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BEST PRACTICES

AWARDS

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BEST
2020 PRACTICES
AWARD

digicert®

2020 GLOBAL
TLS CERTIFICATE
COMPANY OF THE YEAR AWARD

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Background and Company Performance

Industry Challenges

The importance of securing digital communications over the World Wide Web is now greater than ever before. Man-in-the-Middle (MitM) or Man-in-the-Browser (MitB) attacks happen when cyber adversaries impersonate a website to intercept data transmission and steal user data (and often, by extension, money). The 2018 IBM X-Force threat intelligence report states that around 35% of network exploitation attempts involved a MitM attack in 2017.

Secure Sockets Layer (SSL) / Transport Layer Security (TLS) certificates help create a secure pathway to encrypt and decrypt data exchange between web servers. A Hypertext Transfer Protocol Secure (HTTPS) protocol in the URL is evidence of an encrypted website. In addition to ensuring a secure connection, TLS certificates provide recognition, trust and identity to end-users visiting the website.

The rise of privacy-conscious consumers, an evolving cyber-attack landscape, and browsers such as Chrome and Mozilla pushing 'encryption everywhere' initiatives, have contributed to the growth of HTTPS sites. The percentage of HTTPS websites on the Internet has grown from a mere 24% in 2016 to 83% in 2019, recording a phenomenal 245.8% increase.

However, in the last three years, the TLS certificate market has attracted a number of headlines; many stories have focused on certificate distrust and regulatory changes. The Certificate Authorities (CAs) that issue TLS certificates to business entities have had a tough time grappling with the continually changing dynamics of the TLS certificate market.

On the one hand, Google, Mozilla, and Safari have made a series of announcements, including mandating the use of the SHA-2 algorithm, distrusting millions of certificates issued by Symantec and other CAs, and removing visual identifiers in the browser URL that distinguish between different certificate types. All these announcements meant CAs had to invest heavily in product innovation and technology upgrades to differentiate their products from the competition.

Meanwhile, the rise in popularity of Let's Encrypt (a non-profit certificate authority), the distribution of complimentary certificates by cloud hosting providers, and a decline in price points have eroded the revenue share of some CAs. Adding to these challenges, two of the leading CAs were busy executing a merger & acquisition deal.

After three years of muted growth, the TLS certificate market showed signs of recovery in 2018 and 2019. Frost & Sullivan expects revenue growth to stabilize with a compound annual growth rate (CAGR) of 10.4% between 2019 and 2024.

Maintaining consistent performance and customer satisfaction during turbulent market conditions is a challenge that many vendors may not succeed in overcoming. In such circumstances, gaining market share, growing customer base, and scaling up is even more challenging.

Visionary Innovation and Performance/Customer Impact

DigiCert, founded in 2003, is a commercial CA that provides enterprise-grade TLS certificates and PKI solutions with strong authentication and encryption capabilities. The CA secures 89% of Fortune 500 companies and counts the world's most recognized brands among its customer base. In 2017, DigiCert acquired the web and PKI business of Symantec, the erstwhile leader of the TLS certificate market.

A Portfolio to Address Customer Needs

Historically, DigiCert focused aggressively on the High Assurance (HA) certificate segment. However, since its acquisition of Symantec's PKI business, the CA has expanded its footprint to the Domain-validated (DV) certificate segment. DigiCert has also become one of the global leaders in providing EU-trusted services through its acquisition of QuoVadis in 2019, which includes qualified website authentication certificates (QWACs) and other qualified services. Additionally, DigiCert offers TLS certificates with Signed HTTP Exchange (SXG) enabled. DigiCert's certificates and management tools support a wide range of enterprise needs and use cases, ranging from standard TLS to compliance-specific use cases such as Google AMP and EU-trusted qualified certificates for natural persons, legal entities or web authentication (QWACs). The company also supports cloud-based code signing, remote document signing, a host of IoT device authentication and encryption scenarios, large enterprise secure remote access, secure email and much more.

DigiCert CertCentral®, DigiCert's cloud-based TLS manager, enables organizations to issue, discover, renew, and revoke certificates in an automated and easy to use way. CertCentral, being a certificate management application, has been built with a vision to reduce the workload of IT teams in managing certificates and enable scalable deployment of certificates. With the support of the Automated Certificate Management Environment (ACME) and other open, standardized protocols such as REST API, SCEP and EST, CertCentral allows for automated renewal, new issuance, and installation of certificates onto their endpoints while maintaining administrative control wherever required.

