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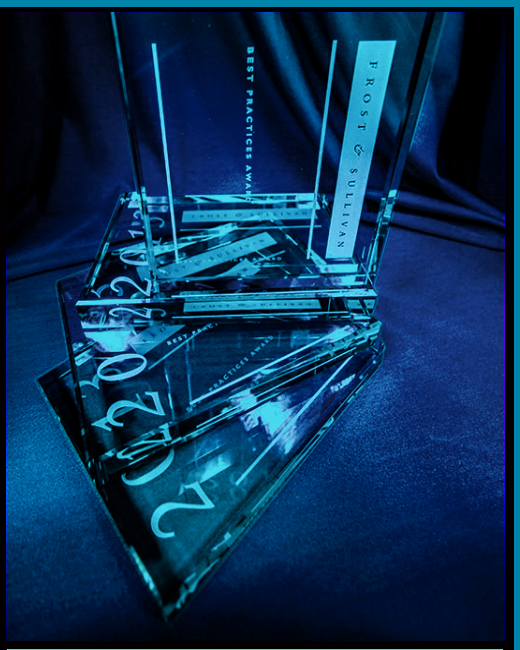
sparkcognition

2016 Global Cognitive Computing Customer Value Excellence Through Technology Convergence Award



FROST & SULLIVAN

2016 BEST PRACTICES AWARD

GLOBAL CONGNITIVE COMPUTING CUSTOMER VALUE EXCELLENCE THROUGH TECHNOLOGY CONVERGENCE AWARD

2016 BEST PRACTICES AWARDS

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Background and Company Performance

Industry Challenges

The world is witnessing rapid digital transformations across agriculture, utilities, public distribution services, manufacturing as well as supply chain management. Things, people, and machines connected to sensors and cloud services have been instrumental in driving such transformations, facilitating innovative business models, and blurring industry boundaries. The Internet of Things (IoT) is harmonizing the way machines and devices communicate with people and vice versa. It is adding the 'smart' to Manufacturing with real time inventory and asset management information system, employee tracking, and predictive maintenance. It is facilitating Smart Healthcare with remote monitoring and intervention, Smart Cities with centralized surveillance and public distribution services as well as Smart Homes and automotive connectivity.

A connected world, however, faces its own challenges. Devices in IoT need innovative sensing techniques and information delivery mechanisms. A major obstacle that needs to be addressed is the problem of connectivity. Different devices need to be wired differently, depending on their power consumption, throughput, and the kind of information to be transmitted. Unscheduled and unforeseen failure of assets increases business expenditure. Securing those assets from downtime and information flow from external threats is paramount to the Industrial Internet applications. Predictive analytics is essential to optimize usage and minimize frequency of asset failure.

With global data explosion, the gap between the amount of data gathered and the number of people analyzing that data is growing exponentially. A traditional Security Information and Event Management (SIEM) technology cannot extract insights that require a deeper level of understanding. Making sense of massive volumes of data in lesser time and at lower costs calls for a replacement of traditional tools and techniques with cognitive computing and natural language processing (NLP) coupled with advanced analytics.

SparkCognition is bridging the gap between Big Data and predictive maintenance by harnessing real time data from connected devices and incorporating deep learning and artificial intelligence (AI) for more accurate risk assessment and intervention before the incident actually occurs.

Technology Convergence Impact and Customer Impact

Business Value from Converging Technologies

A number of products from household to industry systems, machinery, and hospital equipment as well as people are beginning to be connected/embedded with sensors. This kind of an interconnected system has facilitated innovation in IoT applications, connectivity systems, and Big Data analytics. It has also opened doors to malicious threats and external intervention into industrial systems as well as critical medical and personal information. The convergence of Big Data, low-cost powerful computers,

cognitive computing, IoT, and artificial neural networks has been instrumental in the development of SparkCognition's offerings.

Its solutions span across virtual and physical security and predictive analytics leveraging the company's automated model building cognitive algorithms. SparkPredict™ concentrates on system health in the Industrial Internet and IoT space, gathers sensor data from connected devices, and predicts when a system would fail. This helps to reduce downtime and prevent machine failures. Cognitive algorithms devised by SparkCognition go beyond traditional methods of pattern recognition and threshold based methods by automatically developing, deep learning, and curating models for every asset.

