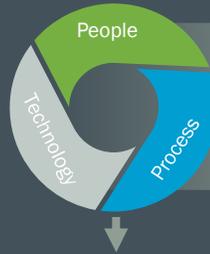


Implementing and Adopting Innovation in Water Systems – The Keys to Success

PNWS-AWWA Conference
April 26th, 2018

Presenters: Michael Karl
Joanie Stultz



*There's a way to do it
better – find it.*

-Albert Einstein

AGENDA



1. Global research highlights
2. Structure of innovation within an utility
3. Survey Results
4. Case Studies
5. Latest innovation examples
6. Where to get additional information



Latest Research

BROWN AND CALDWELL

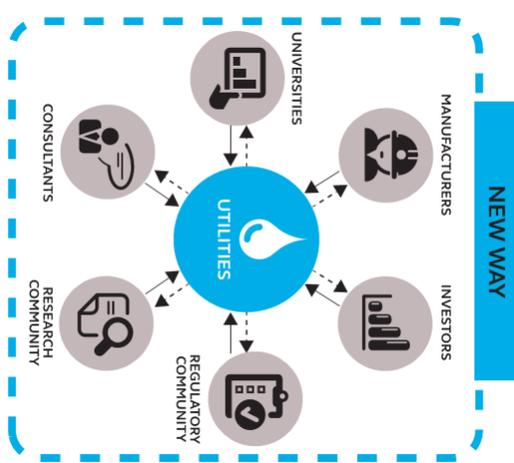
Latest Research

- 4642 Fostering Innovation Within Water Utilities (2017)
- Featured in December 2017 AWWA Journal
- Developed framework for innovation



Source: Carter, J.T.; Foreman, J.; Brown, T.; Darr, M.; Means, E.; Owen, D.; & Jones, T.M., IV, 2017. Empowering Water Utility Innovation- A Pathway to Sustainability. Arcadis. Jason.carter@arcadis.com

Moving the center of gravity of innovation



Source: Carter, J.T., Foresman, J., Brown, T., Darr, M., Means, E., Owen, D., & Jones, T.M. IV, 2017, Fostering Innovation Within Water Utilities, Water Research Foundation, Denver. Jason.carter@arcadis.com

Source: Published by WRF, Project #4642

Latest Research



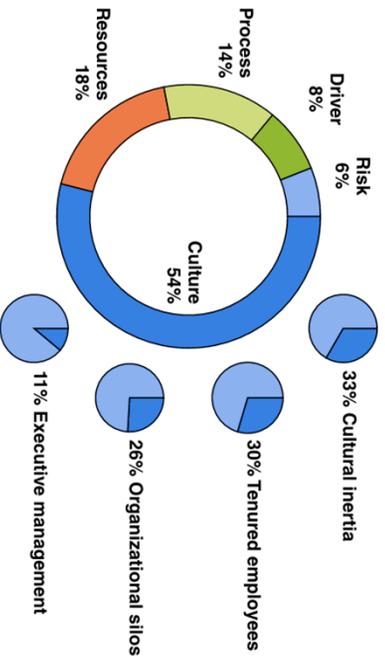
- 8 Key Innovation Disciplines
- Communicate: Area for improvement
- Need to tell success stories

