# FROST & SULLIVAN
## BEST PRACTICES
### AWARDS

FROST & SULLIVAN

2020 BEST PRACTICES AWARD

**fastly®**

**2020 GLOBAL CONTENT DELIVERY NETWORKS COMPETITIVE STRATEGY INNOVATION AND LEADERSHIP AWARD**

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# Background and Company Performance

## *Industry Challenges*

Content delivery network (CDN) vendors traditionally operate on a proprietary infrastructure setup, arranging servers, network routing, and intelligent software to both accelerate and secure the delivery of content from their networks. Frost & Sullivan expects strong growth globally in the content delivery network space, as consumer demand for fast and optimized video, web pages, and applications intensifies. Moreover, as online presence becomes increasingly crucial for brands across the spectrum of industries, each site looks to add rich, personalized content served quickly and securely, with better insights into how users are interacting with this content.[1]

CDN pricing has been on a slow and steady decline in recent years, and some vendors have attempted to mitigate the trend by expanding their product portfolio of offerings into higher-margin areas (such as bot management, identity management, or security services). In the digital media ecosystem, CDN vendors are building out platform capabilities (for ingestion, transcoding, and media management) and in parallel ecosystems for webpage content or eCommerce services, CDN vendors can augment value by tighter integrations with partnering workflow providers, package solutions providers, and central cloud providers. Keeping abreast of the latest developments and future initiatives in cloud services and delivery will be essential to continue ensuring optimal service delivery for customers and consumers.

The growth of the Internet, driven in large part by embedded media, over the top (OTT) video, complex web pages, and distributed applications, has propelled the demand for CDN services. With the number of broadband -enabled households and video-capable devices continuing to increase (while data plans drop in cost), video consumption will proliferate. Additionally, OTT and TV-everywhere services will continue to gain subscribers and viewers as cord-cutting continues and online consumption becomes dominant.

CDNs are the prevailing method for delivering video content, and viewers expect broadcast quality on-demand, pushing providers to find avenues to minimize the poor quality of service on video content, such as buffering and slow start times. Sporting and other live events are underlining the necessity for scalable distribution. Moreover, enterprises are diving headlong into enterprise video applications and bandwidth-heavy web applications requiring CDN acceleration to ensure fast service globally. As more data centers come online, and infrastructure expands to meet commoditized traffic demands, organizations are seeking out ways to deliver content more flexibly and with optimal performance across the entire information technology (IT) business stack—intensifying competition between CDN vendors.

With the increase of OTT video and live streaming, content providers are more susceptible than ever to network congestion and service disruptions, so many have turned from DIY CDNs to managed and multi-CDN approaches to ensure their end-user experience. By

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[1] *Global Media Content Delivery Networks Market, Forecast to 2024: Proliferation of Content and Increasing Consumption Spurring Growth,* (Frost & Sullivan, July 2019).

using the expertise of a professional CDN service and/or delivering content from the best cost/performance CDN for their situation, content providers can avoid downtime and reduce churn. Using managed or multi-CDN approaches, content providers do not have to dedicate resources to build in-house solutions or outlay large new capital and/or operational expenditures while still proving out OTT business models and return on investments.

The competitive landscape includes large market incumbents and many other participant vendors vying to outperform competitors in specific niches or market verticals, with proprietary technology, or by offering broad feature sets. Vendors are looking to innovate by investing in research and development to differentiate, as well as demonstrating scalability and flexibility to make their solutions attractive to decision-makers and application developers. Additionally, many CDN customers report that they are employing multi-CDN solutions rather than an all-or-nothing strategy. Innovative and adaptable vendors can see success, peeling off market share from larger vendors, and collaborating with partners to ensure smooth interoperability with multiple enterprise systems and platforms. These vendors are looking to generate feature-rich and value-driven offerings that are attractive to enterprises with varying business needs and to the wider developer community who desire visibility and configurability.

