FROST & SULLIVAN

MARTELLO

2018 Global NPM and APM Price/Performance Value Leadership Award

2018
BEST PRACTICES
AWARDS

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Background and Company Performance

Industry Challenges

The proliferation of Internet of Things (IoT)-enabled devices, such as smartphones, tablets, and laptops, is compelling managed service providers (MSPs) in the telecommunications sector to render speedy and uninterrupted real-time communications services over a unified communications (UC) network to users looking for continual Internet connection and seamless communication with other devices and people. These services may include voice/video conferencing, video streaming, real-time sharing of files that contain rich media, and live chats, among others.

Businesses have embarked on their digital transformation journey with the objective of rendering convenient and superior quality of user experience. Such trends are driving their move towards open cloud-based services that allow for easier integration of technologies into a scalable unified platform at lower operating costs than before. However, cloud-hosted technology deployments are known to hamper network performance due to network congestion and often make troubleshooting even more difficult.

Furthermore, enterprises are demonstrating growing appetites for gaining holistic visibility into application performance as well as end-user experiences pertaining to cloud, networks, and mobile applications. This is because applications depend on numerous different compute resources connected to various networks, which often causes operational complexity. Monitoring, detecting, analyzing, and fixing performance and availability problems associated with applications is key to maximizing the return on investment (ROI) on application performance management systems while ensuring top-notch end-user experience.

Enterprises are endeavoring to reap ROI on network performance monitoring systems like never before by embracing digitalization and automation to reduce network downtime and any interruption or delay in scheduled communications, whether related to voice, video chats, or other real-time communication avenue as these issues severely compromise the quality of experience (QoE) users take away from their services and negatively impact their business. Total outages, performance setbacks, slow website response times, or delayed emails often occur because real-time services consume huge bandwidth that is expensive, and existing UC networks fail to support these services due to limited network resources or inadequate failover solutions.

Therefore, to ensure reliable and efficient UC application and network performance, software-defined network performance management in real time is imperative. With the performance of UC applications being dependent on the performance of networks, it becomes critical to ensure that the network has enough bandwidth and simulation capabilities to support increasing UC traffic while monitoring network performance. By detecting and pinpointing the root cause and area/s of network/application performance degradation by leveraging a combination of performance management and network

performance solutions, such as software-defined wide area network (SD-WAN), enterprises will be able to proactively fix imminent network/application-based problems and avert instances of network failure or slowdown. With most small-sized enterprises lacking a sophisticated information technology (IT) infrastructure, they can neither gain insight into what is going on at the application level nor implement corrective steps. Also, these solutions will help businesses observe how well their digital technologies are functioning and could aid in streamlining site qualification and capacity planning with scaling up of bandwidth, while the number of connected devices and processes increases in the UC network. This would ensure a strong ROI on their network infrastructure investments.

Price/Performance Attributes and Customer Impact

Ottawa, Canada-headquartered Martello Technologies (Martello) is well regarded for its sophisticated network optimization and performance management solutions that empower MSPs and over-the-top (OTT) service providers (SPs) to deliver quality solutions while enterprises enjoy sustained real-time communications services of top-notch quality on both cloud and enterprise networks. Since being established in 2009, Martello's solutions have been installed in more than 6,000 networks and are used by customers from over 150 countries, an impressive record that distinctly highlights the worldwide acceptance of its solutions.

Perceived Value

Endeavoring to simplify network and application performance management for not only enterprises but also MSPs and OTT SPs, Martello took the strategic initiative of merging with Elfiq Networks (Elfiq) in January 2018 to guarantee outstanding UC performance for its customers and end users. Elfiq, now operating as Martello's subsidiary, is known for its cutting-edge SD-WAN technology that boosts network performance through the effective link balancing of in-bound and out-bound traffic for multiple sites as well as the dynamic selection of multiple site paths and bandwidth control tools.

Martello Technologies + Elfiq Networks: Capitalizing on carrier diversity

Combining its proven network performance software-as-as-service (SaaS) solution with Elfiq's unique SD-WAN technology has strengthened Martello's competence to offer an innovative solution to SPs and enterprises for UC network and application performance management. This solution enables end-to-end network performance management and also troubleshoots concerns related to poor quality of real-time services through the intuitive optimization of bandwidth, much faster than was possible before. All of this translates into a superior quality of user experience that is unprecedented in the market.

