather
- Satellite imagery
- Business listings



## Smart tools aid proactive decisions



Brown and Caldwell // "Smart Utility: Then and Now"

9



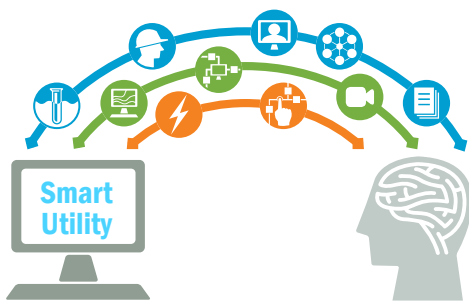
*Smart* is essential for  
a sustainable future.

# What is Smart Utility?

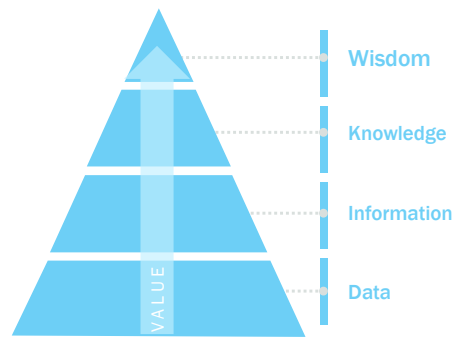


Smart Utility objective:  
**Make technology a better partner**

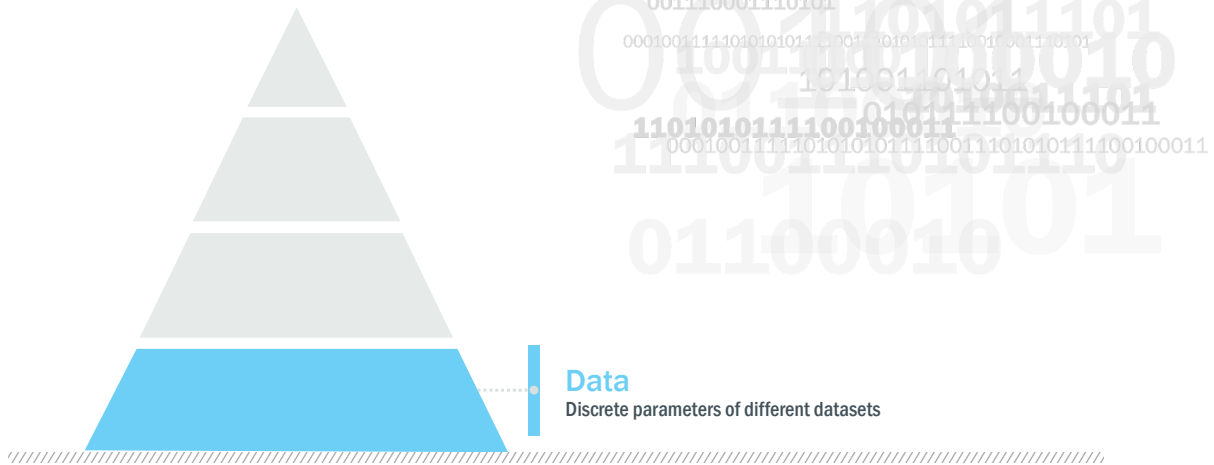