In addition to publicly trusted TLS certificates, the CertCentral manager provides a one-stop destination to manage all other types of certificates deployed in the enterprise. The certificate support extends to private PKI, shared PKI, hybrid certificate deployments, client certificates such as S/MIME, Adobe and document signing certificates.

It is essential to have an efficient pre-validation process to enable timely automated certificate deployment and management. DigiCert follows a phased approach to pre-validate data, reducing the time of issuance and enabling automation. For instance, the certificate issuance process often requires the enterprise to fill out a Certificate Signing Request (CSR) form and submit it to the CA. The CA then processes the CSR, takes it up for validation, and issues a certificate within a specified period. With CertCentral, users can leverage DigiCert's "immediate issuance" feature. In this case, DigiCert leverages pre-validated data about the account and issues the certificate as soon as the user submits the CSR. Having pre-validated data helps DigiCert to issue even OV and EV certificates immediately.

CertCentral allows businesses to enforce flexible and customized access management policies for certificate management. The customer can replicate their organizational structure within CertCentral to enable segmentation of access control by creating divisions and assigning user roles, permissions, and certificate management policies to individual divisions or users.

CertCentral includes support for Certificate Transparency (CT) log monitoring. Automated CT log monitoring notifies the customers of any misuse of their domain on the Internet. Besides, DigiCert also provides certificate discovery services that allow customers to identify and monitor all of the certificates deployed in their network and take any required action.

DigiCert has recently introduced support for 11 languages in its CertCentral platform. The platform also supports nine international currencies to enable smooth transactions for international customers.

With DigiCert's Managed PKI service, businesses can secure email, documents, code, users, and devices – while also enabling remote access through VPN, and authentication of devices connected to Wi-Fi. Furthermore, the service supports multiple use cases such as document signing, IoT device authentication, smart card login and SSL inspection.

The managed PKI service, including the recently announced DigiCert ONE® platform and its DigiCert® Enterprise PKI Manager, enables DigiCert's customers to authenticate their users while accessing sensitive information from a web-based application or extranet portal. With the rise in popularity of Bring-Your-Own-Device (BYOD) initiatives, businesses find it hard to manage and monitor secure access to mobile devices within the network. DigiCert's managed PKI service supports iOS and Android operating systems and enables faster and more scalable implementation of mobile device management (MDM) initiatives without compromising the user experience.

DigiCert's managed PKI service provides enterprises with fully automated certificate deployments in addition to integration with the enterprise active directory; DigiCert provides software to help companies deploy certificates without IT involvement to mobile and PC endpoints using auto enrollment. The platform also provides centralized escrow and recovery capabilities.

DigiCert recognizes integration as a critical pain point for security deployments and certificate management. To address this, the CA follows an API-first approach in its product development process, thus enabling a customized user experience.

Note: In Jan. 2020, DigiCert announced a new, modern approach to PKI deployments for companies: DigiCert® ONE. The platform is built using containerized architecture and provides fast and flexible PKI for all deployment models: private or public cloud, on premises, in-country or hybrid. DigiCert has introduced its DigiCert® Enterprise PKI Manager, DigiCert® IoT Device Manager, which are currently available on the DigiCert ONE platform. Later this year, the company plans to add on-premises, in-country and hybrid and other deployment options for CertCentral (currently available in the cloud), as well as document signing and code signing as a service (in the cloud), the latter two which

are currently available in DigiCert's Managed PKI service.

Agile, Customer-focused Innovation Process

The TLS certificate market has always focused on mass-market adoption; as a result, it has traditionally been lean on innovation. At the same time, the rate of evolution of the threat landscape and explosion of digital communication means customer demand for innovation and solution upgrades is growing.

DigiCert, with a focus on quality and putting customers first, has invested substantially in innovation. Apart from adding resources to its R&D department, the company has also invested heavily in upgrading its infrastructure to support scalable deployments and the development of future-proof products. Additionally, the product development process follows an agile methodology that allows the company to roll out changes and product updates more quickly than competitors. DigiCert brings together industry and academia professionals to develop solutions that are one step ahead of cyber adversaries.

DigiCert recently issued a Verified Mark Certificate (VMC) to CNN.com, a domain that sends large volumes of email to consumers. With a VMC, the customer can add its trademark logo to all the emails sent from the company's domain, thus adding credibility to the brand and preventing brand misuse.