Assisting companies in their migration towards the cloud, Martello looks to ensure efficient bandwidth usage with Elfiq's SD-WAN technology, optimizing UC systems in the process. This saves a considerable amount of time otherwise wasted in contacting SPs to identify and understand the root cause behind poor real-time network connectivity services, which does

not always fix the issue because the problem may not lie in the SP's network. Poor connectivity services, consequently, add to the maintenance cost, increasing customers' total cost of ownership (TCO) and thus diminishing the SP's value proposition. In this context, Martello's edge lies in its agility and flexibility to ensure uninterrupted access to the Internet and the cloud for customers leveraging its link balancing tools with just one functional Internet service provider (ISP) link. This optimizes time and operational expenses, as time is not wasted in troubleshooting activities. Supporting the simultaneous routing of multiple links through multiple paths at different speeds significantly boosts throughput and productivity. This is particularly effective in smart applications, such as smart cities, IoT, and safety, where both enterprises and SPs need to prioritize network traffic over numerous paths and links. With the link balancing capability ensuring low downtime, the failover speed is a matter of seconds, not minutes. Furthermore, the link balancers ensure network traffic, both incoming and outgoing, are balanced efficiently. From the business perspective, this capability curtails chances of downtime and the resultant loss in sales that could arise from a sudden loss in connectivity to links. Additionally, network administrators enjoy complete control over network consumption as well as network link selection. This facilitates the creation of a smart network with the identification of the best link for a certain task, which optimizes bandwidth consumption.

ATLAS: Martello's first cost-effective SD-WAN-as-a-service suite for bandwidth optimization and Management

Leveraging its market-leading competence achieved from the merger with Elfiq, Martello rolled out its first SD-WAN-as-a-service suite named ATLAS in March 2018. Easier to operate than competing SD-WAN solutions, ATLAS's edge over competing offerings lies in its ability to make bandwidth optimization and management less costly than before. Supplying enterprises with end-to-end visibility into network performance and operations in real time while also empowering them to control their devices, whether on site, on the cloud, or in a virtual setting, is made possible by the Elfiq Central platform that facilitates centralized management. This translates into optimization of not only time but also cost, enabling businesses to earn faster returns without having to make additional investments.

Advantages of ATLAS

ATLAS relieves customers of the need to sign lengthy connectivity agreements that become overbearing with time. Affordably priced compared to most of the competing SD-WAN technologies available in the market, ATLAS empowers MSPs and OTT SPs to deliver resilient services whereas enterprises experience business continuity without witnessing a slowdown in network or application performance. By enabling automated programming of devices, Elfiq's SD-WAN technology's cutting-edge network switch feature of zero-touch provisioning (ZTP) automates operating system upgrades, patch installations, bug fixes, and the general programming steps before switching on the connection. With errors in programming, a single device is often the primary cause behind network problems and performance degradation. Martello's solution effectively addresses this challenge by

simplifying configuration changes and addressing network performance-related problems faster than before. The ZTP feature eliminates the need for manual intervention by network administrators to configure devices to a network and significantly reduces chances of manual error. With Martello's ATLAS SD-WAN-as-a-service offering, addition of new servers and links or expanding the capacity of an existing link in compliance with the latest communication and interface protocols has now been streamlined without bringing the network to a halt or opening security loopholes in it.

While this enhances devices' quality assurance, it also saves a huge amount of time when leveraged, especially for large-scale environments such as data centers. This is because generally, network switches have to be provisioned and then programmed one at a time based on respective applications, which is extremely time consuming and makes the entire process too costly. A significant cut down on the number of employee hours previously invested in tasks related to updating and programming leads to a significant reduction in operational costs incurred by businesses. Additionally, a reduced workload frees employees to focus on other activities, thereby optimizing time and enhancing their operational efficiency.