SparkCognition's Mindfabric™ is capable of harnessing real time infrastructure data and learning from it continuously, allowing for more accurate risk mitigation and prevention policies to intervene and avert disasters. The company's cybersecurity centered solution, SparkSecure™, analyses structured and unstructured data and natural language sources to identify potential attacks in the IoT environment. SparkSecure has the advantage of best-of-breed AI and the benefits of big data, and can provide actionable insights to the information and strategy officers. The uniqueness of the cognitive platform is resonated by the fact that, it can continuously learn from data and derive automated insights to thwart any emerging issue. Further, the company is differentiated compared to competitive solutions, which requires manned operation centers to sift through volumes of data and justify anomalies.

Further, the integration of SparkCognition's security algorithms and sensor data with IBM Watson's cognitive computing is addressing this challenge, allowing customers to manage a large number of assets without having to custom-build prognostic models.

Growth Potential

Business enterprises rely on assets that are capable of failing due to natural wearing off or due to external Stuxnet Style cyber threats. Currently, identifying zero-day is one of the biggest challenges faced in cybersecurity. The traditional method of identifying malware has been a signature-based approach to estimate if an incoming piece of information has potential threats. This will require frequent updating of databases with new threats being identified—a process which will become tedious over time.

SparkCognition's methodology of tackling this challenge through cognitive data analytics, machine learning, and AI algorithms has proven to be path-breaking. SparkSecure™ Cognitive Insights, a cognitive security analytics solution, is based in the cloud collects, analyzes and learns from the data it has access to. It has been designed to use algorithms to identify trends and patterns, and thereby predict possible threats. It learns from recent threats and leverages the information to prevent similar threats. The ability of the solution to learn, adapt and thwart as threat lifecycles change is truly a pioneering approach in a market awash with traditional offerings. Some of the applications that SparkSecure has pioneered includes SSH attacks, malicious malware, spearfishing attacks

through the leverage of learn and respond Further, the solution can leverage the knowledge and turn it into security policies which can implemented on system for ongoing security intelligence protection.

Another application, SparkPredict use case is with with ShipXpress Inc., a pioneering cloud-based supply chain software company. This allows it to detect anomalies and potential failures for railcars. SparkCognition's predictive algorithms will automatically develop models for each railcar based on the mileage, travel history, time period, and other seasonal environmental conditions as well as the load percentage of each railcar. With such automated model building capabilities, companies can democratize the use of Big Data in industrial applications.

The company has already closed 30 business deals, and has been focusing on a revolutionary fingerprinting technology as well as AI and machine learning to address virtual security threats. It is focusing on devising cutting edge AI algorithms to address a range of issues from prediction to natural language processing problems. It ingests sensor data from numerous devices without knowing the physics of the machine, and builds a dynamic model of that asset (vendor/physics agnostic) to communicate actionable insights, thereby securing companies from asset failures and external threats.

The company has also recently announced its partnership with Circadence. As part of the project Aeres, the two companies will work on 3D reality in combination with AI to create an environment which allows cyber warriors to be trained more effectively. This platform is meant to deliver real time threat intelligence while integrating natural language processing for superior instruction generation.

Industry Impact

Maintaining security in cloud applications is a growing challenge compounded by increasingly complex attacks. Traditional approaches have been known to be capable of providing companies with false positives. In-context information is instrumental in helping cyber warriors to address issues proactively. Conveying deep, complex business problems involves broad usage of natural language processing and in-depth understanding of the unstructured content.

SparkCognition, through SparkPredict, applies cognitive machine learning capabilities to protect assets, minimize costs, and optimize schedules. The MindFabric Analytics platform serves as a workspace for analytics professionals to draw insights from Big Data. SparkCognition's alliance with IBM Watson has expanded the frontiers of machine learning and cognitive computing which are used to solve complex issues across industries. SparkCognition's threat assessment and remediation platform is an end-to-end security platform, leveraging sophisticated AI algorithms to detect, interpret, research, and mitigate threats. The value of the company is truly in its models and algorithms which learns, runs the process and progressively improves with time. At a juncture, wherein the

industry need is widening its gap with certified human capability, solutions from pioneering companies like SparkCognition is poised to become an industry standard.