## Technology Integration



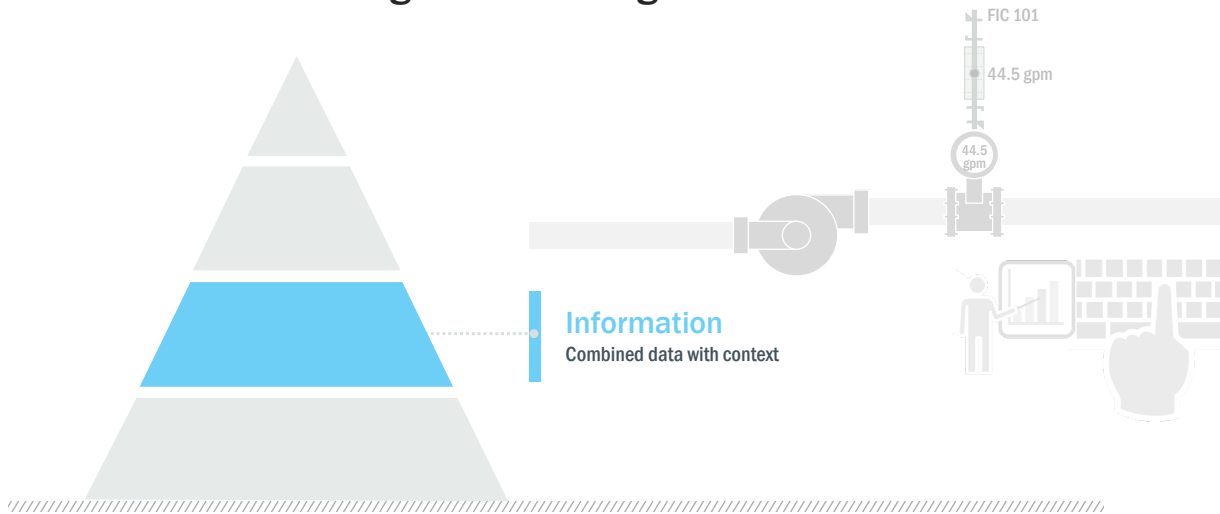
## Workforce Empowerment



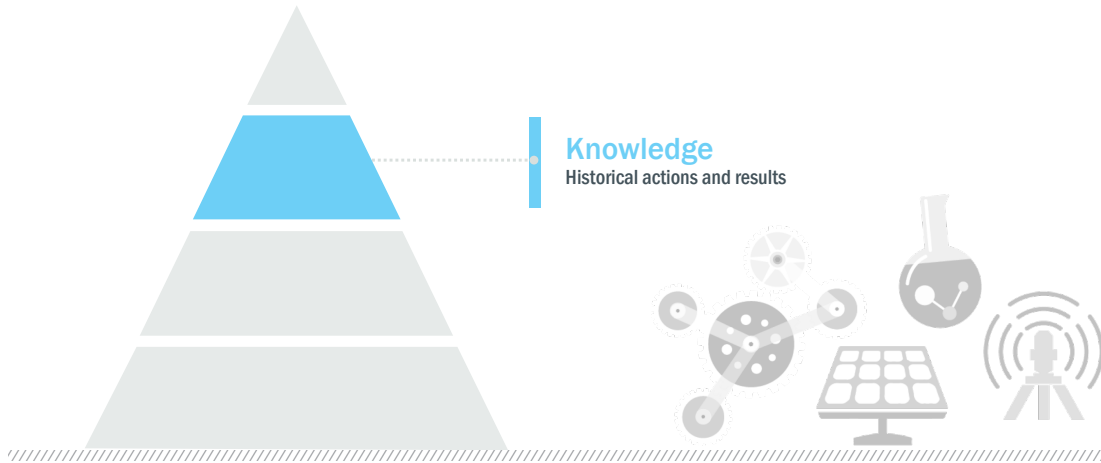
## Data: Digital and manual data collection



## Information: Provide understanding and meaning of the data



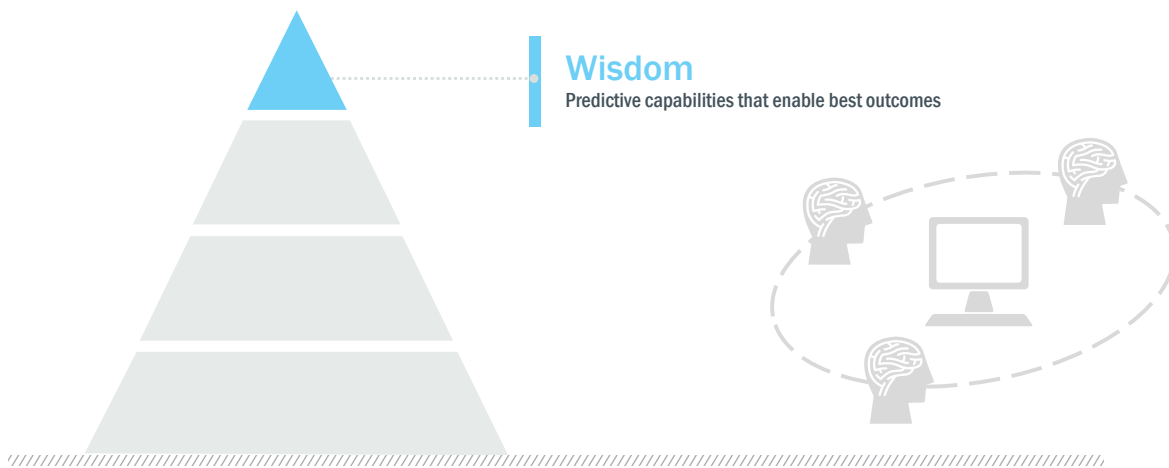
## Knowledge: Embedding goals and requirements with historical context



Brown and Caldwell // "Smart Utility: Then and Now"

