# FROST & SULLIVAN

# **OXOS MEDICAL INC. RECEIVES THE 2023** TECHNOLOGY INNOVATION LEADERSHIP AWARD

Identified as best in class in the North American portable digital x-ray technology 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. OXOS Medical Inc. excels in many of the criteria in the portable digital x-ray space.

| AWARD CRITERIA            |                               |
|---------------------------|-------------------------------|
| Technology Leverage       | Business Impact               |
| Commitment to Innovation  | Financial Performance         |
| Commitment to Creativity  | <b>Customer Acquisition</b>   |
| Stage Gate Efficiency     | <b>Operational Efficiency</b> |
| Commercialization Success | Growth Potential              |
| Application Diversity     | Human Capital                 |

#### Micro C<sup>®</sup>: Revolutionizing Point-of-Care Radiographic Imaging

OXOS Medical Inc. (OXOS) offers high-resolution images and precise measurements in a compact and mobile package. The company's flagship product, Micro  $C^{\circ}$  (Micro C), is the world's first point-of-care dynamic digital X-ray system, providing advanced imaging capabilities at the patient's bedside.

"OXOS's Micro C device is a revolutionary point-of-care X-ray system that provides high-resolution images and precise measurements in a compact and mobile package. The portable device enables healthcare providers to perform scans quickly and accurately without transporting patients to a dedicated imaging facility."

- Azza Fazar Best Practices Research Analyst OXOS' cutting-edge technology and commitment to improving patient care have established it as a leading player in the medical imaging industry.

The North America portable digital X-ray industry is experiencing significant growth due to the increasing demand for point-of-care diagnostic tools, advancements in digital imaging technology, and the need for more efficient healthcare delivery. Portable digital X-ray systems offer several benefits, such as improved workflow, faster diagnoses, and reduced patient exposure to ionizing radiation.

Moreover, these systems provide greater mobility, flexibility, and ease of use than traditional fixed systems. Portable digital X-rays also enable real-time image transfer and faster image processing, leading to timely diagnostics and improved patient outcomes.

#### **Needs-based Innovation Strategy**

OXOS understands the various unique client needs and has taken steps to equip them with the most upto-date and cutting-edge portable imaging solution. Its orderly and systematic product development journey begins with extensive research and development, with co-founders Gregory P. Kolovich, M.D. and Evan M. Ruff, OXOS' Chief Medical Officer, and Chief Executive Officer, respectively, harnessing a deep understanding of patients and healthcare professionals needs. Then, the company leverages the acquired knowledge to build the Micro C device, addressing market needs.

#### The Micro C Device

OXOS's Micro C device is a revolutionary point-of-care X-ray system that provides high-resolution images and precise measurements in a compact and mobile package. The portable device enables healthcare providers to perform scans quickly and accurately without transporting patients to a dedicated imaging facility.

The Micro C device is a handheld X-ray system. It has a small form factor weighing just 7 pounds (3 kilograms) and a size of 1.1 feet, eliminating operator fatigue even during prolonged use and making it easy to transport and deploy in different clinical and surgical settings, e.g., intensive care units, operating rooms, and outpatient clinics.



**Micro C** 

Courtesy of OXOS

The device utilizes proprietary scanning technology that enables it to produce high-resolution images. The device also features an automated positioning system that ensures accurate patient positioning and reduces the risk of operator error.<sup>1</sup>

#### Digital and Dynamic Radiography

The Micro C device is utilized for radiographic imaging and dynamic digital radiography (DDR) of the distal extremity in adults and children. It can capture clear X-rays of various anatomical areas, ranging from the shoulder to the fingers and the knee to the toes. The Micro C device is versatile in its application allowing clinicians to perform stress exams, device placement, guided injections, and range of motion studies.