DigiCert is the first in its industry to create a post-quantum cryptography (PQC) toolkit that allows companies to create "hybrid" certificates for testing in their systems. Hybrid certificates align traditional (RSA, ECC) algorithms with quantum-safe algorithms in one certificate. DigiCert has already worked on proofs-of-concept (POCs) on PQC with companies such as Microsoft, ISARA, Utimatco and Gemalto. DigiCert also provides documentation about using PQC, industry guides, and research of industry attitudes toward preparing for the threats of quantum computing to today's popular encryption algorithms through its PQC toolkit.

The CA actively engages with industry standards and regulatory bodies such as the CA/Browser Forum, IETF, W3C, ASCX9, PCI Council, SAE, CableLabs, CI+, AeroMACS, WinnForum, Industrial Internet Consortium, APWG and NIST NCCoE to drive creation and support of new standards and ensure a safe Internet for end-consumers.

With its multi-pronged approach to innovation, DigiCert has developed a hyper-converged, agile infrastructure that promises reliability, scalability, resiliency, and shorter response time for its customers.

Market Leadership during a Challenging Phase

Distrust of Symantec-issued certificates shook the competitive dynamics of the TLS market. In 2015, Frost & Sullivan estimated Symantec to be holding 44% of the global SSL certificate market while DigiCert had a 9% market share. In 2017, DigiCert acquired the web PKI business of Symantec.

In many ways, the acquisition was a challenging one:

1. With the acquisition of the distrusted Symantec, Thawte, GeoTrust and Rapid SSL business, DigiCert took on a monumental challenge in year one—within one month of the Nov. 2017 acquisition.
 - a. enabling massive issuance of new certificates for the former Symantec SSL customer base;
 - b. turning off Symantec validation systems and training, adding staff to handle the huge volume increase;
 - c. offering free replacement of millions of certificates to help the world's largest companies (including the leading banks and e-commerce engines) to enjoy uninterrupted security and uptime.

Achieving this feat also required DigiCert to undertake millions of emails, in-console messages and phone calls to reach all impacted customers. The company created tools to help Symantec customers find and replace affected certificates. DigiCert hosted multiple webinars and support documentation in many languages. Though many thought it would fail—and the world's largest sites would go dark—DigiCert accomplished this feat with hardly anyone noticing. That was its goal. Perhaps, no other CA could've pulled this off, except DigiCert, which had long before set up a modern architecture and processes to handle the scale.

2. After the acquisition, DigiCert channeled its focus on integrating Symantec's infrastructure with its own and streamlining the architecture, systems, and processes. On top of this, the CA also built new technology and processes to support this updated infrastructure. The company followed an agile process in its integration and innovation efforts to deliver a holistic, integrated, customer-focused solution.
3. It is typical for companies going through acquisition to lose customers during the transition phase. However, DigiCert recorded continued growth while integrating Symantec's customer base.

Despite a turbulent market phase and an acquisition, the company has taken a significant share of the TLS certificate market. Based on Frost & Sullivan's estimates, DigiCert accounts for 50.7% of the total TLS certificate market by revenue in 2019. By volume of certificates issued, DigiCert accounts for 31.9% of the total TLS certificate market in 2019. In the extended validation certificate market, the CA holds a 61.9% market share in 2019.

Building Customer Loyalty through Quality Services

DigiCert has a robust customer support process in place. The company offers a host of value-added features and services such as 24*7*365 priority “skip the queue” validation and support, URL and domain blacklisting services, malware scanning and more. Emphasis on user experience and a customer-first approach to product development ensures that customers do not have to contact support teams often.

The customer support team aspires to give a one-call resolution for every customer support query. The company places significant emphasis on building and motivating the customer support team to gain a deeper understanding of the security industry. In addition to 16 global offices and multi-lingual customer support for regions such as APAC and EMEA, the company has a customer support center in each region.

With its process, product, and innovation aligned to customer needs, the company has recorded a net promoter score of 77 for its customer support team. Besides, the company has approximately 4,000 online reviews with an average rating of 4.8 out of 5, indicating a high ratio of satisfied customers.

DigiCert offers a variety of certificates. Within TLS, businesses can choose from three levels of certificates depending on the size, budgetary needs, and security requirements of the enterprise. In each of these levels, customers can choose from single, multi-domain, or wild card certificates.

- a) **Basic SSL** – Apart from affordable certificate options, customers get access to DigiCert’s certificate lifecycle manager, CertCentral, and 24*7*365 customer support. Prices in this category start from \$285 per certificate per year.
- b) **Secure Site SSL** – In addition to the benefits offered by DigiCert’s Basic certificates, Secure Site certificates come with the Internet’s most recognized trust marks, Norton and DigiCert Seals. Furthermore, the certificates include value-added services such as antivirus scanner, malware checker, and priority validation and support. Prices in this category start from \$399 per certificate per year.
- c) **Secure Site Pro SSL** – These are premium certificates and provide the highest level of website security and brand protection. Secure Site Pro certificates include access to the post-quantum crypto toolkit, include support services such as certificate transparency (CT), and log monitoring. These certificates range between \$995 and \$1,499 per certificate per year.

