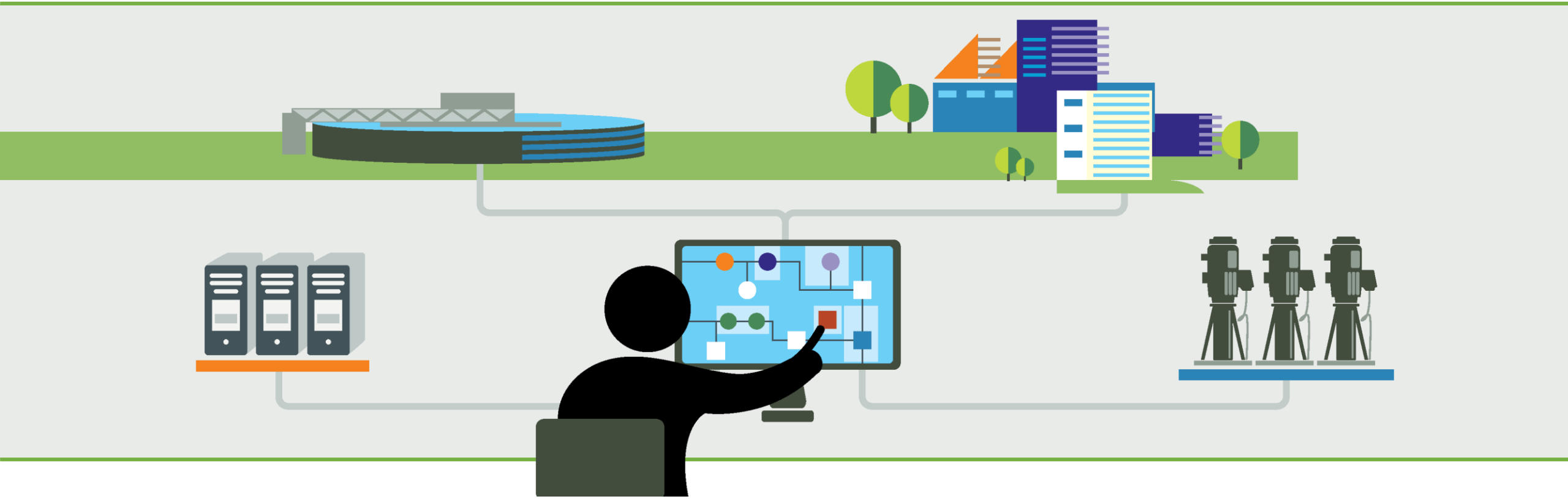
PNWS AWWA

Smart Utility as a Technology Platform:
From Design to Utility Management

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



Organizations face significant challenges

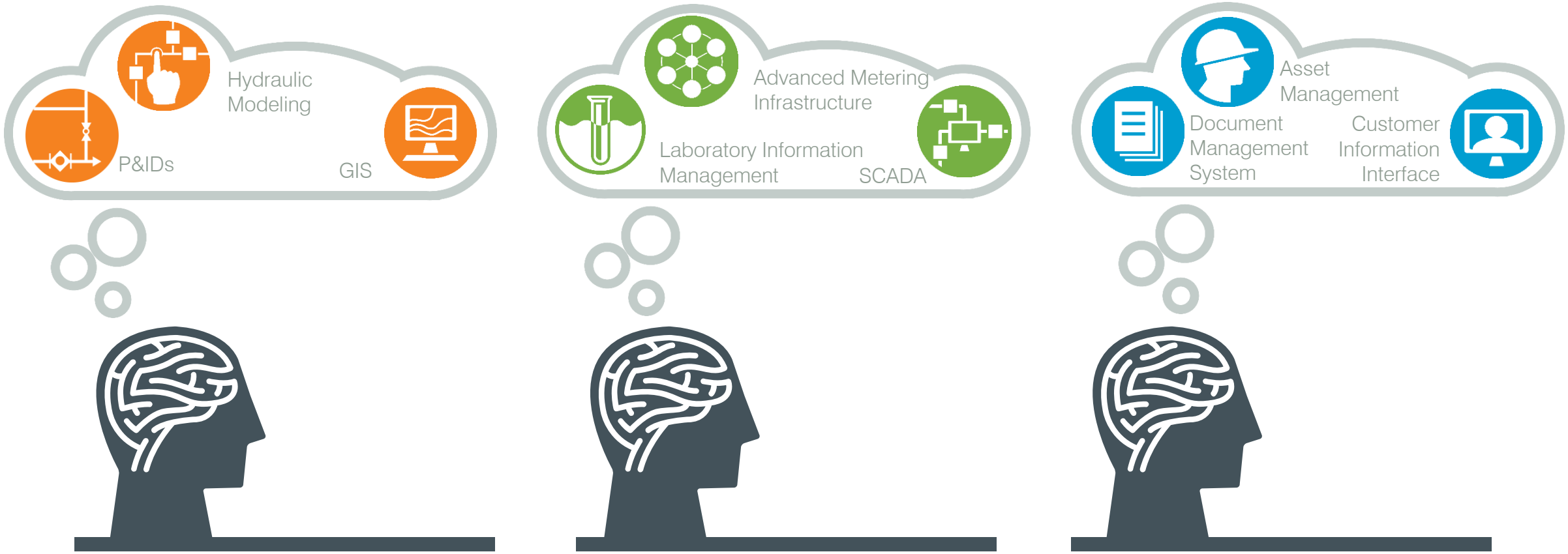
