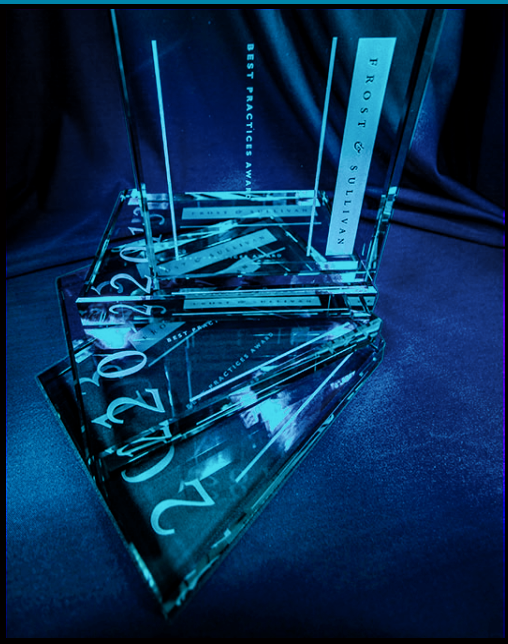


F R O S T & S U L L I V A N



2016 Global
Smart Energy Networks
Enabling Technology Leadership Award



F R O S T & S U L L I V A N

BEST
2016 PRACTICES
AWARD

GLOBAL
SMART ENERGY NETWORKS
ENABLING TECHNOLOGY LEADERSHIP AWARD

2016
BEST PRACTICES
AWARDS

Contents

Background and Company Performance	3
<i>Industry Challenges</i>	3
<i>Technology Leverage and Customer Impact</i>	4
<i>Conclusion</i>	6
Significance of Enabling Technology Leadership	7
Understanding Enabling Technology Leadership	7
<i>Key Benchmarking Criteria</i>	8
Best Practice Award Analysis for Aclara Technologies LLC	8
<i>Decision Support Scorecard</i>	8
<i>Technology Leverage</i>	9
<i>Customer Impact</i>	9
<i>Decision Support Matrix</i>	10
The Intersection between 360-Degree Research and Best Practices Awards	11
<i>Research Methodology</i>	11
Best Practices Recognition: 10 Steps to Researching, Identifying, and Recognizing Best Practices	12
About Frost & Sullivan	13

Background and Company Performance

Industry Challenges

The global power industry is in a period of transition as it moves towards smarter energy systems, driven by constant regulatory, commercial, technological and demand changes.

Frost & Sullivan ongoing analysis reveals that utilities face 3 main constraints as they adapt to changing market dynamics:

1. Utilities must invest in grid technologies that allow them to accommodate the inclusion of decentralized and renewable based energy systems. Despite the expected withdrawal of renewables subsidies, investment is still expected to increase in coming years. This is partly due to the fact that the technology is becoming cheaper, but is also because the price differential between fossil fuels and renewables will become small enough to support the business case. In preparing to integrate renewables and accommodate decentralized power generation, Frost & Sullivan points out that utilities need to further invest in interconnections, demand side management and storage.
2. Utilities often face financing challenges against a long list of investment needs - particularly as electricity consumption growth is expected to continue to decline. Coupled with continued weak financing capabilities, utilities must find alternative revenue sources to ensure continued topline growth. For example, utilities must try to generate revenue by being able to offer demand response and energy efficiency programs to its main customers.
3. Utilities must also balance investments between business-as-usual and future innovative projects. Frost & Sullivan research has ranked the top 5 power sector trends according to maturity of the trend and immediate impact on utilities. Three of these trends - substation automation, asset management and grid automation - can be considered "business-as-usual" investments. The main motivation behind these investments is extending the usefulness of existing assets, via such IT and communications innovations as big data analytics, the Internet of Things (IoT), and next generation communications networks.

Frost & Sullivan monitors several traditional telecommunications infrastructure vendors that have embarked on a targeted smart energy strategy over recent years. The approach by these vendors in targeting the vertical is varied; while some place emphasis on traditional communications infrastructure, many combine their core telecommunications capabilities with energy sector expertise to provide an end-to-end solution to energy companies. A gap between these stakeholders and utilities in the power sector can exist, particularly as utilities seek partners who can help to tackle the above-mentioned challenges.

