FROST & SULLIVAN

2024 NEW PRODUCT INNOVATOR

IN THE ASIA PACIFIC AI-ENABLED CT SYSTEMS INDUSTRY

PHILIPS

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2024 BEST PRACTICES AWARD

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. Philips excels in many of the criteria in the AI-enabled CT systems space.



Navigating the AI-enabled CT Market: Innovation, Efficiency, and Growth Opportunities

The artificial intelligence (AI)-enabled computed tomography (CT) market has evolved significantly, driven by technological advancements and shifting healthcare demands, especially in the post-COVID-19 era. Historically, CT technology development was hardware-centric, emphasizing creating more affordable, reliable, and higher-quality machines. However, the limits of hardware alone in meeting growing demands have led to integrating AI and machine learning technologies, shifting the focus toward software-driven innovation.

AI-powered CT systems offer enhanced capabilities, improving diagnostic accuracy through features like image reconstruction and anomaly detection. AI-driven iterative reconstruction techniques further augment image quality, lower signal-to-noise ratios, and reduce patient radiation exposure. These innovations lead to clearer, more precise images, ultimately improving patient outcomes.

The advent of portable and point-of-care CT units equipped with AI has expanded access to CT imaging, particularly in emergencies and remote locations. This enhanced accessibility allows for rapid diagnostics and decision-making in critical care scenarios.

Post-pandemic healthcare challenges, such as reduced operating budgets, increased patient volume, and staffing shortages, have driven demand for CT technology. Legacy systems are struggling to keep up with these new requirements. In response, companies are designing AI-enabled CT machines to enhance image quality and improve departmental efficiency by serving more patients with fewer machines. These

solutions facilitate staffing challenges and have the potential to control hospital operating costs while meeting the growing demand for high-quality diagnostics.

This shift represents a new approach to CT development, balancing quality, quantity, and operational efficiency. It emphasizes the role of AI in creating more versatile, adaptable, and effective imaging solutions. Within this context, Philips uniquely leverages its CT 3500 to meet market demands. The company is poised to harness new growth opportunities, solidifying its stature in the AI-powered CT systems industry.

Philips' CT 3500: Enhancing Efficiency and Quality in Healthcare Delivery

Founded in 1891 in Eindhoven, the Netherlands, Philips has transformed over the past 130 years from a manufacturer of affordable incandescent light bulbs into a global leader in health technology. Now headquartered in Amsterdam, the company focuses on improving people's health and well-being through innovative solutions across the healthcare continuum, from healthy living and disease prevention to precision diagnosis, personalized treatment, and home care. Philips aims to improve 2.5 billion lives annually by 2030, including 400 million in underserved communities. The company drives value-based care through advanced diagnostic imaging, image-guided therapy, patient monitoring, and health informatics.

In 2022, Frost & Sullivan recognized the company for its innovative AI-enabled CT workflow solutions and its ability to enhance financial and operational performance. Philips' commitment to advancing patient care quality and safety through precise, streamlined imaging technologies and long-term sustainability earned it this prestigious recognition. In 2024, Frost & Sullivan remains impressed with the company's continued innovation and sustained position in the healthcare technology space, particularly with its latest CT 3500 CT system.

Match to Needs

Philips collaborates closely with its customers to understand their current and future requirements. Recognizing that CT scanners are long-term investments, often in service for over ten years, the company designs its products with a forward-looking approach. It addresses hospitals' immediate financial and clinical needs while anticipating future demands, such as rising patient volumes or the addition of new specialties like oncology or trauma care. Philips incorporates scalability into its systems, ensuring that its CT platforms grow alongside healthcare providers' evolving needs. This adaptability allows for technological expansion without significant upfront costs, making the company's solutions accessible and future-proof.

Additionally, Philips invests heavily in research and development (R&D), collaborating with clinicians, scientists, and R&D teams to understand the entire patient workflow (from booking an appointment to receiving results). By analyzing each step, the company identifies areas where the product can improve efficiency and care quality. This in-depth knowledge of patient and operational workflows allows Philips to design solutions that enhance clinical outcomes and operational efficiency.

Philips employs a comprehensive approach to collecting customer feedback, leveraging its global presence and long-standing client relationships. With thousands of devices installed globally, the company receives

ongoing input from diverse healthcare environments. This vast customer base provides invaluable insights, enabling Philips to crowdsource information on user needs and industry trends. Through customer feedback, the company clarifies the direction for product development and innovation.