Aging assets

Budget limitations

Stricter regulations

Knowledge transfer needs

Silos of departmental information

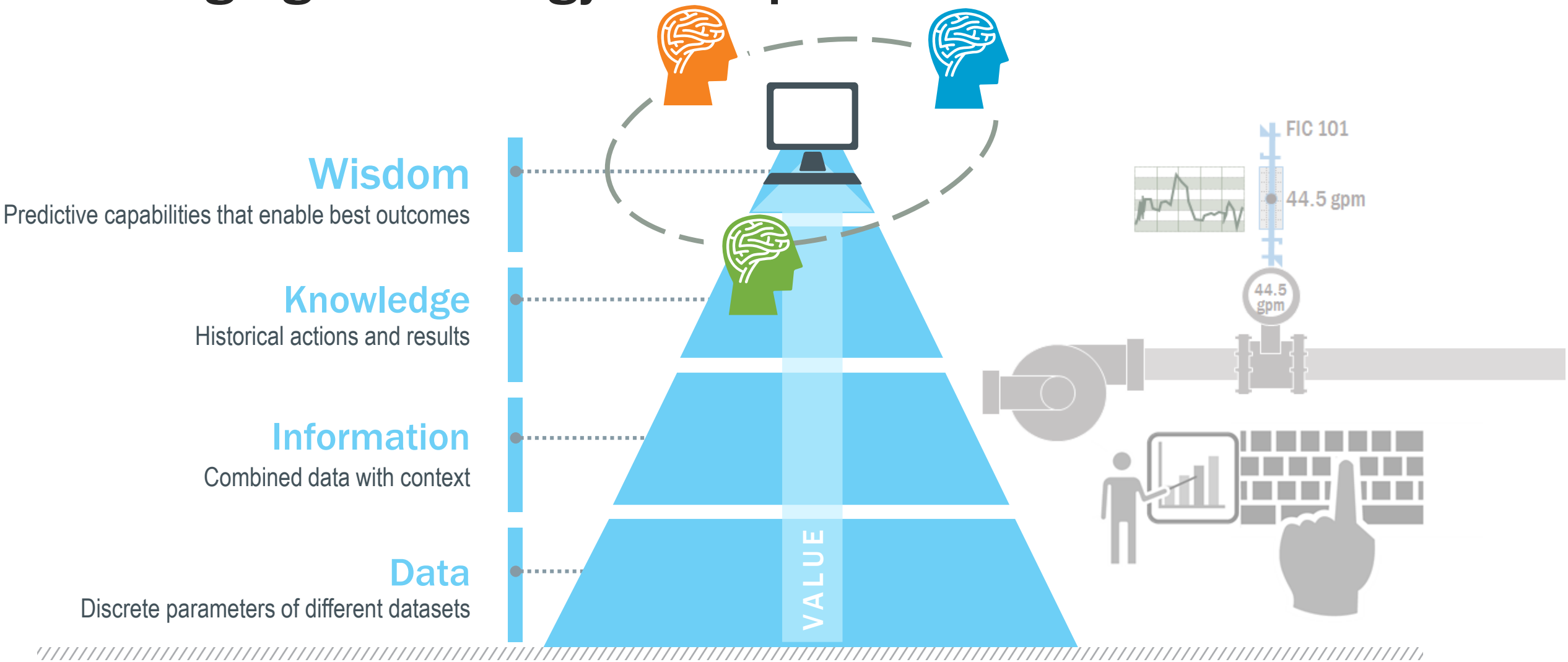


Engineering **Operations** **Maintenance**

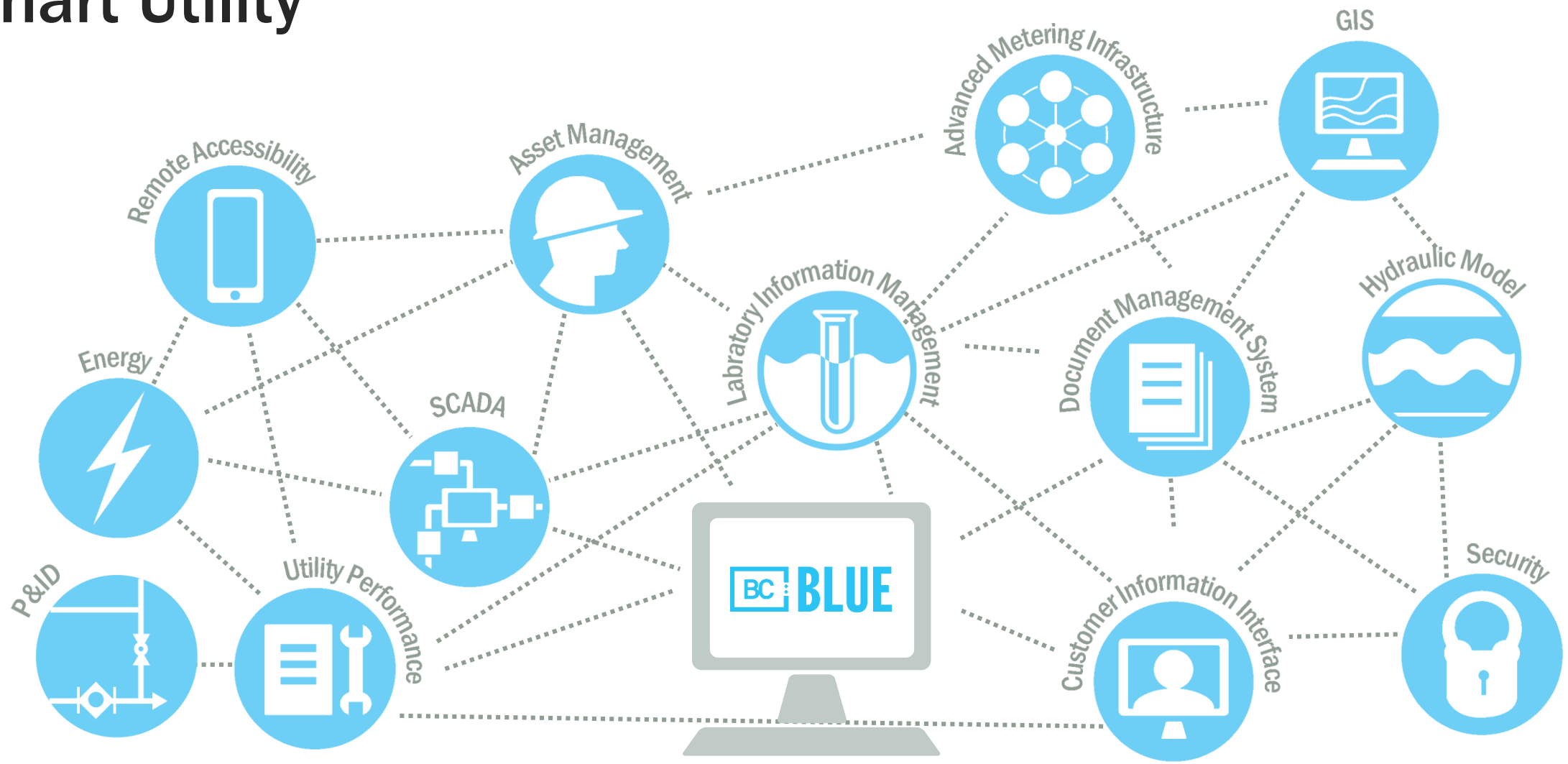
