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# BEST PRACTICES

AWARDS

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BEST  
2020 PRACTICES  
AWARD

zoom

2020 GLOBAL VIDEO  
COMMUNICATIONS IN THE COVID-19 CRISIS  
ENABLING TECHNOLOGY LEADERSHIP AWARD

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## Background and Company Performance

### *Industry Challenges*

Most recently, the onset of COVID-19 response measures in countries across the globe is reshaping the nature of communication and Internet traffic. "Shelter in place" or "stay at home" orders have been instituted and released, in some places, redispersed, forcing work and everyday life to change drastically. Internet traffic spiked as individuals, enterprises, educational institutions, and government agencies of all kinds coped with a new reality, working from home, if available, and remaining at home regardless. Outside of work, people across the globe embraced video applications to communicate with friends and family.

With large portions of the United States (US) population 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. Over-the-top (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.

The public health measures designed to "social distance" individuals away from one another propelled many businesses to close and many companies to move entirely to remote or work from home strategies. Before the crisis, approximately only 7% of workers in the US (or almost 9.8 million of the roughly 140 million civilian workers) had the option to work from home regularly. Telework focused on "knowledge work" (such as executive, IT managers, financial analysts, and accounting). The US lagged behind many European countries in the percentage of telework, with studies in 2016 and 2017 finding that around 20% was common throughout Western Europe.<sup>1</sup> One working study from April 2020 found that approximately 34% of US workers were now working from home.<sup>2</sup> As the shelter in place orders unfolded, Gallup found that as much as 63% of workers were performing some or all work from home by late April 2020.<sup>3</sup>

The COVID-19 induced crisis is seeing more people working from home than ever before, and forcing employers and employees who never expected to work from home to adapt to a new reality. Organizations are reacting to lockdown measures but also reconsidering the nature and deployment of work and work environments, with some firms saying that they may extend work from home options indefinitely. The current situation serves as an unplanned natural experiment, and many organizations are finding that they can indeed

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<sup>1</sup> DESILVER, DREW. "Not Many Americans Can Work Remotely, and Those Who Can Tend to Be the Highest Paid." May 20, 2020. [https://www.pewresearch.org/fact-tank/2020/03/20/before-the-coronavirus-telework-was-an-optional-benefit-mostly-for-the-affluent-few/ft\\_20-03-18\\_telework\\_1/](https://www.pewresearch.org/fact-tank/2020/03/20/before-the-coronavirus-telework-was-an-optional-benefit-mostly-for-the-affluent-few/ft_20-03-18_telework_1/)

<sup>2</sup> Brynjolfsson et al., "COVID-19 and Remote Work: An Early Look at US Data" (unpublished manuscript, April 2020), accessed June 2020. [https://john-joseph-horton.com/papers/remote\\_work.pdf](https://john-joseph-horton.com/papers/remote_work.pdf)

<sup>3</sup> Gallup Poll, *In Depth: Topics A to Z. Coronavirus Pandemic*, accessed June 2020. <https://news.gallup.com/poll/308222/coronavirus-pandemic.aspx>

operate entirely remote with digital tools, leaning heavily on video conferencing, to connect a distributed workforce.

In addition to everyday business continuity, organizations need video communications and collaboration tools to make up for canceled conferences, training, and necessary interpersonal relations. While many businesses believe they can cut costs by moving to remote work (pruning down office space, minimizing travel, and enabling flexibility in light of an economic recession), reliable and easy video communications and collaboration solutions take on critical importance.

Across a variety of verticals, from healthcare to education, previously face-to-face interactions became unachievable in the short term and forced many providers to deliver information and services via video. Congress legislated that the US Department of Health and Human Services (HHS) could provide waivers or modifications to certain mandated privacy requirements during a public health emergency, to support long-distance care, education, or administration. With relaxed enforcement during a crisis, the HHS's Office for Civil Rights recommended that healthcare providers engage best practices and retain vendors with the Health Insurance Portability and Accountability Act (HIPAA)-compliant video conferencing. Similarly, the US Department of Education issued guides to assist schools in compliance with the Family Educational Rights and Privacy Act (FERPA) mandating privacy considerations between instructors and students. Adopting telehealth and distance learning tools increased dramatically from March to June 2020, and though relaxed enforcement will likely end at some point, using video applications may become a new normal for healthcare and education providers.