Return on Investment

SparkCognition is targeting a $10-billion IoT security market. Its sophisticated failure prediction reduces the forewarning time from days to hours. It was able to offer asset-agnostic prediction to support a larger fleet of more diverse assets more cost-effectively. Its automated model building complements human data scientists. Moreover, this model tunes over time and can adapt to various changes in the operating conditions. For one of its customers, a leading supplier of industrial and environment machinery, SparkCognition's solutions were able to detect anomalies across a wider range, achieving more than 99% accuracy, with potential failures detected 5 to 6 days in advance**.**

The company has been offering asset protection to large SaaS vendors by providing signature free prevention mechanisms and reducing zero-day threats. SparkCognition has also developed a cognitive resolution solution for Dassault Falcon Jet. The client has been provided with the iPad version of SparkPredict; this allows the client to ask questions in natural language and get prompt answers, thus reducing the time required to address pending issues.

Customer's Perception of Value

SparkCogntition's has applied its AI algorithms to provide best-in-class solutions to the biggest utility in the United States, Duke Energy, for protecting large multi-billion dollar turbines. It has been able to improve forewarning of potential threats. Moreover, it has applied natural language processing, ingested gigabytes of data, and identified patterns to predict disasters and shut down. It has also been able to improve failure forewarning for the largest pump manufacturer from five days to only a few hours. These mission-critical use-cases speaks volumes of SparkCognition's technology prowess in a high-growth market.

SparkCognition has also succeeded in improving efficiency of the wells by reducing the number of stuck pipers, predicting hole cleaning requirements, optimizing drilling and operating parameters, and predicting and reducing downtime. The company has successfully managed critical assets for start-ups, accurately predicted useful asset life, analyzed patterns, and predicted failures. It has sent alerts on impending failures and provided insights on optimizing designs based on advanced analytics. SparkCognition, with its superior technology, navigates the cyber threat landscape and enables cyber warriors to be trained to effectively tackle potential external and internal threats.

Customer Service Experience

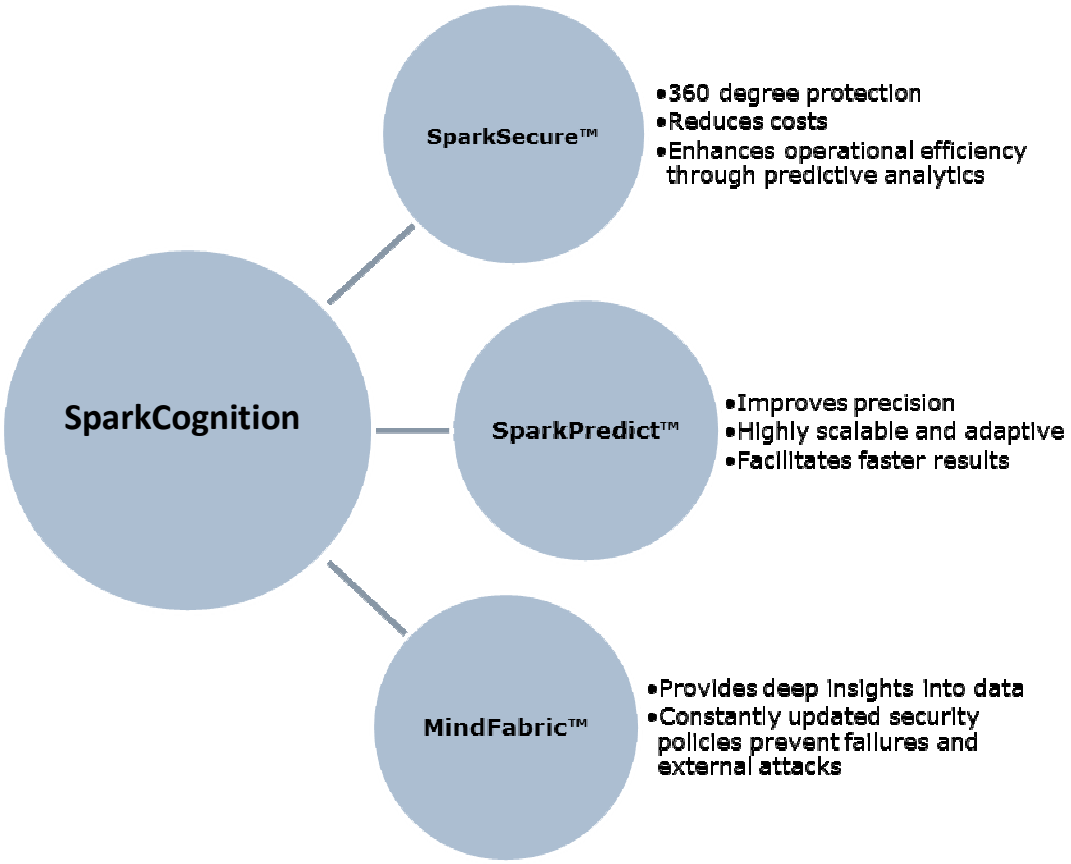
Cognitive analysis is being increasingly used for advanced threat defense. SparkCognition through its cognitive approach to traditional security solutions increases efficiency and