More sources of data is overwhelming to staff

We rely on experienced staff to process large volumes of data. This approach has caused data overload and isn't sustainable.

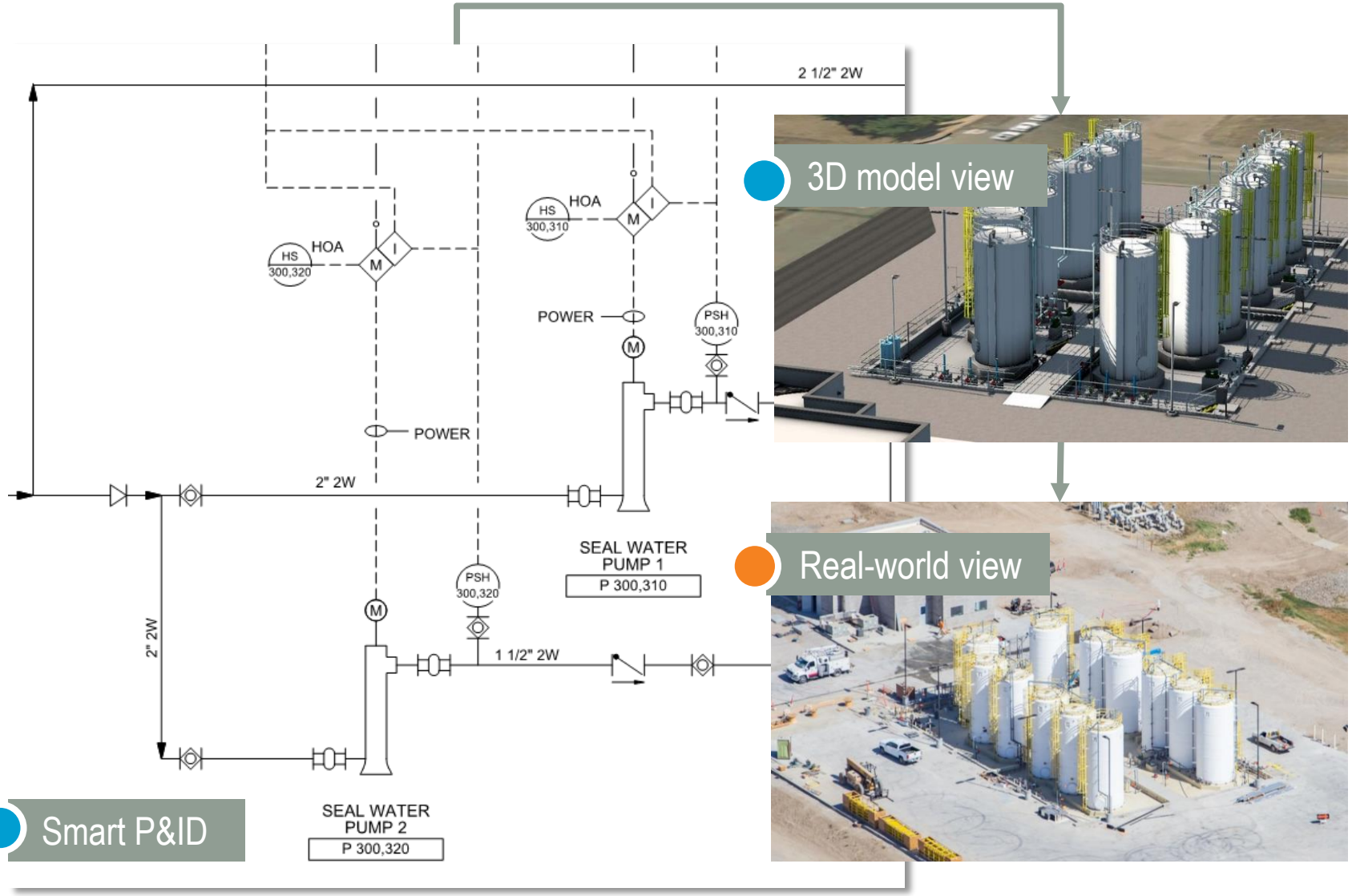
Leveraging technology to empower our workforce



