2017 North American Smart Water Monitoring and Analytics Technology Innovation Award
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Background and Company Performance

Industry Challenges

Aging wastewater infrastructure requires continual and costly maintenance of wastewater collection systems. In the United States (US) alone, the US Environmental Protection Agency (EPA) estimates that upgrading wastewater infrastructure over the next 25 years will require $271 billion.\(^1\) Utilities are taking strong proactive measures to maintain existing pipelines, particularly the mitigation of inflow and infiltration (I&I), to prevent catastrophic sanitary sewer and combined sewer overflow (SSO/CSOs) events. Unpermitted SSOs and CSOs are illegal under the Clean Water Act and are subject to regulatory fines that can reach billions.\(^2\) According to the EPA, up to 75,000 SSO events occur in the US annually, with CSO spills accounting for 850 billion gallons of untreated wastewater and storm water per year. These acts produce a public health hazard and result in environmental degradation, political turmoil, and unplanned remediation and administrative costs.\(^3\)

Currently, the EPA is in the process of developing more stringent regulations with its Capacity, Management, Operation, and Maintenance (CMOM) program. CMOM has an emphasis on SSO/CSO prevention and benchmarks the efficiency of wastewater operations according to the ratio between preventive and corrective maintenance. As a result, standard asset management—sewer evaluation studies, nighttime flow isolations, and forced diversion of sewage—is no longer “fit for purpose” as it cannot detect anomalies as they occur. Preventative maintenance programs that do not take advantage of potentially available data are also inefficient. For example, exaggerated cleaning schedules can lower asset life by increasing pipe and structure wear. Conventional inspection technology such as closed-circuit television is also inadequate in that it provides limited data regarding the collection system’s condition.

Dynamic condition assessment and real-time infrastructure intelligence and analytics are central to a proactive platform that can comply with the regulations. Smart water networks are a promising solution to helping operators manage risk. Specifically, smart technologies combining sensors and data analytics can improve operating insights and actionable intelligence—generating pre-emptive alerts, historical data, real-time intelligence and predictive analytics to increase productivity and optimize system performance.


\(^2\) Hansen, Jeff (March 9, 2008) "Jefferson County, Alabama sewer debt grew into crisis." The Birmingham News

\(^3\) "Wastewater inputs - combined sewer overflows | CADDIS: Sources, Stressors & Responses | US EPA." EPA. Accessed May 11, 2017. [https://www3.epa.gov/caddis/ssr_urb_ww2.html](https://www3.epa.gov/caddis/ssr_urb_ww2.html)
However, monitoring existing wastewater infrastructure system performance is a complex task requiring substantial knowledge and technical understanding about measurements, analysis, and graphical representation. Accurate hydraulic modeling is a critical factor in asset management optimization. Providers that can offer continuous and remote monitoring and a rich data stream from a large number of flow measurement devices will enjoy an increased share of market revenues as they directly address customer challenges. To remain competitive and overcome the historically conservative nature of the sector, market participants with disruptive technologies will need to focus on the operational benefits of their offerings. Ongoing customer support, ease-of-use, affordability, and accurate and efficient data integration are additional success factors.

Technology Attributes and Future Business Value of Eastech Corporation

Eastech’s innovative smart wastewater network system technology offers water utilities a cost-effective means of quickly establishing a targeted, intelligent infrastructure network. Leveraging decades of expertise in the flow controls sector, Eastech launched its patented iTracking® and iTracker® solutions to deliver proactive and sustainable asset management solutions in real-time.

Specifically:

- **iTracking®** is advanced analytical software that provides exact volumetric changes in flow between weather events for micro-detection of inflow & infiltration as well as level alerts and duration data for sewers experiencing overflow conditions.

- **iTracker®** is a low-cost, Wi-Fi and cellular-enabled sensor that provides 24/7 monitoring and performance assessment.

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4 *Big Data Analytics from the Cloud for Energy and Utilities* (Frost & Sullivan, December 2015)
Frost & Sullivan research reveals that integrating wireless connectivity, state-of-the-art iTracker® sensors, and advanced analytics on a GIS-centric™ cloud platform offers customers a powerful value proposition. According to the company, iTrackers® can identify areas of I&I after just a single rain event. The use of detailed hydrographs alongside the identification and ranking of I&I areas by volume helps accurately distinguish rain-derived inflow from infiltration caused by failing infrastructure. Real-time data sets provide utilities with the ability to develop more accurate hydraulic models further—leading to better remediation outcomes.

Frost & Sullivan notes the ability to pinpoint capacity issues through I&I micro-detection sensor technology is a key differentiator for the company. Recent case studies bear out Eastech’s supposition that iTracking®’s proprietary algorithms allow for more efficient and cost-effective I&I location detection than Doppler-type portable flow meters.

**Case Study: Columbia County, Georgia**

In 2017, Columbia County, Georgia experienced a significant rain event associated with Hurricane Irma. The water utility deployed a competitor’s sensor as well as the iTracker®. During the event, the iTracker® alerted operators to a surge condition. Although the device was nearly submerged, it had no damage. The utility then used iTracking® analytical software to process data retrieved from the competitor’s sensors. The resulting analytical report pinpointed a major blockage issue on the trunk line the utility previously could not track. The utility has since ordered additional iTrackers® and plans on utilizing iTracking® in the future.

