

F R O S T & S U L L I V A N

BEST PRACTICES AWARDS

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B E S T

2020
P R A C T I C E S
A W A R D



OCTOPUS
control and command

2020 GLOBAL
SMART AND SAFE CITY PLATFORM
NEW PRODUCT INNOVATION AWARD

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Background and Company Performance

Industry Challenges

Increased urban penetration, coupled with rapidly expanding cities, results in the escalating need for a city's resources—e.g., water, energy, emergency services, and enhanced infrastructure. Consequently, such advancements intensify spikes in congestion and pollution, which further stresses a city's resources. Government institutions and municipalities look for alternative means of managing their cities to combat these issues, such as smart solutions that are more sustainable, green, and resourceful. Smart cities are cities built on intelligent solutions and technologies that lead to adopting intelligent and seamless transportation and other more efficient, sustainable plans. City planners implement smart city solutions to solve major problems through modern management and greater interaction between citizens and institutions to achieve increased safety, security, and quality of life.

With the Internet of Things (IoT) 's rapid expansion, organizations continually create technologies to enhance existing operations and improve the safety and security of citizens, properties, and assets through real-time data. However, cybersecurity, information technology (IT), IoT, and physical security systems, sensors, and devices are managed independently of one another, requiring operators to coordinate through conventional communication means—e.g., phone, email, and in-person. A city's siloed systems decrease real-time information's value as operators still need to communicate events with each other to gain a holistic view of a situation. This slowed response time hinders a city's ability to respond proactively and delays issue remediation by hours, causing more damage and harm. Moreover, IoT's rapid expansion generates massive amounts of information that data analysts must review manually to obtain actionable intelligence during potential security incidents. Too often, security teams cannot piece together event information until a major event has either escalated or ended. Typically, security operators rely on multiple data sources, systems, and viewing screens to gain holistic views of threats that could endanger employees and damage assets.

Since conventional security systems operate independently of one another, they cannot communicate effectively, hindering security officers' ability to respond to threats proactively. As technology companies develop connected platforms—e.g., command and control solutions—for better situational awareness, siloed security practices face obsolescence. Moreover, with the convergence of cyber and physical security, organizations must ensure they protect their ecosystems against stolen credentials and hacking attempts that can threaten their physical and digital environments. Thus, a solution equipped with advanced analytics capabilities that unifies security systems can prove invaluable to maintaining safety and security for businesses or cities.

Traditional data analysis processes that require security teams to review information manually often cause operator fatigue and waste thousands of labor hours annually. Security professional shortages further exacerbate this issue, requiring organizations to remediate this problem through automation and advanced analytics capabilities that

provide actionable intelligence for decision-makers. Unified security systems offer companies sophisticated, connected solutions that analyze the massive amounts of data they obtain daily with more precision than traditional manual procedures, which significantly reduces issues caused by human error and increases efficiency. However, many security technology vendors require rip-and-replace strategies as their solutions are not brand agnostic, increasing initial financial costs and operational downtime as well as reducing the functionality of some features or capabilities due to a complicated deployment and configuration process.

The North American smart city market alone was worth \$148.9 billion in 2018, and Frost & Sullivan expects it will increase at a compound annual growth rate of 10% through to 2025.¹ Given the large number of interdependencies and cross-leveraging of systems, sensors, and platforms required by the market, ease-of-integration and single-pane-of-glass visibility are vital in the context of smart infrastructure in urban environments. A vendor that overcomes these challenges and enables clients to achieve a high return on investment (ROI), avoid rip-and-replace strategies, improve decision-making, and increase overall efficiency through a command and control will capture significant market share and become a leader in the smart city situational awareness solutions market.

New Product Attributes and Customer Impact of Octopus Systems

Founded in 2013, Israel-based Octopus Systems (Octopus) leverages its expertise and experience in cybersecurity and physical security information management (PSIM) technologies to develop, manufacture, and deliver a revolutionary smart and safe city platform. The company serves clients around the globe, including airports, banks and financial institutions, critical national infrastructure, law enforcement, military, oil and gas, safe and smart cities, seaports, and security companies. In 2016 and 2018, Frost & Sullivan recognized Octopus as a global leader in the integrated command and control market and continues to be impressed by the company's customer-centric technologies and ongoing innovation.