15

## Wisdom: Understanding how complex system will react in future scenarios

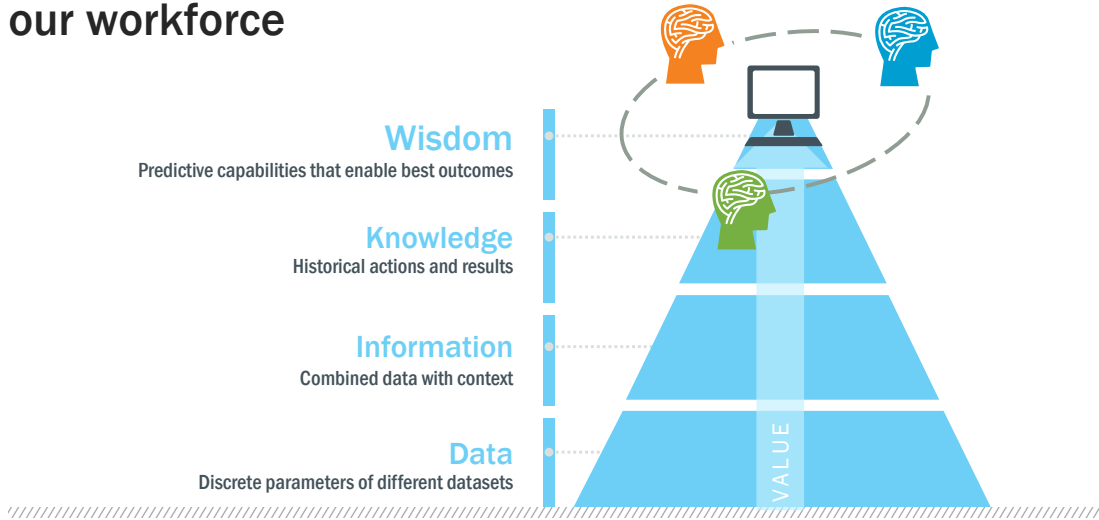


Brown and Caldwell // "Smart Utility: Then and Now"

16



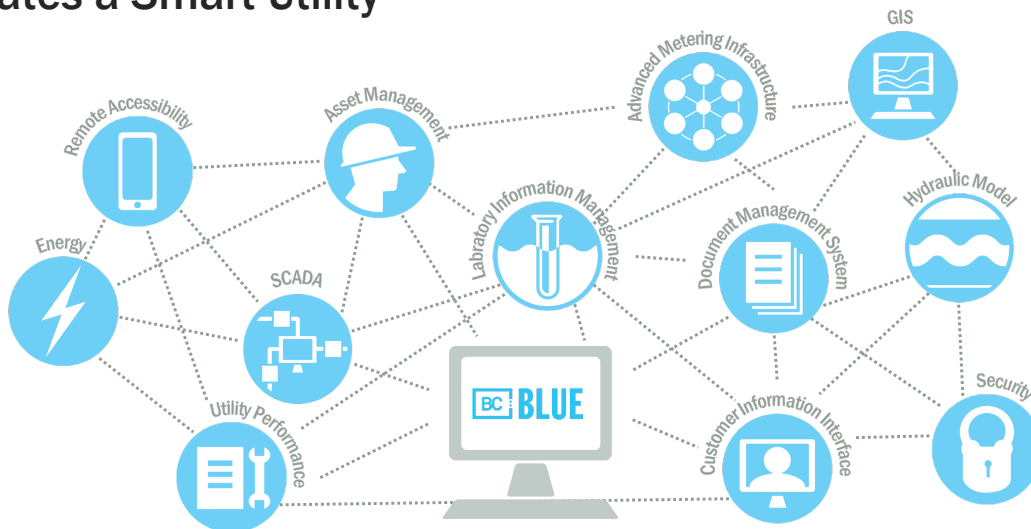
## Fully leveraging technology to empower our workforce



Brown and Caldwell // "Smart Utility: Then and Now"

17

## Connecting applications together with context creates a Smart Utility



Brown and Caldwell // "Smart Utility: Then and Now"

18

So why a  
Smart Utility?



