FROST & SULLIVAN

BEST PRACTICES

AWARDS

FROST & SULLIVAN

2020 BEST PRACTICES AWARD

Jacobs

2020 GLOBAL
DIGITAL WATER CONSULTING SERVICES
COMPANY OF THE YEAR AWARD

Contents

Background and Company Performance

Industry Challenges

Aging infrastructure, water stress, climate change, pandemic concerns, as well as the need for sustainable and smart infrastructure are key drivers for investment in the global water infrastructure market. Adding to this, elements like urbanization and the rapid pace of industrialization are proving to be critical factors for water stress across the globe. Increased awareness concerning climate change as well as increasing intensity and frequency of extreme weather events have led to regulators and policymakers revising existing standards while concomitantly adopting stringent water monitoring and control mechanisms to meet quality and discharge standards. The circular economy is rapidly being adopted as an instrumental business model on the principles of Sustainable Development Goals. The intention is to strengthen business cases while reaping environmental benefits. Digitalization remains the number one priority for the global water industry as it enables a much-needed 'systems-thinking approach' to address the water-energy nexus as well as efficiency improvements. Water utilities across the world are focused on becoming more resilient thanks to increasing frequency and intensity of extreme weather events. They are also looking to improve efficiency by tackling issues such as reducing non-revenue water and addressing water loss in the system.[1]

The recent world-wide COVID-19 pandemic has created major disruptions in the workplace. Water utilities are not exempt from these disruptions and have been forced into having employees shelter at home, operations staff adjusting to new working environments along with other constraints, all the while being on the frontlines of the pandemic response. The result of the COVID-19 pandemic has accelerated the creation and adoption of digital solutions to provide the resiliency needed and to help manage a greatly distributed workforce.

Economic and environmental sustainability have become critical parameters for the deployment of smart water infrastructure as a part of smart citiy efforts. Smart cities around the world have embraced digitalization across all aspects of water management. Data analytics tools and software, along with advanced sensors, are engaged to convert unintelligent infrastructure into smart, integrated, and sustainable infrastructure while delivering tangible economic benefits. Environment and asset management are integrating to form a systems-thinking approach to achieving sustainability-related goals, including those associated with climate action.

Digital water solutions play a critical role in monitoring as well as optimizing water and wastewater treatment systems and associated transmission networks. They provide utilities with data to both monitor and utilize their resources efficiently, while also improving their customer service, infrastructure security, back-end information systems, and service delivery effectiveness. Particularly, smart water meters and intelligent water networks allow utilities to understand, ascertain, and manage key aspects of quality and quantity. This approach helps utilities drive down non-revenue water loss and direct investment to increasing supply resilience and security to a growing population, for example.

---

[1] *Outlook of the Global Water and Wastewater Market*, (Frost & Sullivan, June 2019)

Furthermore, digital twin solutions allow water utilities to replicate real-world scenarios related to treatment systems, equipment or the overall utility infrastructure through the creation of a digital replica of their assets based on design and process details merged with historical data. This technology enables the testing of multiple scenarios, optimization of processes, and it enables predictive maintenance, thereby reducing downtime and the need for various pilot tests.

Nevertheless, various challenges still encumber growth in the digital water market. Specifically, a large percentage of water utilities are conservative and risk-averse. Utility operators need to prove that the community supports planned expenditure and ensure that the solutions and related services are practical. They must also show that additional infrastructure investment can generate both income and value-added benefits. The challenge is in articulating return on investment, value-added benefits, and costs. For example, smart water metering is primarily driven by the market rather than by utility demand or government regulation. As a result, there is limited, though easily obtainable third-party documentation to help guide utilities through evaluation of technologies and vendors. Yet, there is insufficient independent documentation of results for water utilities to get an understanding of likely outcomes from deploying smart water meters or intelligent network solutions.