Frost & Sullivan identifies Aclara Technologies LLC, via its acquisition of Tollgrade Communications' smart grid business, as a technology partner who can help utilities address their business-as-usual investment needs and be conscious of the requirement to integrate renewable and decentralized generation sites – all while keeping a prudent eye on total expenditure.

Technology Leverage and Customer Impact

Aclara Technologies LLC's acquisition gives it access to Aclara Grid Monitoring Platform that enables utilities to begin their analytics journey, particularly in the distribution networks of the electricity system. This Grid Monitoring Platform has 3 components. First, utilities can deploy medium voltage (MV) sensors, regardless of the underlying communications network, to collect key measurements at a more granular level. Secondly, the platform provides a management tool to utilities to increase their situational awareness, which rely on the software's visualization and analytics tools for monitoring and planning. Finally, the predictive grid analytics software feature gives utilities the essential data visibility of various line sensor measurements so that they can better react to or anticipate events. For example, Aclara Grid Monitoring Platform is often used to improve outage management and optimize operations and maintenance scheduling.

Industry Impact

Aclara Grid Monitoring Platform can accelerate the rate at which the power industry will incorporate the use of analytics; it can improve utilities' operational processes in 2 main ways.

- First, it is a straightforward solution that allows utilities to begin to record more measurements per sensor at a more granular level with a device that has roughly the same lifespan as the asset. For example, traditional monitoring devices predominantly found in the energy network often lack the ability to record a large number of measurements at once. Also, these sensors are not able to provide recording at small current of <100amps. However, Aclara's sensors can provide more detailed measurements and visibility of utilities' network as low as 3amps. In cost terms, these sensors also help utilities save on labour costs by eliminating false positive events.
- Secondly, through the Aclara Grid Monitoring Platform, utilities can easily monitor and respond to events in the network (based on the software's visualization and analytics capabilities). Utilities have struggled to deploy advanced analytics, as they lack certain skills and/or require IT investments. Aclara's platform simplifies this internal limitation by immediately demonstrating the linkages to operational processes - such as outage management or load balancing forecasting.

In the last year, Aclara Grid Monitoring Platform has continued to gain new customers outside of the United States, while working with 4 out of 7 distribution network operators in the UK.

Scalability

Aclara's solution can be scaled to the desired degree via its own core capabilities as well as expertise from its acquisition. Within the last year, Aclara has enjoyed a widening of the scope of pilot projects with utilities, expanding to running thousands of sensors from <100 sensors just 2 years ago.

Frost & Sullivan estimates that with substation automation becoming more common in the next 3 years, Aclara can further demonstrate its ability to offer its solution at scale because of its long trading history. Compared to some of its other competitors that offer a niche set of features, Aclara's breadth of proposition and record of operation reassures utilities on its longevity.

Commercialization success

Aclara's acquisition gives it access to an established and commercially successful business, one that applied its telecommunications expertise to the power sector; in particular, is expertise and experience of building the right hardware to measure network availability, delivering required analytics to provide accurate insights for network assurance, and the implementation of big data analytics are transferable assets. An adjacent expansion created Aclara's acquired business, giving it access to distribution management platform for utilities in the United States and then in the United Kingdom, where they are working with majority of the distribution network operators. Commercial interest is also increasing in other parts of the world, including South America and Asia.

Price/Performance Value

Another of Aclara's advantages is the savings it brings to utilities looking to invest in grid automation solutions. First, its sensors have a longer lifespan that is more in line with the average lifespan of energy systems. Because the sensors do not require a battery, Aclara offers a significantly lower total cost of operation by removing the need to manually replace them in the field. Secondly, the sensors are able to provide accurate readings plus location analytics that give utilities improved system visibility. Finally, the Grid Monitoring Platform allows utilities to better manage and respond to events in the network.