Because we can begin to tackle  
problems like never before

## Smart Utility supports effective utility management

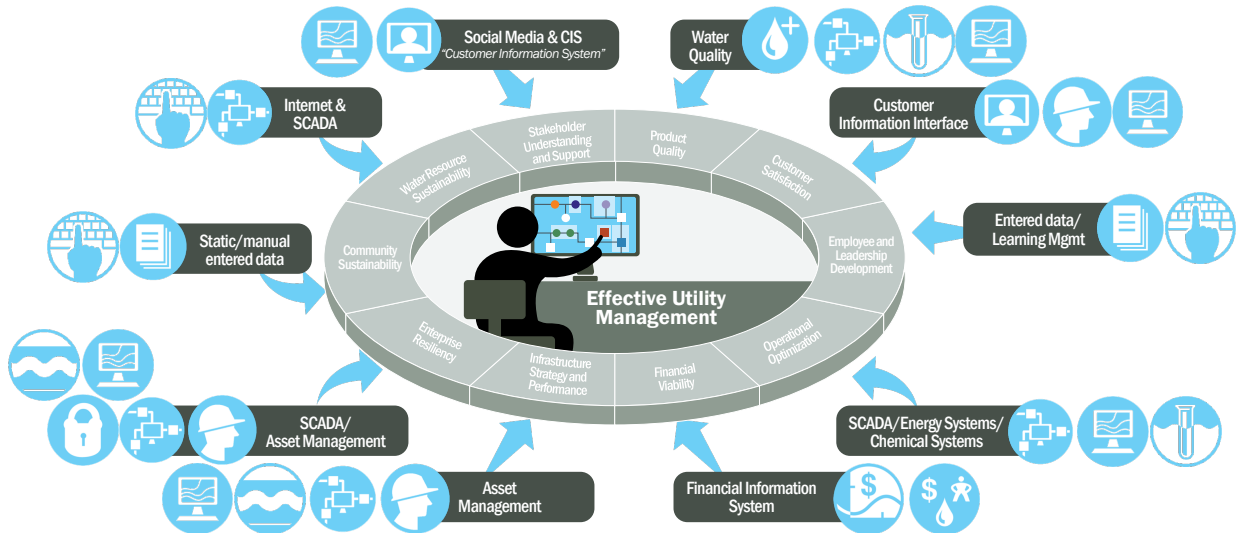


### Keys to Success

- Leadership
- Strategic Business Planning
- Knowledge Management
- Measurement
- Continuous Improvement Management

Source: AWWA Effective Utility Management

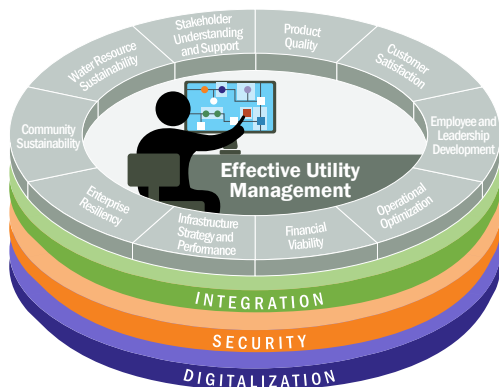
## Connecting strategy and aligning technology through a holistic approach enables Smart Utility



Brown and Caldwell // "Smart Utility: Then and Now"

21

## Smart Utility Framework



This approach provides real time knowledge exchange by removing data and knowledge silos. It provides staff with effective technology tools and facilitates clarity to all divisions across a utility that is aligned with the overall business strategy. **A Smart Utility approach can provide increased wisdom to better achieve your goals.**

Brown and Caldwell // "Smart Utility: Then and Now"

22

## Process examples for water

- Distribution water quality
- Pipeline condition assessments
- Conservation management
- Distribution pressure management
- Energy management

## Process

- Distribution water quality
- Pipeline condition assessments
- Conservation management
- Distribution pressure management
- Energy management

## Business examples for water

- Improved water quality management
- Improved asset management
- AMI + weather data = better water use
- Reduce distribution main breaks
- Lower operational cost

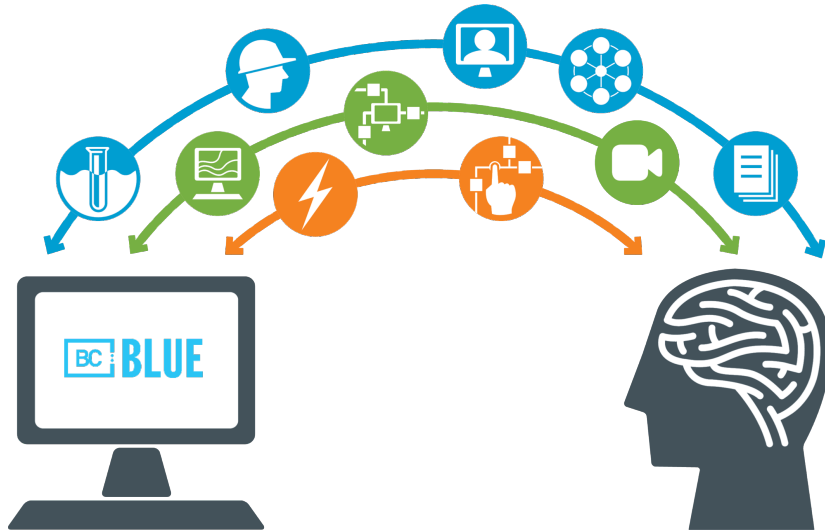
# Steps to achieve Smart Utility



## Step 1: Smart Utility plan sets the foundation



## Step 2: Technology selection matters



Brown and Caldwell // "Smart Utility: Then and Now"