retention capacity of the security team. It learns and adapts from new threats to detect abnormalities and attacks that can potentially exploit a system.

Customers have leveraged SparkPredict's capabilities to predict events by analyzing patterns. Companies have been able to recognize symptoms and act on warnings of impending failures preventing unwarranted downtime. They have been able to analyze root causes through insights generated by SparkCognition about asset behavior. It has helped them develop a dynamic Integral Predictor Pump to monitor boiler pumps and predict and prevent failures. This pump adapts according to the asset environment and provides warnings 7-14 days ahead of an impending failure.

Companies can now prioritize threats through predictive threat intelligence which aggregates log data and analyzes user behavior. SparkCognition's patented algorithms recognize patterns and evolve in accordance with the curated data.

Best-practice Visual



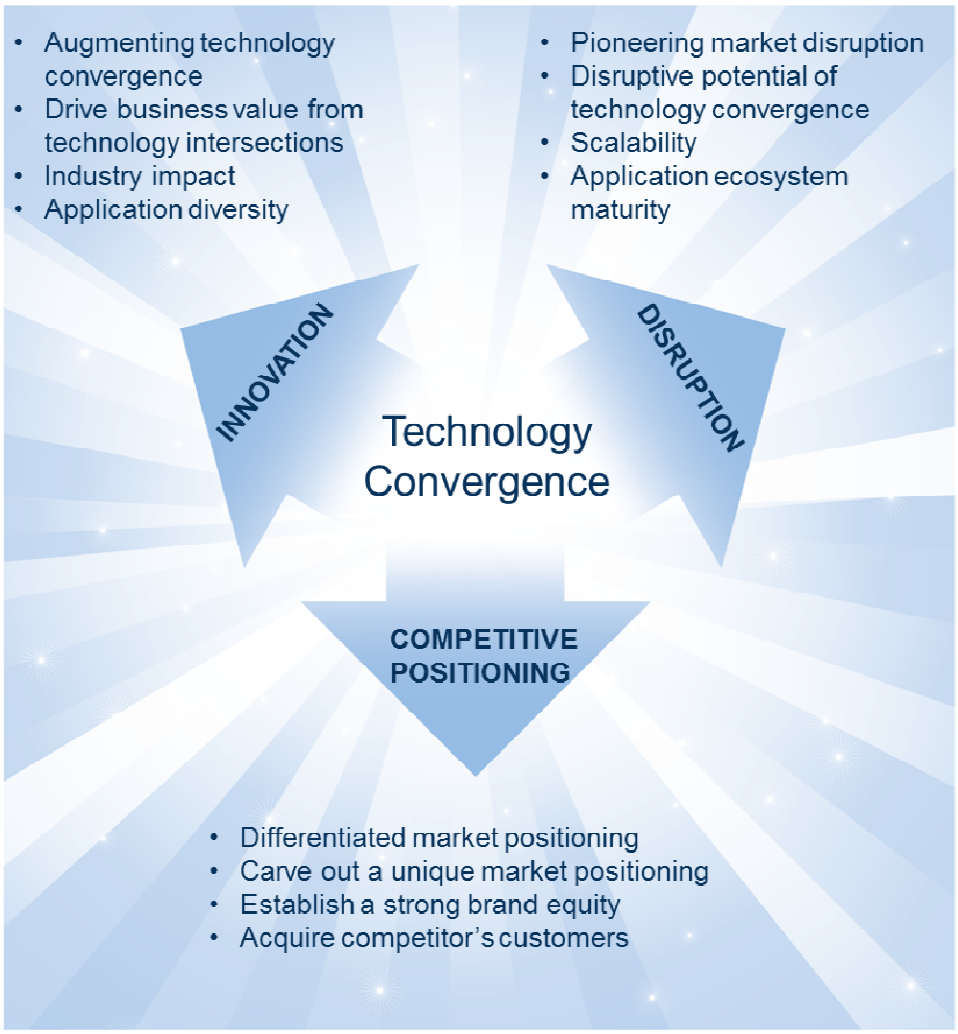
Conclusion

SparkCognition is applying AI algorithms to mine vast quantities of sensor data for Industrial Internet of Things (IIoT). SparkPredict™ analyzes patterns, detects external and internal threats, carries out root-cause analysis of potential threats, and warns operators about impending failures. SparkSecure™ offers cognitive insights by reducing false positives and aids the security analyst team with a cognitive layer to traditional security solutions. Actionable data and insights into threat dynamics are the key benefits of its cognitive solution enabling companies to adapt to the evolving threat environment and respond on time.

With its strong overall performance, SparkCognition has earned Frost & Sullivan's 2016 Customer Value Excellence through Technology Convergence Award.

Significance of Customer Value Excellence through Technology Convergence

