ARCADIS Design & Consultancy for natural and built assets

Leading Water and Wastewater Utility Innovation

June 27, 2019

OWEA

THE Water Research FOUNDATION

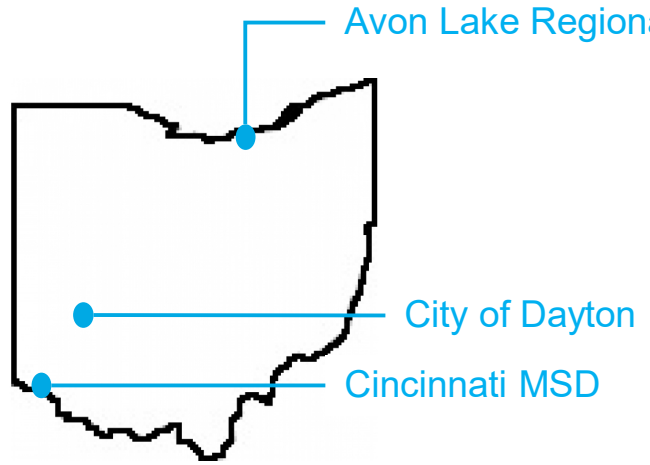
means consulting, LLC

WSSC Where Water Matters

QUEENSLAND Urban Utilities

Serving Your Community Preserving The Environment

Utility Innovation Research



2015

Launched Development of Innovation Framework with 25 Utilities

2016

Expanded Participating Utilities to 50
AWWA, WEF, WSAA, WE&RF

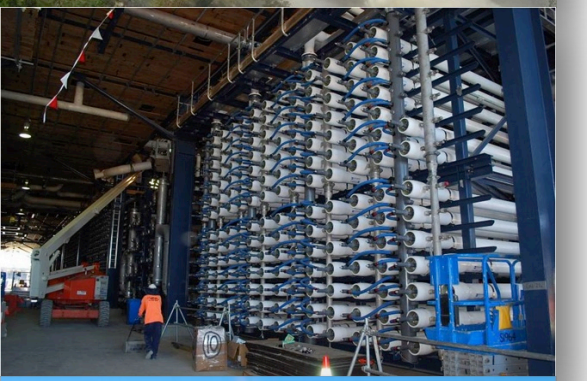
2017

Published Utility Innovation Framework and Launched Campaign

2018

Launched Leading Water and Wastewater Utility Innovation
with 68 Utility Partners
AWWA, WEF, AMWA, NACWA, WSAA

THE Water Research FOUNDATION



Drivers for Innovation

- Financial instability
- Water resource adequacy
- Shifting water demands
- Aging infrastructure
- Changing workforce
- New technology
- Stakeholder expectation
- Regulations
- Efficiency and optimization
- Climate uncertainty

1. **Implementation of strategy**
2. **Sustainability / affordability**
3. **Customer expectation**
4. **Workforce of tomorrow**
5. **Digital transformation**

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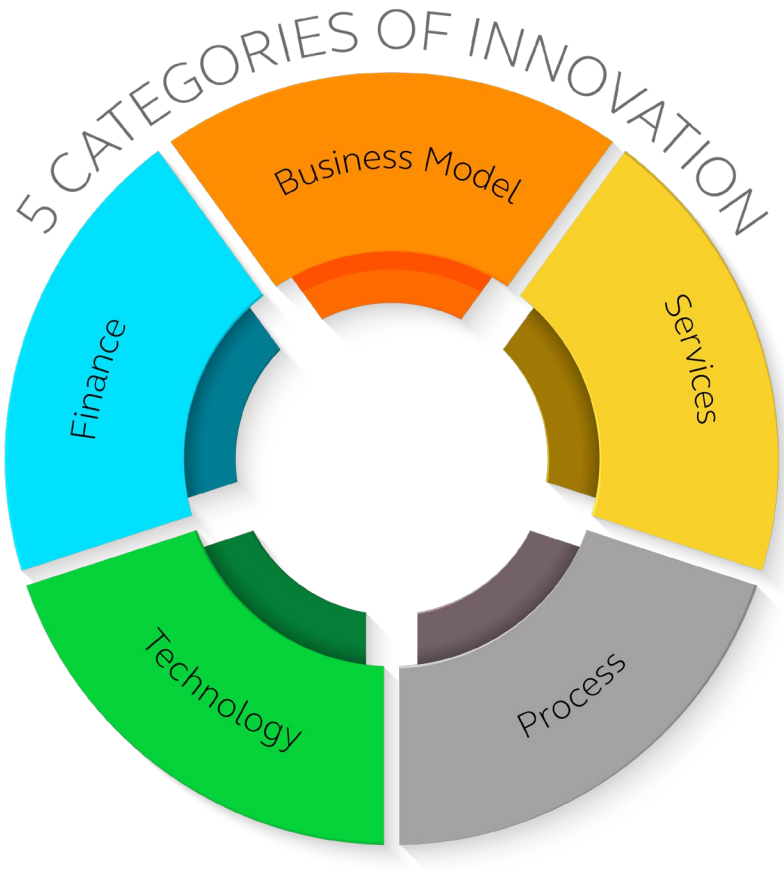
A Definition of Innovation (WRF 4642)

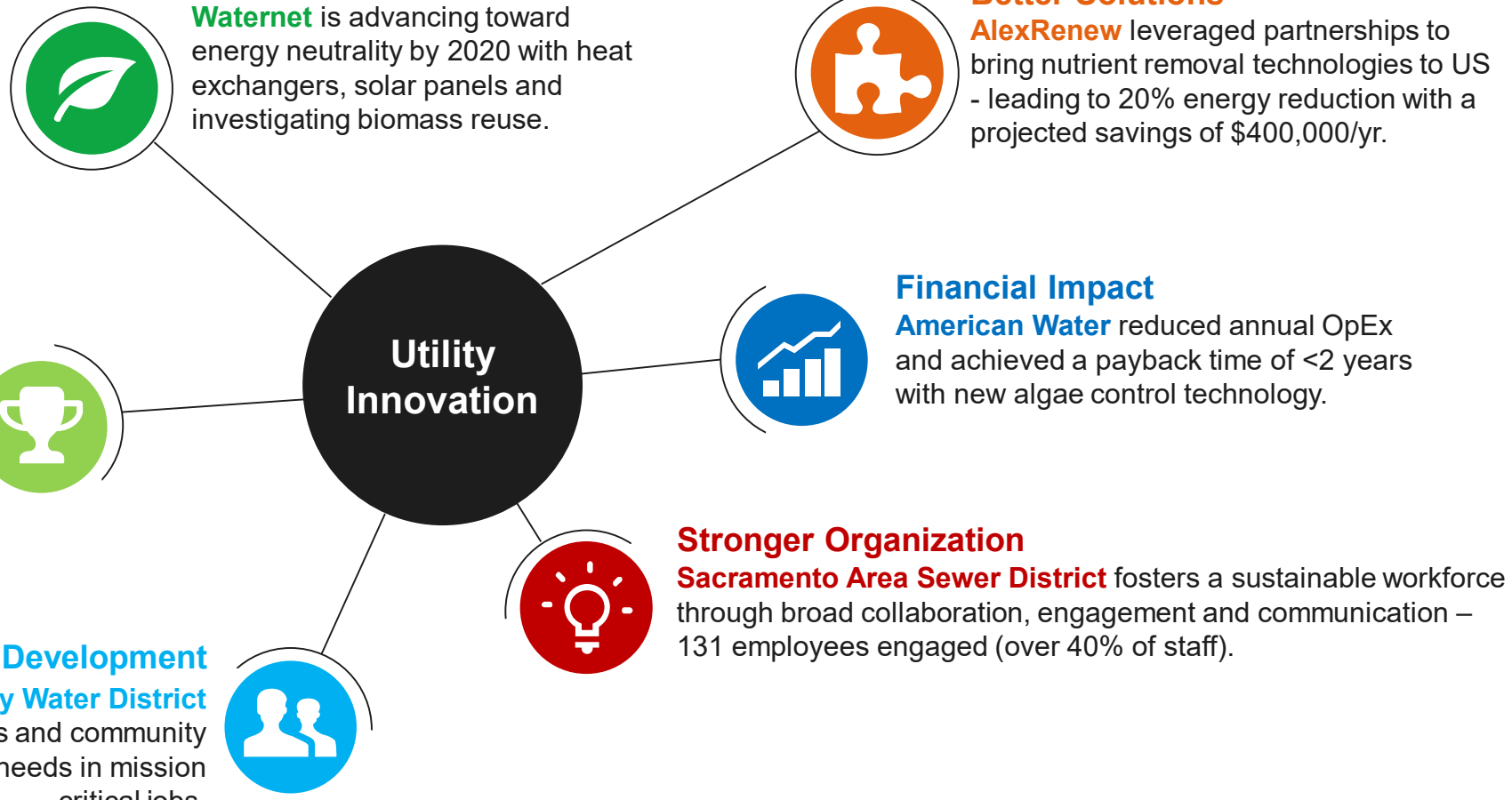
"The application of new ideas resulting in increased value to our customers and/or increased productivity."