Most recently, the onset of COVID-19 response measures in countries across the globe is reshaping the nature of Internet traffic for consumers, brands, content providers, and developers. With large portions of the population now working from home and remaining at home, usage rates for communications platforms, news consumption, and video content are spiking and sending content and internet providers into a scramble to minimize congestion points and latency. OTT providers are throttling strategically to buoy overall network performance, while web pages sending requests back to servers are overloaded and slowing transactions to a crawl. Consumers thus are frustrated with network degradation impacting the performance of applications, web pages, and video content— making CDNs all the more vital. The crisis-induced environment emphasizes the importance of network performance under heavy traffic and should accelerate the digital transformation trend of distributed work.
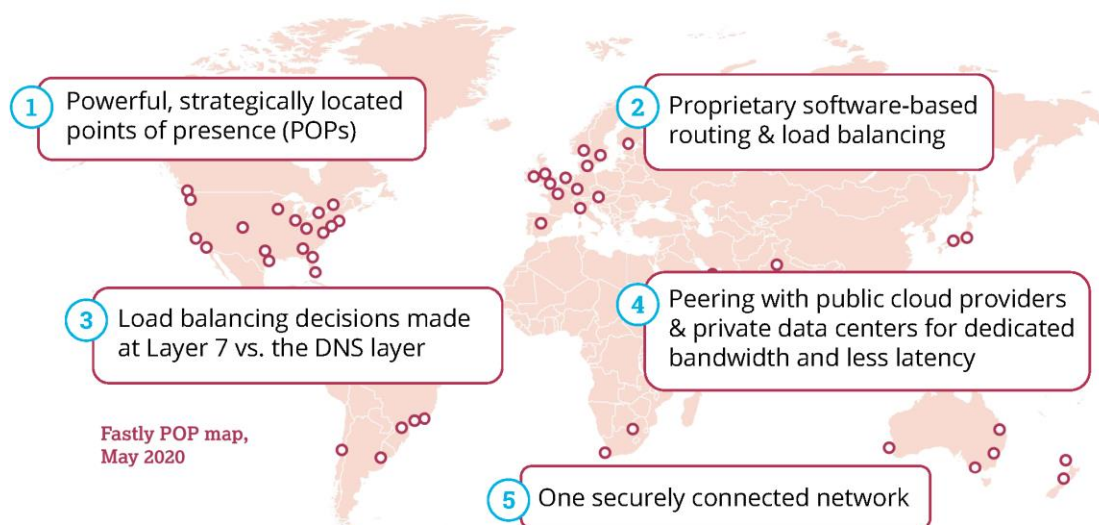
## Strategy Innovation and Customer Impact of Fastly

Founded in 2011, Fastly started off as a developer-friendly innovator. They have grown significantly since then, becoming a publicly traded company in May of 2019, and gaining adoption and prominence in the CDN and cloud world for delivering scale, performance, and security. Fastly operates an edge cloud platform that sits between a company's end users and their web servers (cloud or on premise), to accelerate and secure the delivery of web and mobile content. Fastly's edge cloud platform is designed to securely scale on demand to support major high traffic events. It is also fully programmable, supporting agile software development processes which empower developers to innovate faster.

**Software Focus and Edge Architecture Enables Efficiencies and Scalability**

Fastly has taken advantage of modern Internet architecture to build a smaller, more powerful network that still allows them to achieve massive scale. They have fewer, more powerful points of presence (POPs) - or clusters of servers - connected directly to core Internet Service Providers (ISPs) and Internet Exchange Points (IXPs). These servers are optimized to handle the complex workloads of compute at the edge, using high-end Central Processing Units (CPUs) and a significant amount of Random Access Memory (RAM) to process requests faster. Fastly's servers also use solid-state drives (SSDs) for fast and constant lookup times.

