FROST & SULLIVAN

BEST PRACTICES

AWARDS

FROST & SULLIVAN

2020 BEST PRACTICES AWARD

SPARK BEYOND

2020 GLOBAL
AI-POWERED PROBLEM SOLVING
TECHNOLOGY INNOVATION AWARD

Contents

Background and Company Performance

Industry Challenges

Digital transformation spurred by the Industrial Internet of Things (IIoT) is rapidly changing the business world. With an increasing level of networking and connectivity among people and machines/devices, exponential generation in new data is continuous. Nevertheless, today's businesses already own massive volumes of historical data, so managing the complexity of both historical and new data, making sense of it by unlocking hidden value and discovering hidden patterns, and translating it into critical business decisions proves challenging. Yet these actionable insights are essential for faster decision-making.

Today, companies seek not only to achieve breakthroughs that are hidden in data or to build the best predictive model, but they also seek to solve their toughest business challenges. To best assist clients in tackling these modern data challenges, vendors that can offer a future-ready platform designed to accelerate breakthroughs hidden in the data as well as solve specific business problems are expected to secure leadership positions in the market.

Technology Attributes and Future Business Value

Technology Attributes

Established in Israel in 2013 by founders with deep experience in Artificial Intelligence (AI) and Machine Learning (ML) technology, SparkBeyond has built an AI-powered problem-solving platform, or research engine, running adaptive ML algorithms with large-scale computing power.

Advanced algorithms, big data, and computational power are essentially revolutionizing the world by helping build better predictive models that make accurate predictions. Frost & Sullivan finds that SparkBeyond's perspective on this technological revolution and response are one-of-a-kind. While SparkBeyond respects the importance of using today's advanced tools to predict the future, it strongly believes that the more important goal is to change or shape the future. To this end, the company has built an automated problem solving platform that borrows considerably from AI principles to generate ideas from data and turn them into actionable insights and generate impact.

Frost & Sullivan finds SparkBeyond demonstrates technology innovation based on a 3-step approach that forms the design principles that anchor its platform.

Step 1: Find the root causes. This involves looking at the data from every possible angle, which does not happen with traditional techniques. For instance with traditional approaches, to understand why a machine may fail in a manufacturing environment, a domain expert will use his/her domain knowledge or observational experience to draw a conclusion. While this approach is relatively good, the modern challenge is lassoed to wrangling massive amounts of available data. For instance, a single machine on the shop floor may have 20 different sensors, so it is very difficult to know which of them matters during a particular failure. While considerable work is happening around ML and deep learning to make better sense of the world and optimize all sorts of functions and process,

most areas of exploration prove probabilistic in nature, yet an important element is often overlooked—causality. Essentially, causality asks what causes something else to occur and what is the downstream impact? The language of causality is very different from the language of probability. Frost & Sullivan finds that SparkBeyond's concept of ideation and problem solving is unique in this sense. The company's platform can systematically, dynamically and creatively generate ideas. It crawls the web and searches for open source functions/repositories (which are short programming codes/building blocks, and getting to the meta-information of the data that is available is what these open source functions do), similar to how Google searches for open source knowledge, which is then applied on data to produce deeper insights.

Step 2: The platform harnesses all collectively available knowledge and data. In a mechanical setup, for instance, weather or other external factors may play an important role (e.g., in planning) and can even lead to machine failure. Therefore, not all answers lie in asset-based data or in the information companies have in-house. Keeping this in mind, wherever or whenever external datasets or publicly available data are required to problem solve, SparkBeyond utilizes these built-in datasets (e.g., Wikipedia, external weather data sources, OpenStreetMap, or even The World Bank) and combines it with existing information to reveal hidden patterns and deep insights. Frost & Sullivan appreciates that SparkBeyond has expanded the search hypotheses by not just looking into the dataset that its customers already have, but by searching beyond and then synthesizing any number of those hypotheses at scale. Impressively, SparkBeyond scans massive amounts of data, and its customers find this feature appealing as they do not have to manually test the outcome of hypotheses against a dataset.