Functionality

Martello-subsidiary Elfiq has balanced the capabilities of ATLAS SD-WAN technology with its release of the EDGE Series hardware platform, a novel virtual private network (VPN) component, and a Stateful Firewall that identifies network connections that are crossing the server in addition to their operational performance. This monitoring enables Martello's solution to differentiate legitimate packets for various network connections from malicious sources and thus ensure secure connectivity at the edge of the network. These features also make the ATLAS SD-WAN solution increasingly scalable and mobile while also making possible and simplifying connectivity in remote locations that have limited bandwidth. With the Atlas SD-WAN technology being deployed at layer 2 (Layer 2 design), it relies on multiple concurrent circuits with the ability to deliver a seamless failover, enhanced network performance, and maximum uptime. Powered with the version 4.0 of the proprietary Elfiq Operating System, it is a customer premises equipment (CPE) platform providing multiple concurrent bandwidth providers to deliver maximum uptime. Martello already has a large and growing customer base, so with these new features it is certainly expected to enhance the value proposition of its ATLAS SD-WAN technology solution.

Complementing the EDGE Series, the CORE Series hardware platform extends the capabilities of ATLAS SD-WAN-as-a-service offering. Launched in July 2018, this platform empowers MSPs and value-added resellers (VARs) to ensure bandwidth optimization and reliable real-time UC connectivity services in large environments, such as headquarters, recovery sites, and data centers, equipped with high-speed (10Gbps) connectivity ports and featuring SFP+ interfaces. With these launches, Martello is looking to empower OTT SPs to deliver improved quality of service at various customer sites all over the world.

Ease of Use

Powered by the ZTP capability of the ATLAS SD-WAN-as-a-service offering, pre-optimization through pre-programming of generic steps ensures the faster installation of network switches in growing environments to meet customers' individualized needs as the number of devices, applications, and network components scale up. Perceived as an easy-to-use solution that eliminates the need for network experts to program a networking device, Martello's offering is attracting the interest of small and medium-sized enterprises with limited budgets and a lack of IT infrastructure for carrying out deep network performance monitoring and bandwidth optimization activities. In particular, Martello enjoys a strong footprint in the hospitality sector, with its fault and performance management SaaS, zero-touch provisioning, and analytics capabilities. It helps to optimize real-time traffic such as voice over Internet protocol (VoIP) and improve the overall quality of experience for hotel properties and operators to maintain a state-of-the-art network infrastructure. Also, some of the largest governmental agencies in Africa have deployed Martello's UC management software service to reap the best ROI out of the current network infrastructure.

Performance Reliability

With rollout of the Vantage suite of products in March 2018, which is a modular suite of products for enhancing performance of UC on cloud and enterprise networks, Martello has once again demonstrated its passion for enhancing the quality of end-user experience by ensuring higher performance reliability of customers' networks and end-users' UC devices and appliances at affordable prices. Customers can leverage the UCScore website to gain in-depth visibility into the characteristics of a network defined by parameters such as round-trip time, jitter, and delay, in minutes. Being aware of a network's fitness before installing UC systems into it is the first step towards preventing performance reliability issues. Customers can then run agent-based tests either as per schedule or on demand to proactively look for issues that can diminish QoE and then troubleshoot them leveraging Martello's performance management software before they impact user experience. Combining Vantage with Elfiq's SD-WAN technology empowers customers to maximize UC performance and eliminate chances of downtime by optimizing bandwidth consumption to ensure bandwidth availability and balancing traffic on their networks.

Customer Purchase Experience

Martello has priced its ATLAS SD-WAN offering more affordably than most of the competing solutions available in the market. This is attractive to small and medium-sized enterprises with budgetary constraints and a reluctance to invest in building their own IT infrastructure, intensified by lack of related know-how. By offering ATLAS SD-WAN as a modular service, hardware and software components are covered as well as maintenance that customers can subscribe to as per their specific UC application needs. Giving customers the flexibility to only license features and modules pertaining to their specific UC environment instead of having to buy a license for the entire SaaS package or

compromise on security and performance, as common with most competing solutions, translates into a highly satisfying purchase experience.

Martello offers three different, easily renewable, affordable, and modular subscription-based service packages that position customers to focus on more specific issues and enjoy top-notch QoE with the QEX license, Business Continuity Experience with the BCX license, and Software-Defined Experience with the SDX license. The fact that Martello offers a broad range of features and functionalities enables customers to meet all their UC-related needs on an SD-WAN infrastructure through easy integration and by leveraging one single solution. As a result, SPs and enterprises do not have to adopt different tools from different vendors, which often creates integration issues, and can avoid vendor lock-in situations.