Frost & Sullivan expects that increasing need for optimizing performance and efficiency, focus on customer service improvement, billing revenue and accuracy, ensuring sustainable water supply, emphasis on workplace safety, regulatory and technological changes, and the need to reduce non-revenue water loss are the key drivers of digital transformation in the water and wastewater market.[2]

Visionary Innovation & Performance and Customer Impact

Leading the Way in the Digital Water Space

Jacobs leverages more than seven decades of considerable experience and stands as a leader in sustainable water development as well as an innovative technology services provider in an increasingly connected world. With innovation as its heritage and foundation for the future, Jacobs focuses on significant challenges in applying mature technology across risk-averse industries. The company differentiates itself by its diverse domain expertise, digital technology capability, and focus on delivering value for the customer.

With its strategy around digitally enabled solutions, Jacobs is also positioning itself as a critical partner to public utilities with a unique offering of being able to tackle important customer challenges associated with aging infrastructure. The company also delivers value by reducing operating costs and improving energy efficiency.

Specifically, Jacobs invested in five enterprise-wide innovation hubs aligned to key disruptors: Cybersecurity, applied geospatial sciences, automated design, Internet of things (IoT), and predictive analytics.

---

[2] *Digital Transformation in the Australian Water and Wastewater Market, Forecast to 2022*, (Frost & Sullivan, June 2019)

Jacobs described 2019 as "a year of transformation and growth" while transitioning from an engineering and construction company to a global technology-forward solutions company. The company rebranded its portfolio and image to reflect its reinvention and focus on creating a more connected, sustainable world. Furthermore, Jacobs had a powerful 2019 from a financial standpoint with a revenue growth of 20% (growing to $13 billion from $11 billion in 2018) and pro forma net revenue growth of 11%. Also, the company showed an operating profit growth of 4% and adjusted EBITDA growth of 22%.[3]

Jacobs is positioned for 2020 and and the future years as the water industry transforms and adjusts to the new normal for conducting business. The strength and depth their Solutions Team will be a major driving force behind this effort.

With a deep emphasis on sustainability, Jacobs transformed its portfolio to align with major growth trends such as environmental resilience, information technology/operational technology convergence, and national security. Specifically, the company pays special attention to the sustainable management of water resources for various applications across the globe. Today, Jacobs is a unique company that covers digital aspects such as digital twin, intelligent asset management, drones, and laser scanning along with in-depth domain knowledge in areas like smart cities to respond to these needs. Jacobs provides versatile support for the water industry, from water supplies to treatment, conveyance, wastewater treatment, reuse, and return to the natural environment.

To develop its expertise further, Jacobs acquired CH2M in 2017, a global engineering firm operating in infrastructure and government service sectors, especially water. The CH2M acquisition made Jacobs a leading player in the fields of water treatment and desalinization, which are increasingly important as the developing world modernizes, and the entire globe faces a climate crisis.

Today, Jacobs provides a powerful spectrum of intelligent water solutions—from smart meters to digital twins. Jacobs provides services to transform big data into actionable information that supports utilities with increasing regulatory pressures, aging workforces, failing infrastructure, and climate change-induced challenges; thus, protecting clients' assets, improving efficiency within organizations, and leveraging existing information systems.[4]

At the top of the company's performance in the digital water market and commitment to innovation is the remarkable Replica™ Digital Twin Solution Platform. Replica is a Jacobs-developed software which includes capabilities for assembling models within a customizable interface to simulate fluid dynamics, operations, and controls, as well as water quality and treatment processes simultaneously. Replica differentiates itself by simulating more realisticly and accurately than using multiple discrete and static models. Acting as a reliable tool that simulates whole-system conditions before they arise, Replica contributes to energy and chemical use reductions and improved water quality.[5]

[3] *Jacobs Reports Fiscal Fourth Quarter Earnings*, http://invest.jacobs.com/investors/Press-Release-Details/2019/Jacobs-Reports-Fiscal-Fourth-Quarter-Earnings/default.aspx, accessed February 2020
[4] https://www.jacobs.com/capabilities/water, accessed January 2020
[5] Jacobs, *Replica Dynamic Simulation Software Overview Factsheet*

Replica also ensures simple and complex hydraulic analysis and control strategy development while improving system design through scenario analysis. It provides complete digital twin development to improve system understanding, inform decision making, and reduce risk; thus, increasing facility performance efficiency.