Step 3: No problem is static in nature. Therefore, SparkBeyond's discovery platform is constantly looking and checking for any features and dynamics that have changed, and as the data changes or as new data becomes available, its predictive model adapts to emerging patterns using adaptive ML algorithms. In other words, SparkBeyond ensures that the platform runs as a 24-hour engine wherein it constantly asks new questions and automatically rewrites its own code. SparkBeyond is working aggressively to solve root problems by constantly intervening and understanding what is happening fundamentally instead of just simply building newer models.

Overall, Frost & Sullivan finds that SparkBeyond differs substantially from the conventional approach as it is not seeking to sell out-of-a-box software or even a professional services solution; rather, it is introducing customers to a new lexicon, a wholly new way of problem solving. In a manufacturing setup, for instance, the SparkBeyond platform based on the aforementioned design principles can not only tell with X percent accuracy that a particular machine may go down, but, more importantly, it will offer up the factors leading to why the machine may fail. By extension, it will provide insights and steps to avoid that failure. SparkBeyond's customers now have something more tangible to work with and on an ongoing basis. Frost & Sullivan appreciates SparkBeyond's innovative platform and unique design principles for empowering customers with the ability to change the future, and not just predict finite outcomes.

Future Business Value

SparkBeyond's technological expertise is coupled with a pioneering methodology that positively impacts its clients. As part of its licensing agreement, the company's impact management team, data scientist team, and operations team work closely with customers to scope their problem domain and empower clients with the right skills to independently use the platform. This enables clients to solve ongoing business use cases on their own, with SparkBeyond on hand to provide support whenever needed.

What is quite helpful is the platform's high flexibility; customers can deploy it either in the cloud or on-premises. To this end, SparkBeyond has a partnership with Microsoft where it has jointly developed a version of SparkBeyond on top of the Azure platform. This agility creates great opportunity for SparkBeyond customers to rely on the platform for deeply integrating with the Azure infrastructure and many of its cognitive services.

The company's clients are Fortune 500 companies spread across the insurance, healthcare, energy, consumer packaged goods, manufacturing, retail, banking, telecommunications, media, and pharmaceutical sectors. SparkBeyond has established deep relations with a large management consulting firm for which it acts as the trusted AI-ideation platform. This is because the problem-solving approach SparkBeyond has taken is a form of consulting. In the world of consulting, hypotheses and change management strategies are presented to clients, which is what SparkBeyond accomplishes with its AI- and ML-powered platform.

Frost & Sullivan finds the aspect of SparkBeyond's platform that delivers the greatest customer benefit is in unlocking the value of data in new ways: discovering patterns hidden in complex data, connecting the dots between various data sources, quickly producing ideas, and generating insights that drive action and impact. For instance, in the energy industry, where commodity prices had been depressed for the longest time, fuel costs were a significant chunk of the operating expenses for a contract miner at approximately one-third of the total variable costs. SparkBeyond drove EBITDA (earnings before interest, taxes, depreciation and amortization) level or P&L level impact for this company.

As part of its problem-solving approach, SparkBeyond understood where the various data sources to solve the fuel consumption problem potentially were, as opposed to asking a domain expert as is customary in a traditional approach. In other words, SparkBeyond understood that the answer could lie in sensor data, in the maintenance history of equipment, or with the person using the equipment. Mining machines generate tremendous amounts of IoT data, (e.g., from different parts of the equipment dump trucks or speed excavators), and therefore SparkBeyond's first step was to gather the data. The next step was to connect all data sources within the SparkBeyond platform and ask the right question. It is otherwise simple to calculate the distance travelled and the fuel consumed, but this approach is quite limited because it ignores many variables, such as how much weight is carried and the particulars of fuel consumption tied to payload (as a starting point).

The platform generated hypotheses from different dimensions (e.g., the impact on fuel consumption if the driver used the truck between the speeds of x and y on a given route

or the impact on fuel consumption if the driver used the truck in the highest gear for a set period of time), and then connects weather data as well as route information and their impact on fuel consumption. All patterns found in this data is then transformed into actionable insights using snippets of code. The final step is delivering the insights to the client as actionable recommendations that can be implemented as a change management program. In this use case, as part of the change management program, the contract miner built a dashboard and measured its operators during a given period of time. Over the course of the first 3 months, fuel consumption at the mining site dropped by 10%, and that was a significant boost for the client because it freed up cash.