Ultimately, growth in any organization depends upon finding new ways to excite the market, and upon maintaining a long-term commitment to innovation. At its core, technology convergence or any other type of convergence can only be sustained with leadership in three key areas: innovation, disruption, and competitive positioning.



Understanding Customer Value Excellence through Technology Convergence

Convergence of knowledgebase and know-how around existing technologies promotes innovations, ultimately facilitating new technology combinations.

Key Benchmarking Criteria

For the Technology Convergence Award, Frost & Sullivan analysts independently evaluated two key factors— Technology Convergence Impact and Customer Impact—according to the criteria identified below.

Technology Convergence Impact

Criterion 1: Business value from converging technologies
Criterion 2: Growth Potential
Criterion 3: Industry Impact
Criterion 4: Completeness of Vision
Criterion 5: Scalability

Customer Impact

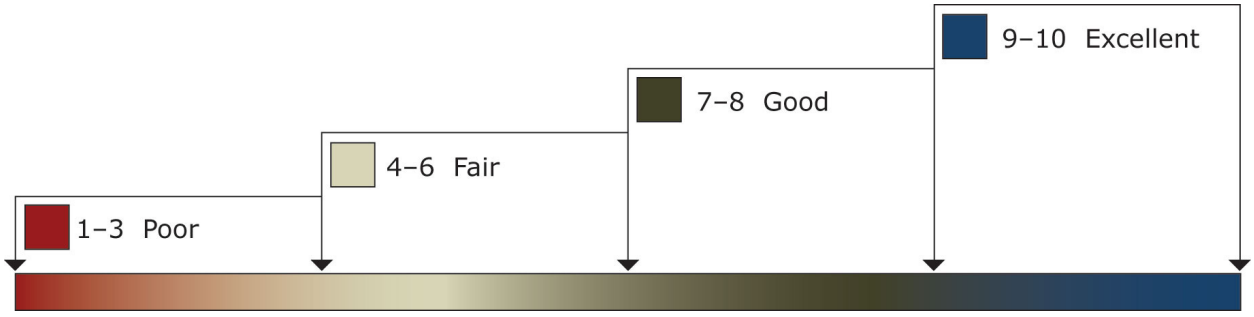
Criterion 1: ROI Benefits
Criterion 2: Customer's Perception of Value
Criterion 3: Customer Ownership Experience
Criterion 4: Customer Service Experience
Criterion 5: Brand Equity

Best Practice Award Analysis for SparkCognition

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 Attributes 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.

DECISION SUPPORT SCORECARD FOR CUSTOMER VALUE EXCELLENCE THROUGH TECHNOLOGY CONVERGENCE AWARD

Measurement of 1–10 (1 = poor; 10 = excellent)			
Customer Value Excellence through Technology Convergence	Technology Convergence Impact	Customer Impact	**Average Rating**
SparkCognition	**9**	**9**	**9**
Competitor 2	9	8	8.5
Competitor 3	8	8	8

Technology Convergence Impact

Criterion 1: Business Value from Converging Technologies
Requirement: Ability to drive/enhance business value from converged technologies that were previously distinct.

Criterion 2: Growth Potential
Requirement: Ability to leverage the benefits of converging technologies and drive growth.

Criterion 3: Industry Impact
Requirement: Potential to alter industry structure and create new value.