Thus, DigiCert offers a flexible pricing model that addresses the needs of different market segments. With a feature-rich service, the company ensures high levels of customer satisfaction.

Conclusion

DigiCert has exhibited strong market leadership – not just in terms of revenue or number of certificates issued, but also in driving the industry forward by supporting the adoption of new standards and by continually innovating through an agile development process. Even in emerging markets such as IoT or PQC, the company is developing use cases and standards to establish its thought leadership. By leveraging its superior technology, customizing it to regional markets, and having the best-in-class customer support system, DigiCert has established itself as the market leader.

With its strong overall performance, DigiCert has earned Frost & Sullivan’s 2020 Company of the Year Award.

Significance of Company of the Year

To receive the Company of the Year Award (i.e., to be recognized as a leader not only in your industry, but among non-industry peers) requires a company to demonstrate excellence in growth, innovation, and leadership. This excellence typically translates into superior performance in three key areas—demand generation, brand development, and competitive positioning—that serve as the foundation of a company’s future success and prepare it to deliver on the 2 factors that define the Company of the Year Award: Visionary Innovation and Performance, and Customer Impact).



Understanding Company of the Year

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

Key Benchmarking Criteria

For the Company of the Year Award, Frost & Sullivan analysts independently evaluated each factor according to the criteria identified below.

Visionary Innovation and Performance

- Criterion 1: Addressing Unmet Needs
- Criterion 2: Visionary Scenarios through Mega Trends
- Criterion 3: Implementation of Best Practices
- Criterion 4: Blue Ocean Strategy
- Criterion 5: Financial Performance

Customer Impact

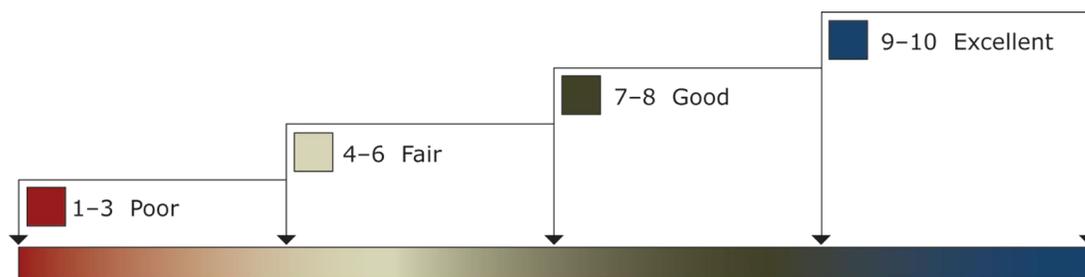
- Criterion 1: Price/Performance Value
- Criterion 2: Customer Purchase Experience
- Criterion 3: Customer Ownership Experience
- Criterion 4: Customer Service Experience
- Criterion 5: Brand Equity

Best Practices Award Analysis for DigiCert

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 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 considers Visionary Innovation and Performance and Customer Impact (i.e., 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, Frost & Sullivan has chosen to refer to the other key participants as Competitor 1 and Competitor 2.

<i>Measurement of 1-10 (1 = poor; 10 = excellent)</i>			
Company of the Year	Visionary Innovation & Performance	Customer Impact	Average Rating
DigiCert	9.5	9	9.25
Competitor 1	8.5	8	8.25
Competitor 2	7	8	7.5

Visionary Innovation & Performance

Criterion 1: Addressing Unmet Needs

Requirement: Implementing a robust process to continuously unearth customers' unmet or underserved needs, and creating the products or solutions to address them effectively.

Criterion 2: Visionary Scenarios through Mega Trends

Requirement: Incorporating long-range, macro-level scenarios into the innovation strategy, thereby enabling first-to-market growth opportunity solutions.

Criterion 3: Implementation of Best Practices

Requirement: Best-in-class strategy implementation characterized by processes, tools, or activities that generate a consistent and repeatable level of success.

Criterion 4: Blue Ocean Strategy

Requirement: Strategic focus on creating a leadership position in a potentially uncontested market space, manifested by stiff barriers to entry for competitors.

Criterion 5: Financial Performance

Requirement: Strong overall business performance in terms of revenue, revenue growth, operating margin, and other key financial metrics.