To monitor client experiences, Philips tracks the Net Promoter Score across its products and business units, gathering detailed feedback over time. Given the long lifecycle of its products, the company treats customer interactions as ongoing partnerships rather than one-time transactions. This continuous feedback loop throughout a product's lifespan ensures that Philips remains responsive to evolving customer needs.

Delivering Value

Philips addresses the operational challenges of healthcare facilities, especially those in regions with growing patient populations like Vietnam, Cambodia, Thailand, and India. Rather than requiring hospitals to invest heavily in additional CT scanners, staff, and power infrastructure, the company increases the efficiency of the CT 3500. Its designs allow for higher patient throughput without demanding significant increases in power or space, enabling hospitals with limited resources to manage larger patient loads efficiently while maintaining high standards of care.

The CT 3500 accelerates workflows through Philips' AI-powered CT Smart Workflow, which automates each step of the scanning process. Precise Position uses a camera to enhance the vertical patient orientation accuracy by 50% and reduces positioning time by up to 23% compared to manual operations.[1] Precise Planning automatically selects the scan area and Exam Card based on patient anatomy, speeding up exam preparation and improving consistency. Additionally, Precise Intervention automates setup and guidance for tissue biopsies and needle-based procedures, streamlining these interventions.

Beyond its technological capabilities, Philips emphasizes ease of use, incorporating AI-driven workflows that simplify complex processes. CT 3500 allows novice operators to consistently achieve high-quality imaging, with AI-assisted tools helping to standardize results regardless of the user's experience or time of day. This user-friendly design, combined with the robust performance of the CT system, supports healthcare providers in delivering reliable, consistent care even under constrained conditions.

Focus on Quality

Philips' design philosophy centers on patient safety and quality. Unlike traditional entry-level CT scanners, which often compromise performance, the CT 3500 incorporates advanced technology from its premium models. High-quality components, such as image detection and tube technology, facilitates even entry-level devices to produce accurate and high-resolution imaging essential for precise diagnosis and treatment planning. The company's commitment to quality extends to creating systems that consistently deliver exceptional imaging results, which are critical for healthcare providers, especially in high-demand or resource-limited settings. The CT 3500 employs AI-based Precise Image reconstruction technology to provide superior image quality while reducing radiation exposure.

[1] Philips, "Philips Launches AI-Powered CT System to Accelerate Routine Radiology and High-Volume Screening Programs," Philips, December 21, 2023, https://www.philips.com/a-w/about/news/archive/standard/news/press/2023/20230517-philips-launches-ai-powered-ct-system-to-accelerate-routine-radiology-and-high-volume-screening-programs.html.

This technology enhances low-contrast detectability by up to 60%, reduces noise by 85%, and lowers radiation dose by 80%.[2] Additionally, it reconstructs all reference protocols in under one minute, supporting efficient operation even in the busiest radiology departments.[3]

Commitment to Reliability

Reliability is a critical pillar in Philips' approach to healthcare solutions. The CT 3500 manages high patient volumes while reducing the risk of unplanned downtime. For hospitals, particularly in remote areas or

Noise Reduction with Precise Image



Source: Philips

those with heavy patient loads, any downtime can lead to significant delays in care. The company addresses this issue through proactive maintenance and scheduling regular component checks and replacements to prevent disruptions. As a result, it contributes to continuous operation, helping providers avoid backlogs and keep their services running smoothly.

Additionally, the CT 3500 has undergone rigorous testing, including shake tests, to ensure its durability in challenging environments like mobile units and earthquake-prone regions. These tests facilitate the system to remain operational during critical situations, such as natural disasters, where maintaining hospital functionality is essential.

Frost & Sullivan applauds Philips for its forward-thinking approach to developing the CT 3500. The company addresses current and future needs by integrating scalable, adaptable solutions that enhance clinical outcomes and operational efficiency. Philips' commitment to innovation, robust feedback mechanisms, and emphasis on reliability underscore its leadership in delivering high-quality, sustainable healthcare solutions globally.

[2] Philips, "Philips Launches AI-Powered CT System to Accelerate Routine Radiology and High-Volume Screening Programs," Philips, December 21, 2023, https://www.philips.com/a-w/about/news/archive/standard/news/press/2023/20230517-philips-launches-ai-powered-ct-system-to-accelerate-routine-radiology-and-high-volume-screening-programs.html.
[3] Ibid.