Replica has been leveraged to support more than 200 facilities around the globe that treat more than seven billion gallons per day. Jacobs continues to provide solutions to its clients' challenges utilizing Replica to simulate conveyance systems, pumping stations, and treatment facilities. The solution solves the challenges across complex hydraulics, energy efficiency, pump station optimization, and water quality process control.[6]

Delivering Value for Customers through Solid Performance

Aiming to deliver best-in-class value for customers, Jacobs always focuses on direct interactions with customers and prioritizes building strong and lasting relationships with them. The company tracks its engagement with customers from initial contact through the delivery of various projects and efforts. Jacobs is continuously analyzing how it improves customer engagement.

One of the ways Jacobs is engaging customers in the water sector is through the Leading Utilities of the World (LUOW), a global network of nearly 50 leading utilities from around the globe. Jacobs, as a foundation sponsor, helps LUOW members work in collaboration to meet the challenges they are facing. Through workshop settings to share best practices among the global utilities, the group meets at least 3 to 4 times a year. The Jacobs team participates in these sessions to discuss, among other critical industry issues, the latest advances in the digital water sector.

Jacobs believes that meeting customers' needs is the first measurement of quality. A great example of Jacobs's outstanding performance is the cooperation between Jacobs and the City of Cincinnati. Cincinnati has been facing over a billion gallons of overflow within its collection system. The city needed to solve issues related to its collection systems (i.e. increasing capacity and storage). In close cooperation with the city, Jacobs suggested methods of utilizing the existing capacity more efficiently without building any additional infrastructure. By combining forecasting information, real-time hydraulic modeling, and around 500 IoT sensors located throughout the collection system, Jacobs reduced the overflow by over half a billion gallons a year. As a result, comparing the reduction level and the investment the city took—Jacobs' solutions helped defer the infrastructure outlay of around $300 milion; thus, granting unrivaled price/performance value by combining a whole suite of digital solutions (from AI and IoT to controlled systems and digital twins) to create a powerful solution.

One of the unique elements of Jacobs' performance is the fact that it engages with clients throughout the entire journey. As a result, repeat business with many of its clients has been consistently growing and driving overall business growth. Specifically, a remarkable example is an oil company in central Texas that wanted to develop a water strategy to meet its needs for oil exploration. Jacobs developed a partnership built on the philosophy of being

---

[6] *Ibid.*

with them throughout the journey. Jacobs leveraged the Replica software platform to create an effective strategy for the client. As a result, the company is successfully implementing the new water conveyance infrastructure, and Jacobs still maintains good relations while constructing upgrades at a local municipal wastewater treatment works.

Jacobs has also been instrumental in shaping the discussion around digitizing the water sector, especially in the context of digital twin solutions. The digital twin offering is split into three key categories: digital twinning to validate the above mentioned examples of design and improve system and operator performance, the linking of Building Information Model (BIM) and geospatial data with a digital twin to depict layout details, and the data-driven digital twin (where it is possible to capture mountains of data and apply data analytics and machine learning techniques to develop a digital twin). Jacobs has delivered all of these to the water sector to showcase the relevance of these digital technologies.

Furthermore, Jacobs has provided a series of educational articles on its web-page to show organizations how to apply a digital twin in their projects as well as being active in a water utility CIO Forum that one of Jacobs' employees founded in 2007. Jacobs has a leadership role in the Smart Water Network (SWAN) Forum and it actively participates in the American Water Works Association, where it works with communities to advance innovative technologies.