Octopus' Game-changing Situational Awareness Technology

Command and Control

Octopus initially launched in the converged PSIM and IT security management market, providing clients with superior situational awareness through its "one-stop shop" Command and Control platform. The Command and Control solution enables clients to access their physical and IT security technologies from a single, unified system to offer advanced situational awareness to security teams, whether locally or globally. For example, if a traveling employee is present in a region where satellites detect harsh weather or news outlets report riots, Octopus' platform notifies operators and the employee so they can take immediate action to prevent injury. Furthermore, in the event of a car accident or traffic congestion that disrupts the traffic flow on a fleet vehicle's usual route, Command and Control alerts operators of the incident, enabling them to

¹ *The Future of Smart Urban Infrastructure in North America, 2018–2025* (Frost & Sullivan, November 2019)

make an informed decision, such as re-routing the driver or allowing them to continue on the same route.

The platform provides clients with a holistic view of events that could impact their business operations through the most vast and rich data sources available. Notably, Octopus was the first company to offer a completely cloud-based command and control solution, significantly decreasing costs associated with on-premise solutions—e.g., rip-and-replace hardware, maintenance, and real estate—while enabling clients to achieve high ROI and low initial expenditures. Thus operators can access the automated platform, monitor events, and receive alerts on laptops, smartphones, tablets, and workstations from anywhere in the world, allowing organizations to focus on their business operations. The technology enables customers to use Command and Control as a virtual global security operations center to manage one or multiple locations.

The company has since expanded its offerings to include smart city solutions based on its Command and Control technology. Frost & Sullivan's research analysts point out this proves the company's continuing innovation and best practices, positioning it as an industry leader that will continue to capture more market share. Moreover, it demonstrates Octopus' understanding of customer and market demands and the company's ability to maintain a cutting-edge approach to developing and expanding its offerings to meet industry voids through its unmatched technologies.

City Wise

Octopus' new brand-agnostic, modular smart city platform, City Wise, is compatible with a myriad of systems and sensors, making it an optimal solution for any city, no matter where they are on their smart city journey. City Wise integrates with PSIM, military, IoT, and security information event management technologies through its open architecture to support more than 350 infrastructure, security, safety, and communications systems, and data sources. The platform integrates with:

- Access control (physical and digital)
- Antivirus
- Drones
- Environmental
- Facial, license plate, and surveillance recognition
- Fire alarms
- Firewalls
- Global Positioning Systems (GPS)
- Information security
- Intrusion alarms
- IoT and smart lighting
- Perimeter intrusion
- Radars

- Resident communications
- Smart parking
- Supervisory Control and Data Acquisition water and power systems
- Traffic and transportation control
- Waste management

The highly scalable City Wise platform provides real-time information from data-rich streams, such as cameras, weather satellites, gunshot detection, building automation and management systems, human resources, video management, visitor management, and other monitoring and tracking technologies, systems, and sensors. The solution applies Octopus' revolutionary analytics and artificial intelligence (AI) capabilities—e.g., person-of-interest or object detection, identification, and tracking—to enable operators to make sense of the information without conducting extensive research or poring over hours of video footage, sensor readings, news broadcasts, or other data sources. City Wise pieces the data together, enabling clients to focus on running their business. Moreover, the platform supports global information systems, allowing clients to track and monitor employees' indoor and outdoor locations via two-dimensional and three-dimensional floor plans and geo-maps.

The company's comprehensive future-proof City Wise platform enables cities to reduce their operational expenditures and carbon footprint while increasing efficiency, safety, and security by decreasing the consumption of utilities and other resources via automated AI capabilities, reducing human error and manpower redundancy. For instance, the company's solution allows operators to recognize when a resource needs attention or malfunctions—e.g., a light bulb that needs replacement or when a light fixture component fails. Moreover, City Wise provides cities with a cost-effective city management solution equipped with advanced analytics and AI capabilities that enhance resource management and improve city, citizen, and visitor safety and security. Furthermore, City Wise enables operators to send mass notifications to employees, citizens, and visitors. It equips them with a GPS-based panic button that allows first responders to act rapidly and proactively.