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 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

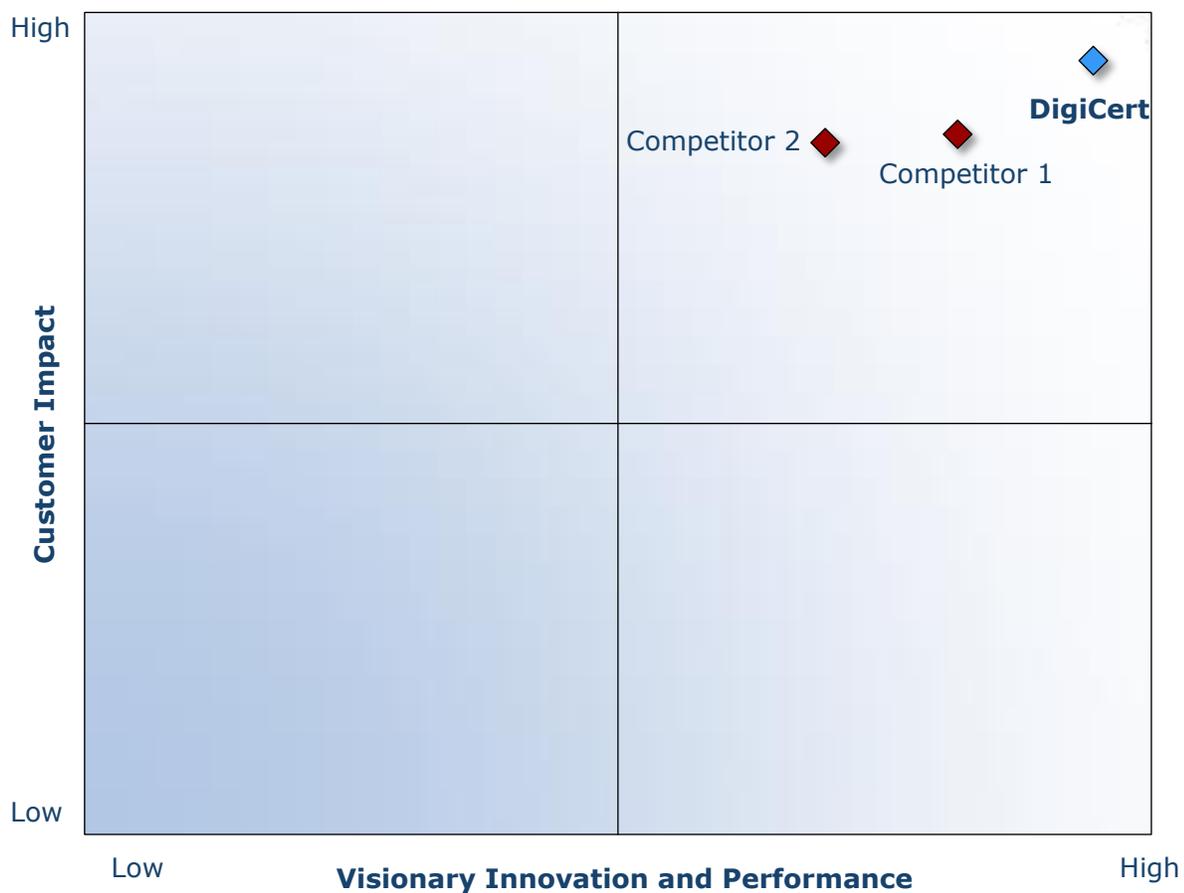
Requirement: Customer service is accessible, fast, stress-free, and of high quality.

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 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 world	<ul style="list-style-type: none"> • Conduct in-depth industry research • Identify emerging industries • Scan multiple regions 	Pipeline of candidates that potentially meet all best practices 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 practices 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 practices 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 practices 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 practices award recipient	<ul style="list-style-type: none"> • Review analysis with panel • Build consensus • Select winner 	Decision on which company performs best against all best practices criteria
9 Communicate recognition	Inform award recipient of recognition	<ul style="list-style-type: none"> • Present award to the CEO • Inspire the organization for continued success • Celebrate the recipient's performance 	Announcement of award and plan for how recipient can use the award to enhance the brand
10 Take strategic action	Upon licensing, company 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 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.



About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, helps clients 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 nearly 60 years of experience in partnering with Global 1000 companies, emerging businesses, and the investment community from 45 offices on 6 continents. To join Frost & Sullivan's Growth Partnership, visit <http://www.frost.com>.