Connecting applications together with context creates a Smart Utility



Collecting data:
Lifecycle of project



DESIGN PERIOD

- Descriptions
- Equipment numbers
- Instrument list
- Equipment list
- Cable schedule
- Raceway schedule
- Asset classifications

CONSTRUCTION PERIOD

- Procurement info
- Warranty info
- Asset information
- Manufacturer/part

Benefits of collecting data during design and construction

3D

VISUALIZATION

- Existing conditions
- Animations
- Renderings
- Walkthroughs
- Asset information

4D

SCHEDULING

- Project phasing
- Visual validation
- Interproject coordination

5D

ESTIMATING

- Cost phasing
- Quantity extractions
- Funding projections

A powerful integration to enable visual observations from model to real-world construction

Right person to the right information at the right time

We live in a world where everything is “Smart”

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

In this industry, we need to leverage the meaning to be Smart to improve our systems and processes.


Being *Smart* is essential
for a sustainable future.

Information handoff at the end of a project can be overwhelming

Data that O&M staff needs to optimize are often available, but not readily accessible.

Engineers and contractors handover significant quantities of information to owners—literally!

Boxes of hardcopy and/or electronic PDFs information that the owner needs to incorporate into the asset management and O&M systems.

Many owners don't get a chance to review the reams of data let alone input the design and asset information into the CMMS.

A Smart Utility approach can help solve this problem!

Data-rich design environments

Sacramento Regional Sanitation District, CA

EchoWater Project
Bringing Water Back

Project data can be leveraged for successful handoff

Data are powerful. But only if they are usable.

- Capture data used to develop designs
- Capture data during construction
- Connect data collected to CMMS and other tools
- Save time and money to map data into a smart utility solution

