FROST & SULLIVAN

ABB

2018 North American Digital Grid Communication Company of the Year Award

2018
BEST PRACTICES
AWARDS

Contents

Background and Company Performance

Industry Challenges

As the electric grid undergoes a digital transformation, the guarantee of a robust and a highly reliable communication infrastructure becomes crucial—particularly for executing increasingly complex, mission-critical, and emerging operations.

Emerging operations such as integrating behind-the-meter assets for virtual power plants, demand response, micro grids, and distributed energy resources have all become important components in the discussion of energy conservation and grid reliability.

A growing number of US states are declaring their commitment to renewable power with a few cities going as far as committing to obtaining 100% renewable power targets within the next decade or so.

To ensure successful integration and quick and seamless performance, these networks must deliver low latency and high availability, and must address vulnerabilities caused by lapses in cybersecurity. Successful integration also requires a deep understanding of operational and information and communication technology.

Utilities tend to be conservative in their approach to choosing the right communications vendor and to adopting the latest communications hardware owing to limited in-house expertise. Because of this, there is a growing need for managed services (aka communication as a service) platforms.

The majority of Tier I transmission and distribution industry participants have been expanding their expertise in the Internet of Things and communication spaces to better position themselves to address this unmet customer need. The rates of expansion and success stories vary by company.

Visionary Innovation & Performance and Customer Impact

This Company of the Year award acknowledges a market veteran that has taken extraordinary steps to address evolving customer needs and has truly embraced the digital transformation journey both internally and externally.

Customer Ownership Experience

ABB has been building communication networks in more than 100 countries and has more than 70 million connected devices worldwide. ABB Ability is the unified, cross-industry digital capability—extending from device to edge to cloud—that provides a digital platform to enable customers to know more, do more, do better, together.

Frost & Sullivan market research found that ABB Ability communication products ensure that its clients benefit from high-quality (all products are built adhering to ISO9001 standards) and real-time data, low operating costs, superior customer service, and strategic asset management.

This has resulted in ABB's early involvement in key utility projects in places such as:

- Spokane, WA (Avista Utilities)
- Santa Clara, CA (Silicon Valley Power)
- Rock Hill, SC
- Corpus Christi, TX
- Wellington, FL (Wellington Utilities)
- Los Angeles, CA (Glendale Power & Water)
- Abu Dhabi Water & Electric Authority (ADWEA)
- North-Rhine Westphalia, Germany (RWW)

DTE Energy

The US Department of Energy chose DTE Energy to roll out one of the largest smart grid projects in the country, benefiting more than 2.2 million customers in 7,600 square miles in Southeastern Michigan. The $168 million project used ABB's private wireless network to lay the foundation for the utility's smart grid communications infrastructure.

The infrastructure provides DTE with the necessary capacity and speed to support applications including advanced metering infrastructure (AMI), distribution automation (DA), substation automation, outage management, SCADA, and other smart grid applications in the future.

Guam Power Authority

Guam Power Authority (GPA) provides generation and distribution services to 52,000 customers on the 210-square-mile island of Guam. The public corporation found that ABB met its key project requirement of a single vendor capable of delivering a highly reliable private wireless field area network (FAN) supporting communications for multiple smart grid applications and survivability in typhoon-force winds.

GPA selected ABB's TropOS wireless broadband communications network to provide bidirectional communication between the AMI collectors and the utility head-end systems, as well as for substation automation equipment including voltage regulators, fault indicators, smart relays and transformer monitors; monitoring and control of renewable power sources; and replacement of leased lines for power and water SCADA communications for GPA and its sister utility Guam Waterworks Authority (GWA).

Other smart grid applications planned which leverage the TropOS network will include SCADA RTU communications, demand side management, mobile workforce management, water AMI, video surveillance, and water asset maintenance.

GPA has been able to reduce truck rolls, increase billing accuracy, expedite outage restoration, and increase customer satisfaction by 13% and lower line losses from over 7% to 4.5% by monitoring substation equipment using smart grid data. GPA and GWA also expect to save more than $800,000 annually by eliminating leased line communications in favor of TropOS and fiber to support SCADA and other operations telemetry and control applications.

Customer Service Experience

ABB's core strengths are in its technology and its ability to adapt to changing business and regulatory environments. The company has a strong focus on product support, which has

allowed it to differentiate itself from its competitors.

