

FROST & SULLIVAN



**2017 North American
Smart Water & Smart Cities
Product Leadership Award**

FROST & SULLIVAN

BEST
2017 **PRACTICES**
AWARD

**NORTH AMERICAN
SMART WATER AND SMART CITIES
PRODUCT LEADERSHIP AWARD**

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Background and Company Performance

Industry Challenges

The North American municipal water industry, designed to provide consistent and stable service, finds itself in an operating landscape that is anything but stable. Cases of irregular water supply, increasing wastewater treatment demands, financial stress, changing customer demands, technological innovations, and deteriorating infrastructure place a myriad of strains on an industry historically intended and built to operate at a slower pace. While technological innovation poses a challenge, it is also one of the only means to comprehensively address the major problems experienced by the municipal water utility industry. For instance, data-based smart water solutions add a new, intelligent operations layer that will ensure water utilities optimize management and prioritize resources when and where they are needed.

To achieve the expansive benefits today's smart technology provides, however, municipal water utilities must navigate a complex territory that itself has numerous challenges. How do water utilities ensure their digital investments are future-ready and adaptable as capabilities improve? Considering the breadth of information technology and water utility infrastructure involved, how does one weave everything together while dealing with numerous hardware and software products and solutions? Last, how do water utilities move past a history of insular activity and embrace broad data interconnectivity with other utilities and civic services to deliver ever greater value to society? All three questions pose challenges to the municipal water utility industry as it grapples to construct a new, more sustainable business model for 21st century realities.

A major challenge the municipal water industry deals with is that water infrastructure was not built with future upgrades and repairs in mind. Underground pipes and infrastructure is challenging and costly to access, for instance, especially when there is need to replace parts or upgrade with new solutions. As utilities strain to efficiently deal with outdated infrastructure, they become more aware of significant future shifts, so how they operate now should have future evolutions in mind. Awareness of likely, but undefined, future needs, however, does not deliver confidence in today's solutions' ability to cope with those needs. Therefore, water utilities need market partners dedicated to the development of solutions in data infrastructure that wisely consider and integrate the capability to handle future demands, even if the specifics are currently unknown.

Water utilities operate a wide range of infrastructure components and activities. As a result, it is very unlikely—and even dangerous—for a water utility to partner with a single, comprehensive solutions partner to ensure that all infrastructure pieces are interoperable and smoothly integrated. Quite the opposite is true, water utilities invest in a range of products from many different partners as they seek to maximize the benefits and strengths of different products and manufacturers. This approach produces a landscape of water utilities filled with technology from many different vendors patched together to form one functioning utility. The challenge concerning patchwork infrastructure means that a holistic integration of sensors and infrastructure data requires a single platform from

which to generate, integrate, and analyze data stemming from technology supplied by non-aligned partners.

What the Information Age has delivered is the understanding that nothing operates in isolation anymore; and, more pointedly, the understanding that although everything has always been connected, it could not be measured. This means that the value of data and information is not found in a silo, but instead revealed by comparing and analyzing different data sets to achieve a more complete understanding of how to deliver greater efficiencies. Water utilities, therefore, need to think not just about how information communication technologies can be best applied to the water industry, but about how the water industry can communicate and cooperate with other utility industries, civic and government services, and customer information to achieve larger benefits that deliver on a utility's promises to society.

Ultimately, municipal water utilities face a great change brought on by the Information Age's application to the industry, and companies must undergo a large step change in how they operate and connect among themselves, to customers, and within society as a whole. To do this, they will need strong industry partners with the technical expertise and industry foresight to deliver solutions that help water utilities reorganize to address current demands, leveraging information communication technologies and also delivering an embedded agility to adapt to future demands. Market participants able to achieve these industry goals will demonstrate strong leadership qualities that are highly desired by the municipal water utility industry.

Fybr, founded in 1998, is an organization that understands these challenges and has worked to organically address them as the business evolved into a leading end-to-end Internet of Things solutions provider. Fybr began work in machine-to-machine learning concerning parking sensors, but has grown to incorporate numerous water applications, such as sewage, storm water and flooding management, irrigation, and wet weather sensing in its mission to be a smart cities partner.

Product Family Attributes and Business Impact

Match to Needs

The most crucial component in the evolution towards data-connected devices, algorithms, and intelligent management of infrastructure and systems is the unknown customer needs anticipated over the next 10, 15, and 20 years. The Information Age represents a future where data and capabilities are in near-constant flux. Fybr is leading the market to bring about this step change by offering end-to-end solutions for numerous smart city applications, including water and wastewater infrastructure and networks. Frost & Sullivan considers this industry effort a best practice in product leadership to inspire confidence in customers and to increase pressure on market participants to compete at this level.

Fybr's edge devices can be connected to any number of infrastructure components to monitor leaks, sewer conditions, storm run-off, and even environmental applications in watersheds or in agricultural fields and viticulture. While Fybr has built out a solid ability

to cater to the water and wastewater industry, a central and strategic fundamental premise of Fybr is that its data platform is industry agnostic.