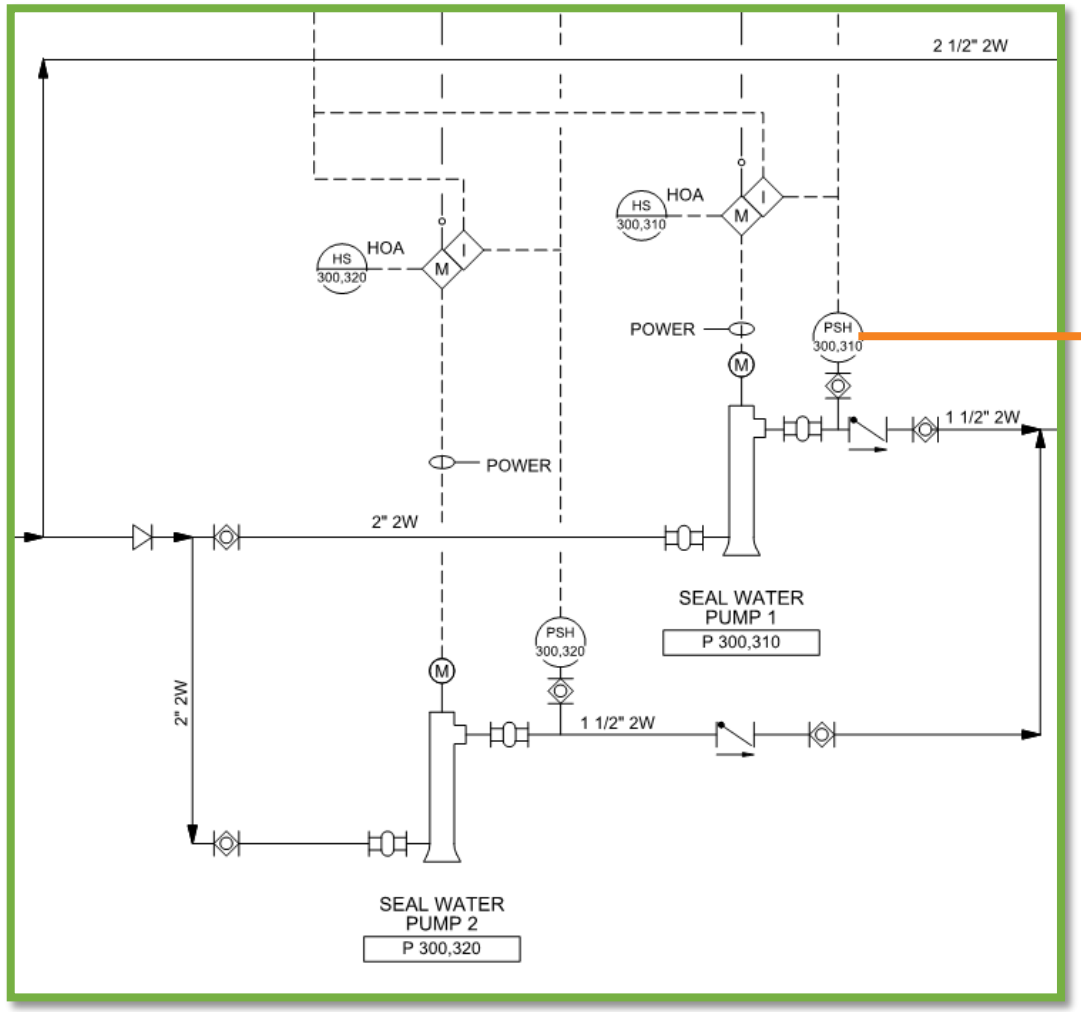
PROJECT DATA

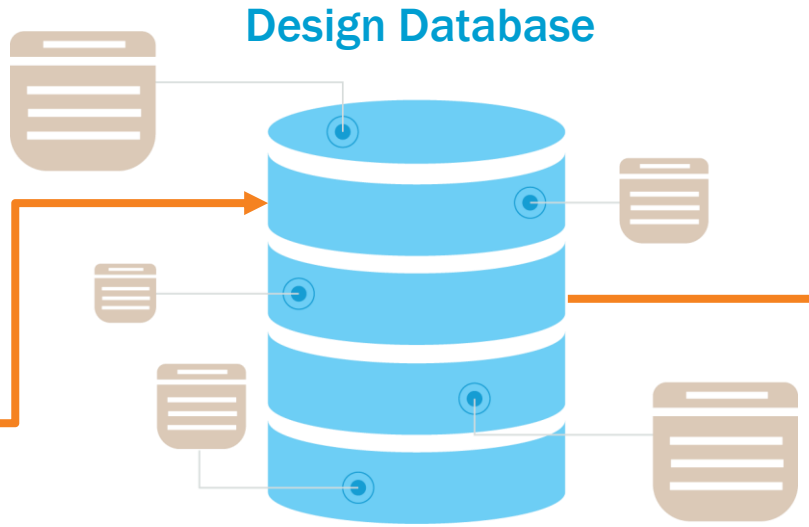
Smart P&IDs, BIM/Revit models and equipment procurement data have direct O&M applications and ultimately support a smart utility vision

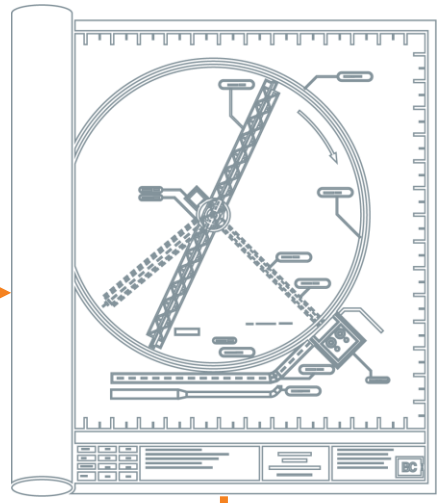
SMART UTILITY APPLICATION

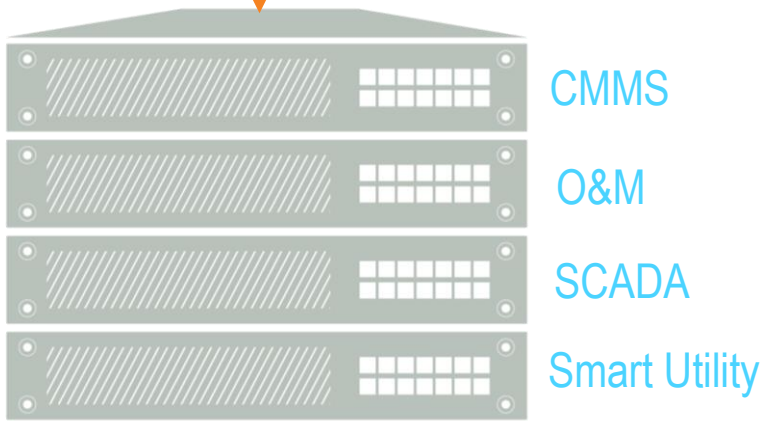
- Spare-parts inventory
- RCM programs
- Lockout/tagout forms
- Asset data
- Predictive analytics
- Calibration ranges
- Standard operating procedures
- Calibration ranges
- Equipment operating data

Data workflow









Department Work Order Metrics | Preventive vs Reactive

Date: 1/1/2015 – 12/31/2029

Product Quality | Water Resources | Operational Optimization | Infrastructure Performance

FUTURE LINKS: Customer Satisfaction | Financial Viability | Stakeholder Support | Enterprise Resiliency | Sustainability