27

## Step 3: Right migration strategy



## Benefits of Smart Utility



Operational  
efficiency

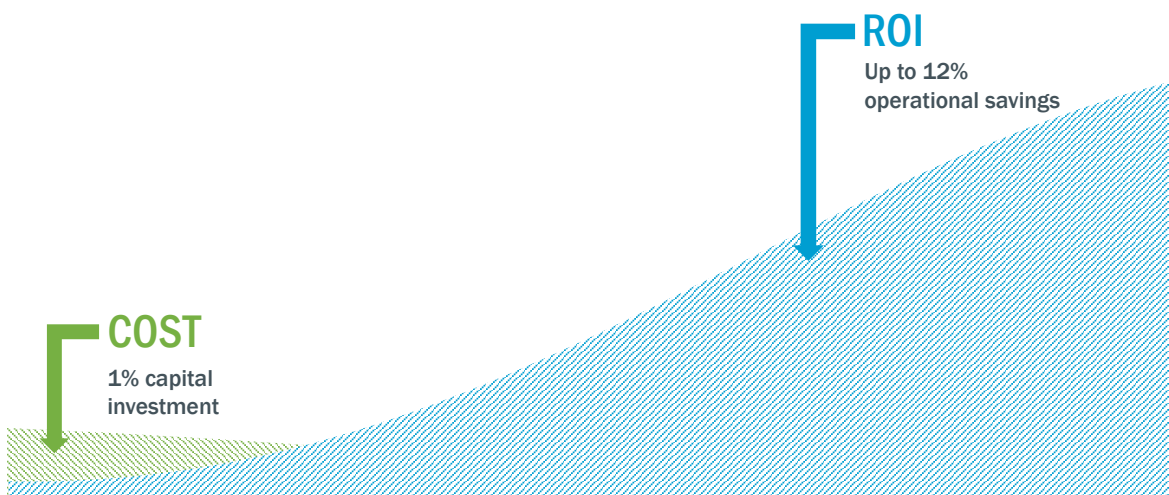


Informed  
decisions

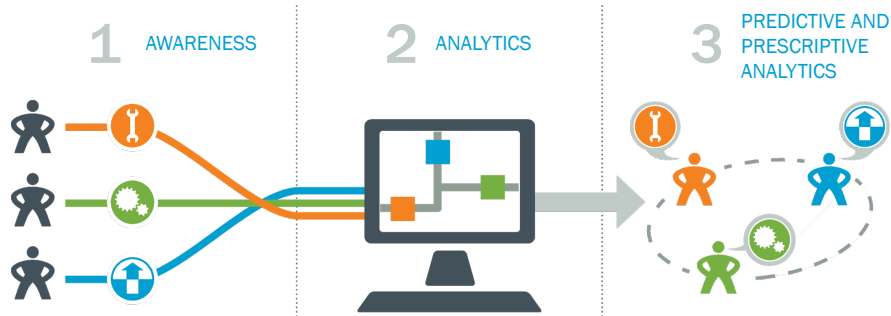


Workforce  
optimization

## Start saving now



## Phased maturity model helps modernize without reinvestment



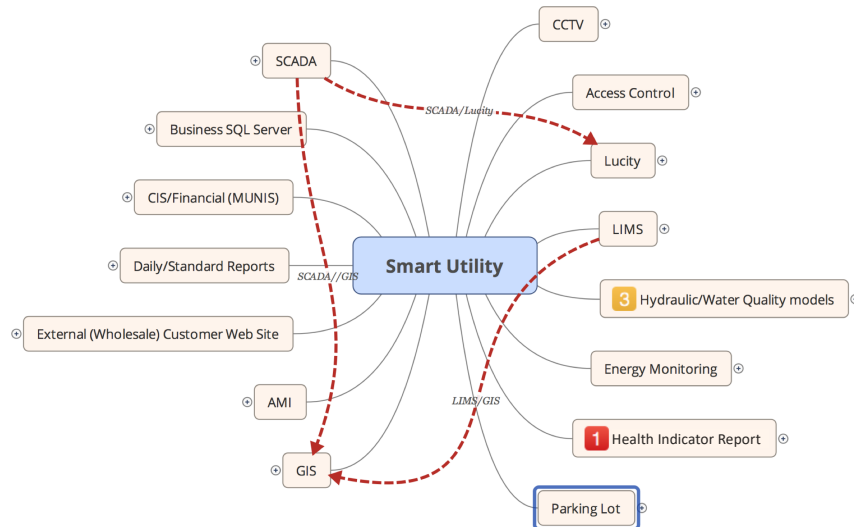
A staged approach to implementing Smart Utility allows you to implement new technology in phases to limit re-work.