### Fastly's unique network architecture



1. Powerful, strategically located points of presence (POPs)
2. Proprietary software-based routing & load balancing
3. Load balancing decisions made at Layer 7 vs. the DNS layer
4. Peering with public cloud providers & private data centers for dedicated bandwidth and less latency
5. One securely connected network

Fastly POP map, May 2020

In addition to their advanced server and network hardware, Fastly leverages a software-centric approach to maximize performance. By writing code at every level of the network stack, they have been able to turn their servers into high-powered, high-scale edge cloud devices. Their software-defined networking stack includes built-in routing and load balancing, eliminating the need for custom appliances and hardware. It acts as a real-time configuration system and logging platform, giving customers greater visibility and control over their edge traffic. It also includes multiple other software-based functions from image

optimization to DDoS, bot mitigation and web application firewall. Creating their own software-defined networking stack, has allowed Fastly to gain significant network efficiencies, translating into lower total cost of ownership for their customers, and the flexibility to rapidly scale as they add more services or update existing ones.
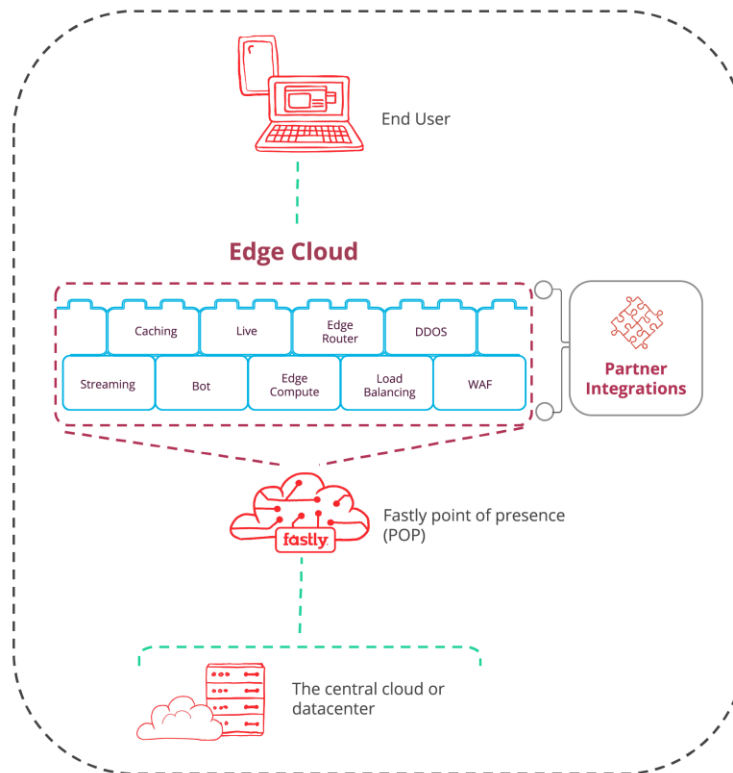


Lastly, Fastly operates as a single network, rather than separate networks for compliance and security, which is typical of some other CDNs. Fastly customers with compliance-concerned traffic (such as Payment Card Industry, Health Insurance Portability and Accountability Act, and Service Organization Control) experience no negative latency because of that traffic being shunted off to a separate, less performant network. Fastly's single network remains optimized for powerful performance and ensures all traffic benefits from the same security, visibility and control.

**Embedded Web Security that Balances Performance and Safety**
Fastly's security solutions are built directly into their edge cloud platform, providing developers and security operations teams with a fast, safe environment to create and run modern applications. Fastly's high-bandwidth, globally distributed network naturally scales to absorb the most disruptive DDoS attacks without impacting performance. Their Web Application Firewall (WAF) is fully integrated at the cache layer, reducing latency since it only inspects origin traffic. For bot protection, Fastly partners with a number of bot detection vendors – including PerimeterX, Shape Security and DataDome - providing the ability to rapidly enforce bot mitigation rules at the network edge.

Fastly's fully configurable edge cloud platform also allows for greater visibility and control in updating security policies. Security operations teams can use real-time logs streamed from Fastly's edge to see threats and exposures to vulnerabilities as they emerge. They can push out new WAF rules, alter DDoS or bot protection rules, or update Access Control Lists on-the-fly for near-instant protection from active attacks. Lastly, Fastly has also factored in security to its recently announced Compute@Edge offering. Still in beta (as of May 2020), this offering will allow developers to deploy custom applications, without impacting production traffic or having to worry about patching servers for the latest operating system vulnerabilities. Developers will be able to spin up a sandbox environment which automatically executes code for a limited period of time and rapidly decommission it, significantly reducing the attack surface.

