

FROST & SULLIVAN



2022 NEW PRODUCT INNOVATION

*GLOBAL
CARDIAC MONITORING
WEARABLES INDUSTRY*

Best Practices Criteria for World-Class Performance

Frost & Sullivan applies a rigorous analytical process to evaluate multiple nominees for each award category before determining the final award recipient. The process involves a detailed evaluation of best practices criteria across two dimensions for each nominated company. SmartCardia excels in many of the criteria in the cardiac monitoring - wearables space.

AWARD CRITERIA	
<i>New Product Attributes</i>	<i>Customer Impact</i>
Match to Needs	Price/Performance Value
Reliability	Customer Purchase Experience
Quality	Customer Ownership Experience
Positioning	Customer Service Experience
Design	Brand Equity

SmartCardia

SmartCardia has developed a breakthrough cardiac and vital signs monitoring patch, supplemented by a cloud-based Artificial Intelligence (AI) software as a service (SaaS) platform that enables industry-leading real-time patient monitoring. The patch records and live transmits seven-lead electrocardiography (ECG), measuring heart rate, respiration rate, oxygen saturation, skin temperature, posture and activity

“SmartCardia multiparameter patch’s ability to monitor multiple vital signs to ensure better patient care is a unique solution in the space.”

**- Pavel Zhebrouski,
Best Practices Research Analyst**

in real-time. The electronic unit is re-usable across patients, and the hypoallergenic disposable patch can be used for up to 14 days on the body and is a cable free patient monitor. The reusable sensor unit combined with low cost disposable patch allows for monitoring patients from weeks to months, allowing for long term remote patient monitoring. The cloud-based SaaS platform provides real-time AI-based intelligence and alerts,

including 20 different kinds of arrhythmias, as well as a dashboard for clinicians to access and analyze the patient’s streamed data in real-time. Leveraging its innovative mindset, the company focuses on clinical quality data and scientific validation while delivering unique insights into patients’ health.

Setting New Standards

SmartCardia's corporate culture revolves around using purpose to drive innovation. Its product roadmap, i.e., planning, development, and implementation strategies, incorporates clinician and patient feedback, ensuring its offerings align with their dynamic needs.

"SmartCardia strives to increase its global presence in different regions while bringing value to customers by providing robust, reliable, and innovative solutions."

**- Pavel Zhebrouski,
Best Practices Research Analyst**

The company's solution suite takes cardiac monitoring one step further than any competing solution. Specifically, it combines medical wearable technology with AI to provide unique insights into patients' health. Starting with a first generation single lead ECG patch, the team has built upon years of innovation and experience to bring the seven-lead ECG patch to the market. The patch obtains excellent ECG signal quality with ultra-low noise, excellent P-wave and QRS morphologies, enabling accurate detection of a variety of

arrhythmias that is not possible with today's single lead cardiac patches.

The solution transforms the space with AI enabled cloud at clinicians' office to generate diagnosis/reports directly, with real-time alerts to clinicians and staff. SaaS allows for easy scaling, faster/immediate diagnosis of health conditions and highest quality of reporting. It also transforms a labour intensive and high-cost cardiac technician-based analysis to AI automated low cost/high quality analysis. The patch facilitates non-invasive patient monitoring in outpatient, home-care, or in-hospital settings. The multiparameter patch's ability to monitor various vital signs to ensure better patient care is a unique solution in the space.

On top of that, the company developed its remarkable SmartNeuralNet, a machine learning (ML) technology powering the patch and cloud. As a result, the solution enables seamless real-time wireless patient monitoring driven by cloud technology. SmartCardia's AI-powered back-end platform detects over 20 arrhythmias and conduction issues, including ventricular, supra-ventricular beats, ventricular tachycardia, atrial fibrillation, bigeminy, trigeminy, and runs.

The platform also presents a real-time dashboard for clinicians to view full-disclosure (complete) ECG at any instance and detect patient condition deterioration early. In case of cardiac arrhythmia or other serious events detected, physicians receive immediate notification from the platform.

The company has built best-in-class solutions under strict quality control standards. Specifically, it holds ISO 13485 certification as a medical device manufacturer and ISO 27001 certification for data security and privacy. Also, SmartCardia's patch with several of the parameters, cloud, and software are CE-marked as Class IIa medical device.¹

The company's new and purpose-built solutions set it apart from its competitors, with superior design, reliability, and quality as its central pillars.

¹ <https://smartcardia.com/>, accessed May 2022

Roadmap to Success: Customer-centric, Continuous, Proactive

SmartCardia goes beyond its extensive expertise and best-in-class capabilities, with customer value as a strategic imperative. Through the years, the company has earned a sterling reputation for supporting customers' paths toward better patient outcomes.

Unlike competitors, SmartCardia builds its solutions, collaborating closely with a range of stakeholders and partners to evolve alongside market needs and trends. The patch received positive feedback and valuable inputs from leading researchers and clinicians around the globe, with testing and validation conducted in over ten clinical trials with over 3000 patients.²

The company brings unique value to the market as it provides standard multi-lead holter-level accuracy, proven in clinical trials. Notably, it obtains the best ECG signal quality: published research shows less than 1.5% noise in total ECG data, which is comparable to a seven-lead holter solution, while other patches can have 5 to 10% noise in the captured data.³ Cardiologists admit the solution brings excellent signal quality.