In addition to systems' maintenance needs, City Wise provides a city's departments and first responders with vital information regarding various events affecting the city—e.g., criminal acts, cyber-attacks, severe weather events, and terrorism—as the solution gathers and makes sense of information across various sensors and systems. Furthermore, Octopus integrates with computer-aided dispatch systems to mobilize the closest first responders (with the proper training) automatically to different emergencies while providing them with pertinent event data—e.g., location (and directions), photos, and incident-specific information. Moreover, City Wise supports operational technology facilities—e.g., water and power utilities—enabling operators to monitor critical national infrastructure and safeguard against cyber and physical attacks.

Impressive Partner Network and Exceptional Customer Support

Octopus partners with world-renowned companies, including Amazon, Avigilon, Bosch, Cisco, FLIR, General Electric, HikVision, Honeywell, IBM, McAfee, Microsoft, Milestone, NICE Public Safety, SensoGuard, Siemens, Suprema, Symantec, Traffilog, and Tyco. The company's partnerships enable Octopus to integrate existing and new technologies seamlessly with its solutions. Such strategies allow the company to offer a rapid implementation process, taking only a few weeks to deploy and configure Octopus' technologies compared to competitors' standard months-long implementation practices. Moreover, the solution's real-time Business Intelligence dashboard prioritizes data. It offers a comprehensive view of a client's sites, allowing operators to manage their organization's environment seamlessly through the user-friendly interface.

The company offers two pricing models: Perpetual licensing or software-as-a-service (SaaS). With the licensing option, a customer pays a one-time fee to gain the rights to use the software and for any customization and services, and then pays an annual maintenance fee based on the number of sites where the client utilizes the technology. With Octopus' SaaS option, clients pay a yearly management fee based on the number of users. Moreover, the company's technologies comply with national and global industry mandates, including AS9100D, ISO20000-1, ISO20000:2011-9, ISO27001, ISO27017:2015, ISO27018:2016, ISO90003, ISO9001, and the General Data Protection Regulation, allowing clients in any industry globally to utilize Octopus' solutions. Serving as a testament to the company's industry-disruptive technology and customer-centric strategies, Octopus' clients span across 26 countries—including well-known brands, such as Brinks, Coca-Cola, Credit Karma, Electra Security, G4S, Security and Crisis Centre by EJC, and York Regional Police.

Conclusion

As government institutions and municipalities work to address the increasing needs of urban penetration and integrate sustainable, resourceful solutions, the need for a system with a comprehensive, holistic view augmented by advanced analytics capabilities becomes apparent. Conventional siloed systems are managed independently from one another, requiring manual analysis from multiple sources, hindering response times.

Previously recognized as a global leader in the integrated command and control market by Frost & Sullivan in 2016 and 2018, Octopus Systems provides a brand-agnostic, modular smart city platform, called City Wise, which is compatible with more than 350 systems. Powered by the company's Command and Control platform, City Wise leverages proprietary advanced analytics and artificial intelligence to offer a single, unified system for enhanced situational awareness, significantly decreasing cities' costs and carbon footprints while increasing safety and security. Octopus Systems' wholly cloud-based solution enables cities to avoid rip-and-replace strategies and access their ecosystem's posture from anywhere in the world.

For its strong overall performance and innovative smart city solutions, Octopus Systems earns Frost & Sullivan's 2020 Global New Product Innovation Award in the smart and safe city platform industry.

Significance of New Product Innovation

Ultimately, growth in any organization depends upon continually introducing new products to the market and successfully commercializing those products. For these dual goals to occur, a company must be best-in-class in three key areas: understanding demand, nurturing the brand, and differentiating from the competition.



Understanding New Product Innovation

Innovation is about finding a productive outlet for creativity—for consistently translating ideas into high-quality products that have a profound impact on the customer.

Key Benchmarking Criteria

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

New Product Attributes

- Criterion 1: Match to Needs
- Criterion 2: Reliability
- Criterion 3: Quality
- Criterion 4: Positioning
- Criterion 5: Design

Customer Impact

- Criterion 1: Price/Performance Value
- Criterion 2: Customer Purchase Experience
- Criterion 3: Customer Ownership Experience
- Criterion 4: Customer Service Experience
- Criterion 5: Brand Equity

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"> 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 the 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, resulting in 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>.