The COVID-19 crisis has underlined and accelerated preexisting trends in the space as digital-first strategies become more important than ever, ushering video communications to the forefront for enterprises, consumers, and institutions. The crisis-induced environment emphasizes both the importance of network performance under heavy traffic while it also accelerates preexisting trends toward digital transformation trends and distributed work. Consumers and enterprise customers expect high-quality performance as well as ease of use, or they will switch video services. With large portions of the US and global workforces working remotely for the foreseeable future, video vendors find a more competitive environment than they could have imagined mere months ago; consequently, buyers and users will judge vendors on how they cope with the “of the moment” strains and plan for the future.

### *Technology Leverage and Customer Impact of Zoom*

In the contested video communications market, Zoom Video Communications, Inc. (NASDAQ: ZM) has been gaining traction over the last decade against more established companies and larger brand names. Zoom's founder and Chief Executive Officer, Eric Yuan, believes that listening to user feedback and having a quick reaction are the keys to success. With a cloud-based approach, reliable quality, and a highly intuitive and easy to use interface, Zoom was poised for future growth. When COVID-19 changed the landscape and priorities for individuals and organizations across the globe, Zoom confronted new challenges and decisions.

## **Reallocated Every Available Resource to Security and Privacy Initiatives**

Zoom faced an unprecedented growth in a matter of weeks. In December 2019, Zoom had handled a maximum of 10 million daily meeting participants, but one peak day in April saw more than 300 million daily meeting participants. Much of this profusion of usage came from use cases that were previously hard to imagine for an enterprise platform. This exposed security and privacy weaknesses. Admirably, Eric Yuan acknowledged and felt the responsibility for the unexpected abuses and exposure that users experienced; thus, the company swiftly designed and implemented a 90-day plan of extensive review and remediation to address the issues.

Notably, the company reallocated nearly all of its resources across departments to this 90-day plan dedicated to security and privacy, freezing all other feature or product developments. With the entire company focused on reinforcing security and privacy on the platform, Zoom has made concrete and praiseworthy strides while maintaining the ease of use that made it popular. The company engaged a comprehensive third-party review with security and consumer safety experts. Zoom engaged a council of chief information security officers (CISO) from across the tech sector to advise on privacy best practices, as well as worked closely with relevant authorities for data requests on instances of abuse. The initiatives also include a series of white-box penetration tests to identify issues as well as an expansion of the bug bounty program.

Moreover, within the first month, Zoom redesigned the user interface with a new security icon. Consolidating features and settings previously distributed in various meeting menus, the clearly visible security icon allows hosts to turn on a password protected waiting room, lock the meeting once all participants join, remove participants, mute or turn off video for one or all participants, as well as restrict attendee's ability to screen share, chat, rename themselves, and annotate host's content. Network or an organization's IT administrators also gained greater management capabilities and visibility. Administrators can view and set routing preferences, at the user, group, or meeting level, to send traffic through a preferred data center (or avoid one) in real time.

As the company moved forward, it announced plans on May 14 to open two new research and development (R&D) centers and hire approximately 500 new software engineers. Located in Pittsburgh and Phoenix, drawing from talent pipelines at Carnegie Mellon University and Arizona State University, these centers will augment Zoom's R&D capacity and capitalize on cutting-edge innovation surrounding these highly regarded engineering and computer science programs.

## **Acquisition Supports Encryption Push**

In support of the efforts to ensure security on the platform, Zoom finalized the acquisition of Keybase, a notable cryptographic team, in early May 2020. Keybase's integration comes on the recommendation of noted privacy and security advocate, and former Facebook security chief, Alex Stamos, who joined Zoom as an outside consultant in early April 2020 to push the company to achieve its vision and expectations.