ABB's comprehensive services associated with ABB Ability wireless communication include all four phases of wireless network integration: planning, deployment, optimization, and commissioning. It has developed a global customer satisfaction survey program to proactively understand and manage customers' needs and determine their satisfaction. The high-level reporting tracks development trends, performance levels against customer expectations, and customer loyalty.

The company offers after-sales technical training services during which customers learn to plan, install, manage, and troubleshoot ABB wireless communication products. The training is designed to improve the operational expertise of engineers and technicians working in project planning, installation, commissioning, and maintenance.

Performance Value

ABB has witnessed several technological innovations and understands that adoption is costly. One of ABB's key value propositions that gives it a major competitive advantage is that its communication products are essentially backward-compatible with legacy meters, sensors, and devices across the grid.

Frost & Sullivan found that this gives utilities a significant advantage: they can upgrade their communications infrastructure without replacing existing electric assets; lower operating and replacement costs will eventually improve their bottom line.

Addressing Unmet Needs

ABB has taken a strategic approach of being the "one-point contact" for all communications needs in the utility industry. Utilities will be able to comprehensively address their needs for AMI, distribution automation, substation automation/security, and mobile workforce through ABB's full range of communications solutions that are based on the widest variety of platforms, including optical networks, power line carriers, wireless networks, tele-protection, and network management suite.

In addition to supporting smart grids, these multi-purpose products also serve wide-ranging industry verticals that include oil and gas, automotive and transportation, mining, and smart cities. Utilities that are expanding their operations beyond power, water, and gas can leverage ABB's product portfolio to harness maximum value from their communication infrastructure. Frost & Sullivan found that most competitors in the industry specialize in a single type of communication platform that is either restricted to wireless networks or optical fiber.

Implementation of Best Practices

Implementing industry-leading best practices to achieve operational excellence is at the core of what ABB does. Its Operational Excellence Program is based on the European Foundation for Quality Management Business Excellence Model. The multi-dimensional approach is driven by a dedicated team that works to achieve the highest standards of business and operational efficiency. The program helps ABB offer its customers standardized products and services, consistent quality, and global processes at a fair price

worldwide. In addition, the company manufactures all products in adherence to ISO 9001, an international quality management system standard.

Other management programs that help ABB stand apart from the competition include:

- People Satisfaction Management, a global people satisfaction survey that maps expectations and satisfaction. It is an effective way to focus on the areas that are most important to its customers, and provides valuable insights about strengths and development areas at country, regional, and global levels.

- Net Promoter® Score: ABB's customer satisfaction survey provides the company with an accurate indicator of a customer's loyalty to ABB as well as the likelihood of re-purchasing or referring.

- Service Knowledge Portal, which essentially is ABB's knowledge management tool to collect and share information. With more than 20,000 service employees worldwide, the portal allows ABB to capitalize on the collective knowledge of its people. Information in the portal is organized into relevant topics, which allows employees to connect and collaborate with others in their field and allows for a quick response to customers' problems and challenges.

Visionary Scenarios through Mega Trends

ABB, with more than 70 million connected devices and 70,000 control systems, has established itself as a market leader in digital applications. ABB Ability is a visionary approach to strategically invest in product innovation by leveraging ABB's breadth of technological expertise and tracking Mega Trends in the market. Innovative products and services incubated and developed by ABB Ability have given the company a first-mover advantage.

ABB has been a pioneer in substation technology, which is rapidly developing with the dawn of the Internet of Things. ABB has capitalized on this Mega Trend through ABB Ability's Digital Substation Program, which takes fiber optic technology and advances it by combining modern electrical gear with digital sensors and cloud computing. As a result, edge intelligence based on comprehensive, real-time information and predictive algorithms are being mainstreamed into utility operations.

Conclusion

ABB Ability wireless communication networks has become a market leader in supporting mission-critical distribution and substation automation systems and finding its place as a highly respected solution provider for private wireless mesh networks, including broadband, narrowband, licensed, unlicensed, mesh, point-to-point and point-to-multipoint, and microwave products. The recent addition of the ABB Ability digital platform allows ABB to take a visionary approach to addressing changing requirements and technological expectations.

With its strong overall performance, ABB has earned Frost & Sullivan's 2018 Company of the Year Award for digital grid communication.