Celebrating your success ensures sustained success



Brown and Caldwell

Top Internal Innovation Inhibitors



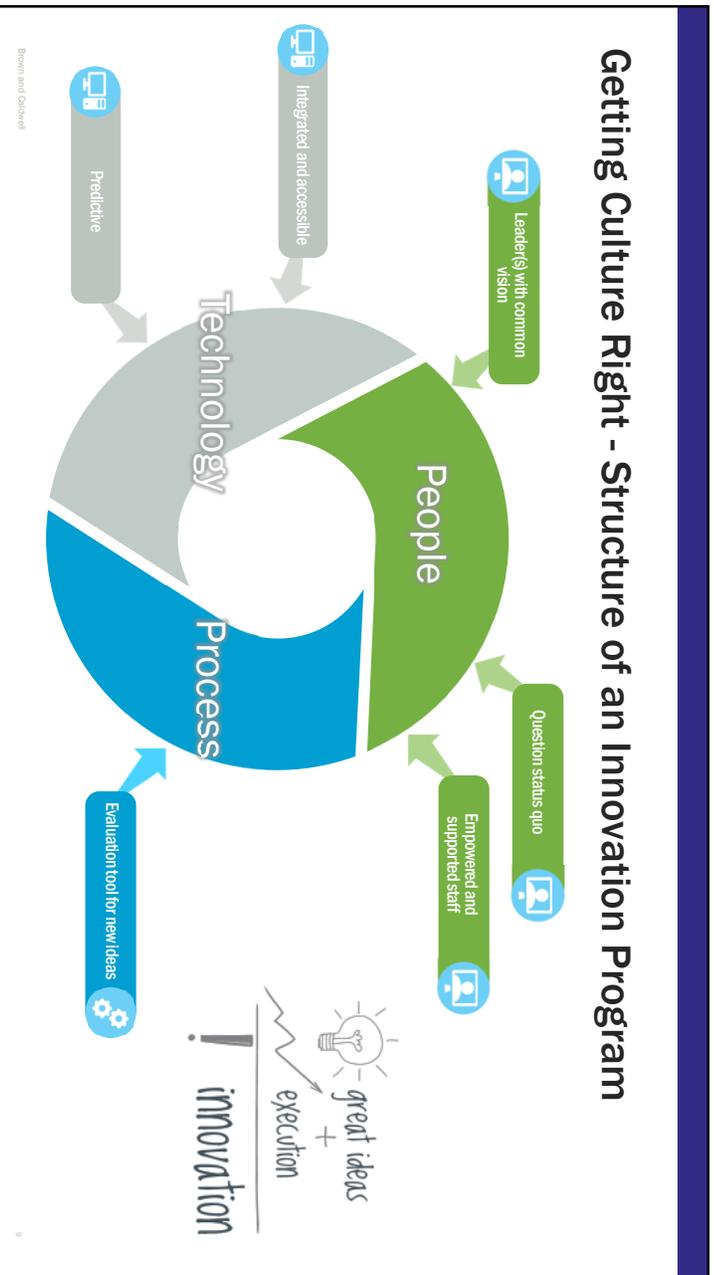
Innovation Inhibitors

- > 50% inhibitors are culture related
- Culture drives behavior
- *What makes an innovative culture?*



Source: Carter, L.T., Foresman, J., Brown, T., Barr, M., Means, E., Owen, D., & Jones, T.M. IV. 2017. A Framework for Driving Innovation in Your Water and Wastewater Utility. Journal American Water Works Association, Denver, Volume 109, Number 12, December 2017. 8

Getting Culture Right - Structure of an Innovation Program



Pacific Northwest AWWA Innovation Survey



Why is Innovation Critical?

- “For long term **sustainability**”
- “Substantial growth, need to **do more with same staffing level** as growth occurs”.
- To face “challenges to serve and provide **more with less**”
- Dealing with “challenging operating conditions, need to **do more with less**, need to be efficient, ability to benchmark”
- “Meeting the **needs of growth** while ensuring we get the most out of our existing infrastructure”.
- To “**improve transparency** with consumers”
- “To enable water utilities to **operate more efficiently**”
- To address challenge of a “**limited water supply**.”



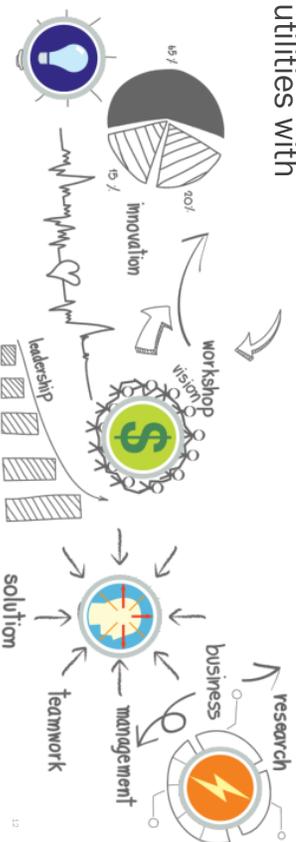
“long term sustainability”
 “do more with less”
 “improve transparency”

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11

Innovation Success Factors

- Staff buy-in for adoption process
- Guiding vision within organization
- Dedicated funding source to put towards specific programs/projects
- Innovation champion leading the effort
- Partnerships with other utilities with innovation experience

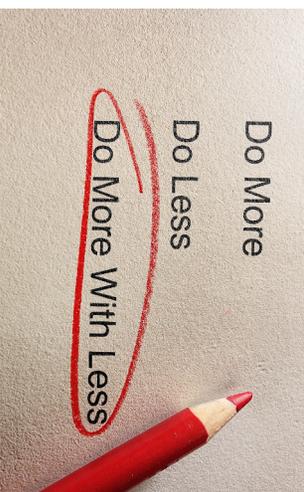


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12

Innovation Constraints

- Not enough financial resources
- Culture inertia
- Lack of technical resources
- Lack of internal support
- Budget lifecycles not flexible to allow for dedicated funding for innovation program or projects



"If time and funding aren't on our side, data can be."

