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BEST PRACTICES AWARD

2020

SkyFoundry

2020 NORTH AMERICAN
ENERGY MANAGEMENT SOFTWARE
ENTREPRENEURIAL COMPANY OF THE YEAR AWARD

Contents

Background and Company Performance

Industry Challenges

The North American power sector has transformed over the last ten years, shifting from traditional, large, and centralized conventional power sources to a diverse sector full of renewable energy resources (RES). While this transformation has unlocked many new opportunities, it has created a unique and growing imbalance within the North American electricity system. In addition, the increase in electricity generation from renewables, which are inflexible by nature, is creating volatility and unpredictability for the energy supply across the grid. This increase in demand for electricity and the transformation in the North American electricity sector will strain the economy and increase the risk of power blackouts; however, investing in more capacity would be an expensive solution to the above challenge for both utilities and consumers.

To address this challenge and reduce the strain on the grid, power and utility companies are increasingly recognizing the energy management system (EMS) as one of the most important and cost-effective solutions. An efficient EMS can reduce the energy expenditure of companies and industries across different business verticals and thus lead to savings on energy consumption and positively impact the environment. An EMS is important in distribution systems and can impact the electricity generation system as well. This solution reduces the dependence on fossil fuel-based generation systems and aids in the large-scale integration of renewable energy sources. In recent years, the EMS market in North America has emerged as a fast-growing sector, with increasing emphasis on improving energy efficiency and sustainability across organizations.

An EMS consists of a software component, energy management software, and hardware to connect with assets. While the hardware collects and transmits the data generated from different energy-consuming assets across the organization, the energy management software analyzes the data and helps facility management view energy consumption by asset, identifies assets that have high energy consumption, and recommends actions to reduce energy expenditure by replacing machinery or monitoring energy use more closely.

Many businesses are still manually inputting utility energy bill data into their systems, which can be time consuming and can lead to inaccuracies. With energy management software, energy data can be easily extracted and analyzed, providing companies with accurate information on their energy use and helping them avoid errors from manual analysis. Moreover, energy management software helps businesses with cost reductions and increases operational efficiency.

Energy management software is an exciting market in North America that is poised for healthy growth for the next five years. Regulatory frameworks will drive the demand for this software in the coming years to encourage energy efficiency and increased customer awareness on reducing the carbon footprint and energy expenditure. The EMS market will be characterized by advancements in wireless connectivity, smart sensors, Internet of Things (IoT), Big Data analytics platforms, cloud computing, and new business models. To stay competitive in the energy management software market, companies need to offer solutions with competitive pricing and attractive business models.

Entrepreneurial Innovation and Customer Impact

Delivering Energy Management Solutions since 2009

Founded in 2009, Virginia-based SkyFoundry is a leading energy management software provider that offers its SkySpark® platform for customers, including original equipment manufacturers (OEMs), utilities, energy service companies (ESCOs), systems integrators and other companies that support the built environment. The company was founded with the clear objective to disrupt the energy management software market by creating an innovative software platform that enables users to save energy and improve both energy and operational performance. The following are some of the company's key areas of focus:

- Energy management and data analytics

- Automated System Optimization

- Facility management

- Asset performance management

The company empowers businesses to innovate by leveraging its flexible software platform providing full transparency so that consumers are aware of their energy consumption by asset, sources of energy consumption, equipment performance and overall operational costs. The SkySpark platform includes a complete suite of tools for energy data analysis and reporting applications and automatically performs analytics on the data from heating, ventilation, and air-conditioning (HVAC); lighting; automation systems; and other assets connected to the meter to identify consumption patterns, faults, deviations, and opportunities for cost reductions and operational efficiency improvements.

The SkyFoundry team is led by industry leaders with deep experience in energy management automation, and the IoT. Since 2009, the company has been strengthening its cutting-edge research and development team, which is proficient in energy markets, artificial intelligence (AI), edge computing, machine learning (ML), smart algorithms, distributed computing, automation, and cyber security. With such a talented workforce, the company has remained successful in the energy management software market.

Brian Frank, founder of SkyFoundry, was the co-founder of Tridium and the chief architect of Niagara Framework. In addition, Brian is a contributor to key open-source initiatives in the smart device industry, including OBIX, CoAP, Sedona, Fantom, and Project Haystack. John Petze, co-founder of SkyFoundry, was CEO of Tridium and later served as the global sales director for Cisco's Smart Buildings Division. John was named as one of the top 10 pioneers in IoT technology in 2006, and is Executive Director of Project-Haystack.org, the open source initiative that develops meta data standards for building and equipment systems.

