

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

FROST & SULLIVAN BEST PRACTICES AWARD

AI-BASED, REAL-TIME AND ON-DEMAND VIDEO
COMMUNICATION PLATFORM - NORTH AMERICA

Technology Innovation 2019



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Background and Company Performance

Industry Challenges

The evolution of smart and connected gadgets is making connected living a reality. The growth in technologies, such as Internet of Things (IoT), augmented reality (AR), computer vision, and machine learning, has paved the way for new innovations and applications related to smart devices that provide users with accessibility to various tools and solutions to help them better address their day-to-day requirements. Key participants across all industries are increasingly incorporating such technologies to enhance the user experience.

Fortune 100 companies are constantly exploring new techniques for integrating the latest technologies into existing smart devices, such as mobile phones and tablets, which are expected to change the real-time communication with users as well as improve work efficiency. The home services industry includes various businesses and applications, such as maintenance and repair, home improvement, construction and installations, interior design, and plumbing, and caters to a large number of customers and clients on a daily basis. Key manufacturers or providers in the multi-billion dollar home services industry find it challenging to provide a best-in-class customer service support experience, which is crucial for customer development and retention. To address this challenge, key participants in the industry are taking the required measures, such as adopting new technologies, collaborating with technology providers, and, in some cases, even acquiring companies with the ability to provide advanced solutions, to address current and future customer service requirements.

Technology Attributes and Future Business Value

Founded in 2017, Oregon-based Stroom Inc. has developed an enhanced real-time communication solution by converting the existing camera in a smart device into an intelligent camera. The Stroom platform is powered by advanced technologies, such as AR, computer vision, machine learning, object recognition, and spatial mapping, for remotely capturing real-time information and communicating with the service provider or home services expert. This innovative platform addresses the aforementioned challenges faced by the home services industry. For example, Stroom's AI-based solution enables providers in the home services industry or in other customer support industries to diagnose problems more effectively and to gather any necessary equipment or tools before physically arriving at the premises.

Industry Impact

Stroom has successfully developed a horizontal software solution that seamlessly connects home service customers with customer service professionals and domestic home services experts. Generally, when a client requires some assistance in operating any home appliance or needs professional help in home repairs, such as appliance repair, the client has to voice call the customer support helpline or the home service professional to explain the issue and schedule an appointment based on the service professional's availability. The expert comes to the home to analyze the issue, captures any required measurements, scouts for or orders the necessary components, and, in some cases, requests the

assistance of another service expert. In contrast, with the Stroom platform, the customer can make a video call to the customer service professional, who can then directly capture the required information and, in some cases, remotely diagnose the issue. With the information captured, the service professional can arrive prepared to address the issue during the first visit. With Stroom, the service professional no longer needs to travel to the client's site several times to complete the repair, thereby saving up to 50 to 60% in wasted workhours, effort, and costs that are generally associated with conventional methods of addressing such jobs.

Frost & Sullivan commends Stroom for optimally addressing customer and industry requirements and streamlining home services by developing an advanced artificial intelligence (AI)-based, real-time, and on-demand video streaming communication platform integrated with computer vision and machine learning technologies. The company's keen focus on technology development and its customer-driven business strategy have made it one of the key participants in the emerging AI-based, real-time, and on-demand video communication platform industry.

Product Impact

Stroom has a clear vision regarding the current and growing requirement for a real-time platform that can bridge the communication gap between the manufacturer's customers and the home service expert. The platform allows home service professionals, large brands, and appliance manufacturers to communicate with their customers to create an efficient and enhanced customer experience. By adopting advanced technologies, such as AR and AI, Stroom increases the performance of home service professionals by over 40%, and computer vision and machine learning allow the platform application to capture real-time data, such as depth information for measurements. In addition, the company has developed its own proprietary spatial mapping technology for reconstructing the environment in 3D, optical character recognition (OCR) for capturing model/serial number, and object and pose estimation technology for capturing and estimating the position of objects and appliances.

Based on Frost & Sullivan research, Stroom is well positioned to allow large home service enterprises and professionals to leverage its AI-based, real-time, and on-demand video streaming communication platform to provide clients with an enhanced customer service experience. For example, Stroom's platform solution enables home service or customer service companies to collaborate with customers and assess and address their issues more efficiently, compared to other key participants in the real-time communication home and customer service industry.

Application Diversity

Stroom predominantly caters to the customer service requirements of the home services industry and was one of the 20 growth-stage start-ups in IKEA's 2019 Bootcamp program. Stroom is keen on becoming the go-to, real-time, and on-demand video streaming communication platform solution provider for all major brands involved in the home services industry. Moreover, the company has partnered with HomeAdvisor and Porch and has established a long list of home service professionals and companies to provide its

services across North America. The company has partnered with other key participants in the home services industry to integrate Stroom into their existing customer service portals or mobile applications.