– Gene Koontz, Oplow, March 2018

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13

Innovation in the PNW

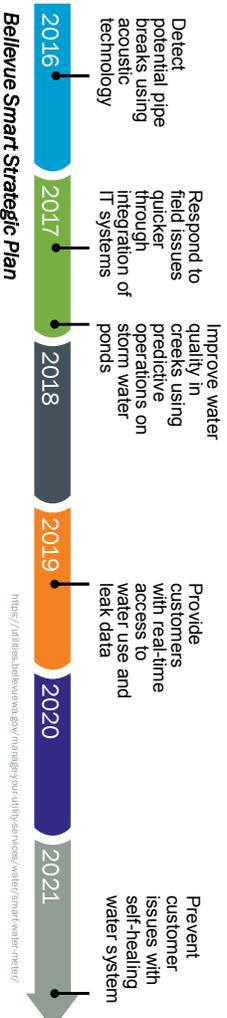


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City of Bellevue

Vision driven – Mayor’s Innovation Challenge

- Smart City Plan
- Standard Business Case Evaluation (BCE) tool
- Innovation “shark-tank” grant program



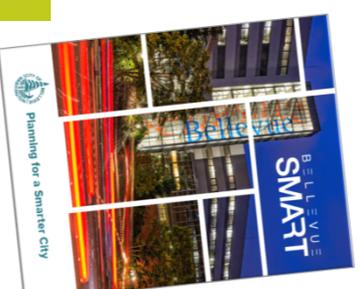
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15

City of Bellevue

Vision driven – Mayor’s Innovation Challenge

- Smart City Plan
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Bellevue Smart Strategic Plan

<https://atlites.bellevue.gov/manage-your-utility-services/water/smart-water-over/>

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16

Suez

Innovation champions empowered to drive change



- VP of Engineering and Technology tasked with innovation goal
- Empower staff at all levels
- Phased training approach
- Real-time/adaptive software changes
- Staff buy-in

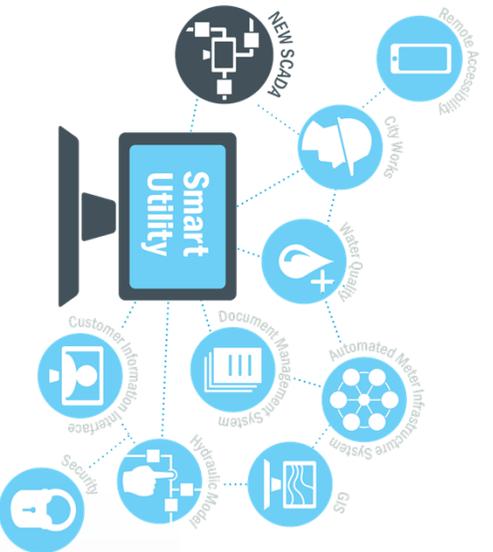

 “Providing our customers and employees with the best service through proper use and application of operational technology”
 - Smart Utility Committee

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17

City of Mercer Island

New management takes on technology challenge



- Develop Smart Utility and integrate communication systems
- Invest in training for existing staff
- Improve transparency with customers

Innovation to improve transparency and customer service:
 AMI allows for more frequent leak detection and real-time data for customers to understand water use.

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18



Silverdale Water District

Building a Recycled Water Program

Partner with Utilities

- Kitsap County, Kitsap County Public Works, Kitsap PUD

Build Key Public Partnerships

- Central Kitsap School District, YMCA, Harrison Medical Center – Silverdale
- **Patience with public perception**
- 10-year water quality sampling program