**Support for Multi-CDN and Multi-Cloud Environments**
Fastly also supports customers who leverage multiple CDNs for redundancy and reliability with its Media Shield offering. This offering is particularly compelling for customers delivering large online media streams and live events. In essence, Fastly's network serves as an origin point for multiple CDNs and collapses numerous requests for the same content into one request back to origin. This reduces the burden on a customer's origin, lowers egress costs and holds down infrastructure expenditures. Media Shield also provides real-time configuration changes and real-time logging of every request allowing customers to detect and remediate issues faster. This is especially important for live video where high performance infrastructure is expensive and complex to scale up and problems can have a major business impact.

Fastly also has the flexibility to function well with multi-cloud architectures, freeing customers from cloud vendor lock-in which can hinder development and negotiation power. In January 2020 they announced the launch of Fastly Cloud Optimizer, targeting eCommerce and high tech organizations who commonly work with multi-cloud or mult-CDN architectures. Cloud Optimizer sits between a customer's CDNs and cloud providers, delivering intelligent routing capabilities without the need to rearchitect their infrastructure. Like Media Shield, it also features request collapsing, to reduce origin traffic and costs and empowers customers with greater visibility and control over their network traffic.

**Exceptionally Developer Friendly**
Frost & Sullivan believes Fastly's commitment and deep responsiveness to developers is a great benefit to their community and equips them with a great deal of opportunity to support modern application development processes. From the beginning, Fastly built its edge cloud platform as a space for developers to create, with fully programmable and customizable delivery at the edge. Customers could execute logic for A/B testing, URL redirects, paywall authentication, and location/language customization faster and more efficiently at the edge. Prizing agile development, Fastly can embed into a company's existing technology stack to help support continuous integration/continuous delivery efforts as developers look to push out new code to production several times a day. This capability leverages the real-time visibility and control that Fastly builds into the platform, including streaming real-time log data from the network so that developers see user

behavior and can quickly roll out or roll back configurations and code changes. This log data can also be fed into the customer's logging endpoint of choice for further monitoring and analysis. Fastly supports multiple logging endpoint solutions, including Sumo Logic, Splunk, Google Big Query and others.

As developers create modern digital experiences and apps, they need an edge computing space where they can build in the languages they know, using expressive programming models, without sacrificing performance and security. After listening to these concerns, Fastly built the Compute@Edge serverless compute environment. Still in beta (as of May, 2020), but emerging soon, Compute@Edge empowers developers to produce highly complex apps running at the edge. The platform acts as a place for developers to build in a sandbox environment for limited testing and deploy custom apps without impacting traffic or worrying about patching security vulnerabilities. While Compute@Edge will eventually be language-agnostic, Fastly is currently offering Rust as a second language (in addition to Varnish Configuration Language) with the goal of adding more over time.

The company reports a class-leading startup time of 35.4 microseconds which is currently 100x faster than the next solution in the market. Built on WebAssembly and optimized for globally deployed servers, Compute@Edge also features concurrent fetch and body processing so that apps can fashion highly personalized end-user experiences and interactions. Fastly collaborates with Mozilla, Intel, and Red Hat in creating the Bytecode Alliance as an open-source community to develop WebAssembly-based compiler tools and standards for functionality across many platforms

**Solid Performance, Positioned to Cope with COVID-19 Crisis**
Posting solid growth rates, Fastly is on track to take an enviable position supporting enterprises on their cloud journeys. Going public in 2019, the company used the resources gained in its IPO to pursue ambitious goals and posted full year-over-year revenue growth of 39% and fourth quarter revenue growth of 44% year-over-year. Yet in light of 2020's stock market instability, Fastly is seeing enterprise customers seek out its services in conjunction with multi-cloud and digital transformation strategies, and mid-markets similarly leveraging Fastly as an accelerant and essential part of a shift towards platform-as-a-service strategies. In these circumstances, Fastly sits at the intersection of web services and consumers who will flee to alternatives if services are not fast and reliable—propelling a pattern of expanding services in a single customer account where year two revenue can reach three times year one, and year three could reach as high as 40% over the start.