To strengthen its reputable brand, Jacobs focuses on strategic communication with partners, investors, and customers while actively participating in leading industry events and trade shows to be an essential voice of the industry. Furthermore, as the digital water market is associated mainly with long-term savings, Jacobs comes to customers and investors as a solid, trustworthy partner that shares responsibility for their long-term investment. The company's successful history of operation further solidifies its credibility and demonstrates the company's wealth of experience.

Recently, Jacobs launched a sustainability strategy, known as PlanBeyond, that encompasses people, places, and partnerships with the primary goal of ensuring a sustainable future for everyone. Specifically, Jacobs aims to be an employer of choice while improving people's health and wellbeing and creating sustainable places to live and work. Also, the company enables change through smart solutions while focusing on innovations and partnerships for growth.

Furthermore, Jacobs introduced BeyondIf—an internal idea generation platform that leverages the company's digital capability and domain expertise as a key differentiator in the market.

Recently, through the BeyondIf platform a staff suggestion led to the development of an AI driven solution to automatically categorize and score pipe defects in conveyance systems. This type of continual innovation helps Jacobs propel its digital offerings in the water space.

Conclusion

Today is the start of creating the new normal for the water industry. The increasing need to optimize performance and efficiency, focus on customer service improvement, ensure a sustainable water supply, and adjust to rapidly evolving regulatory and technological changes are the key drivers of digital transformation in the water industry. Responding to these demands, Jacobs transitioned from an engineering and construction firm to a global technology-forward solutions company, achieving a leading position as a digital solutions and services provider. With a focus on the One Water approach where all water is a valuable resource, Jacobs' captures its full suite of capabilities linking water to the other markets within Jacobs. The company provides a powerful spectrum of solutions for the water industry and other markets, from water supplies to treatment, conveyance, wastewater treatment, reuse, and return to the natural environment.

Jacobs is continuously reinforcing its market position in the digital water market built on its proven capabilities and an increasingly powerful partner network. For its commitment to innovation, Jacobs is recognized with Frost & Sullivan's 2020 Global Company of the Year Award in the digital water consulting services market.

Significance of Company of the Year

To receive the Company of the Year Award (i.e., to be recognized as a leader not only in your industry, but among your non-industry peers as well) requires a company to demonstrate excellence in growth, innovation, and leadership. This kind of excellence typically translates into superior performance in three key areas: demand generation, brand development, and competitive positioning. These areas serve as the foundation of a company's future success and prepare it to deliver on the two criteria that define the company of the Year Award (Visionary Innovation & Performance and Customer Impact).

Understanding Company of the Year

As discussed above, driving demand, brand strength, and competitive differentiation all play a critical role in delivering unique value to customers. This three-fold focus, however, must ideally be complemented by an equally rigorous focus on Visionary Innovation & Performance to enhance Customer Impact.

Key Benchmarking Criteria

For the Company of the Year Award, Frost & Sullivan analysts independently evaluated two key factors—Visionary Innovation & Performance and Customer Impact—according to the criteria identified below.

Visionary Innovation & Performance

Criterion 1: Addressing Unmet Needs
Requirement: Implementing a robust process to continuously unearth customers' unmet or under-served needs, and creating the products or solutions to address them effectively

Criterion 2: Visionary Scenarios through Mega Trends
Requirement: Incorporating long-range, macro-level scenarios into the innovation strategy, thereby enabling "first-to-market" growth opportunity solutions

Criterion 3: Implementation of Best Practices
Requirement: Best-in-class strategy implementation characterized by processes, tools, or activities that generate a consistent and repeatable level of success.

Criterion 4: Blue Ocean Strategy
Requirement: Strategic focus on creating a leadership position in a potentially "uncontested" market space, manifested by stiff barriers to entry for competitors

Criterion 5: Financial Performance
Requirement: Strong overall business performance in terms of revenues, revenue growth, operating margin, and other key financial metrics

Customer Impact

Criterion 1: Price/Performance Value
Requirement: Products or services offer the best value for the price, compared to similar offerings in the market.

Criterion 2: Customer Purchase Experience
Requirement: Customers feel they are buying the most optimal solution that addresses both their unique needs and their unique constraints.