WRF 4642 Definition for "Innovation"



Innovation management = stewarding ideas as critical assets.

Impact of Innovation



Sustainability

Waternet is advancing toward energy neutrality by 2020 with heat exchangers, solar panels and investigating biomass reuse.

Better Solutions

AlexRenew leveraged partnerships to bring nutrient removal technologies to US - leading to 20% energy reduction with a projected savings of $400,000/yr.

Financial Impact

American Water reduced annual OpEx and achieved a payback time of <2 years with new algae control technology.

Stronger Organization

Sacramento Area Sewer District fosters a sustainable workforce through broad collaboration, engagement and communication – 131 employees engaged (over 40% of staff).

Workforce Development

Santa Clara Valley Water District collaborates with 45 utilities and community colleges on to address labor needs in mission critical jobs.

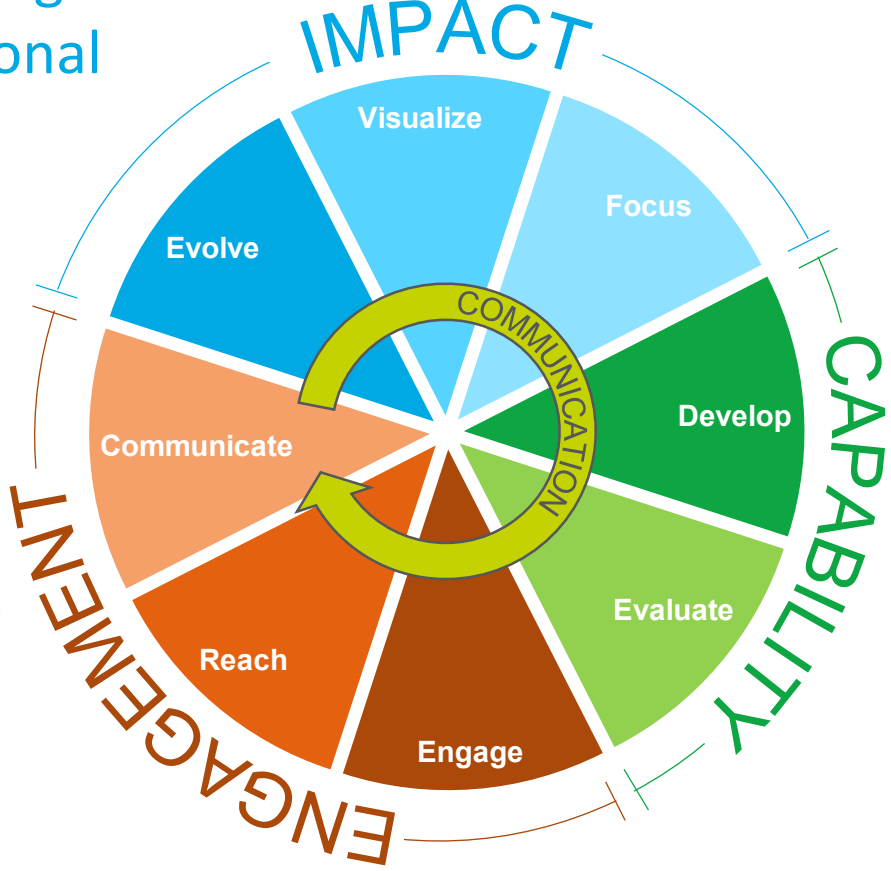
Recognition

Queensland Urban Utilities was named *Business Review Weekly's* Top 10 Most Innovative Companies.

Utility Innovation Framework (WRF 4642)

Results-oriented. Tangible and intangible improvement aligned with leadership and organizational philosophy.

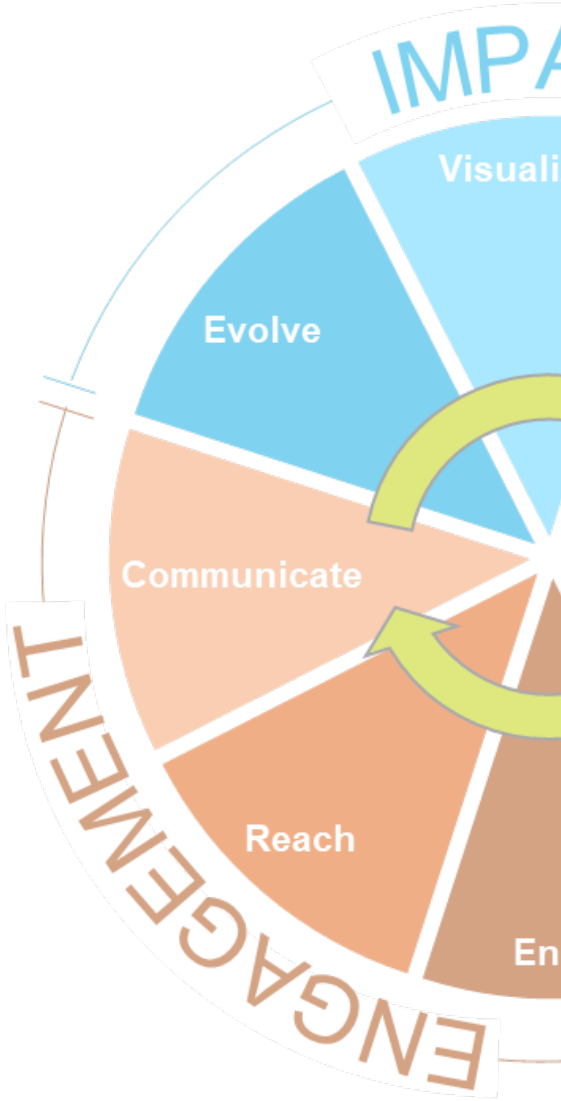
People-oriented. Ideators, mentors, adopters leading initiation and application of innovation.



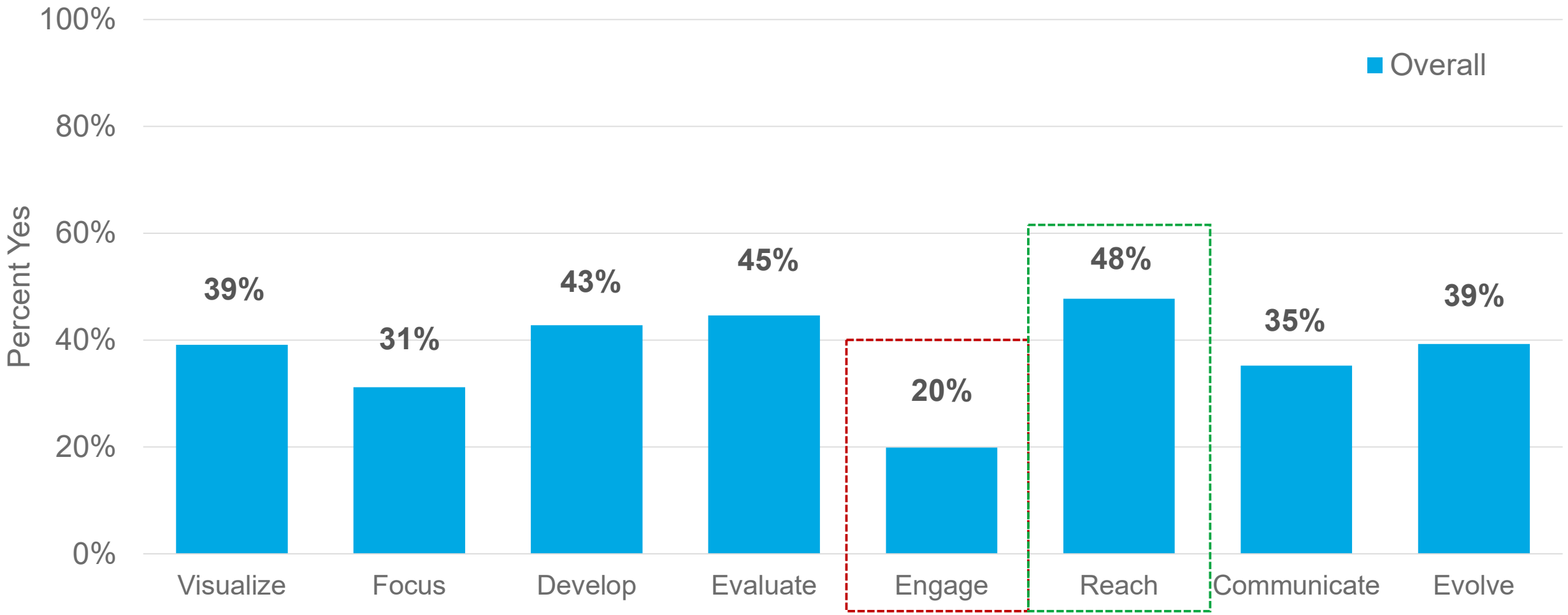
Ecosystem-oriented. Environment encouraging growth and maturation of ideas.