As the water and wastewater industry changes and becomes more sophisticated in data collection and analytics, Fybr's platform will be able to shift and adapt to evolving needs. In fact, the solution architecture is not bound by application. Intelligent edge devices provided by Fybr can learn from each other and understand network conditions to improve performance without instruction from a central command center or field crew. Further, as water municipalities look to integrate with city services and smart city agendas, Fybr will be able to provide a seamless platform that brings together a number of partners to uncover the interconnectivity in urban realities needed to generate more effective systems.

"We have had very encouraging initial results from an ongoing project in California's Central Valley working with Fybr and using various types of sensors deployed in test blocks. We tested the remote management system against standard irrigation practices in order to make an informed decision regarding the value of sensor data and remotely managed systems...the preliminary results suggest that significant annual water savings may be possible while improving yields. Fybr's Ag IoT platform has enabled DaCapo Ag to integrate sensor data from the fields with irrigation monitoring and control data (from sensors also installed as part of Fybr's Ag solution) that will ultimately lead to significant reductions in input costs in terms of water and irrigation labor".

**Bob Greiner, CEO
DaCapo Agriculture**

Product Value

Fybr's product value for customers is market-leading, both, as previously mentioned, regarding platform agility to cater to evolving needs and in providing an all-in-one turnkey solution that minimizes customer risk. Many of Fybr's peers are siloed in ways that align to industry or application, which minimizes the full value that can be applied to data and analytics across water and city infrastructure. Further, customers receive a complete package solution that is maintained and operated by Fybr. This solution sets customers up to avoid a complicated and drawn out integration process that can be a significant barrier to water utilities and to cities, more broadly. Turnkey industry solutions such as this that overcome traditional silos in data solutions unlock deeper insights that enhance operational decision-making, which is considered a critical best practice by Frost & Sullivan.

Further, much of Fybr's value is in its application-agnostic approach. This permits customers to tackle individual and specific challenges, such as optimized irrigation through soil sensors, or to tackle a more complex and dynamic challenge, such as using sewer and flood water level sensors to not only manage water infrastructure but to integrate data

into traffic management systems. Fybr empowers customers to combine the different solutions to extract even more complex data and insights as efforts towards smart cities mature, which Frost & Sullivan considers an industry best practice. As smart city projects begin to incorporate sensors dealing with a number of functions (e.g., transportation, water, traffic, street lighting) the data can be used across departments and within a single platform to enhance decision-making and deliver a truly smart city.

Positioning

Many solution providers in the industry struggle to tackle immediate needs while maintaining visionary preparedness for the future of smart cities. Fybr, however, is prepared to deliver now and in the future, working to promote its perspective and insight to help put cities on a more sustainable path. To further this goal, Fybr has joined the Smart Cities Council as a North America Associate Partner. This places Fybr in an industry-leading position to promote its depth of best practice knowledge in how customers can propel forward using digitization tools and algorithms to take full advantage of the Information Age. It gives Fybr the unique ability to help the Council manage its Smart Cities Readiness Guide, which promotes best practices in developing smart cities. Frost & Sullivan considers proactive market positioning and the promotion of industry thought leadership to be important best practice, especially in growing marketplaces where guidance and direction is crucial. Fybr's engagement with the Council ensures its voice is heard and recognized within the Council, as well as associates Fybr with other leading voices and interested parties to make certain it is well-connected with innovative organizations and potential customers.

Customer Acquisition

Fybr launched an ambitious goal of rolling out 30 smart city platforms at the start of 2017. While it has not yet reached this goal, it is, however, currently present in the United States, Canada, and Asia managing and monitoring over 3 billion sensor events. Fybr is a market leader through its work with key North American cities that aim to develop smart capabilities, including Washington, D.C., San Francisco, and Montreal. A benefit of Fybr's application-agnostic platform is that while it is making active inroads into water-related applications, city customers can start by addressing non-water centric challenges, such as lighting, and later expand coverage to include sewer monitoring. Delivering success in the smart city concept, regardless of application, increases the likelihood of broader rollouts concerning additional applications. Additionally, Fybr is branching out to non-urban applications, such as irrigation needs in farming, crop growing, and viticulture.

These capabilities allow Fybr to push new opportunities through parallel smart city projects including both industrial and agricultural water opportunities. This flexibility positions Fybr to expand its business in a number of directions and remain capable of responding to present and future customer needs. Fybr's ability to incorporate numerous types of customers, and, further, to reach traditionally segmented departments within large customers, provides the organization with a significant addressable base regarding customer acquisition. Frost & Sullivan considers the development of a solution that delivers a diversified addressable market an industry best practice because it allows

organizations to weather economic turbulence that can otherwise lead those with uniform customer profiles to bankruptcy.

