

2018 Frost & Sullivan Asia-Pacific
Data Center
Enabling Technology Leadership Award

CORNING



Corning
Optical Communications

ASIA PACIFIC
ICT AWARDS

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Letter Of Congratulations

We are proud to present Corning Optical Communications with this year's Award for best practices in Enabling Technology Leadership in the data center industry.

Frost & Sullivan's global team of analysts and consultants continuously research a wide range of markets across multiple sectors and geographies. As part of this ongoing research, we identify companies that continually invest in new technologies to deliver a unique and superior customer experience, or invest in technologies that enhance a vast array of applications. This involves extensive primary and secondary research across the entire value chain of specific products. Against the backdrop of this research, Frost & Sullivan is pleased to recognize Corning Optical Communications as the Enabling Technology Leader in the data center industry.

To achieve enabling technology leadership is never an easy task, but it is one made even more difficult considering today's competitive intensity, customer volatility, and economic uncertainty—not to mention the difficulty of innovating in an environment of escalating challenges to intellectual property. Within this context, your receipt of this Award signifies an even greater accomplishment.

Moreover, we recognize that the selection of Corning Optical Communications as recipient of this Award is the result of many individuals (employees, customers, and investors) making daily choices to support in the organization and contribute in a meaningful way to its future. We enthusiastically acknowledge and celebrate these achievements.

Once again, we congratulate you on your achievements and wish you great success in the future.

Sincerely yours,



David Frigstad

Chairman
Frost & Sullivan

Industry Challenges

Increasing operating and deployment costs

Data center architectures are evolving to manage rapidly growing workloads and changing deployment models, with cloud deployments registering accelerated growth. While the technology complexities are demanding increased investments, services are increasingly getting commoditized. Hence, data center service providers are continuously seeking means to lower capital and operational costs to drive profitable growth.

Need to optimize floor space available

The ability to monetize data center services is directly proportional to available floor space, leading service providers to focus on optimizing available floor space. Deploying high-density cabling solutions enables them to meet the demand for high bandwidth capacity in duct installation and maximize space.

Ensuring lower latency rates and best-in-class service levels

With increasing competition among service providers, there is a significant need to ensure the ability to provide the highest standards of service. The demand for higher bandwidth is growing exponentially and emerging technologies, including artificial intelligence and the Internet of Things (IoT), are posing new challenges in managing this data. Thus, data centers need to enable high data rates and minimize latency.

Technology Leverage and Customer Impact

Commitment to Innovation

Corning Optical Communications is continuously demonstrating its commitment to innovation and developing in-depth expertise in manufacturing and engineering, among other fields.

Focusing on product innovation to create market differentiation, it offers a diverse range of offerings such as EDGE8™ and RocketRibbon™.

The EDGE8 data center solution provides a Base-8 design, pre-terminated high-density optical cabling system. RocketRibbon extreme-density cable comprises up to 3,456 fibers in a cable, resulting in significantly faster installation for data center service providers. Both solutions feature a future-ready design that offers a simple migration path to significantly higher bandwidth, while enabling lower total cost of ownership.

Commercialization Success

Delivering its 1 billionth kilometer of optical fiber in 2017, Corning Optical Communications has achieved commercial success in the data center market and established itself as a provider of choice for optical fiber manufacturing solutions, with its optical fibers deployed in data centers, networks, and long-haul and submarine cables globally.

As a testament to its success, the company's customer base comprises Fortune 500 companies and several leading hyperscale data center operators. Its principal markets in Asia-Pacific include China, Australia, Japan, Singapore, and several Southeast Asian countries, in which the company achieved significant revenue growth. Corning Optical Communications also recorded considerable customer wins in Australia in 2017.

Price/Performance Value

Corning Optical Communications is focusing on creating a compelling value proposition of performance, efficiency, and networking solutions with competitive total cost of ownership (TCO). Corning EDGE and EDGE8 solutions are deployed at over 50,000 data centers in 30 countries worldwide, highlighting the strong value proposition.

Corning solutions offer the simplest path of migration to 40G, 100G, and 400G connections. Customers can attain 100% fiber utilization without the need for conversion modules, assuring them that their investments go a long way in attaining greater fiber identification and routing speeds.