A Fusion of Design and Functionality for Optimal Patient and User Experience

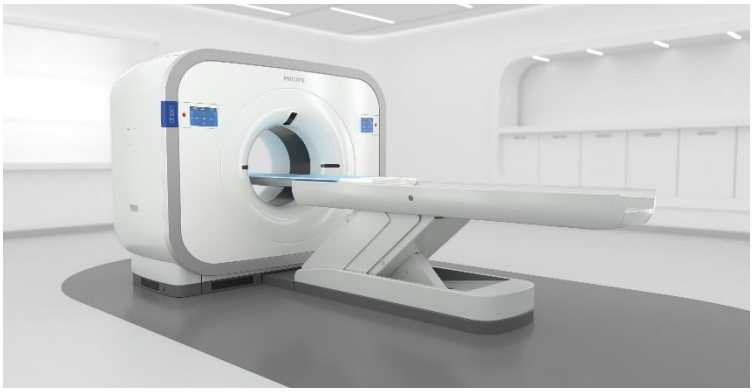
Philips significantly emphasizes design, integrating aesthetics and functionality to enhance the overall user experience of its CT systems.

Visual Design and Patient Experience

In medical devices, industrial design is crucial to functionality and patient perception. Philips understands that a CT system's visual appearance affects how patients view healthcare quality. A device that looks outdated may create a negative impression, leading patients to question the quality of the service. Conversely, a modern, clean, futuristic design instills patient confidence, fostering a positive first impression. This emphasis on aesthetics is deliberate, as studies show that a positive initial impression leads to greater patient cooperation during medical procedures, which ultimately contributes to better results.

Philips also tailors its designs to integrate seamlessly into different healthcare environments. The use of neutral colors and thoughtful panel design ensures that the CT 3500 complements various room settings, from skylight panels to murals, enhancing the overall atmosphere of the diagnostic room. The goal is to reduce patient anxiety and create a more welcoming, reassuring environment. The company even incorporates psychological elements, such as different colored linoleum thresholds, which serve as subtle cues to assess a patient's comfort and anxiety levels before they undergo the scan.

Philips CT 3500



Source: Philips

Functional Design and User Experience

Beyond aesthetics, Philips focuses on the practical design of its CT systems to improve user experience and system reliability. The company prioritizes durability, selecting components with long mean times between failure and integrating smart parts that communicate their performance and remaining service life. With over 170 sensors and diagnostic points embedded into the system, the CT 3500 continuously monitors its own health, reporting potential issues before they become problematic. This proactive approach allows for predictive maintenance, reducing downtime and ensuring that the system remains operational even in remote or underserved areas.

Optimal Customer Experience

Philips integrates smart technology, AI-driven support, and a comprehensive service model that spans the entire lifecycle of its CT systems. By leveraging AI for remote monitoring and diagnostics, the company enables proactive maintenance and issue resolution without the need for on-site technicians. This approach is particularly beneficial in remote locations, reducing service interruptions and ensuring smooth, reliable operations, even in underserved areas.

Philips understands that customers invest in systems for the long term, so it prioritizes maintaining quality over the entire equipment lifespan. It keeps the hardware running, adapts to changes in medical standards, and improves user training. The company provides ongoing education, offering self-paced learning modules and virtual events that ensure operators and medical staff stay updated with the latest practices. This service is especially valuable for remote healthcare providers who may have limited access to global medical advancements.

To enhance the customer experience further, Philips offers flexible support options tailored to different needs. For instance, the company partners with local biomedical engineers in remote communities to provide first-level maintenance, ensuring that systems remain operational. This holistic approach considers the entire ecosystem of healthcare professionals, from radiologists to administrators, ensuring that customers receive customized, top-tier support that meets their specific needs throughout the system's lifecycle.

> *"Frost & Sullivan is impressed by Philips' comprehensive approach to integrating design, functionality, and user experience in its CT 3500. The company's focus on aesthetics and practical design enhances patient comfort and confidence and optimizes operational efficiency and reliability. Philips' commitment to ongoing support and proactive maintenance through AI-driven technology further underscores its dedication to delivering exceptional, long-term value and performance in healthcare settings."*
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> ***Best Practices Research Analyst***

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Strategic Investment and Global Reach: Philips' Impact with the CT 3500

The Philips CT 3500 has a solid global presence with widespread availability across several regions. It has gained significant traction in areas like South America, the Middle East, and parts of Asia, including Mongolia, Kazakhstan, and India. These regions share similar challenges, such as high patient volumes and logistical issues, which the CT 3500 addresses. Its wide appeal across diverse geographies underscores its effectiveness in meeting global healthcare needs.