Eight Innovation Disciplines

1. **Visualize** - maintain a long view that empowers and inspires innovation
2. **Focus** - define challenges that guide investment
3. **Develop** - invest resources in new ideas
4. **Evaluate** - test concepts in scaled and relevant applications
5. **Engage** - motivate, enable and reward stakeholders
6. **Reach -** utilize resources outside of the organization
7. **Communicate -** capture and convey defining success stories
8. **Evolve -** implement concepts and measure impact



Eight Key Business Disciplines



WRF 4907 Leading Water and Wastewater Utility Innovation

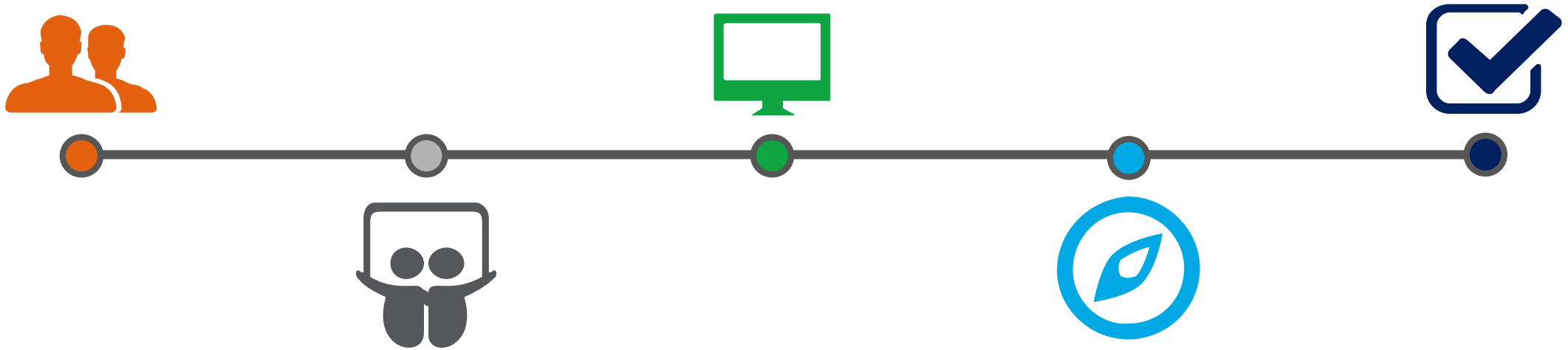
1. Influencing the Social Dynamic of Innovation

2. Accelerating Innovation Through Partnerships

3. Creating an Innovation Planning Tool

4. Developing Innovation and Launch Strategies

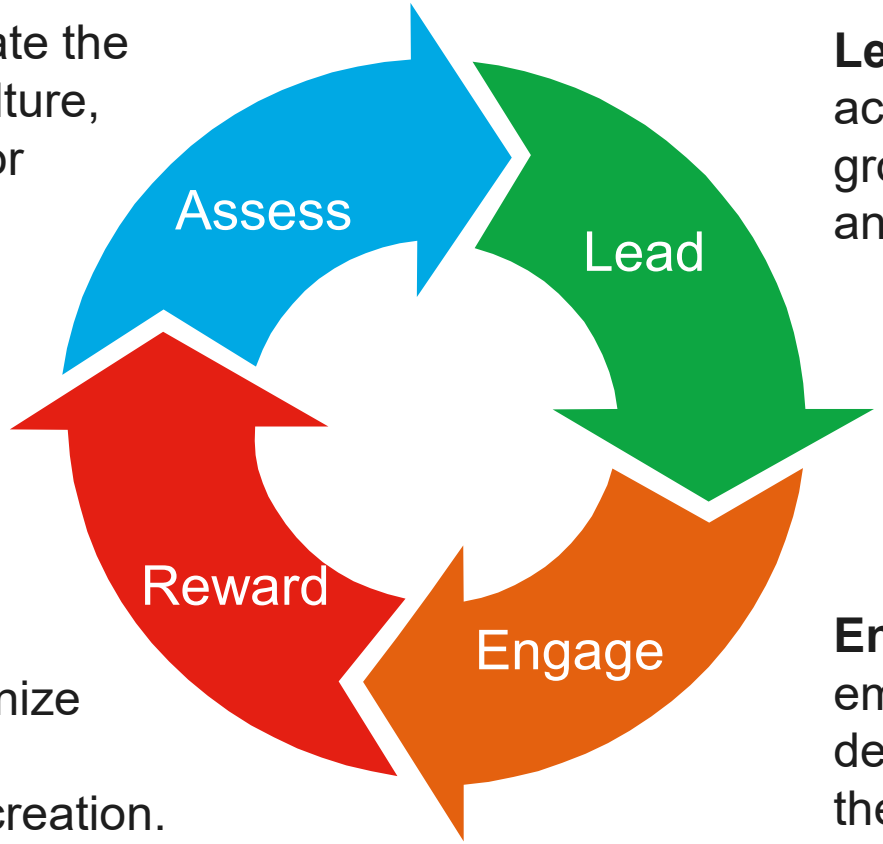
5. Compiling Innovation Leaders Resource



WRF 4907 Task 1

Influencing the Social Dynamics of Utility Innovation

Assess. Approaches to evaluate the impact engagement has on culture, change trajectory, and areas for improvement/opportunity.



Lead. Individuals or teams who actively seek, direct and foster the growth of new concepts for learning and overall value creation.

Reward. Practices that set the expectation - normalize, recognize and reinforce participation in innovative-thinking and value creation.

Engage. Practices that connect and empower staff to create, develop and deploy new concepts that bring value to the customers, environment and organization.