BLUE BOARDS

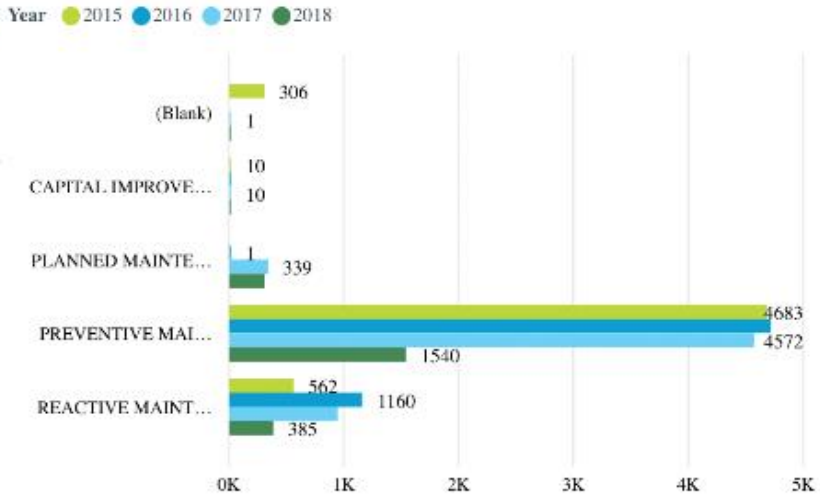
- GIS
- WORK
- SCADA
- AMI
- LAB

Category Reports

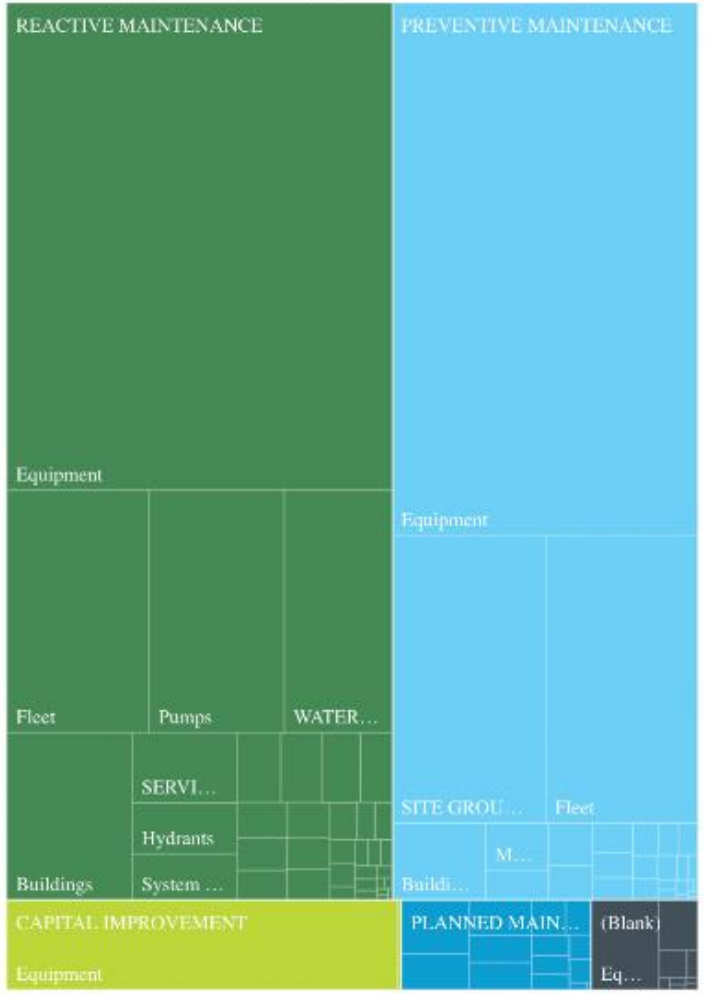
- Labor & Material
- Preventative vs React
- Cost by Division
- GIS Portal

Number of WO and Cost by Reason

Number of WO by Reason and Year



Total Cost by Reason and Category



Work Order List

WO ID	WO Category Type	WO Reason Type
48262	Equipment	REACTIVE MAINTENAN
48268	Facilities	REACTIVE MAINTENAN
48269	Buildings	REACTIVE MAINTENAN
48270	Equipment	REACTIVE MAINTENAN
48271	Equipment	REACTIVE MAINTENAN
48273	Equipment	REACTIVE MAINTENAN
48291	Equipment	REACTIVE MAINTENAN
48292	Equipment	REACTIVE MAINTENAN
48306	Fleet	REACTIVE MAINTENAN
48307	Fleet	REACTIVE MAINTENAN
48312	Buildings	REACTIVE MAINTENAN
48316	Equipment	REACTIVE MAINTENAN
48365	Equipment	REACTIVE MAINTENAN
48368	Storage Facility	REACTIVE MAINTENAN
48373	Equipment	REACTIVE MAINTENAN
48378	Equipment	REACTIVE MAINTENAN
48379	Equipment	REACTIVE MAINTENAN
48382	Equipment	REACTIVE MAINTENAN
48383	Fleet	REACTIVE MAINTENAN
48398	Equipment	REACTIVE MAINTENAN
48411	Equipment	REACTIVE MAINTENAN
48492	Equipment	REACTIVE MAINTENAN
48505	Room	REACTIVE MAINTENAN
48515	Equipment	REACTIVE MAINTENAN
48584	Fleet	REACTIVE MAINTENAN
48604	Room	REACTIVE MAINTENAN
48610	Fleet	REACTIVE MAINTENAN
48613	Control Valves	REACTIVE MAINTENAN
48725	Equipment	REACTIVE MAINTENAN
48736	Storage Facility	REACTIVE MAINTENAN
48745	Equipment	REACTIVE MAINTENAN

BC BLUEWORK

Why a Smart Utility?