The addition of Keybase's team and knowledge will help Zoom build out end-to-end encryption across Zoom's portfolio. Indeed, by May 30, Zoom had completed the

transition from Electronic Code Book (ECB) to Galois/Counter Mode (GCM) encryption on Zoom 5.0 client on the cloud network. Advanced Encryption Standard (AES) 256-bit GCM encryption is a highly secure encryption cipher that carries three critical parameters to transmit the secure code or block, a one-time number, a key, and a shared secret. GCM encryption operates as a stream, meaning each block's authentication depends on the previous block, and it incorporates the handshake authentication natively into the cipher. AES-GCM stream cipher is written in parallel, meaning it achieves much higher throughput and lower latency than alternatives. Overall, the AES 256-bit GCM encryption standard, currently default on all Zoom calls, delivers enhanced protection of meeting data as it is in transit and resists tampering, maintaining the confidentiality and integrity of the data.

Zoom's push for end-to-end encryption took a big step toward realization on May 22, 2020, as the company released a draft design of the offering for public review and feedback from civil liberties organizations, the internal CISO council, child safety advocates, government, and encryption experts. With the drafted design on GitHub, users and encryption researchers could offer critiques and improvements while Zoom began beta in July. End-to-end encryption is the highest level of security that entirely prevents man-in-the-middle attacks, where a hacker can snoop in on the conversation between the user and the server. The company announced in June that it will make that end-to-end encryption available for all accounts, including free/basic users.<sup>4</sup>

### **Ensuring Scalability**

Faced with a massive explosion of users and traffic, Zoom coped well with the influx of capacity demand and continues to make moves to ensure functionality. Zoom reports that by April 22, relatively in the early days of the shelter in place orders in the US, it witnessed the user base grow to approximately 300 million daily meeting participants. Only weeks earlier, on April 1, the company had announced a user count of 200 million daily meeting participants, up from a pre-COVID count of only 10 million in December 2019. The precipitous rise in users and calls would strain and break many platforms, yet Zoom handled the surge. Moreover, in late April, Zoom announced that it would continue to manage explosive growth leveraging Oracle Cloud Infrastructure (OCI). Diversifying cloud capabilities with OCI (in addition to existing technology deployments with Amazon Web Services, Microsoft Azure, and its data centers), Zoom gained another flexible partner that dedicates a significant amount of support and performance to Zoom's data transfer functions. Broadening its platform, on cloud hosting platforms and co-location housing, Zoom ensured that it could cope and accommodate future demand, with greater reliability, bandwidth capacity, and protection. These measures are an outgrowth of and in addition to Zoom's normal protection procedures, with failover capacities and approximately 50% additional capacity in the regions.

### **Supporting Vital Use Cases in a Watershed Moment**

As remote video communications became mission-critical for many enterprises and all types of organizations struggled to adapt, Zoom served as a stable and reliable communication channel and partner enabling continuity and connection. Zoom's wide

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<sup>4</sup> <https://blog.zoom.us/end-to-end-encryption-update/>



applicability and usability made it an ideal vehicle to support the healthcare sector and telehealth when face-to-face meetings became impossible and undesirable. Indeed, Zoom already offered a HIPAA compliant solution (Zoom for Healthcare) that allowed healthcare providers and patients to maintain collaboration and communication for regular and urgent care as well as connect with staff (physicians, nurses, staff, and social services) across the organization. Zoom retains HIPAA compliance as it serves as a protected and encrypted conduit only, and does not have access to identifiable personal health information. These meetings include default multi-layered access control for owners, administrators and members, protecting meetings for only authenticated attendees. Auditable, and with data and service layer encryption, these Zoom meetings met the standards before the HHS temporarily loosened regulations. Leveraging this existing security, healthcare providers are using Zoom for a variety of use cases in and out of the hospital, enabling greater mobility and accessibility for staff in and out of areas requiring sterilization, remote consultations, and group conversations. Delivering telehealthcare through Zoom, providers can maintain engagement with colleagues and patients, as well as family members who may be quarantining in a different location. For patients, many of whom may be using video communications for the first time, the straightforward sign-in experience has proven an invaluable enabler of accessibility. Zoom for Healthcare includes integrations with Epic telehealth workflows as well as electronic health records and medical device integrations.