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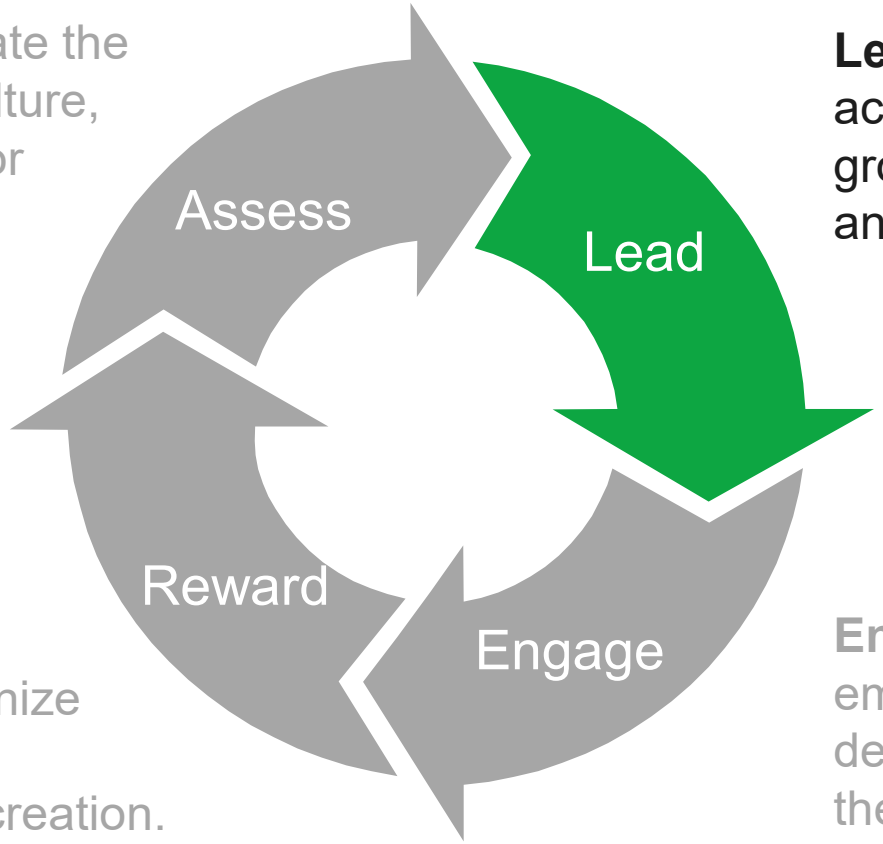

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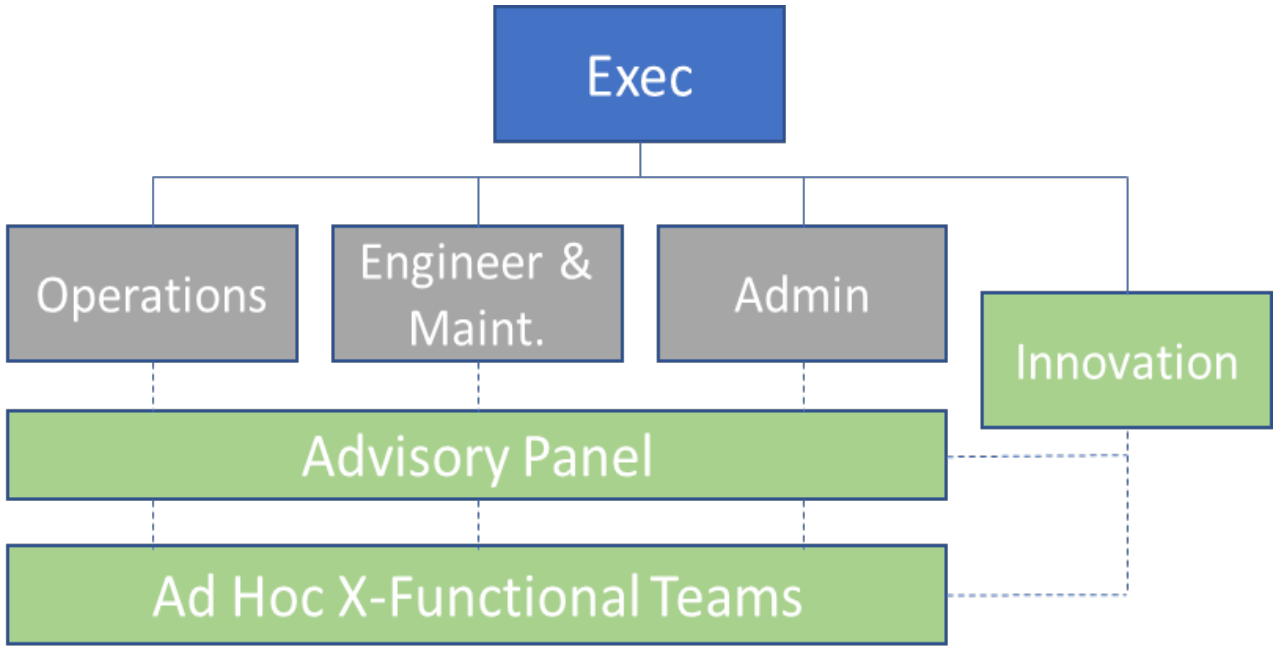
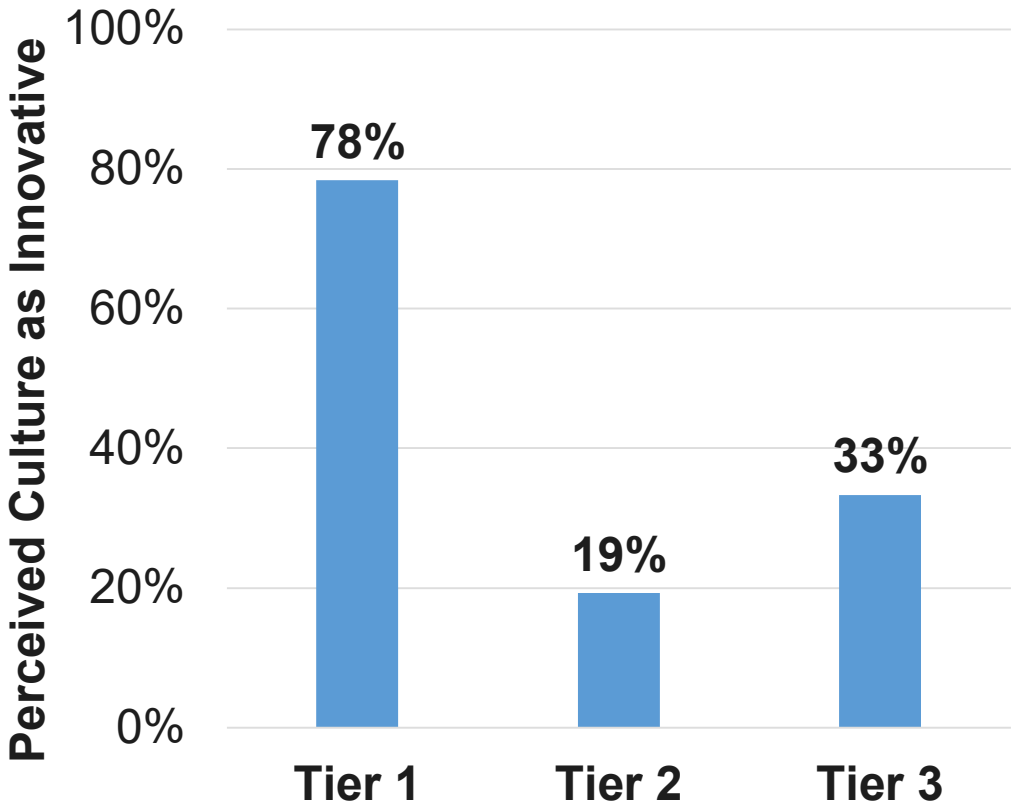
Possible Organizational Structure