Significance of Company of the Year

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

Understanding Company of the Year

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

Key Benchmarking Criteria

For the Company of the Year Award, Frost & Sullivan analysts independently evaluated two key factors—Visionary Innovation & Performance and Customer Impact—according to the criteria identified below.

Visionary Innovation & Performance

Criterion 1: Addressing Unmet Needs
Criterion 2: Visionary Scenarios through Mega Trends
Criterion 3: Implementation 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 ABB

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
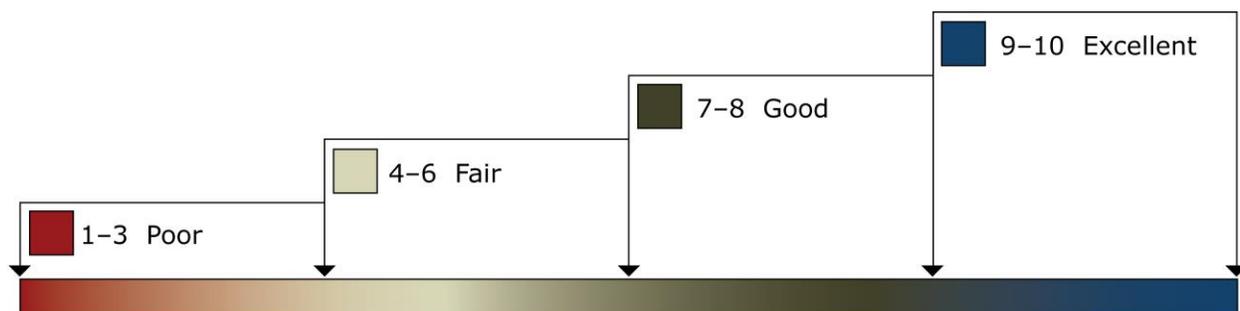
The Decision Support Scorecard is organized by Visionary Innovation & Performance and Customer Impact (i.e., these are the overarching categories for all 10 benchmarking criteria; the definitions for each criterion are provided beneath the scorecard.). The research team confirms the veracity of this 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 2 and Competitor 3.

Measurement of 1–10 (1 = poor; 10 = excellent)			
Company of the Year	Visionary Innovation & Performance	Customer Impact	**Average Rating**
ABB	**9**	**9**	**9.0**
Competitor 2	8	7	7.5
Competitor 3	8	6	7.0

Visionary Innovation & Performance

Criterion 1: Addressing Unmet Needs
Requirement: Implementing a robust process to continuously unearth customers' unmet or under-served 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 revenues, 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 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.
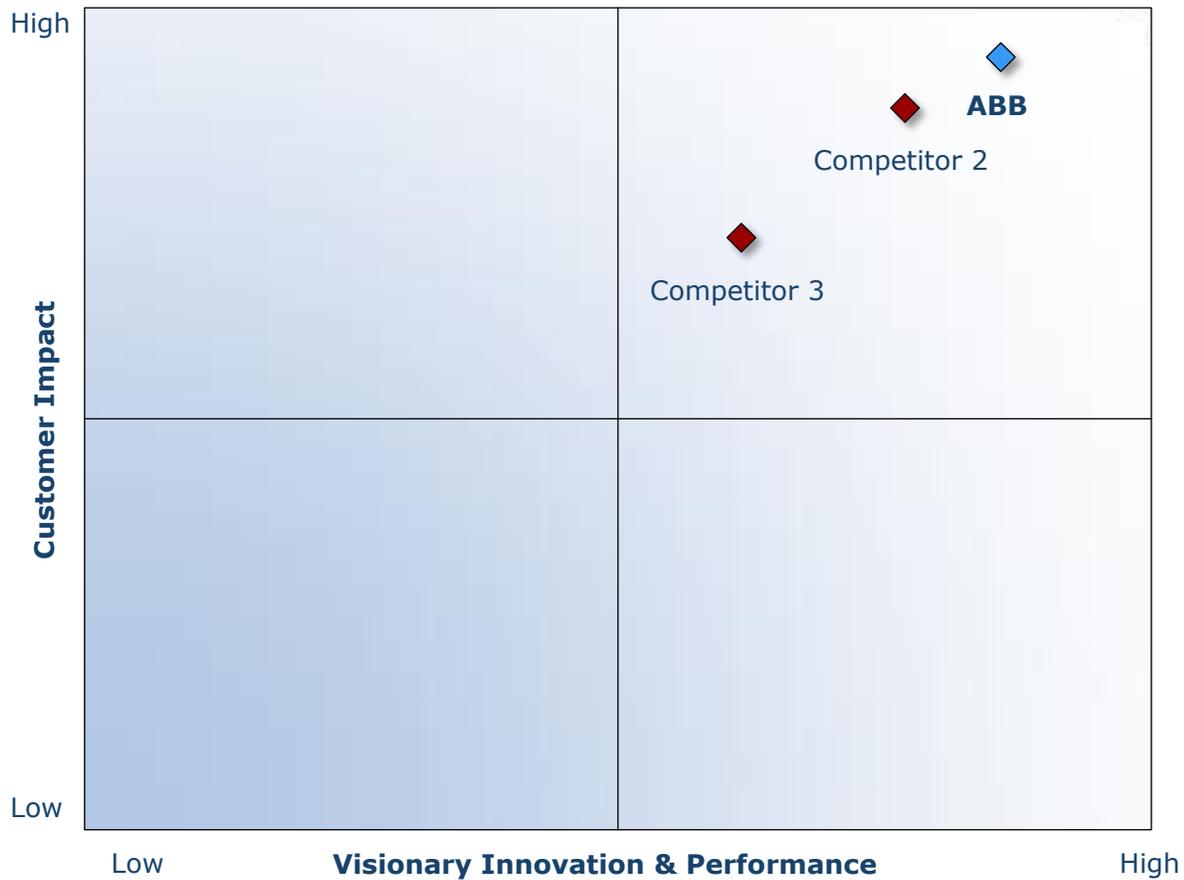
Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices

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

STEP		OBJECTIVE	KEY ACTIVITIES	OUTPUT
1	**Monitor, target, and screen**	Identify Award recipient candidates from around the globe	• Conduct in-depth industry research • Identify emerging sectors • Scan multiple geographies	Pipeline of candidates who potentially meet all best-practice criteria
2	**Perform 360-degree research**	Perform comprehensive, 360-degree research on all candidates in the pipeline	• Interview thought leaders and industry practitioners • Assess candidates' fit with best-practice criteria • Rank all candidates	Matrix positioning of all candidates' performance relative to one another
3	**Invite thought leadership in best practices**	Perform in-depth examination of all candidates	• Confirm best-practice criteria • Examine eligibility of all candidates • Identify any information gaps	Detailed profiles of all ranked candidates
4	**Initiate research director review**	Conduct an unbiased evaluation of all candidate profiles	• Brainstorm ranking options • Invite multiple perspectives on candidates' performance • Update candidate profiles	Final prioritization of all eligible candidates and companion best-practice positioning paper
5	**Assemble panel of industry experts**	Present findings to an expert panel of industry thought leaders	• Share findings • Strengthen cases for candidate eligibility • Prioritize candidates	Refined list of prioritized Award candidates
6	**Conduct global industry review**	Build consensus on Award candidates' eligibility	• Hold global team meeting to review all candidates • Pressure-test fit with criteria • Confirm inclusion of all eligible candidates	Final list of eligible Award candidates, representing success stories worldwide
7	**Perform quality check**	Develop official Award consideration materials	• Perform final performance benchmarking activities • Write nominations • Perform quality review	High-quality, accurate, and creative presentation of nominees' successes
8	**Reconnect with panel of industry experts**	Finalize the selection of the best-practice Award recipient	• Review analysis with panel • Build consensus • Select winner	Decision on which company performs best against all best-practice criteria
9	**Communicate recognition**	Inform Award recipient of Award recognition	• 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	• Coordinate media outreach • Design a marketing plan • Assess Award's role in future strategic planning	Widespread awareness of recipient's Award status among investors, media personnel, and employees

The Intersection between 360-Degree Research and Best Practices Awards

Research Methodology

Frost & Sullivan's 360-degree research methodology represents the analytical rigor of our research process. It offers a 360-degree view of industry challenges, trends, and issues by integrating all 7 of Frost & Sullivan's research methodologies. Too often companies make important growth decisions based on a narrow understanding of their environment, leading to errors of both omission and commission. Successful growth strategies are founded on a thorough understanding of market, technical, economic, financial, customer, best practices, and demographic analyses. The integration of these research disciplines into the 360-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.