**Case Study: Greenfield, Missouri**

In 2013, Greenfield, Missouri was working to remedy major I&I problems. Although the water utility had recently replaced a 10,000 linear foot sewer basin with new polyvinyl chloride (PVC) pipe, the I&I problem remained. The utility placed Eastech’s technology device at the outflow point of the remediated basin to confirm the problem had been rectified. Eastech was able to ultimately determine that the newly installed PVC collection system was leaking profusely at multiple pipe joints causing a 30x increase in flow.

**Case Study: Berkeley County, South Carolina**

In 2012, Berkeley County Water & Sanitation used iTracking® to cost-effectively determine the source of I&I within its 2.1 linear miles of collection infrastructure. The utility deployed five iTrackers® and, within two weeks of monitoring, accurately pinpointed the source—a 2,200 linear foot mini-basin responsible for approximately 80% of the extraneous flows.
Instead of the standard labor-intensive and time-consuming miles-long investigation typically required, Eastech’s iTracking® technology can determine the problem to within a single pair of adjacent manholes after just a few rain events. As utilities can easily identify problematic areas, there is no longer need to use costly nighttime flow isolation along with extensive CCTV investigation. Furthermore, I&I micro-detection does not require confined space entry or repetitive sensor maintenance, which can lead to large safety and liability issues due to the presence of dangerous gasses present in sewers and storm drains.5

Frost & Sullivan firmly believes that Eastech understands customer pain points and works hard to make its platform accessible and easy to use by operators. As a managed services solution, there is no upfront capital expense, and neither municipalities nor utilities are required to install, maintain, or manage any hardware or software components. Managed services are provided license-free for the first two years, and a secure server-based web portal allows customers to receive in-depth monitoring, ongoing technical support, and data access for as little as $1.25 per day per site. iTracking®’s intuitive and user-friendly interface only requires a few hours of training for personnel while installing iTrackers® takes less than 15 minutes. Unlike portable bottom-sitting flow meters, iTracker® sensors install above the flow stream—eliminating maintenance concerns due to the possibility of sediment build-up. Eastech is open to licensing its technology and is currently exploring opportunities.

**Growth Potential**

As a disruptive technology in a historically conservative sector, Eastech is aware that clients must first prove iTracking®’s viability before placing major orders. To that end, the company is partnering with environmental engineering firms such as Hazen & Sawyer and TREKKK Design Group to test-drive its solutions. The close working relationship Eastech has with the firms implementing its technology affords the company a steady stream of customer feedback. As partners share their pain points, Eastech is continually presented with opportunities to innovate its solutions further. The company’s brand awareness continues to grow through partnerships, face to face sales calls, and work with cities and municipalities, poising Eastech for significant growth. The company is currently developing a network of sales representatives and highlighting its creative and entrepreneurial culture to demonstrate its agility and commitment to client-centric innovation.

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Conclusion

In North America, water utilities face unprecedented infrastructure challenges. Eastech’s state-of-the-art smart wastewater grid technology offers a proactive and cost-effective solution. The company’s patented suite of integrated solutions can immediately pinpoint failing infrastructure, validate hydraulic model assumptions, and ensure regulatory compliance—offering unparalleled client value. Eastech further optimizes its asset management through dynamic on-demand or real-time data delivery. With its technical excellence, ease of use, and client-centric innovation, Eastech earns Frost & Sullivan’s 2017 Technology Innovation Award in the North American smart water monitoring and analytics market.

For more information on Eastech and iTracking® Smart Wastewater Network Technology, please visit: www.smartwastewater.com.
Significance of Technology Innovation

Ultimately, growth in any organization depends upon finding new ways to excite the market and upon maintaining a long-term commitment to innovation. At its core, technology innovation, or any other type of innovation, can only be sustained with leadership in three key areas: understanding demand, nurturing the brand, and differentiating from the competition.

Understanding Technology Innovation

Technology innovation begins with a spark of creativity that is systematically pursued, developed, and commercialized. That spark can result from a successful partnership, a productive in-house innovation group, or a bright-minded individual. Regardless of the source, the success of any new technology is ultimately determined by its innovativeness and its impact on the business as a whole.
Key Benchmarking Criteria

For the Technology Innovation Award, Frost & Sullivan analysts independently evaluated two key factors—Technology Attributes and Future Business Value—according to the criteria identified below.

**Technology Attributes**
- Criterion 1: Industry Impact
- Criterion 2: Product Impact
- Criterion 3: Scalability
- Criterion 4: Visionary Innovation
- Criterion 5: Application Diversity

**Future Business Value**
- Criterion 1: Financial Performance
- Criterion 2: Customer Acquisition
- Criterion 3: Technology Licensing
- Criterion 4: Brand Loyalty
- Criterion 5: Human Capital

**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.

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<th>STEP</th>
<th>OBJECTIVE</th>
<th>KEY ACTIVITIES</th>
<th>OUTPUT</th>
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| 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 |
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| 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 recipient | 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 is 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.

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.