Similarly, the Zoom for Education solution has been FERPA compliant since before the crisis and serves as a secure meeting space for hybrid classrooms, administrative meetings, and instructor office hours. Further, Zoom demonstrated social responsibility and good faith in the COVID-19 crisis, in removing the time limit on basic/free accounts for K-12 schools affected. These education accounts include mandatory security settings for passwords, waiting rooms, and limited screen sharing. Flexible pricing for additional features and higher education institutions are supporting students and teachers to navigate a difficult new environment. Moreover, Zoom is also facilitating communications for state and local governments and supporting innovation. Government officials and workforces are using Zoom to perform necessary work and deliver services, as well as novel uses such as town halls and even a jury trial.<sup>5</sup>

Zoom also remains committed to enterprise users, as it maintains its professional services team that aids business continuity as well as large events and webinars that became important as conferences were canceled. Working closely with enterprise customers, Zoom continues to not only sustain businesses but to assist with dedicated IT support and encouragement through changes in processes. Furthermore, Frost & Sullivan has previously recognized Zoom's suite of solutions that offer a full and consistent, end-to-end

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<sup>5</sup> Charles Scudder, "In a Test Case, Collin County Jury Renders Verdict on Zoom for the First Time; Too Risky for a Full Trial? The One-Day, Nonbinding Decision Marked a Small Step Forward as Courthouses Struggle to Find Safe Ways to Restart Jury Trials.," The Dallas Morning News, May 22, 2020.

<https://www.dallasnews.com/news/courts/2020/05/22/in-a-test-case-collin-county-jury-meets-on-zoom-for-the-first-time-but-some-lawyers-say-its-too-risky-for-real-trial/>

business communications experience. Frost & Sullivan lauds the dedication to innovation that Zoom continues to demonstrate, releasing over 300 new features in 2019, including the Zoom Phone (a cloud private branch exchange) along with improvements to the enterprise voice, video, content collaboration, webinar, chat, and file-sharing abilities.

As so many people, especially virus vulnerable individuals such as elders and those in care facilities, remain under direction to adhere to physical distancing guidelines, Zoom has proven to be an invaluable instrument to maintain mental well-being. Concerned with the harms of loneliness among the older adult population, Florida State University's Institute for Successful Longevity (ISL) launched initiatives to spread awareness, guides, and mentorships of how to use Zoom's capabilities. The ISL's research shows that using technology is a vital instrument to combat social isolation despite the requirements of physical distancing. The platform's ease of use (it works on any device or browser without the need to create an account) is assisting the less tech-savvy and older users in connecting with loved ones, as well as retaining active social lives for book-clubs, fitness, religious ceremonies, and more.