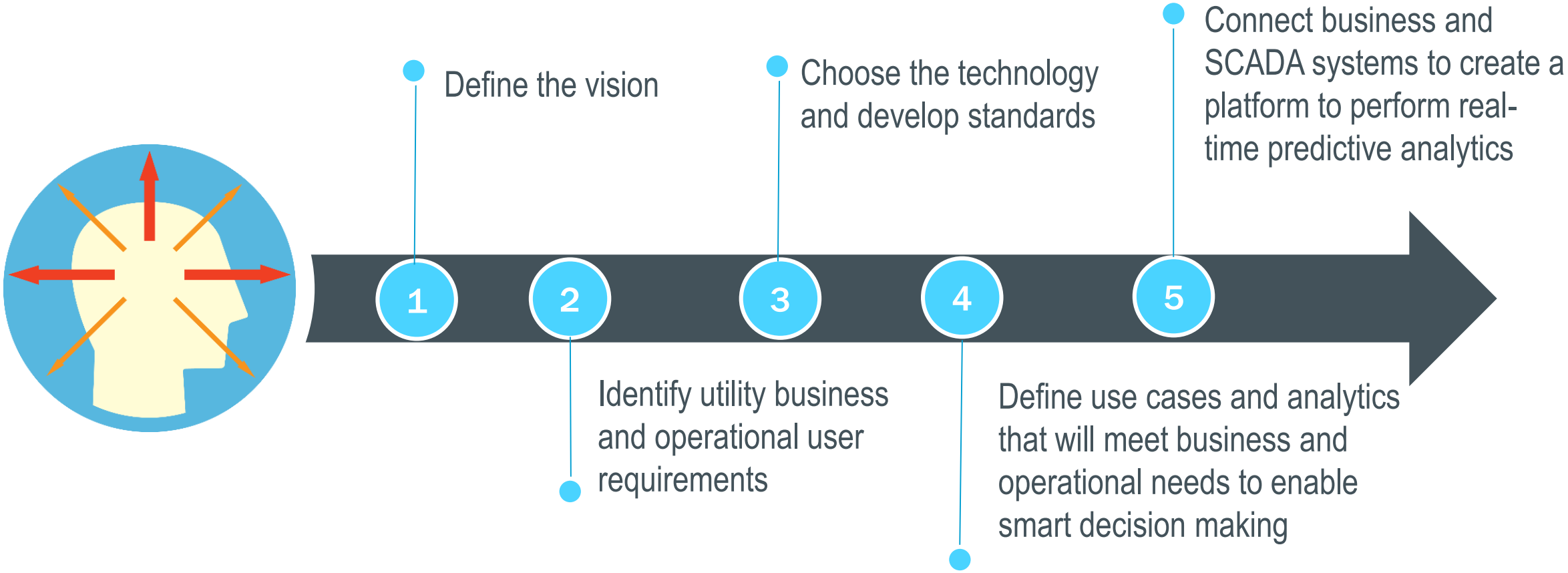
Organization's desires…

- Take control of your data
- Save money (energy, chemicals, labor)
- Make informed decisions
- Improved operations
- Improved maintenance (RCM program)