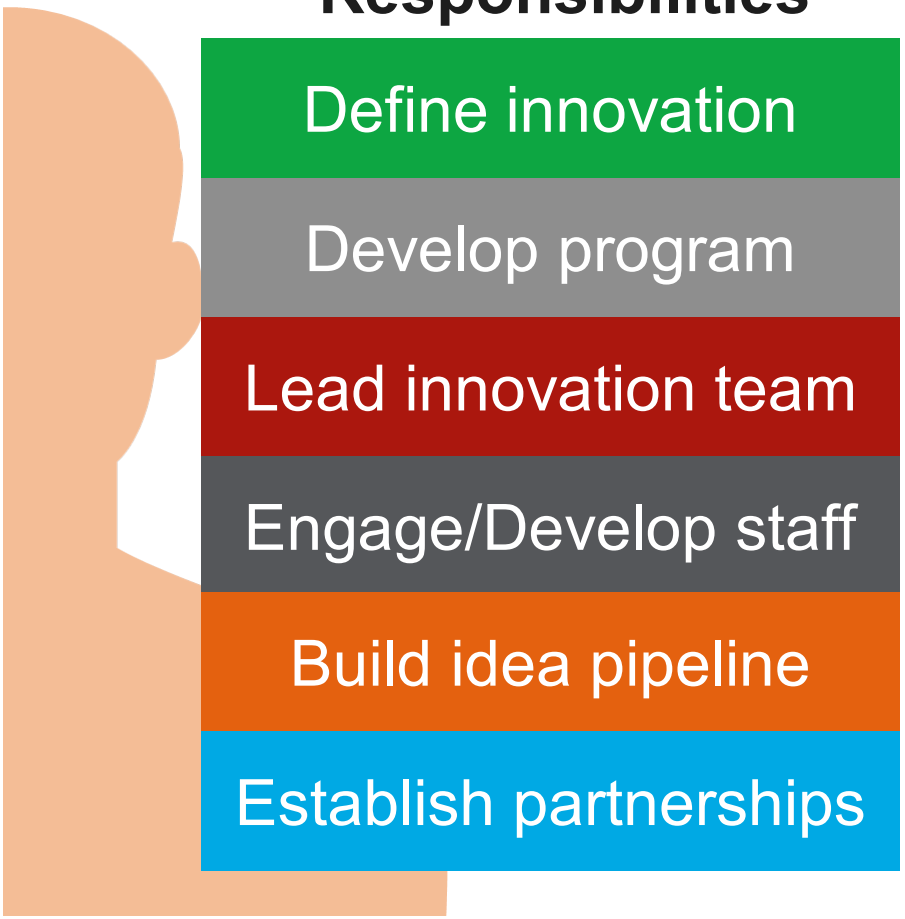


Innovative Culture and Reporting Structure



Utility Innovation Leaders

Responsibilities

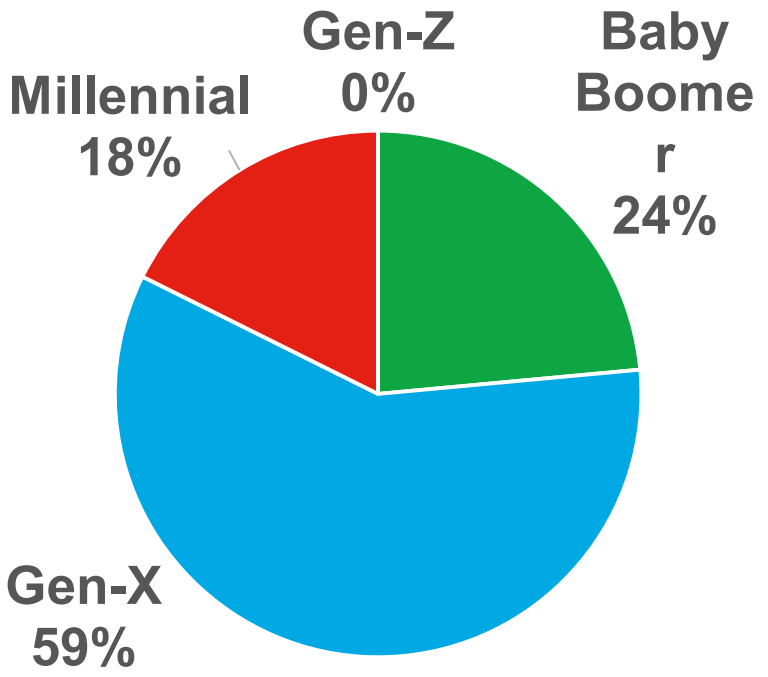


Keys for success?

- Communicate with Executive Management and strategically align innovation efforts.
- Create safety for innovation founded on trust and curiosity
- Share successes and inspire
- Ignite passion and commitment throughout the organization by creating ambassadors
- Engage the entire organization using various engagement tactics

Utility Innovation Leaders

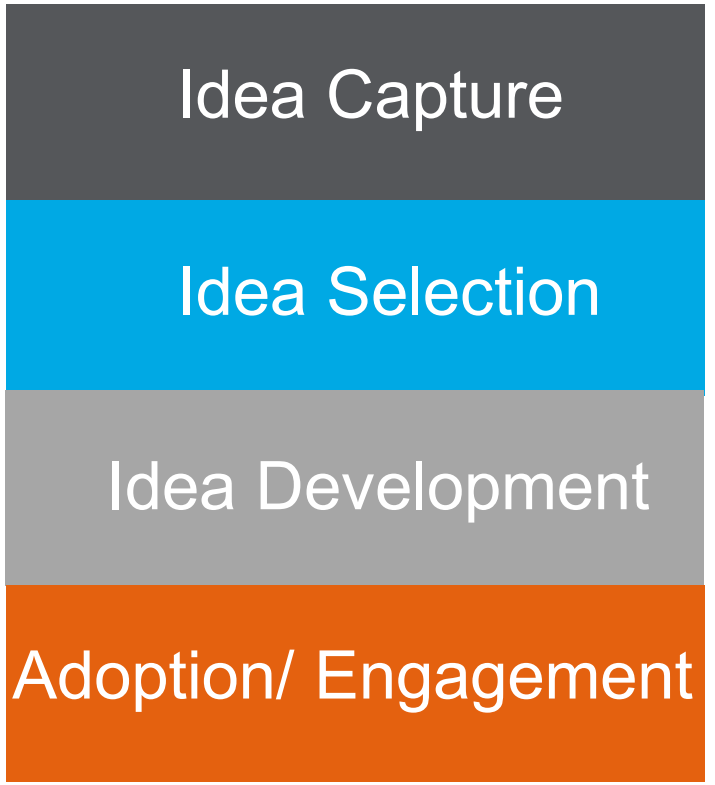
- 72% are full-time
- 50% reside in executive management
- 88% with over 10 years of water sector experience
- 71% recruited from within the organization
- 56% had Master's Degree or Doctorate (6% had formal innovation training)
- Must have experience with failure…
- Traits - vision caster, communicator, networker, explorer, facilitator, flexible, humble, mentor, passionate



Utility Innovation Teams

- 43% of utilities had some form of innovation team
- 41% had governance document
- 59% have role descriptions
- Usually one team (avg 11 people), representing multiple generations and departments

Responsibilities



WSSC

Where Water Matters

Improving Sustainability and Operations through Innovation Leadership

The Engineering and Environment Services Division (EESD) manager at WSSC was tasked with developing an innovation program and leading this program to success as a part-time, informal innovation leader for the organization.

The EESD manager has established a team of three resources fully dedicated to innovation and research.

- Engineering Research Specialist
- Principal Scientist
- Product Development Engineer

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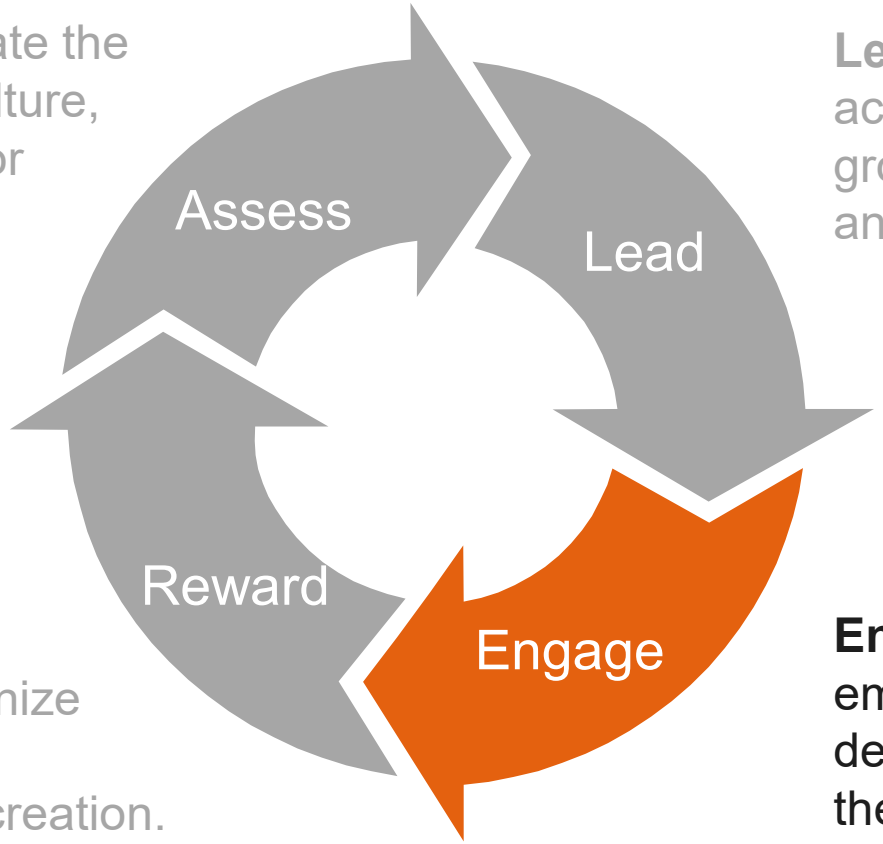