Criterion 4: Completeness of Vision
Requirement: Ability to showcase a long-term vision and pioneer industry transformation.

Criterion 5: Scalability
Requirement: Capability to scale the vision and deliver on components that ensure lifecycle success.

Customer Impact

Criterion 1: ROI Benefits
Requirement: Technology, products or services that offer the best returns for the investment, compared to previous class of solutions or approaches.

Criterion 2: Customer's Perception of Value
Requirement: Customer view-points on blurring of application and its potential to create new revenue streams.

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

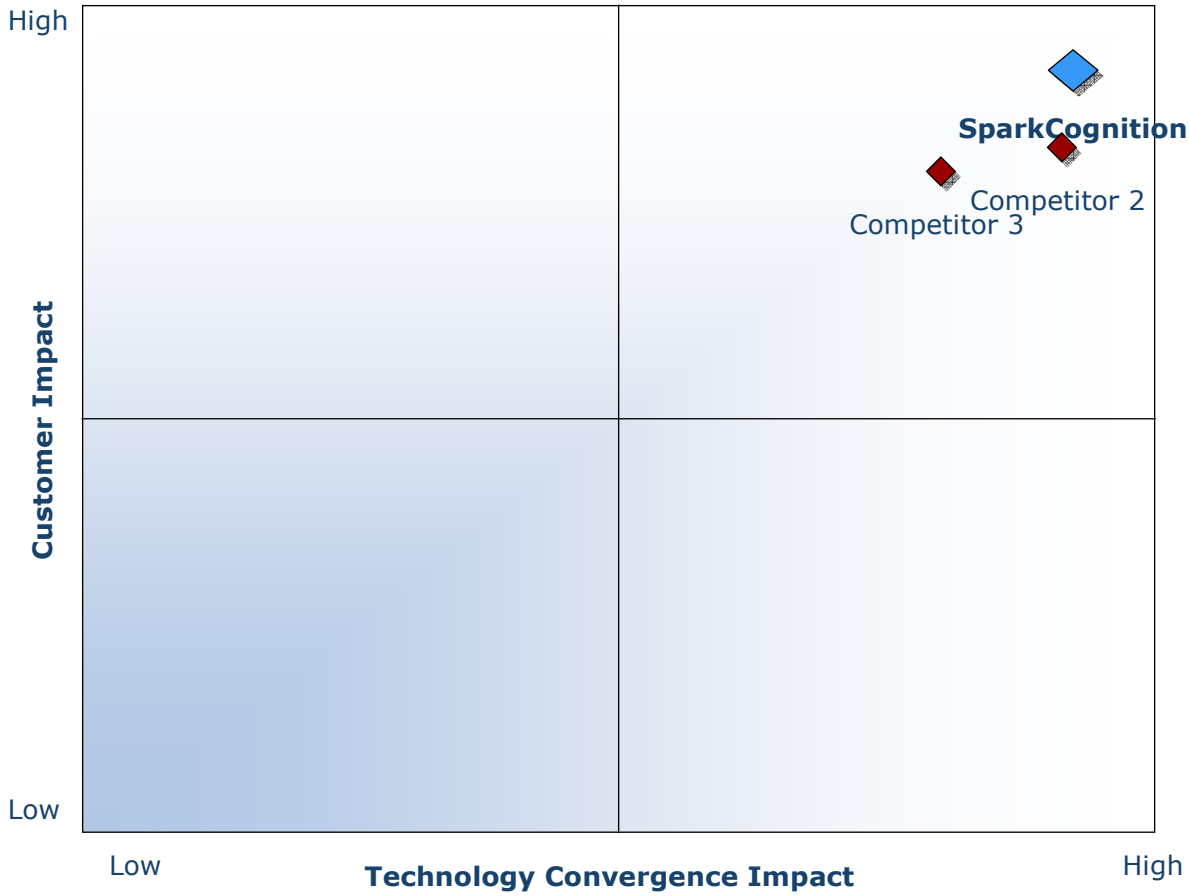
Criterion 4: Customer Service Experience
Requirement: Customer service is accessible, fast, stress-free, and of high quality

Criterion 5: Brand Equity
Requirement: New technology enhances the company's brand, creating and/or nurturing brand loyalty

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 CUSTOMER VALUE EXCELLENCE THROUGH TECHNOLOGY CONVERGENCE 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	• 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 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 may 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

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.