In contrast to traditional X-ray machines that often rely on many buttons, dials, and inputs, the Micro C Medical Imaging System stands out with its streamlined and user-friendly approach. The innovative system eliminates complexity by automatically adjusting its settings to suit the surgeon's needs, thus simplifying the imaging process. The Micro C system only requires three simple buttons for pinpoint control. Its detectors have a pixel pitch of 100 micrometers and a capture size of 2.25 megapixels.<sup>2</sup>

The Micro C Medical Imaging System is crucial in diagnostic and surgical radiography, contributing to improved patient care and accurate medical interventions.<sup>3</sup> It produces exceptional quality static images,

<sup>&</sup>lt;sup>1</sup> https://atdc.org/blog/oxos-medical-proposes-deployable-chest-X-ray-device-for-coronavirus-diagnoses-and-monitoring/

<sup>&</sup>lt;sup>2</sup> https://oxos.com/#f\_not\_fluoro

<sup>&</sup>lt;sup>3</sup> https://oxos.com/#f\_not\_fluoro

commonly known as digital radiography (DR) and live imaging, referred to as DDR.

These high-resolution images are critical for diagnostic accuracy and surgical procedure success as detailed visual information aids clinical decision-making.



#### Micro C: Groundbreaking, High-quality, Portable DR and DDR

Courtesy of OXOS

#### Ergonomic Design

The Micro C system's ergonomics are evident in several aspects. OXOS specifically designed the system for operator ease of use and convenience. One notable feature is capturing, adjusting, and refining radiographic images with one hand while keeping the other free for anatomical manipulation or tool execution.

The handheld device incorporates intuitive controls and interfaces that allow operators to perform various functions with minimal effort. With a well-designed user interface, radiographers can easily manipulate imaging parameters, such as exposure settings or image enhancement filters, using a single hand.

#### The OXOS Cloud Platform

The OXOS Platform is an advanced cloud-based integration and storage system that securely preserves radiographic studies, and dynamic X-ray captures. Physicians can instantly access these studies on their mobile devices right after image acquisition, enabling fast, streamlined, and user-friendly workflows without needing on-device management.

The cloud-based platform complies with HIPAA regulations and leverages OXOS's advanced medical security and encryption technologies. The OXOS Platform is available on iOS, Android, and the web.

#### Seamless Integration

OXOS designs its devices to be compatible with Digital Imaging and Communications in Medicine (DICOM)

standards, enabling smooth integration with healthcare providers' existing Picture Archiving and Communication System (PACS) servers. Regarding image quality, Micro C performs on par with top-notch machines and seamlessly sends high-quality images integrated with existing tools.

The process of entering patient data is tedious and prone to errors. OXOS devices simplify this process by directly connecting to clinicians existing worklists, facilitating easy lookup and study creation. The OXOS family of devices seamlessly works with all major electronic medical record (EMR) providers, such as EPIC, Cerner, Athena, and others. Compatibility ensures seamless integration between Micro C and the users' preferred EMR system.

In addition, OXOS is Fast Healthcare Interoperability Resources compatible, empowering providers to efficiently capture, send, interpret, and bill from the device itself. OXOS also offers comprehensive EMR templating capabilities, enhancing interpretation efficiency.

#### Strategic Practices Promoting Successful Operations

OXOS has a proven track record. In January 2021, the United States Food and Drug Administration (FDA) granted the Micro C device 510(k) clearance. Moreover, the same year, the FDA granted the device clearance for pediatric use.

The latter regulatory certification demonstrates Micro C's effectiveness in imaging children, further expanding the technology's market potential. This achievement also indicates OXOS's success in deploying technology that meets the needs of a diverse customer base and has the potential for regional and global expansion.<sup>4</sup>

"Micro C's low radiation profile allows the system to provide diagnostic imaging where it's needed at the exact moment it is needed. We've already seen a growing interest to deploy the Micro C beyond the traditional hospital and ambulatory surgery center (ASC) markets—settings such as primary care clinics, emergency departments, urgent care centers, mobile imaging services, cadaver labs, retirement homes, skilled nursing facilities, sports medicine practices, athletic facilities, military deployments, correctional facilities, home health, and rural medicine."