SkyFoundry's Business Model

SkyFoundry's end-to-end SkySpark platform can be applied to a diverse range of business uses, scenarios and vertical markets. The company goes to market exclusively through a

worldwide network of authorized reseller partners. SkySpark is sold as licensed software and runs on all major operating systems and cloud environments. This flexibility enables its diverse partner channel to deploy the software on-premise where required, offer it as Software as a Service and deploy it at the edge by embedding it into proprietary software applications and hardware products. The software provides a complete end-to-end platform that includes data acquisition, data normalization, highly efficient storage, a continuous processing analytics engine and a suite of data visualization applications. It also includes the capability to be extended by partners and OEMs enabling them to provide their own value-add and market differentiation. This combination of a ready-to-go software application that is also easily extensible reduces the time-to-market for partners, thereby decreasing software development and support costs.

The company's business model is the sale of software licenses. License fees are based on size/capacity of the installed system as measured by "points" - a point being anything that data is collected for, i.e., a sensor, meter actuator, etc. All features and functions are provided with all licenses including a comprehensive suite of apps that automatically visualizes real-time data and identifies patterns, correlations, and key performance indicators (KPIs), all without requiring any custom development of graphical screens. It does, however, enable customers to create customized visualizations, displays, and apps as needed.

To enable data acquisition from diverse systems and devices, the platform includes a variety of data connectors, including Modbus TCP, OBIX, Haystack, Obix, simple network management protocol (SNMP), Sedona, SQL, MQTT and OPC UA, and a connector development toolkit that enables rapid development of connectors to other systems and protocols.

One of the most unique capabilities of the software is that it can be deployed in a distributed architecture from the edge to the cloud. This provides significant differentiation from cloud only solutions and enables efficient and reliable data collection and storage, while addressing security requirements for mission critical applications.

With over ten years of market expertise, and deployments to over 1 billion sq ft of facilities worldwide, SkyFoundry has strongly positioned itself in the energy management software market to tackle the most pressing challenges and market gaps through its scalable SkySpark platform.

SkyFoundry's SkySpark Energy Management Software Platform

As a completely open platform, SkySpark enables collection and analysis of data coming from a wide range of diverse equipment, sensors, and devices. The software normalizes that data following the open-source Project-Haystack.org meta data standard. The analytics engine then processes rules and algorithms against the data through a variety of in-built pattern recognition, advanced math and machine learning techniques to quickly identify issues worthy of attention. It then provides operators with clear, easily understandable visualizations on these issues, including frequency, duration, magnitude,

and cost. The end result is to help customers 'find what matters' in their facility operations and equipment systems.

Through its SkySpark platform, SkyFoundry addresses several gaps in the energy management software market. For example, collecting and storing terabytes of heterogenous data from different equipment, sensors, and devices can be challenging for any energy management software provider. SkySpark's high performance Folio Database and advanced data compression enable the collection and storage of live sensor data with in a fraction of the storage space required by conventional databases while providing millisecond access times. To turn the collected data into actionable insights, energy management software providers need to define rules and algorithms manually to manage and derive value from terabytes of data. SkySpark's analytic engine, called Axon, automatically processes rules and algorithms and generates visualization and notifications, all without any manual interference. To address the diverse needs of facilities of different types, SkySpark combines full programmability with an extensive set of in-built analytics functions. This enables partners to implement their own advanced analytic algorithms without dependence of SkyFoundry.

The platform can be used in a wide variety of applications, including energy and resource management and reporting; monitoring of equipment, sensors, and devices; fault detection, energy analysis; load profiling; facility benchmarking; and asset performance. It provides customers with the ability to gain the needed insights to improve energy efficiency, reduce energy use, and enhance overall facility operations, thereby lowering costs and improving asset performance.

SkySpark for OEMs and SaaS Providers

With SkySpark, SkyFoundry provides an end-to-end software solution to its partners enabling them to aggregate, mine, and analyze data generated from automation systems, meters, sensors, and other smart devices. The company's ready-to-go platform takes on the toughest challenges of interoperability, database dependency, semantic modeling, and information delivery and helps partners derive value from their investments. The platform can run in various environments, ranging from small edge devices to virtual servers in the cloud, which is a clear market differentiator when compared to competitors. In addition, the platform provides OEM customers with the flexibility to deploy solutions based on their needs, such as SaaS, on-premise deployment, and embedded products and differentiate their offering with OEM-proprietary extensions and apps.

The company continuously increases its market expertise, specifically through effective partnerships, and has discovered new ways to develop its competence and support blue ocean strategies. SkyFoundry currently serves over 140 organizations, including major OEMs, ESCOs, system integrators, and specialty technology firms, and its platform is currently deployed in over 15,000 facilities worldwide, encompassing over 1 billion square feet. This accomplishment from an energy management software provider is huge because only a few companies have accomplished this feat to date.