Apart from being the unique multiparameter product with data capturing, analysis, and reporting capabilities and providing clinician-controlled full disclosure data and dashboard, SmartCardia's solution suite enables considerable cost savings for patient monitoring.

Specifically, the electronic unit is re-usable across patients, and a hypoallergenic disposable patch can be used for up to 14 days on the body. Also, the device stores all the data locally and live streams it by Bluetooth Low Energy through a mobile device.

The company also supports hospitals in monitoring COVID-19 patients. The system monitors respiratory distress and detects the effect on the heart due to disease and medications for COVID-19 patients in real-time.

SmartCardia maintains industry-leading standards in its solutions and provides excellent customer service. Thus, building a solid and cooperative relationship with customers is vital for its strategy.

The company's commitment to innovation satisfies customers' demands and anticipates future expectations. SmartCardia's transparent and seamless approach and close relationships position it as a partner of choice.

A Foot in the Present and an Eye on the Future

Since its inception, SmartCardia's strong reputation and customer-centric framework led to its coveted preferred partner status. Over the years, it added a range of new customers to its established base. The founding team includes PhDs from Stanford, Swiss Federal Institute of Technology and several top universities globally, with years of strong R&D in ECG and bio-signal processing and machine learning.

The company has raised \$10.5 Million in funding to drive its innovation focus further. SmartCardia strives to increase its global presence in different regions while bringing value to customers by providing robust, reliable, and innovative solutions and speeding up research and development efforts. Notably,

² Ibidem

³ SmartCardia Interview with Frost & Sullivan, April 14, 2022

the company is planning for the United States market entry in 2022 (pending FDA approval). The company is also working on scaling its solutions to empower the millions of patients with chronic conditions with actionable insights to improve their health.

Frost & Sullivan believes SmartCardia is well-positioned to drive the cardiac monitoring space into its next growth phase, capturing market share in the coming years.

Conclusion

To create a new solution, a company needs to understand the market's needs and deliver a solid solution designed and embedded with high quality and reliable performance. Frost & Sullivan finds that SmartCardia embodies this concept. The company's innovative solution has two components: a reusable electronic unit and a disposable patch powered by the SmartNeuralNet, a machine learning technology. SmartCardia's artificial intelligence-powered back-end platform detects over 20 arrhythmias and conduction issues while presenting a real-time dashboard for clinicians to view full-disclosure electrocardiograms and identify possible cardiac arrhythmia or other serious events early. Furthermore, it integrates a customer-centric approach to ensure its offering addresses the wants and needs of users. For its strong overall performance, SmartCardia is recognized with Frost & Sullivan's 2022 Global New Product Innovation Award in the cardiac monitoring – wearables industry.

What You Need to Know about the New Product Innovation Recognition

Frost & Sullivan's New Product Innovation Award recognizes the company that offers a new product or solution that uniquely addresses key customer challenges.

Best Practices Award Analysis

For the New Product Innovation Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

New Product Attributes

Match to Needs: Customer needs directly influence and inspire product design and positioning

Reliability: Product consistently meets or exceeds customer performance expectations

Quality: Product offers best-in-class quality with a full complement of features and functionality

Positioning: Product serves a unique, unmet need that competitors cannot easily replicate

Design: Product features an innovative design that enhances both visual appeal and ease of use

Customer Impact

Price/Performance Value: Products or services provide the best value for the price compared to similar market offerings

Customer Purchase Experience: Quality of the purchase experience assures customers that they are buying the optimal solution for addressing their unique needs and constraints

Customer Ownership Experience: Customers proudly own the company's product or service and have a positive experience throughout the life of the product or service

Customer Service Experience: Customer service is accessible, fast, stress-free, and high quality

Brand Equity: Customers perceive the brand positively and exhibit high brand loyalty

About Frost & Sullivan

Frost & Sullivan is the Growth Pipeline Company™. We power our clients to a future shaped by growth. Our Growth Pipeline as a Service™ provides the CEO and the CEO's growth team with a continuous and rigorous platform of growth opportunities, ensuring long-term success. To achieve positive outcomes, our team leverages over 60 years of experience, coaching organizations of all types and sizes across 6 continents with our proven best practices. To power your Growth Pipeline future, visit Frost & Sullivan at <http://www.frost.com>.

The Growth Pipeline Engine™

Frost & Sullivan's proprietary model to systematically create ongoing growth opportunities and strategies for our clients is fuelled by the Innovation Generator™.

[Learn more.](#)

Key Impacts:

- **Growth Pipeline:** Continuous Flow of Growth Opportunities
- **Growth Strategies:** Proven Best Practices
- **Innovation Culture:** Optimized Customer Experience
- **ROI & Margin:** Implementation Excellence
- **Transformational Growth:** Industry Leadership



The Innovation Generator™

Our 6 analytical perspectives are crucial in capturing the broadest range of innovative growth opportunities, most of which occur at the points of these perspectives.

Analytical Perspectives:

- **Mega Trend (MT)**
- **Business Model (BM)**
- **Technology (TE)**
- **Industries (IN)**
- **Customer (CU)**
- **Geographies (GE)**