Customer Purchase Experience

Aclara's customers feel like they are buying the most optimal solution, since the solution clearly addresses the 3 industry challenges. First, distribution network operators need these solutions because they need to ensure renewables can be integrated within their energy systems. Secondly, the solution offers strong performance value for the total cost of ownership, as discussed above. Finally, through the Grid Monitoring Platform, utilities are able to apply the analytics to any operational process or metrics they need to improve. Without having specialist skills, utilities will also be able to deploy and manage the sensors easily via the platform.

Customer Acquisition

Aclara's customer references, particularly in the United Kingdom, are crucial in providing the new customers in other countries with confidence to invest in the solution. References are crucial, as they truly demonstrate real world benefits. They also provide a well-proven path in which a utility can embrace this particular roadmap to using analytics. Finally, references also help utilities build a straightforward investment business case in a world of limited financial resources and unlimited priorities. Compared to Aclara's other competitors, this is a significant first mover advantage.

Conclusion

Frost & Sullivan identifies Aclara Technologies as a technology partner who can truly help utilities address their business-as-usual investment needs, and also be conscious of the requirement to integrate renewable and decentralized generation sites – all while keeping a prudent eye on total expenditure. As such, Aclara Technologies LLC has earned the 2016 Frost & Sullivan Global Enabling Technology Leadership Award.

Significance of Enabling Technology Leadership

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 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 Global 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: Industry Impact
- Criterion 2: Product Impact
- Criterion 3: Scalability
- Criterion 4: Commercialization Success
- Criterion 5: Application Diversity

Customer Impact

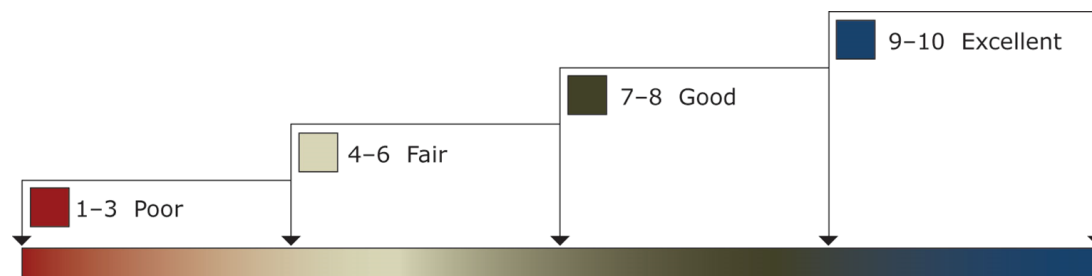
- Criterion 1: Price/Performance Value
- Criterion 2: Customer Purchase Experience
- Criterion 3: Customer Ownership Experience
- Criterion 4: Customer Service Experience
- Criterion 5: Customer Acquisition

Best Practice Award Analysis for Aclara Technologies LLC

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 Technology Leverage and Customer Impact (i.e., the overarching categories for all 10 benchmarking criteria; the definitions for each criteria 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 players as Competitor 2 and Competitor 3.

<i>Measurement of 1–10 (1 = poor; 10 = excellent)</i>			
Enabling Technology Leadership	Technology Leverage	Customer Impact	Average Rating
Aclara Technologies LLC	9.3	9.5	9.4
Competitor 1	7.3	7.8	7.6
Competitor 2	7.1	7.5	7.3

Technology Leverage

Criterion 1: Industry Impact

Requirement: Technology enables the pursuit of groundbreaking new ideas, contributing to the betterment of the entire industry

Criterion 2: Product Impact

Requirement: Specific technology helps enhance features and functionality of the entire product line for the company

Criterion 3: Scalability

Requirement: Technology is scalable, enabling new generations of products over time, with increasing levels of quality and functionality

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 like 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