# Jordan Valley Smart Utility Implementation

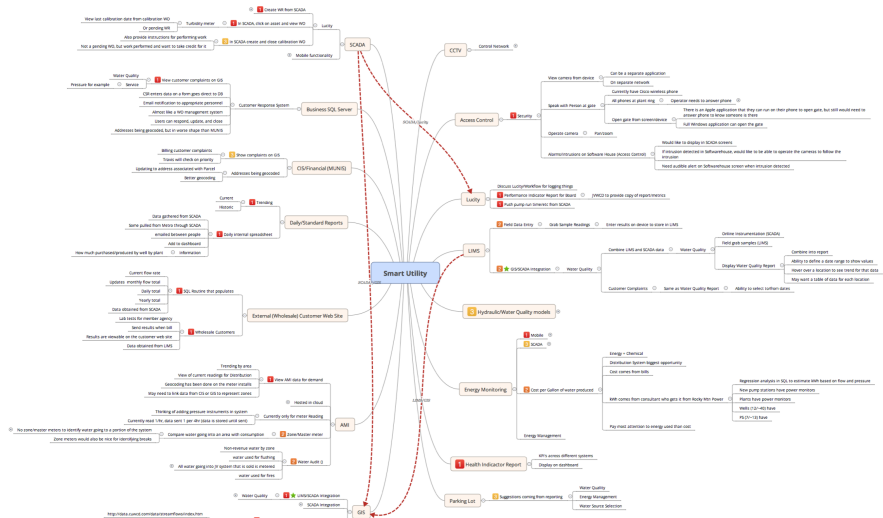
GIS based analytics



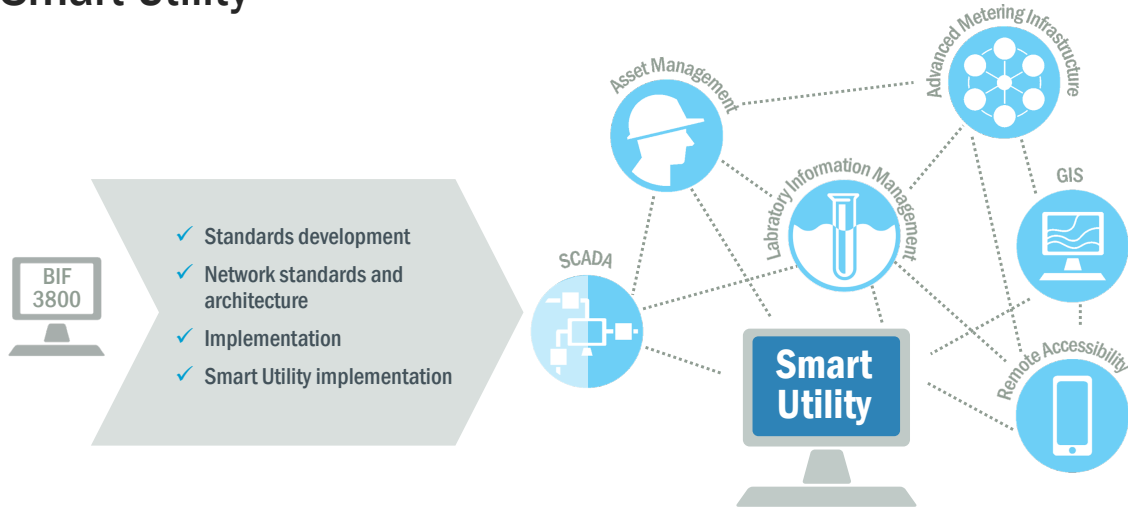
# Workshops focused on defining Smart Utility use cases



# Identified use cases with priorities for a phased implementation



# Jordan Valley's phase 1 implementation of Smart Utility



Brown and Caldwell // "Smart Utility: Then and Now"