- Evan Ruff, Chief Executive Officer and Co-Founder of OXOS Medical Inc.<sup>5</sup>

#### The AiLARA System

Given FDA clearance in March 2022, the AiLARA System automates the implementation of the ALARA (As Low as Reasonably Achievable) principle to OXOS's portable X-ray unit, the Micro C. This technology aims to simplify taking low-dose X-ray images, reduce reshoots, maintain image quality, and streamline patient care.

AiLARA uses the company's patented positioning system to determine the thickness of the anatomy, the distance from the X-ray source, and the distance from the detector to choose the optimal X-ray settings, including the X-ray tube voltage potential, beam current, and exposure time. The resulting images are

<sup>&</sup>lt;sup>4</sup> https://oxos.com/oxos-medical-brings-revolutionary-radiographic-technology-to-pediatrics-with-additional-fda-clearance-of-the-micro-c-2/

<sup>&</sup>lt;sup>5</sup> https://oxos.com/oxos-medical-enters-40-billion-u-s-diagnostic-radiology-market-with-fda-clearance-of-micro-c-medical-imaging-system/

clinically relevant with a low radiation dose while maintaining OXOS's industry-leading image quality.

The AiLARA System is the first artificial intelligence (AI)-powered, automated, dynamic radiation dose engine to implement the ALARA principle in the Micro C family of instruments. The system offers an industry-first point-and-shoot capacity for radiographic techniques, creating safe, low-dose, and high-quality X-ray images, simple enough for any clinician to use.

OXOS's recent success in receiving the US patent for its rolling collimator technology highlights how the company continues to improve the Micro C X-ray system. Ultimately, it aims to produce radiographic technology accessible to anyone, anywhere.

"AiLARA uses the company's patented positioning system to determine the thickness of the anatomy, the distance from the X-ray source, and the distance from the detector to choose the optimal Xray settings, including the X-ray tube voltage potential, beam current, and exposure time. The resulting images are clinically relevant with a low radiation dose while maintaining OXOS's industryleading image quality." The patent describes sophisticated collimator mechanisms essential for X-ray imaging, removing the need to manually readjust the X-ray emitter and detector placement in handheld and portable systems. This innovation plays a crucial role in streamlining the diagnostic procedures. This FDA clearance is a significant milestone for OXOS, further contributing to its commitment to providing innovative advancements that directly put the future of accessible, low-dosage X-rays into the hands of its customers.

### - Azza Fazar Best Practices Research Analyst

Frost & Sullivan anticipates rapid, widespread technology adoption. The company's first-mover

status strengthens its position on emerging opportunities.

#### The Power of Foresight: Sustained Leadership

With its customer-led strategy, OXOS creates a shift in the portable digital X-ray industry. The AiLARA System and Micro C Medical Imaging System offer several benefits to its customers, helping the company retain current customers and attract new ones.

#### Partnerships and Collaborations

OXOS has experienced significant growth in recent years, expanding through strategic partnerships and increasing its presence in the global market.

In April 2021, the company partnered with OsteoApp.ai to bring its proprietary AI tools to the point-ofcare across all facilities using OXOS's Micro C portable X-ray system. This collaboration revolutionizes the diagnosis and treatment of osteoporosis by providing a novel solution that will improve the accuracy and efficiency of diagnosis and treatment.

With the partnership, OXOS aims to enhance its offerings further and improve the quality of care for patients while OsteoApp.ai expands its reach and impact in the healthcare industry.<sup>6</sup>

Moreover, OXOS integrates ImageBiopsy Lab's PANDA Pediatric Bone Algorithm for Diagnostic

<sup>&</sup>lt;sup>6</sup> https://oxos.com/oxos-medical-and-osteoapp-ai-combine-to-diagnose-osteoporosis-at-the-point-of-care-2/

Musculoskeletal Imaging. This integration aims to assist pediatric imaging by automating and accelerating the highly subjective and time-consuming Greulich & Pyle Atlas assessment method. This integration will enable doctors to determine bone age and provide the appropriate course of treatment for children with orthopedic problems.