Commitment to Creativity

Corning Optical Communications is creating connectivity solutions that address the core needs of data center service providers – speed of installation, lower operating cost, and optimized floor space requirements.

The creative solutions address the need for scaling faster towards 400G in a compact footprint with the most competitive TCO.

Customer Service Experience

Strong focus on key value drivers for DC providers enhances the potential for better ownership experience. Corning's innovations are enhancing the speed of installation and network,

and the ability to reduce fiber required in the DC, all of which translates into creating better ownership experience for customers.

Conclusion

The award recipient demonstrates strong focus on innovation in the data center market. With new offerings that create compelling value proposition to address key needs of service providers, it has achieved significant success in the region.

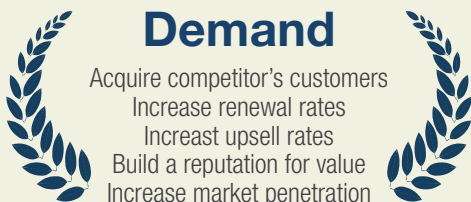
With its strong overall performance, Corning Optical Communications has earned Frost & Sullivan's 2018 Data Center Enabling Technology Leadership Award.



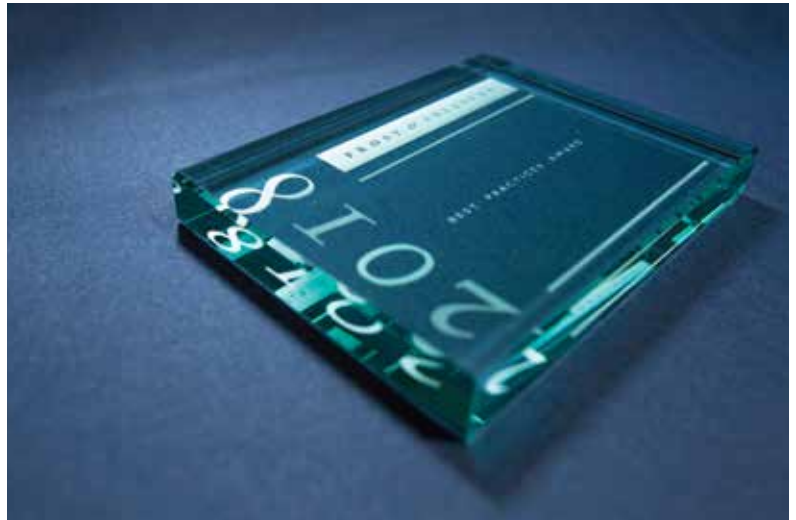
Ultimately, growth in any organization depends upon customers purchasing from a company and then making the decision to return time and again.

In a sense, then, everything is truly about the customer—and making those customers happy is the cornerstone of any long-term successful 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, best-practice organizations 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 two key factors—Technology Leverage and Customer Impact—according to the criteria identified below.

Technology Leverage

- Criterion 1: Commitment to Innovation
- Criterion 2: Commitment to Creativity
- Criterion 3: Stage Gate Efficiency
- Criterion 4: Commercialization Success
- Criterion 5: Application Diversity