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Internal Stakeholder Engagement

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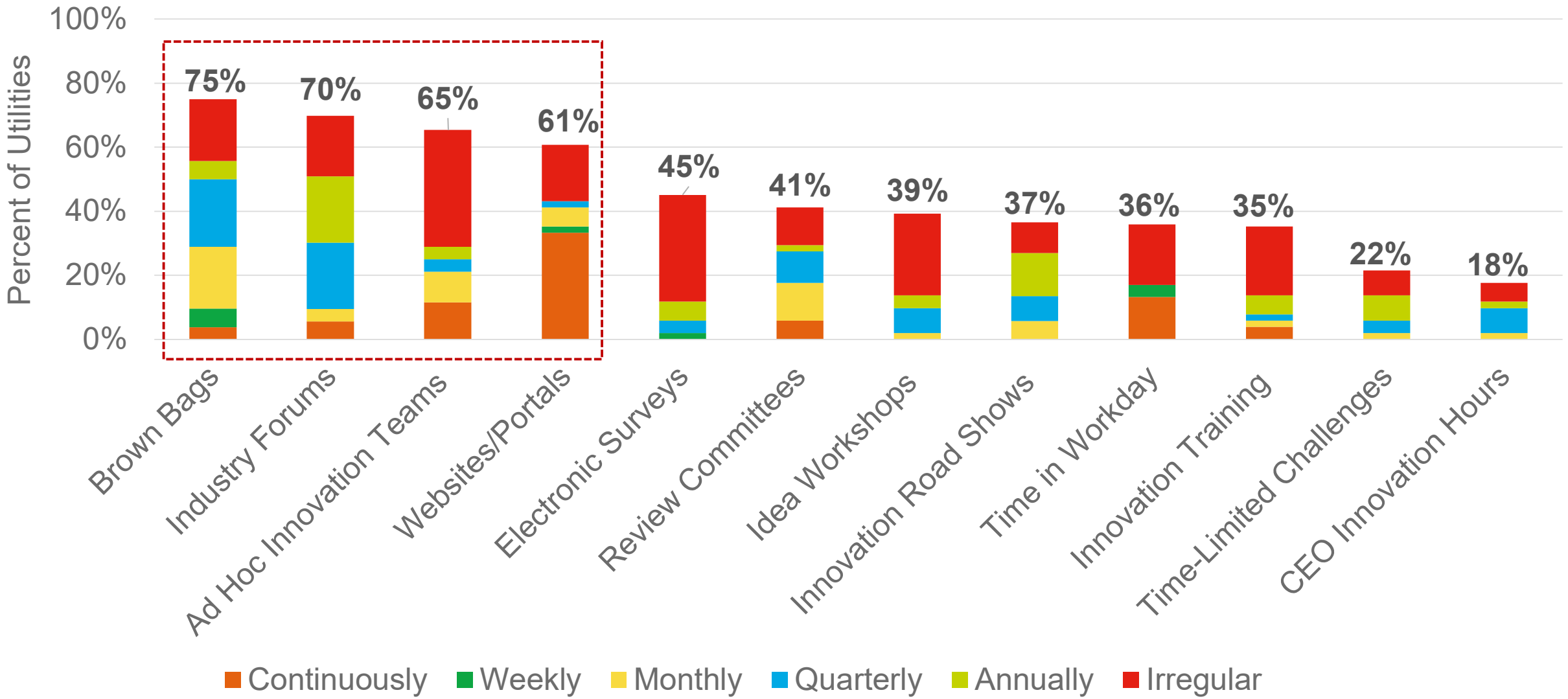
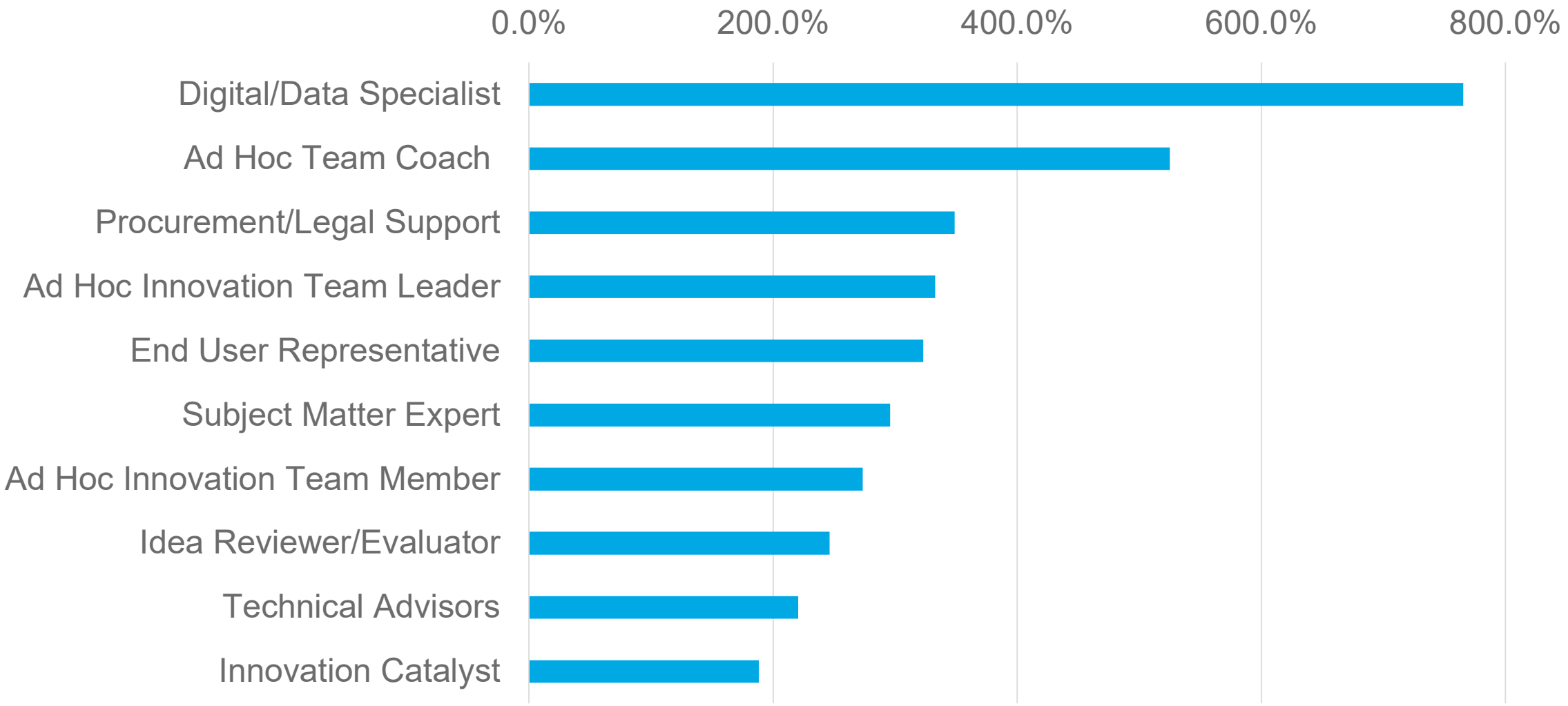


Growth Opportunities



King County

Bright Idea to be LEAN

- Online idea submission platform – Bright Ideas
- LEAN Management system training offered to all staff to foster continuous improvement and innovation
- Improved time to complete 60% engineering review from 4 months to 1.5 months