The following are several features of the SkySpark platform:

- Analyzes and normalizes asset data based on several factors, such as days, location, time, and size, and then creates custom normalization factors.

- Generates reports quickly and easily and exports energy data across various data formats, such as Excel, CSV, XML, and JSON.

- Automatically processes rules and ML algorithms on the data to detect issues, patterns, correlations, anomalies, and trends.

- Automatically generates visualization on data and analytic results and tools to create customized user apps and reports.

- Offers a distributed computing architecture to enable deployment from the edge to the cloud.

- Includes certificate-based authentication for security purposes, trusted platform module (TPM) integration, HTTPS in the browser, and lightweight directory access protocol (LDAP) support for centralized credential management.

- Automatically notifies users of any faults and anomalies through email messages, with hyperlinks and report attachments.

SkyFoundry's SkySpark platform allows partners to adhere to regulatory frameworks related to energy efficiency, optimize their service offerings and costs to develop software, and holistically improve energy management software capabilities. Frost & Sullivan applauds SkyFoundry's commendable efforts and success, considering that more than 90% of its partners are satisfied, and its customer retention rate is high. The company has more than 100 customers across North America, Europe, Asia-Pacific, and the Middle East. In North America SkyFoundry's key partners include fortune 100 companies such as CBRE, IBM, and JLL, as well as mid-market and specialty engineering service companies including Altura, BuildingFit, ATS, DLR, Intellastar, EcoVox, IoTWarez, BuildingsIoT, Bueno Systems, Energenz, Crowley Carbon, and many others.

Conclusion

SkyFoundry's SkySpark platform automatically collects and analyzes heterogenous data from automation systems, meters, sensors, and other smart devices across the customer's premises to identify issues, faults, trends, correlations, and opportunities for operational improvements and cost reductions. The company's powerful SkySpark platform creates a marketplace that enables customers to turn data into actionable intelligence, and adapt service offerings to support new business models in the energy efficiency and facilities management market. SkyFoundry's technological expertise is far ahead of the curve, demonstrated by its expert founding members, diverse customer segments, and state-of-the-art platform.

For its strong overall performance, SkyFoundry has earned Frost & Sullivan's 2020 Entrepreneurial Company of the Year Award in the North American energy management software industry.

Significance of Entrepreneurial 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 innovation or growth strategy. To achieve the dual goals of customer engagement and growth, an organization must be best in class in 3 key areas: understanding demand, nurturing the brand, and differentiating from competition.

Understanding Entrepreneurial Leadership

Demand forecasting, branding, and differentiation underpin an entrepreneurial company's journey toward forming deep relationships with customers and permanently altering the market with their actions. Entrepreneurial Innovation and Customer Impact are the cornerstones of this award, as discussed further in the next section.

Key Benchmarking Criteria

For the Entrepreneurial Company of the Year Award, Frost & Sullivan analysts independently evaluated Entrepreneurial Innovation and Customer Impact according to the criteria identified below.

Entrepreneurial Innovation

Criterion 1: Market Disruption
Criterion 2: Competitive Differentiation
Criterion 3: Market Gaps
Criterion 4: Blue Ocean Strategy
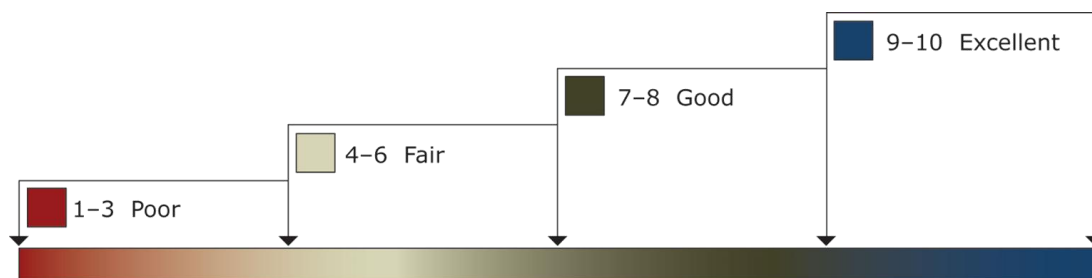Criterion 5: Passionate Persistence

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 SkyFoundry

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

9–10 Excellent
7–8 Good
4–6 Fair
1–3 Poor

The Decision Support Scorecard considers Entrepreneurial Innovation 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.

Measurement of 1–10 (1 = poor; 10 = excellent)			
Entrepreneurial Company of the Year	Entrepreneurial Innovation	Customer Impact	**Average Rating**
SkyFoundry	**9**	**9**	**9**
Competitor 1	8	8	8
Competitor 2	7.5	7.5	7.5

Entrepreneurial Innovation

Criterion 1: Market Disruption
Requirement: Innovative solutions that have genuine potential to disrupt the market, making current solutions obsolete and shaking up competition.