Customer Ownership Experience

Enterprises incur a lower TCO by leveraging Martello-subsidiary Elfiq's pioneering SD-WAN technology that can be scaled to support more than 500 interlinked sites. An average enterprise deployment sustains a maximum of 300 sites, while ensuring reliable and optimal network performance with the leverage of just one controller. Setting up widely connected networks, such as full-mesh, is an extremely costly process. In this context, the ability of Elfiq's technology to scale to such a huge number of sites without degrading network performance is groundbreaking for the price offering. This sophisticated and unprecedented ability was testified to in March 2018 with Canada's Centre of Excellence in Next Generation Networks (CENGN)'s limited installation of Elfiq's Virtual LBX technology into its modern, multi-vendor OpenStack framework in the first phase of this scalability project.

Additionally, the Stream VPN engine, powered by the ZTP capability, among others, allows for the connection of thousands of tunnels. Consequently, small and medium-sized enterprises with limited budgets and IT infrastructure reap unprecedented ROI from the ZTP capability leveraging thousands of sites at once. This is because the engine removes the need for hardware components in creating a widely connected network framework, cutting down on customers' capital expenditure (CAPEX) by streamlining the management of VPN links. Using this framework, Martello and Elfiq can run 'real-life tests', virtualize real-life contexts with real sites, and prove that this technology can support the scaling up of the network to accommodate an increasing number of sites and hence more traffic without causing a dip in network performance efficiency. Bundling SD-WAN technology with service assurance positions Martello to address customers' need for holistic visibility, ranging from network quality and performance management to troubleshooting, and translates into a highly pleasing customer ownership experience.

Customers incur lower CAPEX than before by predicting network performance issues in real time and implementing corrective measures to automatically fix them. Optimized bandwidth usage and network performance eliminates the need to expand existing WAN

infrastructure or UC environments or even increase bandwidth capacity, which otherwise increases customers' TCO.

Conclusion

Persistent in its efforts to enhance the quality of real-time UC services that MSPs and OTT SPs render to enterprises as they migrate towards the cloud and to optimize end-users' QoE, Ottawa-headquartered Martello Technologies has been following a strategy of organic and inorganic growth to develop the best price-performance ratio for customers in the NPM and APM market for UC networks.

Its strategic merger with Elfiq Networks that is known for its pioneering SD-WAN technology and now operates as Martello's subsidiary, combined with its constant product launches and new feature rollouts, have empowered Martello to render unprecedented value to its customers. Elfiq's launch of the modular and cost-effective ATLAS SD-WAN-as-a-service offering; bundling of Elfiq's SD-WAN technology with Martello's UC performance management software named Vantage; new platforms, such as the EDGE Series and the CORE Series; new tools, such as the Stream VPN engine; and new features, such as Stateful Firewall, guarantee the delivery of top-notch real-time UC services on both cloud and enterprise networks.

Martello's ability to offer a wide array of real-time network performance monitoring and bandwidth management solutions powered by ZTP and link balancing empowers customers to address all their UC-related needs on an SD-WAN infrastructure through the easy integration and leveraging of only one single solution. As a result, customers enjoy a one-stop shop experience, which prevents integration issues and vendor lock-in situations.

Martello's adoption of a modular, subscription-based model that ensures customers only pay for what they need has made it accessible to small-sized enterprises that have limited budgets and do not have a sophisticated IT infrastructure but still need to ensure network uptime for uninterrupted real-time UC services. Overall, this ensures a superior quality of customer and end-user experience, as ISPs witness an improvement in the quality of services they render, enterprises enjoy uninterrupted business communications, and end users are able to stay connected to the Internet and their peers.

Martello Technologies has achieved a prominent position in the global NPM and APM solutions market, registering impressive growth of more than 150% over the last three years. For its strong overall performance, Frost & Sullivan is proud to bestow the 2018 Price/Performance Value Leadership Award to Martello Technologies.

Significance of Price/Performance Value Leadership

Ultimately, growth in any organization depends upon customers purchasing from your company, and then making the decision to return time and again.A key component of customer retention is the delivery of a high-quality product at a reasonable price.To achieve these dual goals (customer engagement and price/performance), an organization must strive to be best-in-class in three key areas: understanding demand, nurturing the brand, and differentiating from the competition.