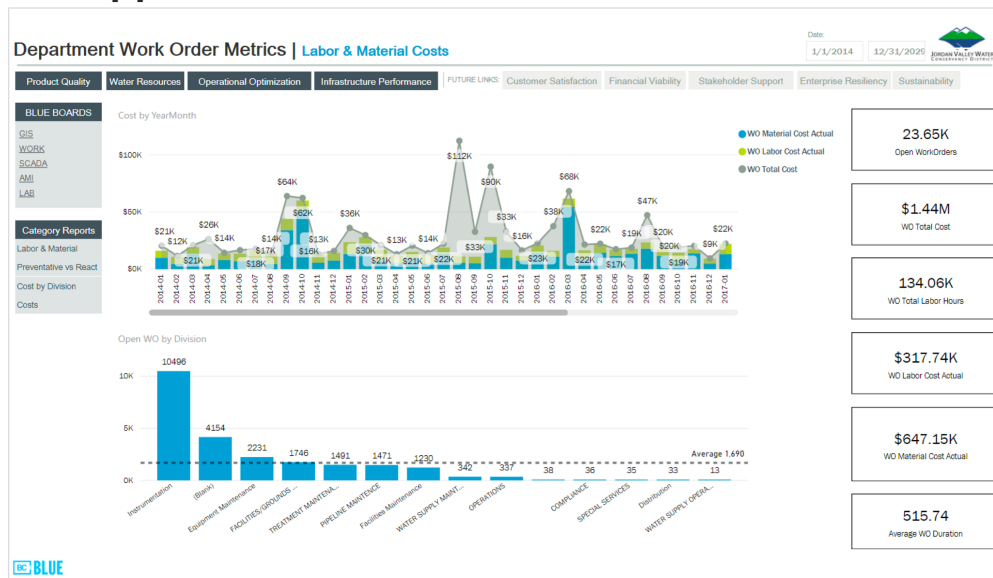
35

## Navigation approach

EUM Strategy Reports

Application Focused Insights Pane

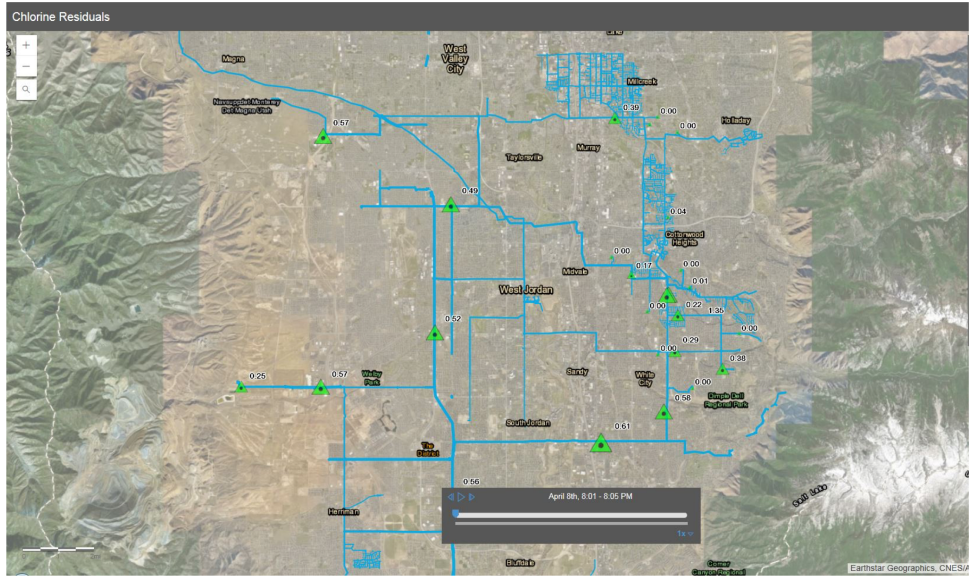
Application Specific Reports



Brown and Caldwell // "Smart Utility: Then and Now"

36

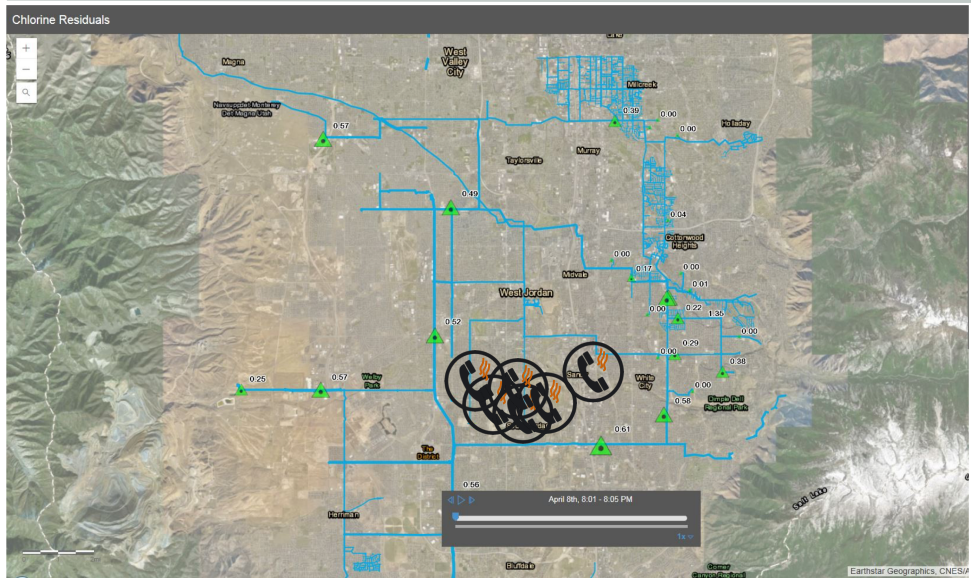
# JVWCD GIS Portal



Brown and Caldwell // "Smart Utility: Then and Now"