Furthermore, the Stroom platform has paved the way for the company to acquire customers across the telecommunication industry. Stroom has collaborated with one of the largest telecom providers, Verizon, to leverage high bandwidth mobile 5G communications and AI at Verizon's 5G Lab for Stroom's platform. Stroom plans to announce other confidential projects in the near future.

Another use case of Stroom's technology is in the aerospace and airline sector. The company has an ongoing partnership with a key participant in the airline industry that adopted Stroom's platform to interact with its third-party technicians that service its aircraft. In addition, Stroom's client portfolio consists of boat manufacturers that have adopted the software platform for similar applications. Companies in the insurance industry are using Stroom Pro for real-time video streaming communication with customers to capture required information with remote claims.

Frost & Sullivan finds that Stroom's AI-based, real-time, and on-demand video streaming communication platform can potentially be adopted in all major industries for various customer service and in-house servicing requirements. In addition, Frost & Sullivan finds that the company's approach of identifying diverse industries and targeting customer support applications for its technology is a valuable business strategy for gaining a competitive advantage.

Visionary Innovation

Stroom's real-time, on-demand video streaming communication platform addresses both the current and future needs for the increased ability to communicate with clients and enables manufacturers and service professionals to provide an enhanced customer service experience.

The company's platform works in a few simple steps. The Stroom Pro software development kit (SDK) is integrated with the home service provider's mobile app. The customer service experience begins as a standard phone call that is converted into a Stroom video call if the customer service executive needs to view the problem for diagnosis. Once the customer provides the required permission, the Stroom AR video call is initiated and launched seamlessly. The call is one-way video and two-way audio, and the customer is provided with the following two options: turn off the device's camera or end the conversation with the customer support professional. Similarly, the expert using the Stroom Pro platform is provided with various required tools, such as 3D drawing for annotation and a laser pointer to guide the customer and point the camera at various angles to view and capture photos. In addition, the video is recorded and autosaved for later reference.

The service expert can take unlimited photographs that capture real-time spatial information to determine measurements and dimensions related to the issue. Moreover, the service expert can annotate the photos and drop 3D models or images of products and

components onto the photo to check the fitting and mark the location accordingly. Even though the Stroom Pro call feels like a normal video call, the processing of spatial meshing and OCR works seamlessly in the background.

Technology Licensing

Stroom is currently licensing its SDKs to several major brands across various industries. The company's pricing package depends on the service professional's use of the Stroom Pro solution. For example, customers subscribe to certain amounts of use per year, which provides unlimited downloads and access to various tools and expert support. In addition, the subscription is tailored so that customers receive discounts as their use increases.

Frost & Sullivan recognizes the value in Stroom's strategy of licensing and offering subscriptions to its proprietary platform, thereby enabling the company to build a niche market for its solution based on home service professionals' current and future requirements.

Brand Loyalty

Since its inception, Stroom has been successfully building its brand image by constantly engaging with customers, especially across the home services industry, and gaining valuable in-depth knowledge of customers' current and future requirements. Stroom's expertise in the machine learning and computer vision software industry and its AI-based, real-time, and on-demand video streaming communication platform have allowed it to acquire \$10.5 million in funding from investors, such as Flying Fish Partners, Greycroft, Curious Capital, Oregon Venture Fund, Portland Seed Fund, TechNexus, Rogue Venture Partners, Betaworks Ventures, GGV Capital, General Catalyst, and Loup Ventures.

Stroom has been using this acquired funding to scale and continue improving its solution's performance and capabilities. By acquiring UK based deep technology company, Selerio, and by growing its engineering development, product, and customer support teams, the company is planning to increase its brand image even further and capture an optimal maximum market share in the home services industry.

Conclusion

Stroom is playing a crucial role in enhancing the customer service experience across the home services industry and in considerably boosting the ease and efficiency of diagnosing and troubleshooting customers' issues. The application diversity of the Stroom Pro platform has allowed the company to gain customers from other industries as well, such as airline, insurance, and telecommunications. The company's advanced AI-based, real-time, and on-demand video streaming communication platform will continue to play a crucial role in the customer service industry and is expected to be adopted by different vertical markets worldwide.

With its strong overall performance, Stroom Inc has earned Frost & Sullivan's 2019 Technology Leadership Award in the North American AI-based, real-time, and on-demand video communication platform industry.