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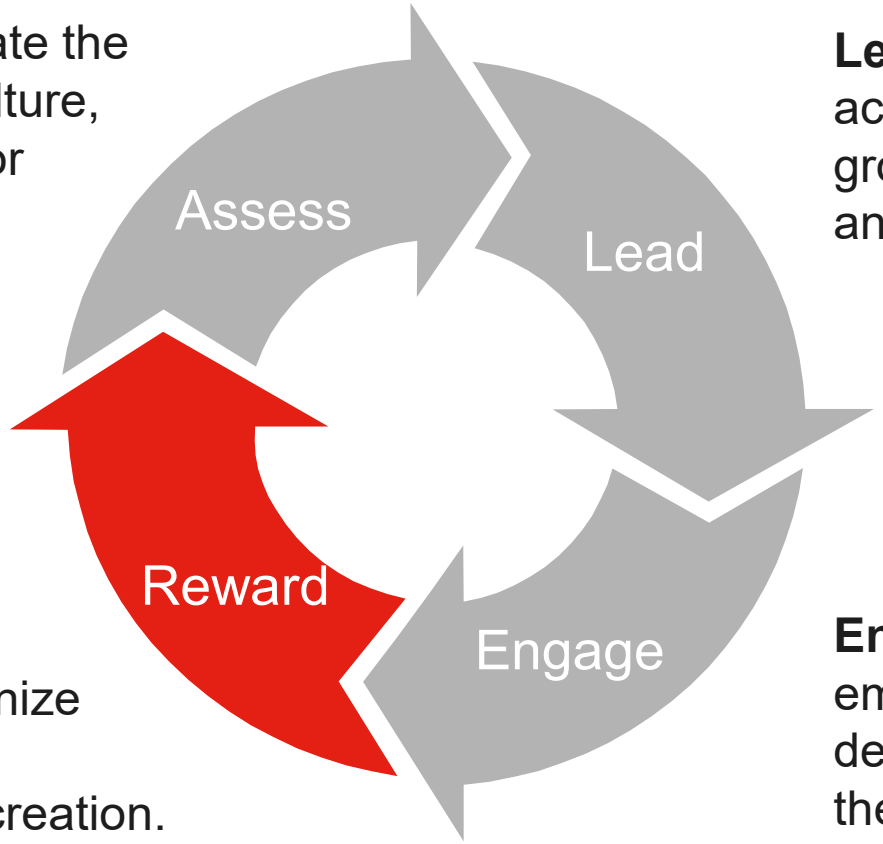

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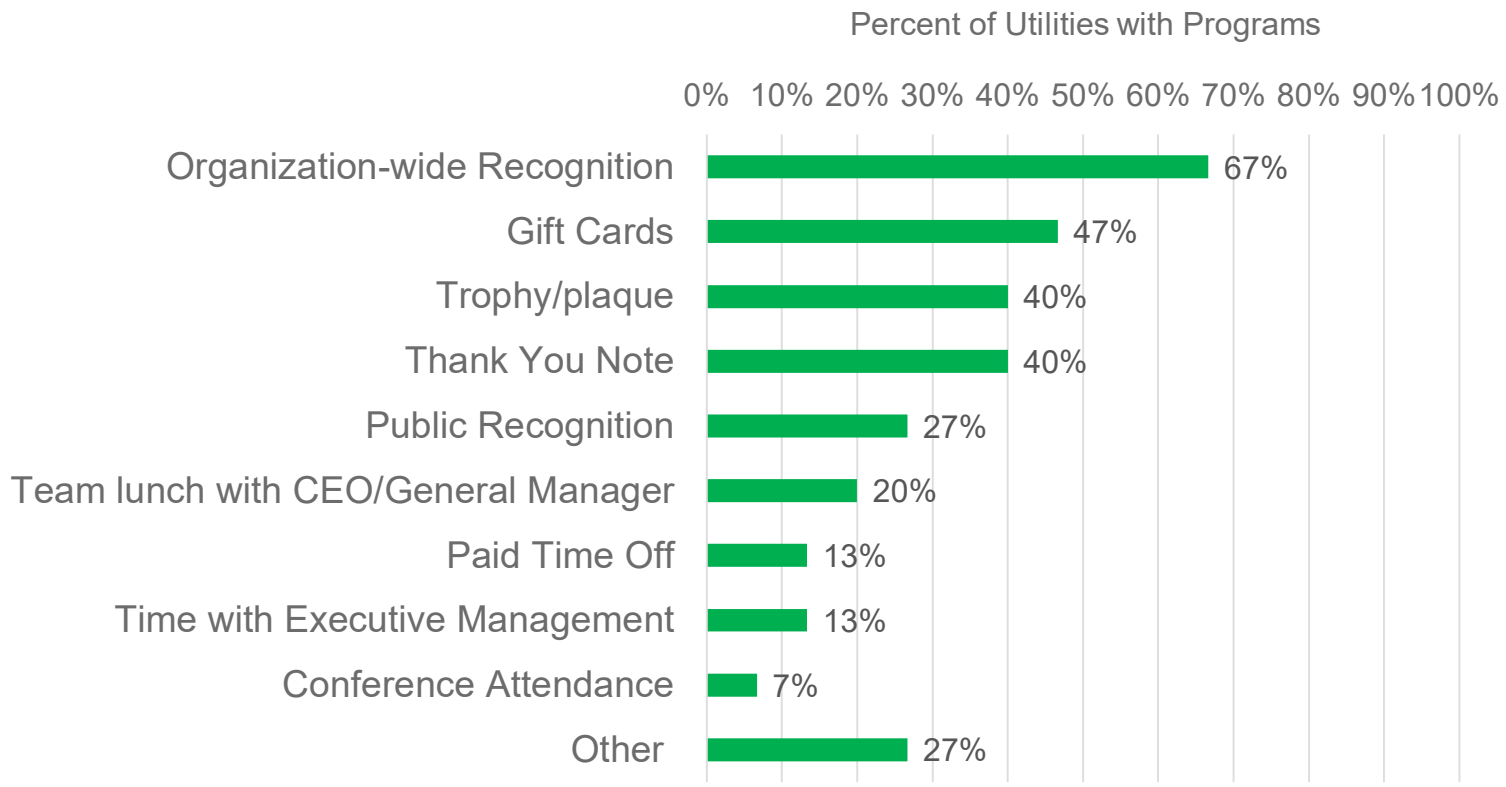
Rewards and Recognition

36% of utilities have a Rewards and Recognition Program

Importance of Rewards and Recognition

- Demonstrate employees' value in the innovation program
- Provide incentives for participation and grow alumni (i.e., build buy-in)
- Provide program exposure
- Promote message

Non-Monetary Rewards and Recognition



QUEENSLAND Urban Utilities

The Maturation of Rewards and Recognition

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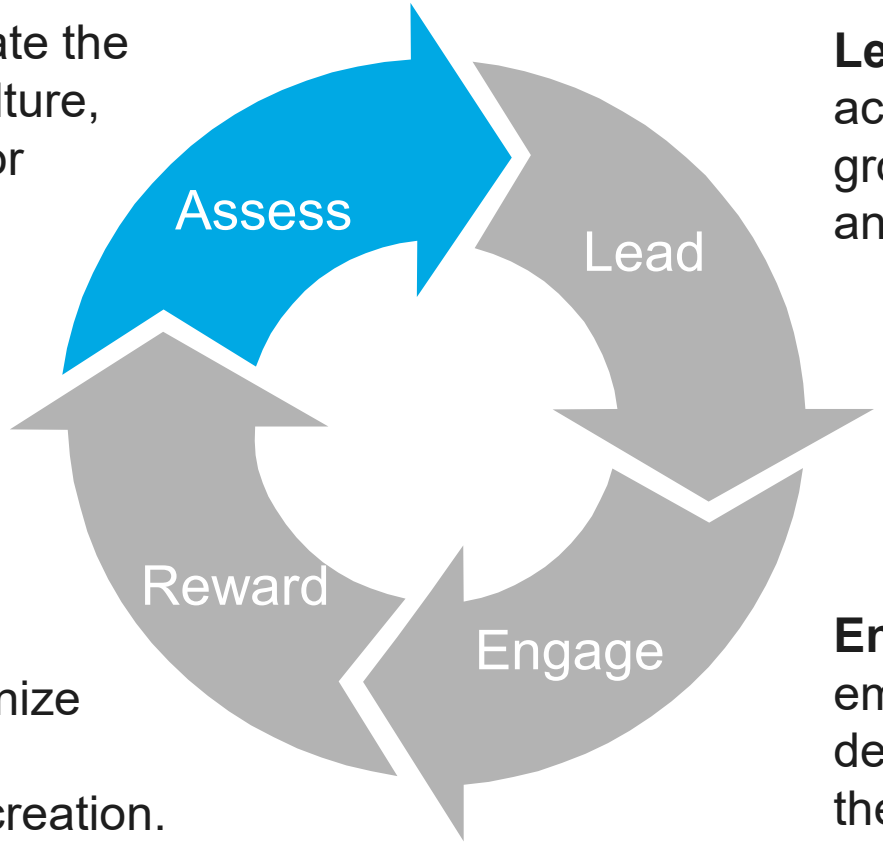