## *Conclusion*

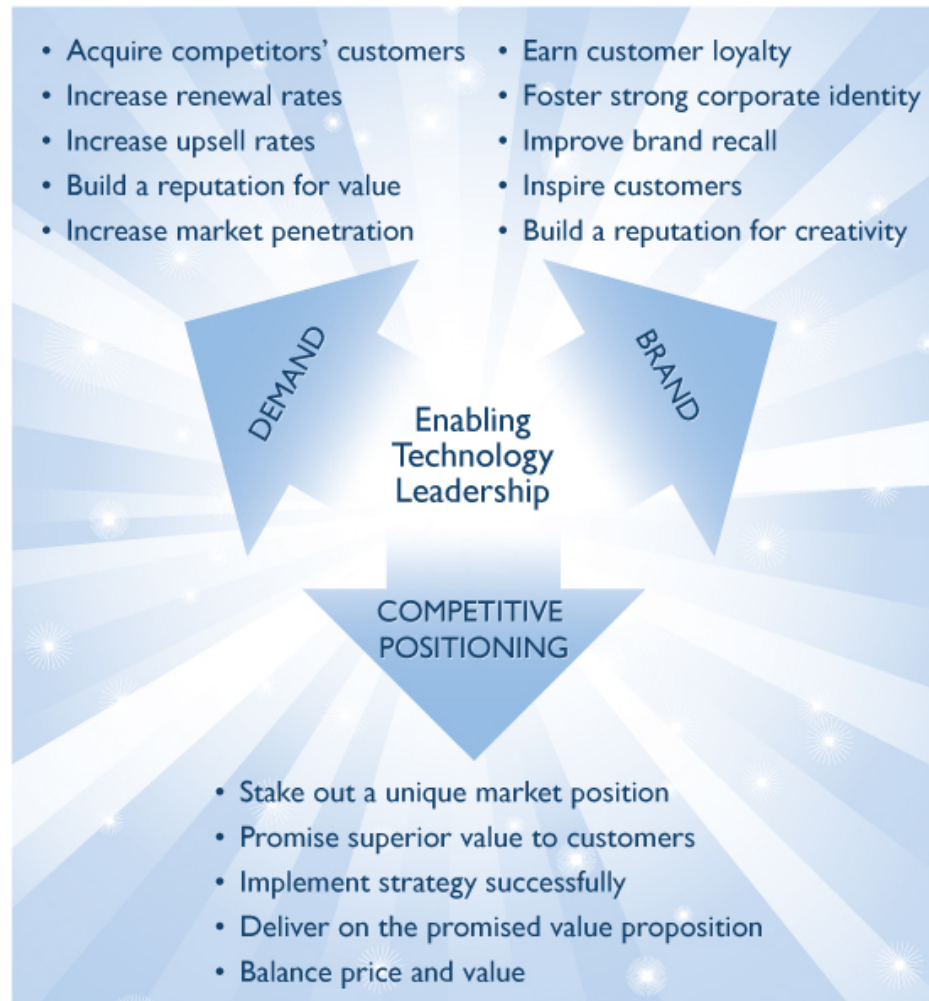
As the COVID-19 induced crisis pushed millions of people to shelter in place, video communications tools became mission-critical for all types of organizations, virtually overnight. On the foundation of its elegantly simple user interface and reliable, high-quality calls, Zoom became the tools of choice for many. Yet, the explosion of usage exposed vulnerabilities in Zoom's platform. Notably, Zoom admitted the shortcomings and committed to becoming more secure and helping customers in the time of crisis. Dedication the entire organization to security and privacy initiatives, Zoom made fast strides and continues to make progress on transit encryption, data security, and end-to-end encryption. The company's agility allowed it to cope with the hundreds of millions of users joining in only a few weeks. Its support for key use cases and verticals ensures that when face-to-face meetings are impossible, dependable video calls can fill the gap to enable communications for verticals such as healthcare, education, and enterprise.

For its commitment to improvement, demonstrated agility, and exceptional functionality, Zoom earns Frost & Sullivan's 2020 Global Enabling Technology Leadership Award for video communications during the COVID-19 crisis.



## Significance of Enabling Technology Leadership

Ultimately, growth in any organization depends on customers purchasing from a company and then making the decision to return time and again. In a sense, then, everything is truly about the customer. Making customers happy is the cornerstone of any successful, long-term growth strategy. To achieve these goals through enabling technology leadership, an organization must be best in class in three key areas: understanding demand, nurturing the brand, and differentiating from the competition.



## Understanding Enabling Technology Leadership

Product quality (driven by innovative technology) is the foundation of delivering customer value. When complemented by an equally rigorous focus on the customer, companies can begin to differentiate themselves from the competition. From awareness, to consideration, to purchase, to follow-up support, organizations that demonstrate best practices deliver a unique and enjoyable experience that gives customers confidence in the company, its products, and its integrity.