As the acute global crisis following COVID-19 places new stress on the Internet, Fastly is supporting customers through this period admirably and helping them reimagine their processes to ensure performance. Truly acting on its values, Fastly is providing $50 million worth of services to non-profit and open source organizations for free, in addition to cash donations to frontline organizations. Moreover, Fastly's existing strengths are well-suited to a remote-first environment where web and mobile performance gain greater prominence as a key metric. As trends toward data center disaggregation and applications move to multi-cloud environments, Fastly successfully supports and speeds service to

end-consumers. The likely consequences of the acute crisis will accelerate these existing trends, and Fastly, commendably, has already positioned itself to enable edge computing and empower DevOps innovations at the edge.

**Cultivating an Ecosystem**

Fastly cultivates a strong partner ecosystem that helps amplify their reach and time-to-market, while providing customers with enhanced value from joint offerings. Fastly has four categories of partnerships representing different go-to-market options for their robust partner ecosystem. Integration partners aligned with modern application development processes can leverage Fastly's API-first approach to ensure interoperability with a spectrum of tools and workflows (from one-click integrations to highly technical implementations). This includes Big Data platforms, tools for continuous integration and continuous delivery, and observability solutions -- all of which help drive greater consumption and customer engagement. Fastly's solution partners embed Fastly's edge security, acceleration, and delivery capabilities into their platforms, creating an all-in-one offering for their end-users. Whether they are a SaaS, PaaS, or IaaS vendor, Fastly helps solution partners offer fast, secure, and scalable hosting services in combination with their own products.

Fastly also fosters channel or referral/reseller partnerships in which the partner either refers their customers to Fastly, or resells Fastly's full site delivery, edge compute, and security offerings on top of their own value-added services. Last but not least, Fastly cultivates strong relationships with central cloud partners to empower customers' digital transformation and facilitate joint solutions with public, private, and hybrid cloud providers across multiple product segments. Specifically, Fastly maintains strong integrations with major cloud vendors like Google Cloud Platform and Microsoft Azure.
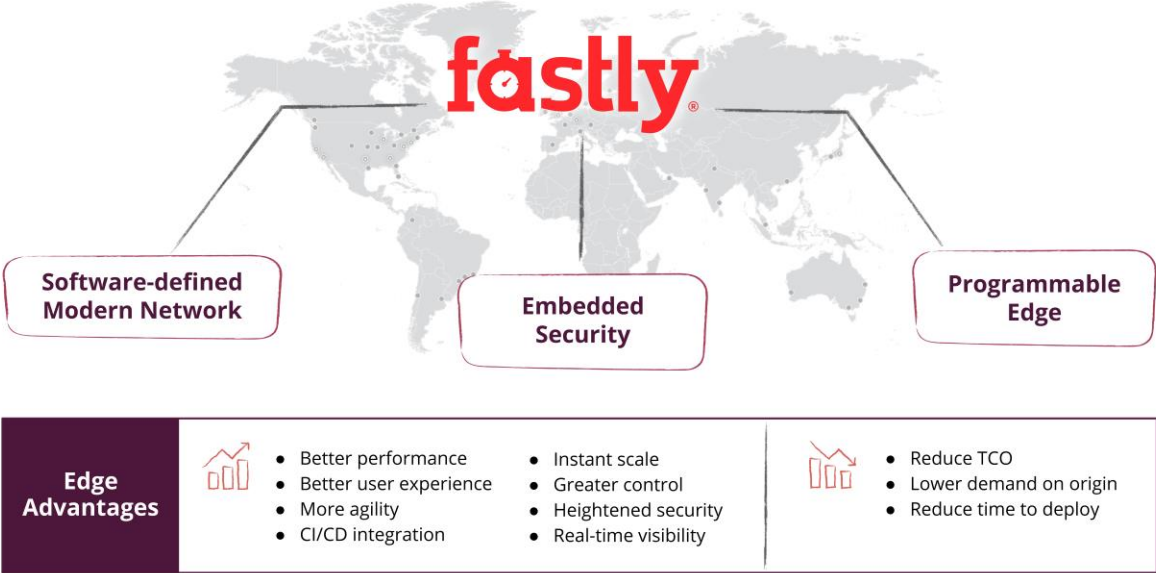
## Conclusion