Branding

Philips prioritizes building a unified brand identity over promoting individual product lines. Branding influences fast decisions in consumer goods, but for capital equipment like medical devices, the company depends on its well-established, trusted brand to succeed in the market. Its 130-year legacy and global reputation for innovation and quality are key to its brand perception in healthcare technology.

Philips emphasizes sustainability, long-term partnerships, and patient outcomes, delivering devices that offer value over a 10-year or more lifecycle. Unlike competitors that build brand families around specific products, the company maintains a "One Philips" approach, investing in the strength of its overarching brand rather than separate product names. This strategy highlights Philips as a global leader in health technology, focusing on ethical practices, sustainable healthcare, and impactful innovation that enhances patient care.

Growth Potential

Philips strategically invests in advanced technologies, particularly AI, and its ability to anticipate evolving healthcare challenges. The company focuses on enhancing operational, clinical, and financial performance for its customers by embedding AI into its systems, such as the software-defined CT 3500. This approach improves affordability and brings cutting-edge technology to healthcare facilities.

> *"Frost & Sullivan believes that the CT 3500 exemplifies the company's global leadership and commitment to addressing diverse healthcare challenges. The system's broad adoption across regions facing high patient volumes and logistical hurdles highlights its effectiveness and versatility."*
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Philips' focus on innovation disrupts traditional models, allowing hospitals to operate more efficiently, even with fewer staff, a critical advantage given the projected global shortage of 10 million healthcare workers by 2030, predominantly in low- and lower-middle-income countries.[4] The company's forward-thinking strategy addresses future healthcare needs by developing systems that deliver high performance with reduced staffing and resource requirements. This proactive approach aligns with rising patient expectations for quality care and positions Philips to meet increasing demands in a healthcare landscape that requires innovative, scalable solutions.

Frost & Sullivan believes that the CT 3500 exemplifies the company's global leadership and commitment to addressing diverse healthcare challenges. The system's broad adoption across regions facing high patient volumes and logistical hurdles highlights its effectiveness and versatility. By emphasizing a unified brand identity and investing in advanced technologies like AI, Philips enhances its global presence and positions itself as a pioneer in scalable, sustainable healthcare solutions for the future.

[4] World Health Organization, "Health Workforce," World Health Organization, 2024, https://www.who.int/health-topics/health-workforce#tab=tab_1.

Conclusion

To develop a successful new product, a company must grasp market needs and provide a robust solution with high quality and dependable performance. Frost & Sullivan observes that Philips exemplifies this approach with its CT 3500 computed tomography (CT) system. The CT 3500 incorporates advanced artificial intelligence (AI)-driven technology that automates the scanning process, enhancing patient orientation accuracy and reducing positioning time. This feature improves workflow efficiency and consistency, making it easier for healthcare providers to manage high patient volumes and deliver reliable imaging results. The system uses AI-based reconstruction technology called Precise Image, which enhances low-contrast detectability, reduces noise, and lowers radiation exposure. As a result, it provides high-quality imaging while managing patient risk, making it a valuable tool for precise diagnosis and treatment planning.

Additionally, Philips employs a customer-focused strategy to guarantee that its products meet users' specific desires and requirements. The company tailors its CT 3500 to accommodate various healthcare environments by incorporating adaptable design elements and user-friendly features. This customization helps meet the unique demands of different medical settings, boosting overall user satisfaction. Moreover, Philips provides ongoing education and flexible support options, including self-paced learning modules and virtual events. This commitment ensures that operators and medical staff stay updated with the latest practices, improving their ability to use the CT 3500 effectively and efficiently.

With its strong overall performance, Philips earns Frost & Sullivan's 2024 Asia Pacific New Product Innovation Award in the AI-enabled CT systems industry.

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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

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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.

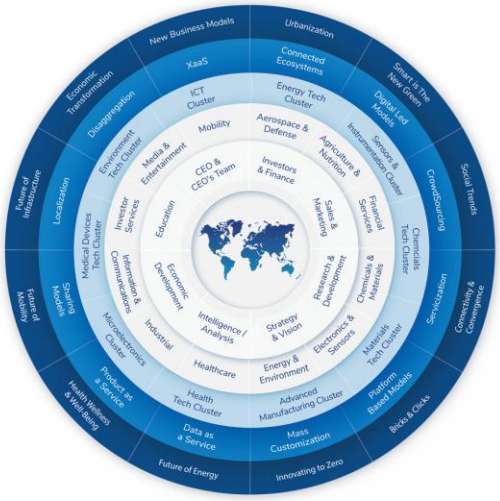


Key Impacts:

- **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)