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
- Criterion 2: Product Impact
- Criterion 3: Scalability
- Criterion 4: Visionary Innovation
- Criterion 5: Application Diversity

Future Business Value

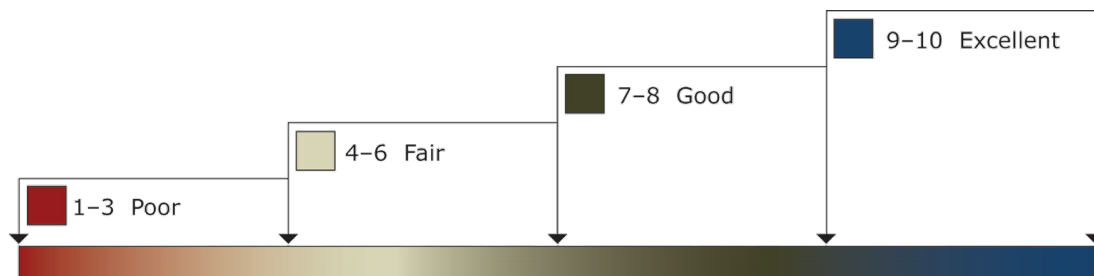
- Criterion 1: Financial Performance
- Criterion 2: Customer Acquisition
- Criterion 3: Technology Licensing
- Criterion 4: Brand Loyalty
- Criterion 5: Human Capital

Best Practices Award Analysis for Stroom Inc.

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



The Decision Support Scorecard considers Technology Attributes and Future Business Value (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.

<i>Measurement of 1–10 (1 = poor; 10 = excellent)</i>			
Technology Innovation	Technology Attributes	Future Business Value	Average Rating
Stroom Inc.	9	9	9
Competitor 1	7	6	6.5
Competitor 2	7	5	6

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

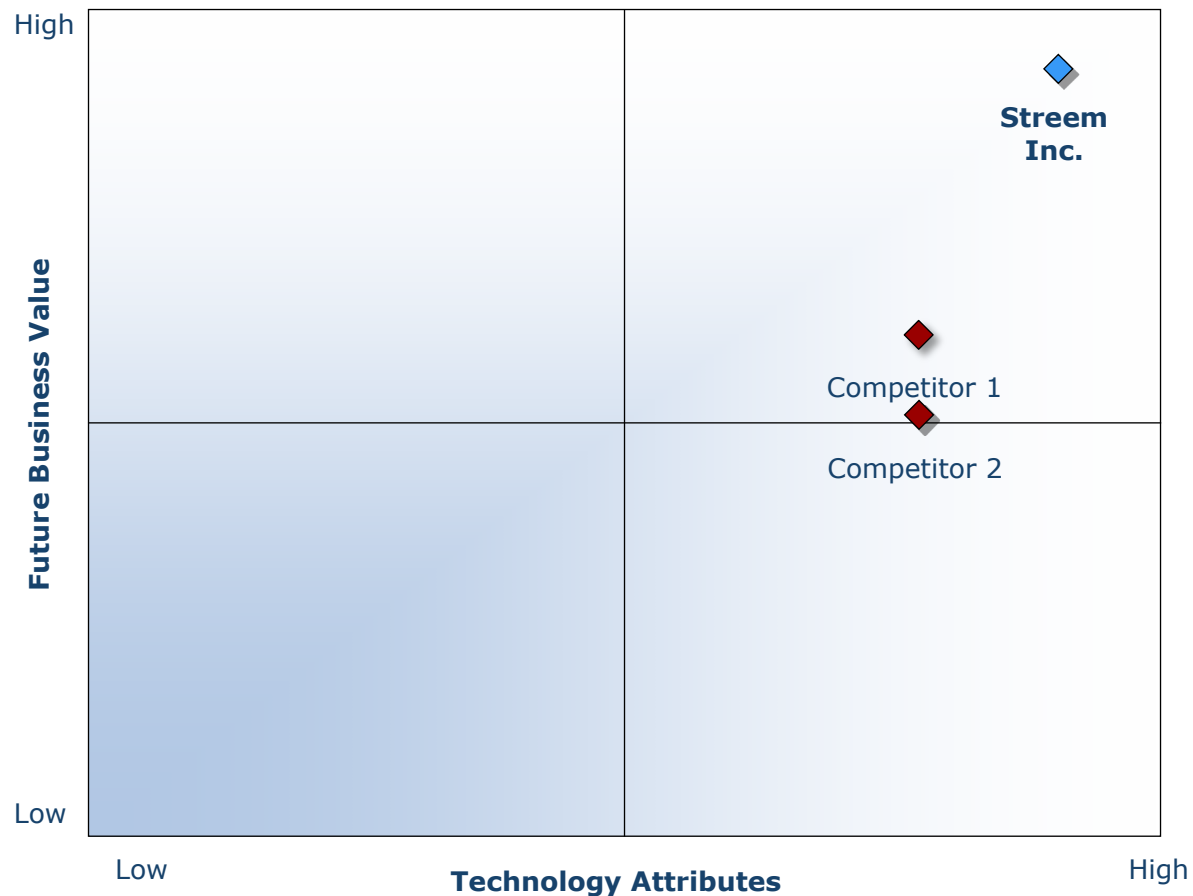
Requirement: New technology enhances the company's brand, creating and/or nurturing brand loyalty.

Criterion 5: Human Capital

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

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 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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	<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 practices 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 practices award recipient	<ul style="list-style-type: none"> 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	<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 is able to 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 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.



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>.