- Turbidity Changes
  - Chlorine Changes
  - Un-Accounted for Water
  - Largest Flow Changes
  - Largest Pressure Changes
- 
- Flushing
  - Main Breaks
  - Field Crew Locations
  - Pipe Age & Type
- 
- Consumption
  - Biggest Volume Change
- 
- Bact-T
  - Chlorine Residual
  - Contaminants
- 
- Chlorine**
  - Production
  - Turbidity
  - Pressure
  - Customer Sales/Flow
- 
- Taste
  - Color
  - Odor/Chlorine
  - Pressure
- 
- Model

# JVWCD GIS Portal



Brown and Caldwell // "Smart Utility: Then and Now"

- Turbidity Changes
  - Chlorine Changes
  - Un-Accounted for Water
  - Largest Flow Changes
  - Largest Pressure Changes
- 
- Flushing
  - Main Breaks
  - Field Crew Locations
  - Pipe Age & Type
- 
- Consumption
  - Biggest Volume Change
- 
- Bact-T
  - Chlorine Residual
  - Contaminants
- 
- Chlorine**
  - Production
  - Turbidity
  - Pressure
  - Customer Sales/Flow
- 
- Taste
  - Color
  - Odor/Chlorine**
  - Pressure
- 
- Model

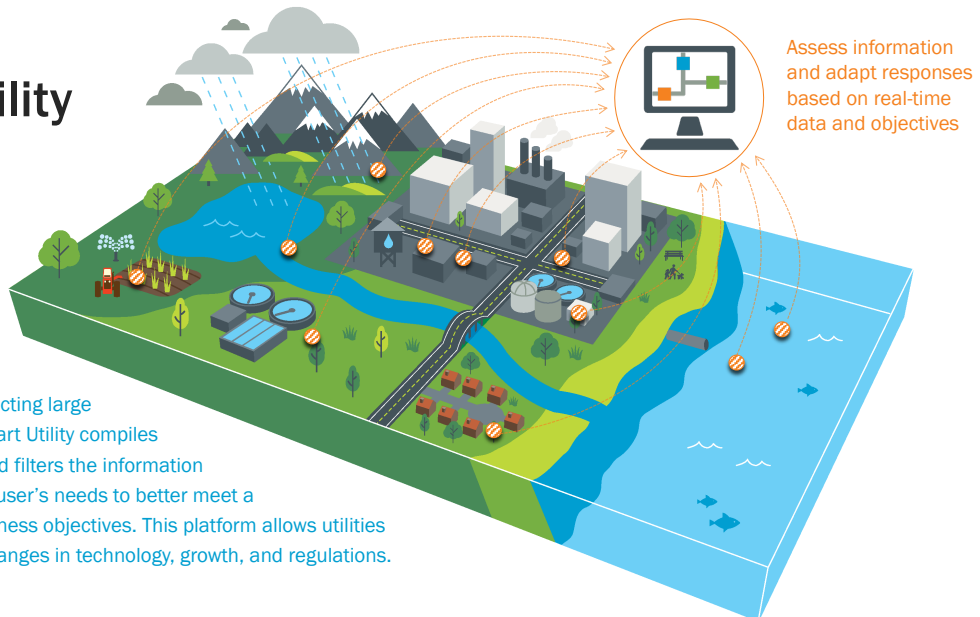
## Right person to the right information at the right time



Brown and Caldwell // "Smart Utility: Then and Now"

39

## Imagine Smart Utility for you



Utilities are already collecting large quantities of data. A Smart Utility compiles this data, analyzes it, and filters the information based on the individual user's needs to better meet a utility's overarching business objectives. This platform allows utilities to gracefully adapt to changes in technology, growth, and regulations.

Brown and Caldwell // "Smart Utility: Then and Now"

40



**Kevin Stively, P.E., PMP, PEng**

[kstively@brwncald.com](mailto:kstively@brwncald.com)

T 206.749.2262

**Michael Karl, WDM2**

[mkarl@brwncald.com](mailto:mkarl@brwncald.com)

T 206.749.2236

**Brown AND  
Caldwell**