Criterion 2: Competitive Differentiation
Requirement: Deep understanding of both current and emerging competition to create and communicate strong competitive differentiators in the market.

Criterion 3: Market Gaps
Requirement: A clear understanding of customers' desired outcomes, the products that currently help them achieve those outcomes, and where gaps exist.

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: Passionate Persistence
Requirement: A deep belief in the rightness of an idea and a commitment to pursuing it despite seemingly insurmountable obstacles.

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.
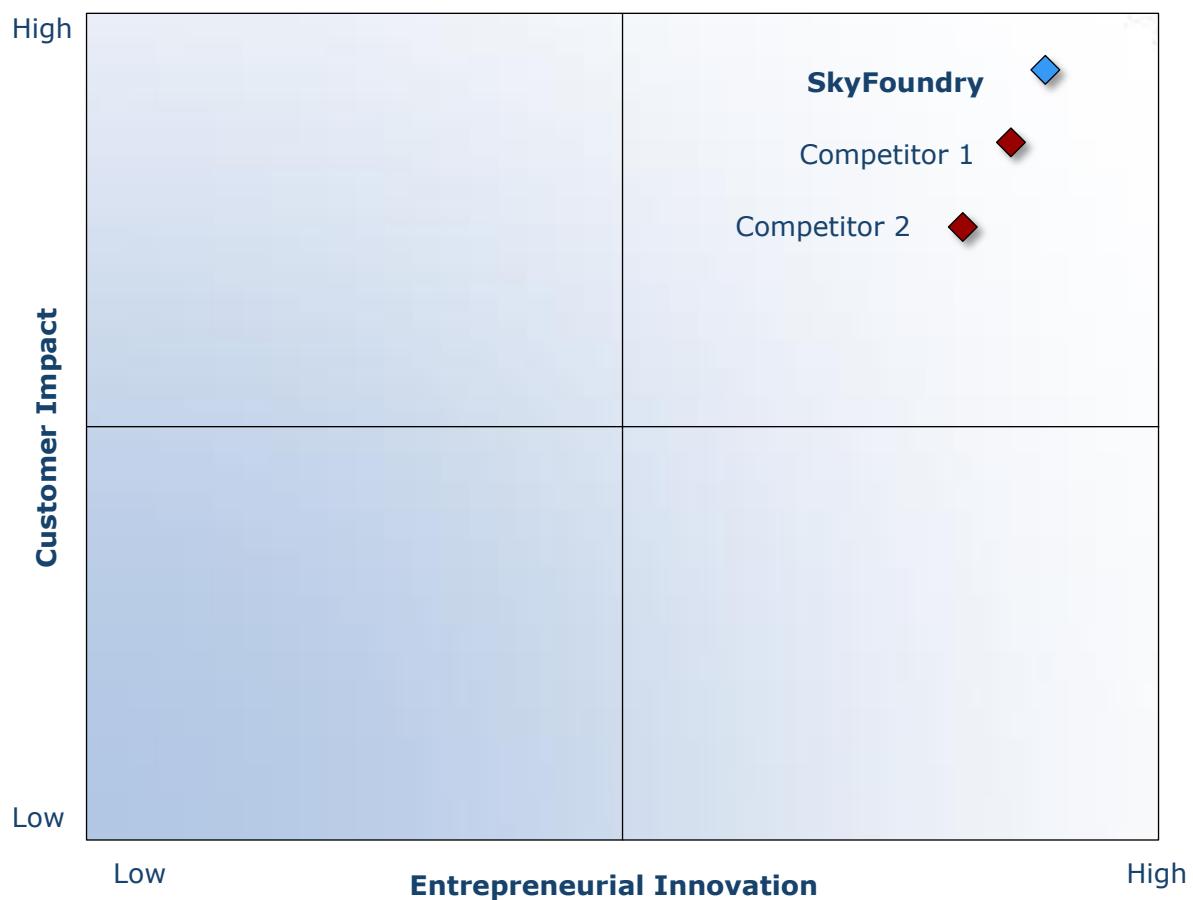
Criterion 4: Customer Service Experience

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	• 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	• 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	• 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	• 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	• 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 practices award recipient	• Review analysis with panel • Build consensus • Select recipient	Decision on which company performs best against all best practices criteria
9	**Communicate recognition**	Inform award recipient of recognition	• Announce 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 is able to share award news with stakeholders and customers	• 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

360-DEGREE RESEARCH: SEEING ORDER IN THE CHAOS

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.