Customer Impact

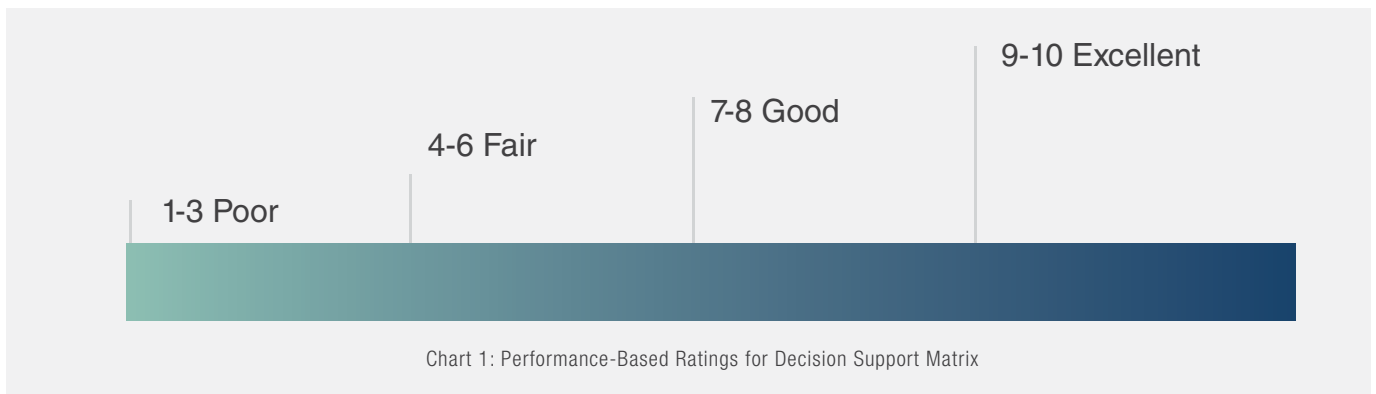
- Criterion 1: Price/Performance Value
- Criterion 2: Customer Purchase Experience
- Criterion 3: Customer Ownership Experience
- Criterion 4: Customer Service Experience
- Criterion 5: Brand Equity

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 Visionary Innovation & 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.

DECISION SUPPORT SCORECARD FOR ENABLING TECHNOLOGY LEADERSHIP

Measurement of 1–10 (1 = lowest; 10 = highest)	Enabling Technology Leadership		Average Rating
	Technology Leverage	Customer Impact	
Corning	9.0	9.0	9.0
Competitor	7.0	6.0	6.5

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.

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.

DECISION SUPPORT MATRIX FOR COMPANY OF THE YEAR AWARD (ILLUSTRATIVE)



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
 Monitor, target, and screen	Identify award recipient candidates from around the globe	<ul style="list-style-type: none"> • Conduct in-depth industry research • Identify emerging sectors • Scan multiple geographies 	Pipeline of candidates who potentially meet all best-practice criteria
 Perform 360-degree research	Perform comprehensive, 360-degree research on all candidates in the pipeline	<ul style="list-style-type: none"> • Interview thought leaders and industry practitioners • Assess candidates' fit with best-practice criteria • Rank all candidates 	Matrix positioning all candidates' performance relative to one another
 Invite thought leadership in best practices	Perform in-depth examination of all candidates	<ul style="list-style-type: none"> • Confirm best-practice criteria • Examine eligibility of all candidates • Identify any information gaps 	Detailed profiles of all ranked candidates
 Initiate research director review	Conduct an unbiased evaluation of all candidate profiles	<ul style="list-style-type: none"> • Brainstorm ranking options • Invite multiple perspectives on candidates' performance • Update candidate profiles 	Final prioritization of all eligible candidates and companion best-practice positioning paper
 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
 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
 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
 Assemble board of advisors	Finalize the selection of the best-practice award recipient	<ul style="list-style-type: none"> • Present candidates to a Board of Advisors • Build consensus • Select winner 	Decision on which company performs best against all best-practice criteria
 Communicate recognition	Inform award recipient of award 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
 Take strategic action	Share award news with stakeholders and customers	<ul style="list-style-type: none"> • Coordinate media outreach • Design a marketing plan • Assess award's role in future strategic planning 	Widespread awareness of recipient's award status among investors, media personnel, and employees

The Intersection Between 360-degree Research And Best Practices Awards



360-degree research: seeing order in the chaos

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 players and for identifying those performing at best-in-class levels.

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About Frost & Sullivan

Frost & Sullivan, the Growth Partnership Company, works in collaboration with clients to leverage visionary innovation that addresses the global challenges and related growth opportunities that will make or break today's market participants. For more than 50 years, we have been developing growth strategies for the Global 1000, emerging businesses, the public sector and the investment community.

Is your organization prepared for the next profound wave of industry convergence, disruptive technologies, increasing competitive intensity, Mega Trends, breakthrough best practices, changing customer dynamics and emerging economies?

Learn more about Frost & Sullivan at www.awards.frost.com



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For information regarding permission, write to:
 Best Practices Recognition Group
 Frost & Sullivan
 7550 IH 10 West, Suite 400
 San Antonio, TX 78229-5616 USA