Understanding Price/Performance Value Leadership

Best-in-class organizations are particularly successful in two critical areas: first, helping customers to appreciate and enjoy the product at every price point; and second, ensuring that customers perceive a demonstrable difference in performance features at every escalating price point. Ultimately, this balance allows companies to profitably deliver a variety of product options to customers, differentiate the product suite, and compete at every level of the market.

Key Benchmarking Criteria

For the Price/Performance Value Leadership Award, Frost & Sullivan analysts independently evaluated two key factors—Price/Performance Attributes and Customer Impact—according to the criteria identified below.

Price/Performance Attributes

Criterion 1: Functionality
Criterion 2: Ease of Use
Criterion 3: Product/Service Quality
Criterion 4: Performance Reliability
Criterion 5: Prioritization of Features

Customer Impact

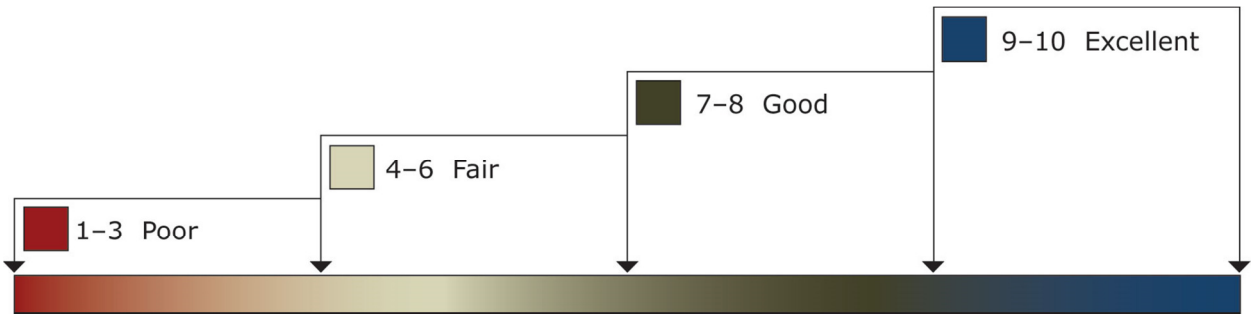
Criterion 1: Perceived Value
Criterion 2: Customer Purchase Experience
Criterion 3: Customer Ownership Experience
Criterion 4: Customer Service Experience
Criterion 5: Brand Equity

Best Practices Award Analysis for Martello Technologies

Decision Support Scorecard

To support its evaluation of best practices across multiple business performance categories, Frost & Sullivan employs a customized Decision Support Scorecard. This tool allows our research and consulting teams to objectively analyze performance, according to the key benchmarking criteria listed in the previous section, and to assign ratings on that basis. The tool follows a 10-point scale that allows for nuances in performance evaluation. Ratings guidelines are illustrated below.

RATINGS GUIDELINES



The Decision Support Scorecard is organized by Growth Performance and Customer Impact (i.e., These are the overarching categories for all 10 benchmarking criteria; the definitions for each criterion are provided beneath the scorecard). The research team confirms the veracity of this weighted scorecard through sensitivity analysis, which confirms that small changes to the ratings for a specific criterion do not lead to a significant change in the overall relative rankings of the companies.

The results of this analysis are shown below. To remain unbiased and to protect the interests of all organizations reviewed, we have chosen to refer to the other key participants as Competitor 2 and Competitor 3.

Measurement of 1–10 (1 = poor; 10 = excellent)			
Price/Performance Value Leadership	Price/Performance Attributes	Customer Impact	**Average Rating**
Martello Technologies	9.6	9.3	**9.45**
Competitor 2	8.1	8	**8.05**
Competitor 3	7.1	7.5	**7.3**

Price/Performance Attributes

Criterion 1: Functionality

Requirement: The product offers enhanced functionality to serve the broadest range of applications

Criterion 2: Ease of Use

Requirement: Customers typically feel that the products are easy to use to generate optimal performance

Criterion 3: Product/Service Quality

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

Criterion 4: Performance Reliability

Requirement: The product consistently meets or exceeds customer expectations for performance over its life cycle

Criterion 5: Prioritization of Features

Requirement: The features that customers most value and expect are most commonly available and most aggressively priced

Customer Impact

Criterion 1: Perceived Value

Requirement: Customers typically feel that they received more from the product or solution than they paid for it