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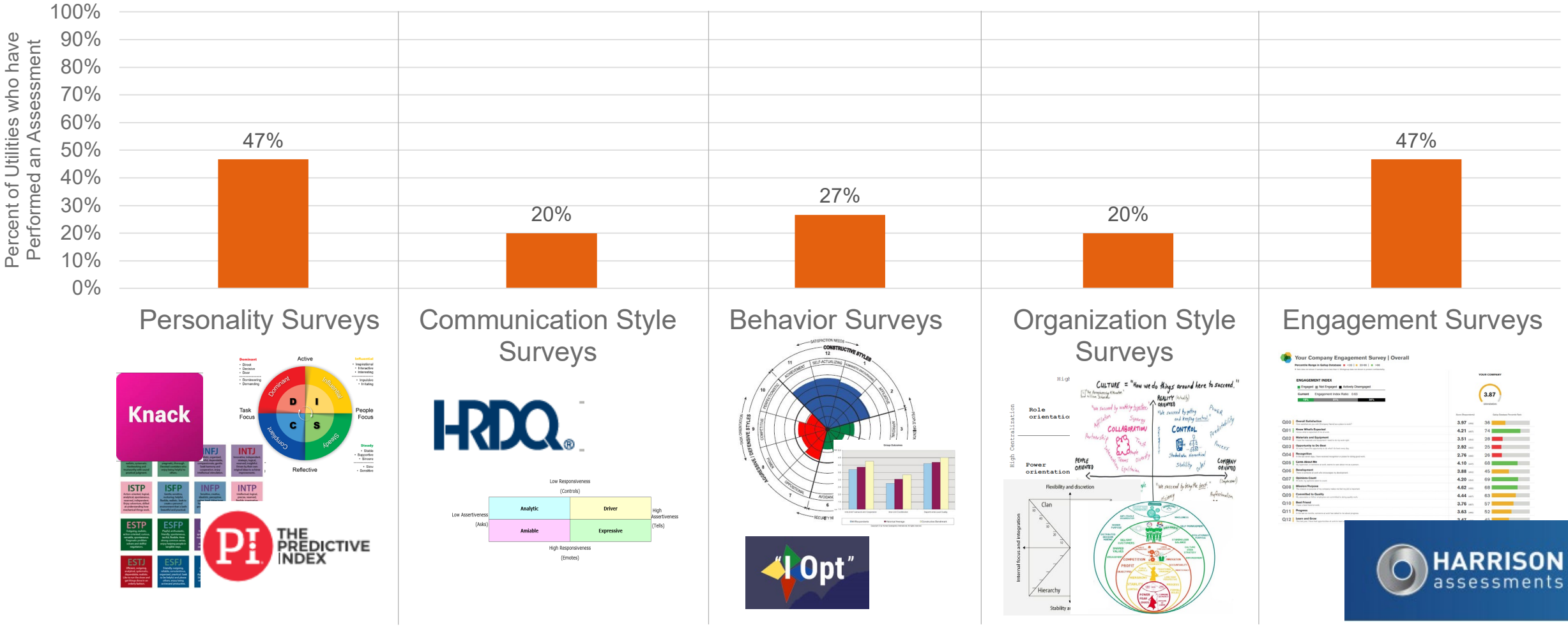
Organizational Culture Assessments

36% of utilities have conducted a organizational culture assessment in the past 5 years



Confidential Client

Assessing Organizational Culture

WRF 4907 project team

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WRF Project Advisory Committee

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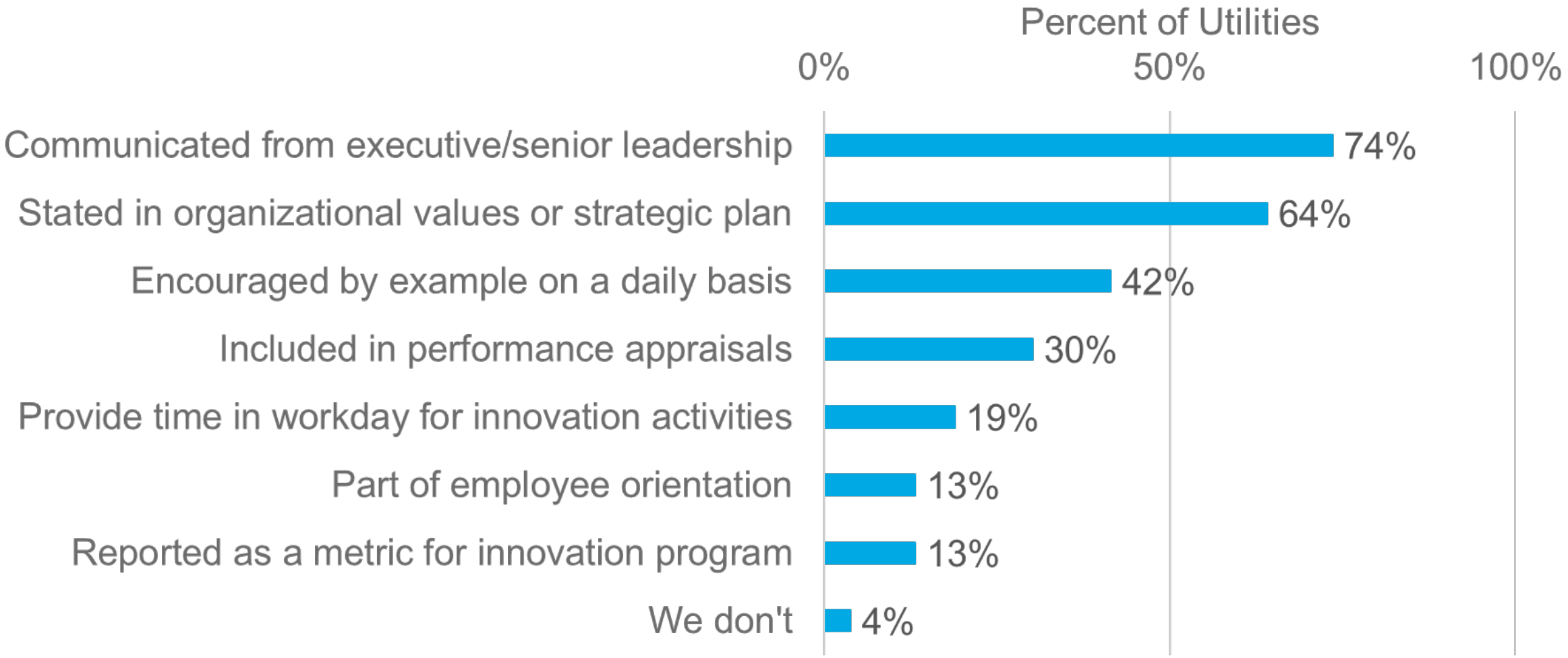
Utility Innovation Leaders

- Organizationally, innovation should be sponsored by chief exec and supported from a position outside of organizational hierarchy.
- There is a “right” person for this position.
- They are most likely already serving in this role somewhere within the organization
- Should be someone with knowledge and understanding of culture
- These are generally emerging leaders and are highly mobile
- Role descriptions, resources and team are important factors for success
- Support also must include front-line leaders

Internal staff engagement

Staff Engagement

- Identify need and urgency of innovation
- Provide wide variety of opportunities for participation – active and passive
- Establish communication protocol
- Establish tiered but flexible recognition program
- Experiment and start small to refine approach
- Provide training:
  - **Awareness:** terminology, innovation process, priorities, opportunities, resources, research/concepts
  - **Tactics:** brainstorming, design thinking, idea development, business case development
  - **Soft skills:** working in teams, communicating, innovative thinking, leading change, nurturing innovation
  - **Lessons Learned:** external sucessful innovations and internal success stories.

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