SparkBeyond has applied this approach to different industries beyond mining. In the realm of health science, it took SparkBeyond's platform under an hour to find vastly better insight into the predictors of colon cancer than a team of PhD data scientists could find in eight months' work.And for a Japanese convenience-store giant wanting to know where it should target future franchises, they found a major driver of consumer intent to buy in Tokyo is being within 300m of a public laundromat - an insight that subject matter experts had never considered. Within the consumer packaged goods industry, the platform also discovered that being close to a church on Sunday has a huge impact on how much Polish people are likely to pay for a beer - another example of the kind of details a human would never think to ask about.

In addition to business impact, SparkBeyond partners with clients to spark meaningful social change on a planetary scale. Successful projects include enabling intelligent planning of social housing and reducing inmate violence by 40%.

Therefore, Frost & Sullivan believes that a robust (and continuously expanding) customer base and the high impact business outcomes that SparkBeyond generates for its customers will further strengthen its position in the global market.

Conclusion

Today's organizations across all industries find themselves in need of a platform to unlock the value hidden in volumes of old and new data. To better problem solve, they desire an innovative way to discover patterns buried in complex data, identify root-causes, generate actionable insights, drive high impact business outcomes, and solve their toughest, most complex business challenges.

SparkBeyond's problem-solving platform powered by AI and ML technology successfully addresses these needs. The platform renders unmatched value by helping customers not only predict the future by building the best predictive model with a measurable business outcome, but also shape or change the future by empowering them to solve their most important challenges. The insights and models use adaptive ML algorithms to adjust and enhance existing data by uniquely utilizing a number of external data sources, which makes the platform future-ready and agile enough to keep up with the incredible pace of change happening in today's dynamic world. For its strong overall performance, SparkBeyond is recognized with Frost & Sullivan's 2020 Global AI-powered Problem Solving Technology Innovation Award.

Significance of Technology Innovation

Ultimately, growth in any organization depends on finding new ways to excite the market and maintaining a long-term commitment to innovation. At its core, technology innovation, or any other type of innovation, can only be sustained with leadership in 3 key areas: understanding demand, nurturing the brand, and differentiating from the competition.

Understanding Technology Innovation

Technology innovation begins with a spark of creativity that is systematically pursued, developed, and commercialized. That spark can result from a successful partnership, a productive in-house innovation group, or a bright-minded individual. Regardless of the source, the success of any new technology is ultimately determined by its innovativeness and its impact on the business as a whole.

Key Benchmarking Criteria

For the Technology Innovation Award, Frost & Sullivan analysts independently evaluated 2 key factors—Technology Attributes and Future Business Value—according to the criteria identified below.

Technology Attributes

Criterion 1: Industry Impact
Requirement: Technology enables the pursuit of groundbreaking ideas, contributing to the betterment of the entire industry.

Criterion 2: Product Impact
Requirement: Specific technology helps enhance features and functionalities 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: Visionary Innovation
Requirement: Specific new technology represents true innovation based on a deep understanding of future needs and applications.

Criterion 5: Application Diversity
Requirement: New technology serves multiple products, multiple applications, and multiple user environments.

Future Business Value

Criterion 1: Financial Performance
Requirement: Potential is high for strong financial performance in terms of revenue, operating margins, and other relevant financial metrics.

Criterion 2: Customer Acquisition
Requirement: Specific technology enables acquisition of new customers, even as it enhances value to current customers.

Criterion 3: Technology Licensing
Requirement: New technology displays great potential to be licensed across many verticals and applications, thereby driving incremental revenue streams.

Criterion 4: Brand Loyalty
Requirement: New technology enhances the company's brand, creating and/or nurturing brand loyalty.

Criterion 5: Human Capital
Requirement: Customer impact is enhanced through the leverage of specific technology, translating into positive impact on employee morale and retention.

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 practices 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	• 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 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 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, 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.