Planning for the future with dual piping

http://www.swd16.org/newsletter/2018_SWD_Newsletter/2018_02_SWD_Newsletter.pdf



Watch our Recycled Water Video

<http://www.swd16.org/index.html>

19

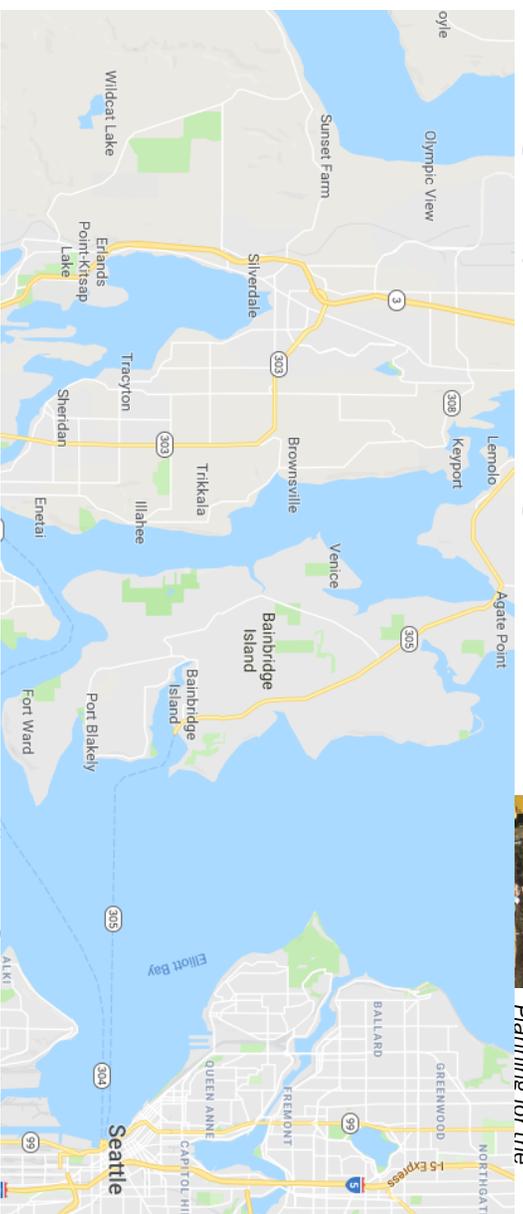


Silverdale Water District

Building a Recycled Water Program



Planning for the



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JWCD Distribution Water Quality

Laboratory Information Management (LIMS) | Inorganics

Product Quality | Water Resources | Operational Optimization | Infrastructure Performance

Financial Tools | Customer Satisfaction | Financial Viability | Stakeholder Support | Enterprise Resiliency | Sustainability

Date: 1/20/2008 | 3/14/2018 |

Site Filter:

Lab Filter:

Parameter:

Results by Date

| Parameter | Sample Date | Count | Min | Max | Astound |
|-----------------|----------------|-----------|-----|------|---------|
| WT-1200 E 800 S | Asness (total) | 0/20/2000 | 36 | 1000 | 0.40 |
| WT-1000 E 820 S | Asness (total) | 0/20/2000 | 74 | 1000 | 1.00 |
| WT-1000 E 830 S | Asness (total) | 0/21/2000 | 74 | 1000 | 0.01 |
| WT-1000 E 840 S | Asness (total) | 0/20/2000 | 62 | 1000 | 0.15 |
| WT-1200 E 800 S | Asness (total) | 0/04/2000 | 51 | 1000 | 10.00 |
| WT-1200 E 810 S | Asness (total) | 0/22/2000 | 63 | 270 | 54.00 |
| WT-1100 E 400 S | Asness (total) | 0/24/2000 | 213 | 1000 | 1.14 |
| WT-1001 E 400 S | Asness (total) | 0/12/2001 | 57 | 1000 | 1.00 |
| WT-1001 E 410 S | Asness (total) | 0/24/2001 | 74 | 1000 | 0.01 |
| WT-1001 E 420 S | Asness (total) | 0/24/2001 | 81 | 540 | 90.00 |

Parameter Legend: Asness (total), Bacterium (total), Calcium (total), Chlorine (total), Copper (total), Lead (total), Lead (total), Magnesium (total), Magnesium (total), Nitrate as Nitrogen, Sulfate (total)

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JWCD GIS Portal

Chlorine Residuals

April 8th, 8:01 - 8:05 PM

ESRI | ArcGIS | ArcMap | ArcView | ArcCatalog | ArcSDE | ArcInfo | ArcToolbox | ArcSWAT | ArcView for Android

Complaints

- Taste
- Color
- Odor/Chlorine
- Pressure

Chlorine

- Production
- Turbidity
- Presssure
- Customer Sales/Flow

Water Resources

- Bacter
- Chlorine Residual
- Contaminants

Infrastructure Performance

- Consumption
- Biggest Volume Change

Water Treatment

- Flushing
- Main Breaks
- Field Crew Locations
- Pipe Age & Type
- Largest Pressure Changes

Water Quality

- Turbidity Changes
- Chlorine Changes
- Un-Accounted for Water
- Largest Flow Changes
- Largest Pressure Changes

Model

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Resources



- WRF Fostering Innovation Within Utilities Guide – 4642
- Empowering Water Utility Innovation Report
- Leaders Innovation Forum for Technology (LIFT)
- WE&RF and WEF initiative
- <http://www.werf.org/lift/>
- LIFT Link - Online platform which allows users to discover new water technologies and research needs
- LIFT SEE IT - Scholarships for utility personnel to visit other utilities with innovations of interest



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26

Key Take-aways



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27



Special Thanks to:

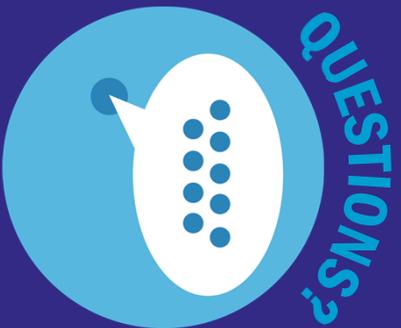


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“Changes call for innovation, and innovation leads to progress.”

- Li Keqiang

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Michael Karl

mkarl@brwncald.com

425.749.2020

Joanie Stultz

jstultz@brwncald.com

206-749-2215

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36