As more essential business processes and mission-critical applications move to distributed architectures online, and consumer expectations continue to rise, service delivery performance becomes only more decisive. Beginning as an upstart innovator in content delivery networks, Fastly is rapidly gaining traction as a key enabler and point of trust in the modern Internet. With its edge cloud platform designed for efficiency and agility and a software-centric approach to its network, Fastly equips customers with new levels of flexibility, scalability, and embedded security. Highly responsive to the developer community, Fastly designs its services platform so that developers can create highly customizable digital experiences. The company's value proposition has only become more beneficial in light of the COVID-19 crisis, enabling the customer to place and accelerate content closer to end-users for better performance. With robust partnerships and a broadly interoperable ecosystem, Fastly is poised to harness emerging distributed work trends and fast-track digital transformations.

With its forward-looking edge cloud platform, developer focus and expanding possibilities, Fastly earns Frost & Sullivan's 2020 Global Competitive Strategy Innovation and Leadership Award in the content delivery networks market.

## Significance of Competitive Strategy Innovation and Leadership

Any successful approach to achieving top-line growth must take into account what competitors are and are not doing; meet customer demand with a comprehensive, value-driven product or service portfolio; and establish a brand that resonates deeply with customers and stands apart from other providers. Companies must succeed in these 3 areas—brand, demand, and positioning—to achieve best-practice levels in competitive strategy.



## Understanding Competitive Strategy Innovation and Leadership

Driving demand, brand strength, and competitive differentiation play critical roles in delivering unique value to customers. This three-fold focus, however, must ideally be complemented by an equally rigorous focus on Strategy Innovation and Customer Impact.

## Key Benchmarking Criteria

For the Competitive Strategy Innovation and Leadership Award, Frost & Sullivan analysts independently evaluated Strategy Innovation and Customer Impact according to the criteria identified below.

### Strategy Innovation

**Criterion 1: Strategy Effectiveness**
Requirement: Strategy effectively balances short-term performance needs with long-term aspirations and vision for the company.

**Criterion 2: Strategy Execution**
Requirement: Adoption of best-in-class processes supports the efficient and consistent implementation of business strategy.

**Criterion 3: Competitive Differentiation**
Requirement: Unique competitive advantages with regard to solution or product are clearly articulated and well accepted within the industry.

**Criterion 4: Executive Team Alignment**
Requirement: The executive team is aligned along the organization's mission, vision, strategy, and execution.

**Criterion 5: Stakeholder Integration**
Requirement: Strategy reflects the needs or circumstances of all industry stakeholders, including competitors, customers, investors, and employees.

### Customer Impact

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

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

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

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

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

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

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

| STEP | OBJECTIVE | KEY ACTIVITIES | OUTPUT |
|---|---|---|---|
| 1 **Monitor, target, and screen** | Identify Award recipient candidates from around the globe | • Conduct in-depth industry research<br>• Identify emerging sectors<br>• 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<br>• Assess candidates' fit with best-practice criteria<br>• Rank all candidates | Matrix positioning 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<br>• Examine eligibility of all candidates<br>• 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<br>• Invite multiple perspectives on candidates' performance<br>• 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<br>• Strengthen cases for candidate eligibility<br>• 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<br>• Pressure-test fit with criteria<br>• 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<br>• Write nominations<br>• 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<br>• Build consensus<br>• 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<br>• Inspire the organization for continued success<br>• 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 may share Award news with stakeholders and customers | • Coordinate media outreach<br>• Design a marketing plan<br>• 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.