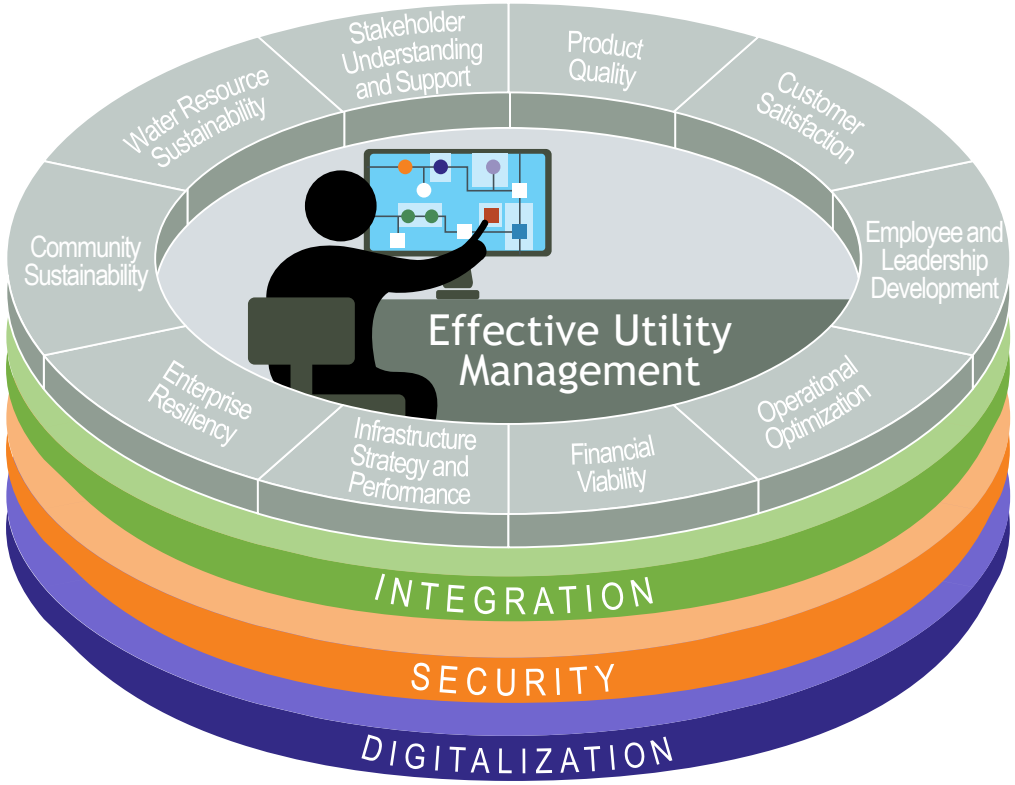
What I believe…

- Leverage the data has been collected
- Prepare the utility for the digital transformation
- Provide a strategy to help our utilities/districts achieve their "smart" goals
- Provide a framework to enable integration of 3rd party data and IoT

Build a plan to become a Smart Utility



Use the EUM as a framework to become a smart utility

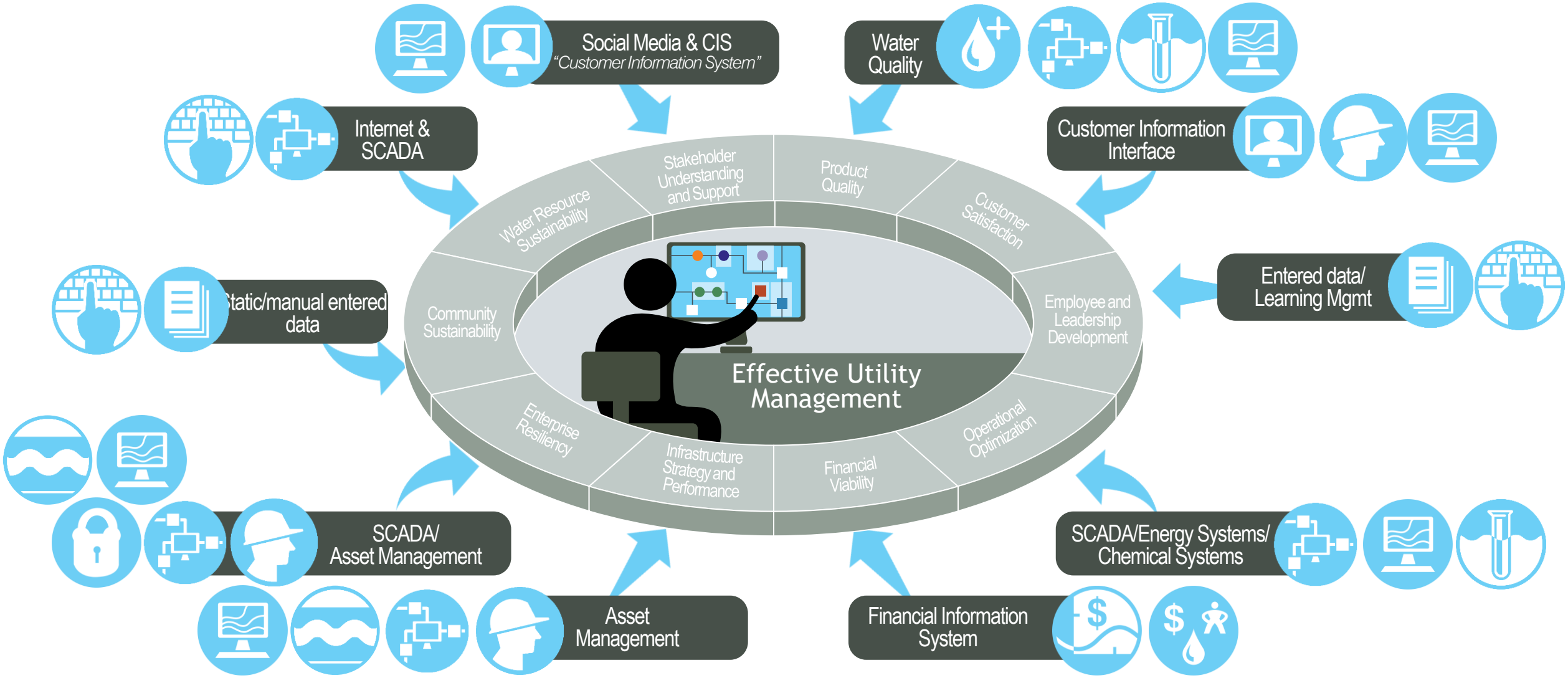


Keys to Success

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

Source: AWWA/WEF Effective Utility Management

Aligning technology to the EUM strategy:
A holistic approach that enables a Smart Utility



Imagine a smart utility for you!

Thank You

it's about connecting

Kevin Stively, PMP, PE, PEng.
206.749.2262
Kstively@BrwnCald.com

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