Operational Efficiency

Fybr is a market leader in promoting quick and efficient smart city growth through its Smart City Quick Start pilot option. The ease with and speed at which Fybr can onboard customers to get their solution up and running and subsequently manage all operations is key to the company's superior operational efficiency, and a rarity when compared to its peers. Fybr's Smart City Quick Start program requires a small investment of \$15,000, which allows even the smallest municipalities to engage in smart city operations. Specifically, customers gain access to the integration of one street-sized area into the Fybr platform. This street will host 50 different sensors of up to 7 types, which include sewage and storm flow, irrigation, vehicle detection, lighting, air quality, micro-climate, and the Fybr Gateway. Deployment is completed within 2 weeks, and after 1 month the customer is delivered results that outline the impacts and capabilities of the platform. Once this quick start is completed, customers are able to scale up in any of the sensor types, the number of sensors, and the geographic coverage area. Fybr's work to strategically incorporate pilot programs as a productive phase of a smart city rollout reduces duplication or inefficiencies that are often seen as pilot programs turn into large pilot programs and finally into projects. Delivering efficiency in operations and rollout is crucial to promoting emerging technologies and solutions in a conservative industry, and is a benefit that Frost & Sullivan considers an important best practice.

Growth Potential

Product and solutions providers traditionally develop with a singular problem in mind and look to grow by adding on products, services, and business units, which leads to a less efficient and disparate organization. Fybr's ability to seamlessly grow, whether by platform application and industry or in scalability, is central to its value proposition, which Frost & Sullivan recognizes as a strong industry best practice. The ability is also unique to the water industry, delivering enviable growth potential. Fybr's platform-first approach allows it to apply its sensors to nearly any piece of infrastructure in a customer challenge, meaning the Fybr-customer relationship can grow over time to deliver additional value. This agility positions Fybr incredibly well to handle the needs of customers today, yet it is already capable of addressing customers' future needs as their situations change or expand.

Fybr's FybrLynk is at the core of the organization's ability to deliver growth through its platform. FybrLynk is a stamp-sized surface-mounted interface that connects and integrates edge devices with Fybr's platform using LoRa modulation through an onboard radio. Any low data rate edge device can be connected, which can unlock a wide range of potential applications for customers that delivers strong horizontal and vertical growth potential.

Conclusion

Fybr has developed a leading smart water solution for the industry that directly responds to key challenges that have traditionally stymied the growth of data-based solutions. Addressing these challenges, unlike many traditional peers in the water industry, Fybr's platform is future-proof through its flexible and adjustable deployment that will respond to evolving customer needs, which span knowledge and management challenges across what have conventionally been disparate pieces of infrastructure. Fybr takes its partnering opportunity further by helping elevate water utilities to become a more integrated component of smart cities, involving both cross-platform data and information exchange and by leveraging its industry engagement through the Smart Cities Council.

With its strong overall performance, Fybr is recognized with Frost & Sullivan's 2017 Product Leadership Award.

Significance of Product Leadership

Ultimately, growth in any organization depends upon customers purchasing from a company and then making the decision to return time and again. A comprehensive product line, filled with high-quality, value-driven options, is the key to building an engaged customer base. To achieve and maintain product excellence, an organization must strive to be best-in-class in three key areas: understanding demand, nurturing the brand, and differentiating from the competition.



Understanding Product Leadership

Demand forecasting, branding, and differentiating all play a critical role in finding growth opportunities for your product line. This three-fold focus, however, must be complemented by an equally rigorous focus on pursuing those opportunities to a best-in-class standard. Customer communications, customer feedback, pricing, and competitor actions must all be managed and monitored for ongoing success. If an organization can successfully parlay product excellence into positive business impact, increased market share will inevitably follow over time.

Key Benchmarking Criteria

For the Product Leadership Award, Frost & Sullivan analysts independently evaluated two key factors—Product Family Attributes and Business Impact—according to the criteria identified below.

Product Family Attributes

Criterion 1: Match to Needs

Requirement: Customer needs directly influence and inspire the design and positioning of the product family.

Criterion 2: Reliability and Quality

Requirement: Products consistently meet or exceed customer expectations for performance and length of service.

Criterion 3: Product/Service Value

Requirement: Products or services offer the best value for the price, compared to similar offerings in the market.

Criterion 4: Positioning

Requirement: Products or services address unique, unmet need that competitors cannot easily replicate or replace.

Criterion 5: Design

Requirement: The product features an innovative design, enhancing both visual appeal and ease of use.

Business Impact

Criterion 1: Financial Performance

Requirement: Overall financial performance is strong in terms of revenues, revenue growth, operating margin, and other key financial metrics.

Criterion 2: Customer Acquisition

Requirement: Product strength enables acquisition of new customers, even as it enhances retention of current customers.

Criterion 3: Operational Efficiency

Requirement: Staff is able to perform assigned tasks productively, quickly, and to a high quality standard.

Criterion 4: Growth Potential

Requirements: Product quality strengthens brand, reinforces customer loyalty, and enhances growth potential.

Criterion 5: Human Capital

Requirement: Company culture is characterized by a strong commitment to product quality and customer impact, which in turn enhances employee morale and retention.

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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Review analysis with panel • Build consensus • Select recipient 	Decision on which company performs best against all best-practice criteria
9 Communicate recognition	Inform Award recipient of Award recognition	<ul style="list-style-type: none"> • 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 is able to share Award news with stakeholders and customers	<ul style="list-style-type: none"> • 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>.