## ***Key Benchmarking Criteria***

For the Enabling Technology Leadership Award, Frost & Sullivan analysts independently evaluated Technology Leverage and Customer Impact according to the criteria identified below.

### ***Technology Leverage***

#### **Criterion 1: Commitment to Innovation**

Requirement: Conscious, ongoing adoption of emerging technologies that enables new product development and enhances product performance

#### **Criterion 2: Commitment to Creativity**

Requirement: Technology leveraged to push the limits of form and function in the pursuit of "white space" innovation

#### **Criterion 3: Stage Gate Efficiency**

Requirement: Adoption of technology to enhance the stage gate process for launching new products and solutions

#### **Criterion 4: Commercialization Success**

Requirement: A proven track record of taking new technologies to market with a high rate of success

#### **Criterion 5: Application Diversity**

Requirement: The development and/or integration of technologies that serve multiple applications and can be embraced in multiple environments

### ***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 <b>Monitor, target, and screen</b>	Identify Award recipient candidates from around the globe	<ul style="list-style-type: none"> <li>Conduct in-depth industry research</li> <li>Identify emerging sectors</li> <li>Scan multiple geographies</li> </ul>	Pipeline of candidates who potentially meet all best-practice criteria
2 <b>Perform 360-degree research</b>	Perform comprehensive, 360-degree research on all candidates in the pipeline	<ul style="list-style-type: none"> <li>Interview thought leaders and industry practitioners</li> <li>Assess candidates' fit with best-practice criteria</li> <li>Rank all candidates</li> </ul>	Matrix positioning of all candidates' performance relative to one another
3 <b>Invite thought leadership in best practices</b>	Perform in-depth examination of all candidates	<ul style="list-style-type: none"> <li>Confirm best-practice criteria</li> <li>Examine eligibility of all candidates</li> <li>Identify any information gaps</li> </ul>	Detailed profiles of all ranked candidates
4 <b>Initiate research director review</b>	Conduct an unbiased evaluation of all candidate profiles	<ul style="list-style-type: none"> <li>Brainstorm ranking options</li> <li>Invite multiple perspectives on candidates' performance</li> <li>Update candidate profiles</li> </ul>	Final prioritization of all eligible candidates and companion best-practice positioning paper
5 <b>Assemble panel of industry experts</b>	Present findings to an expert panel of industry thought leaders	<ul style="list-style-type: none"> <li>Share findings</li> <li>Strengthen cases for candidate eligibility</li> <li>Prioritize candidates</li> </ul>	Refined list of prioritized Award candidates
6 <b>Conduct global industry review</b>	Build consensus on Award candidates' eligibility	<ul style="list-style-type: none"> <li>Hold global team meeting to review all candidates</li> <li>Pressure-test fit with criteria</li> <li>Confirm inclusion of all eligible candidates</li> </ul>	Final list of eligible Award candidates, representing success stories worldwide
7 <b>Perform quality check</b>	Develop official Award consideration materials	<ul style="list-style-type: none"> <li>Perform final performance benchmarking activities</li> <li>Write nominations</li> <li>Perform quality review</li> </ul>	High-quality, accurate, and creative presentation of nominees' successes
8 <b>Reconnect with panel of industry experts</b>	Finalize the selection of the best-practice Award recipient	<ul style="list-style-type: none"> <li>Review analysis with panel</li> <li>Build consensus</li> <li>Select recipient</li> </ul>	Decision on which company performs best against all best-practice criteria
9 <b>Communicate recognition</b>	Inform Award recipient of Award recognition	<ul style="list-style-type: none"> <li>Inspire the organization for continued success</li> <li>Celebrate the recipient's performance</li> </ul>	Announcement of Award and plan for how recipient can use the Award to enhance the brand
10 <b>Take strategic action</b>	Upon licensing, company is able to share Award news with stakeholders and customers	<ul style="list-style-type: none"> <li>Coordinate media outreach</li> <li>Design a marketing plan</li> <li>Assess Award's role in future strategic planning</li> </ul>	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>.