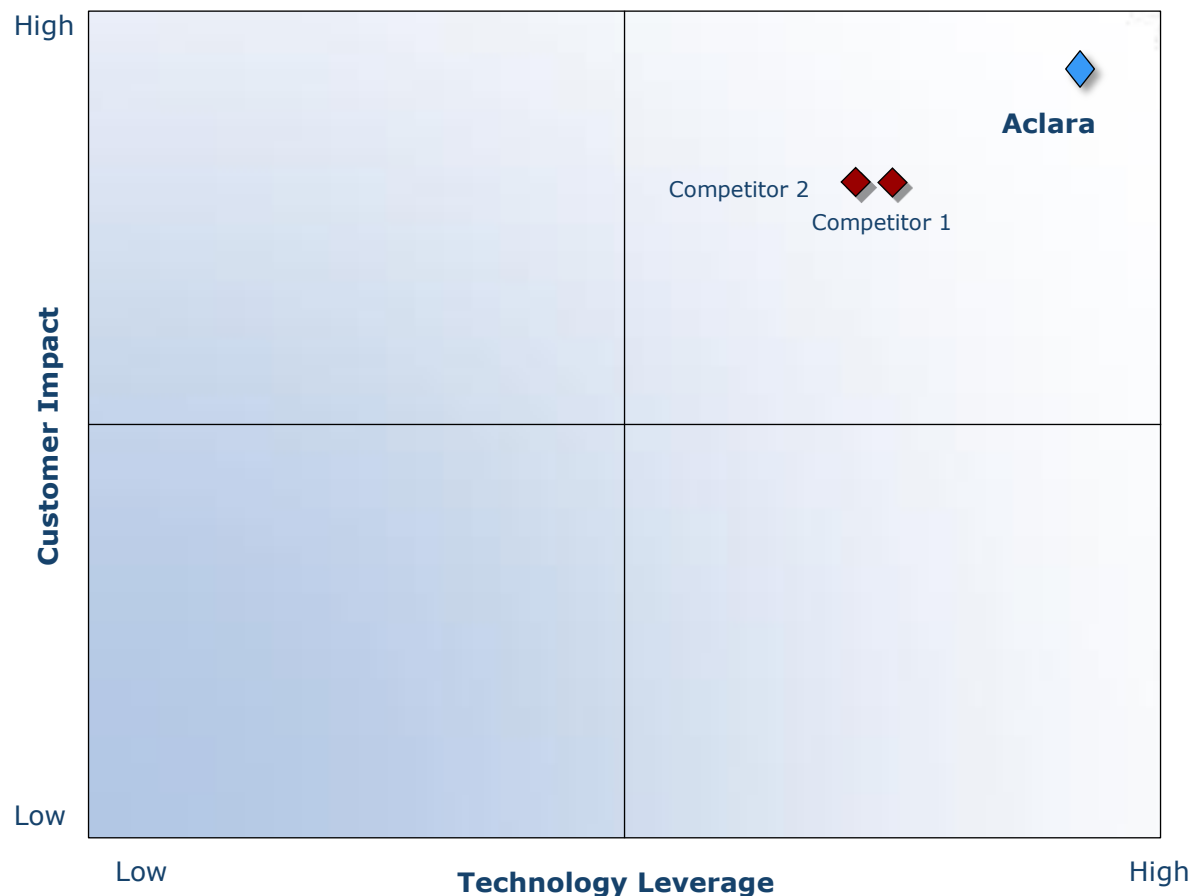
Requirement: Customer service is accessible, fast, stress-free, and of high quality

Criterion 5: Customer Acquisition

Requirement: Customer facing processes support the efficient and consistent acquisition of new customers, even as it enhances retention of current customers

Decision Support Matrix

Once all companies have been evaluated according to the Decision Support Scorecard, analysts can 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 ENABLING TECHNOLOGY LEADERSHIP AWARD

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

360-DEGREE RESEARCH: SEEING ORDER IN THE CHAOS



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

Frost & Sullivan Awards 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	<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
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-practice criteria • Rank all candidates 	Matrix positioning all candidates' performance relative to one another
3 Invite thought leadership in best practices	Perform in-depth examination of all candidates	<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
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-practice 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-practice 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-practice criteria
9 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
10 Take strategic action	Upon licensing, company may 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

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 almost 50 years of experience in partnering with Global 1000 companies, emerging businesses and the investment community from 31 offices on six continents. To join our Growth Partnership, please visit <http://www.frost.com>.