Criterion 3: Customer Ownership Experience
Requirement: Customers are proud to own the company's product or service and have a positive experience throughout the life of the product or service.

Criterion 4: Customer Service Experience
Requirement: Customer service is accessible, fast, stress-free, and of high quality.

Criterion 5: Brand Equity
Requirement: Customers have a positive view of the brand and exhibit high brand loyalty.

Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices

Frost & Sullivan analysts follow a 10-step process to evaluate Award candidates and assess their fit with select best practice criteria. The reputation and integrity of the Awards are based on close adherence to this process.

STEP	OBJECTIVE	KEY ACTIVITIES	OUTPUT
1 Monitor, target, and screen	Identify Award recipient candidates from around the globe	• Conduct in-depth industry research • Identify emerging sectors • Scan multiple geographies	Pipeline of candidates who potentially meet all best-practice criteria
2 Perform 360-degree research	Perform comprehensive, 360-degree research on all candidates in the pipeline	• Interview thought leaders and industry practitioners • Assess candidates' fit with best-practice criteria • Rank all candidates	Matrix positioning of all candidates' performance relative to one another
3 Invite thought leadership in best practices	Perform in-depth examination of all candidates	• Confirm best-practice criteria • Examine eligibility of all candidates • Identify any information gaps	Detailed profiles of all ranked candidates
4 Initiate research director review	Conduct an unbiased evaluation of all candidate profiles	• Brainstorm ranking options • Invite multiple perspectives on candidates' performance • Update candidate profiles	Final prioritization of all eligible candidates and companion best-practice positioning paper
5 Assemble panel of industry experts	Present findings to an expert panel of industry thought leaders	• Share findings • Strengthen cases for candidate eligibility • Prioritize candidates	Refined list of prioritized Award candidates
6 Conduct global industry review	Build consensus on Award candidates' eligibility	• Hold global team meeting to review all candidates • Pressure-test fit with criteria • Confirm inclusion of all eligible candidates	Final list of eligible Award candidates, representing success stories worldwide
7 Perform quality check	Develop official Award consideration materials	• Perform final performance benchmarking activities • Write nominations • Perform quality review	High-quality, accurate, and creative presentation of nominees' successes
8 Reconnect with panel of industry experts	Finalize the selection of the best-practice Award recipient	• Review analysis with panel • Build consensus • Select winner	Decision on which company performs best against all best-practice criteria
9 Communicate recognition	Inform Award recipient of Award recognition	• Present Award to the CEO • Inspire the organization for continued success • Celebrate the recipient's performance	Announcement of Award and plan for how recipient can use the Award to enhance the brand
10 Take strategic action	Upon licensing, company able to share Award news with stakeholders and customers	• Coordinate media outreach • Design a marketing plan • Assess Award's role in future strategic planning	Widespread awareness of recipient's Award status among investors, media personnel, and employees

The Intersection between 360-Degree Research and Best Practices Awards

Research Methodology

Frost & Sullivan's 360-degree research methodology represents the analytical rigor of our research process. It offers a 360-degree view of industry challenges, trends, and issues by integrating all 7 of Frost & Sullivan's research methodologies. Too often companies make important growth decisions based on a narrow understanding of their environment, leading to errors of both omission and commission. Successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. The integration of these research disciplines into the 360-degree research methodology provides an evaluation platform for benchmarking industry participants and for identifying those performing at best-in-class levels.

360-DEGREE RESEARCH: SEEING ORDER IN THE CHAOS

About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, enables clients to accelerate growth and achieve best-in-class positions in growth, innovation, and leadership. The company's Growth Partnership Service provides the CEO and the CEO's Growth Team with disciplined research and best practice models to drive the generation, evaluation, and implementation of powerful growth strategies. Frost & Sullivan leverages more than 50 years of experience in partnering with Global 1000 companies, emerging businesses, and the investment community from 45 offices on six continents. To join our Growth Partnership, please visit http://www.frost.com.