Criterion 2: Customer Purchase Experience

Requirement: Customers feel like they are buying the most optimal solution that addresses both their unique needs and their unique constraints

Criterion 3: Customer Ownership Experience

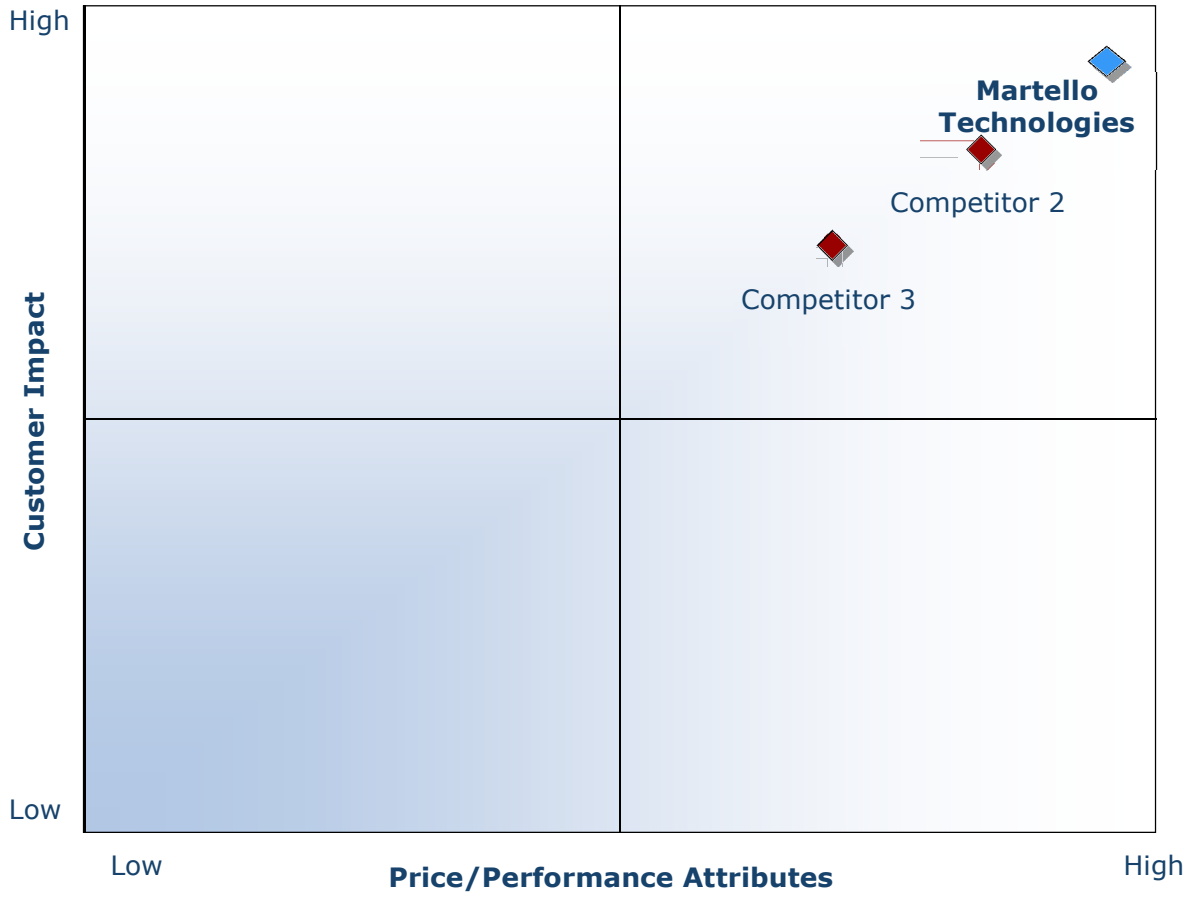
Requirement: Customers are proud to own the company's product or service, and have a positive experience throughout the life of the product or service

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

Decision Support Matrix

Once all companies have been evaluated according to the Decision Support Scorecard, analysts can then position the candidates on the matrix shown below, enabling them to visualize which companies are truly breakthrough and which ones are not yet operating at best-in-class levels.



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 recipient	Decision on which company performs best against all best-practice criteria
9	**Communicate recognition**	Inform Award recipient of Award recognition	• Announce 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-degreeresearch methodology providesan 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 practices 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.