Bone age is crucial in determining whether a child needs internal or external fixation, casting, bracing, or other procedures. The PANDA algorithm developed by ImageBiopsy Lab employs deep learning techniques to generate bone age reports following the Greulich & Pyle scale. The algorithm automatically produces results (5 seconds), and its bone age estimates are reliable within a margin of 5.4 months.<sup>7</sup>

#### **Financial Success**

In its most recent fundraising round in 2023, OXOS secured \$23 million in Series A funding from Parkway Venture Capital and Intel Capital, increasing its total to \$45 million.<sup>8</sup> The company channels the cash to enhance product innovation and expand its market presence worldwide. It has gained significant traction across multiple areas, including outpatient clinics, military and Veterans Administration facilities, sports teams, hospitals, imaging centers, and bio skills labs.

OXOS' board of directors includes Gregg Hill, Co-founder and Managing Partner of Parkway Venture Capital, and Eric King, Investment Director of Intel Capital. Frost & Sullivan opines that OXOS has a unique opportunity to capture a substantial market share. Its technology addresses challenges associated with complex and expensive X-ray technologies while tackling the global shortage of radiology resources.<sup>9</sup>

While continuously advancing its products and technology, the company prioritizes its clients' perspectives and needs. It maintains a robust regional presence while catering to its customer-specific requirements. In the highly competitive field of portable digital X-ray systems, Frost & Sullivan recognizes OXOS's position to gain a larger market share due to its customer-led strategy and innovative solutions.

<sup>&</sup>lt;sup>7</sup> https://oxos.com/announcing-availability-of-panda-pediatric-bone-age-algorithm-with-micro-c/

<sup>&</sup>lt;sup>8</sup> https://oxos.com/oxos-medical-raises-23m-series-a-2/

<sup>&</sup>lt;sup>9</sup> Ibid.

# Conclusion

Technology is a critical success factor for the portable digital X-ray industry. Yet, with many options available, market stakeholders need to leverage the most appropriate and best technology-based solutions to optimize their market impact. With its Micro C device, OXOS Medical Inc. (OXOS) delivers portability, ease of use, and real-time imaging capabilities. These benefits enable healthcare professionals to perform X-ray scans quickly and efficiently, improving patient care and treatment outcomes. The Micro C device's innovative design reduces radiation exposure for patients and healthcare providers, contributing to a safer and more sustainable healthcare environment.

OXOS has achieved commercial success by providing various industries with innovative and effective imaging solutions. For example, it has gained traction in outpatient clinics, the military, the Veterans Administration, sports teams, hospitals, and imaging centers. The company's recent Series A funding of \$23 million, bringing its total to \$45 million, further demonstrates its position in the industry. This backing enables OXOS to accelerate product innovation and expand its global availability.

As the demand for medical imaging continues to grow, Frost & Sullivan believes that OXOS is in a prime position to increase its market share in the highly competitive portable digital X-ray industry. With its commitment to innovation and creative solutions, the company has the potential to continue its growth trajectory and become a significant player in the industry.

For its strong overall performance, OXOS Medical Inc. is recognized with Frost & Sullivan's 2023 North American Technology Innovation Leadership Award in the portable digital x-ray industry.

# What You Need to Know about the Technology Innovation Leadership Recognition

Frost & Sullivan's Technology Innovation Leadership Award recognizes the company that has introduced the best underlying technology for achieving remarkable product and customer success while driving future business value.

## **Best Practices Award Analysis**

For the Technology Innovation Leadership Award, Frost & Sullivan analysts independently evaluated the criteria listed below.

#### Technology Leverage

**Commitment to Innovation**: Continuous emerging technology adoption and creation enables new product development and enhances product performance

**Commitment to Creativity**: Company leverages technology advancements to push the limits of form and function in the pursuit of white space innovation

**Stage Gate Efficiency**: Technology adoption enhances the stage gate process for launching new products and solutions

**Commercialization Success**: Company displays a proven track record of taking new technologies to market with a high success rate

**Application Diversity**: Company develops and/or integrates technology that serves multiple applications and multiple environments

#### **Business Impact**

**Financial Performance**: Strong overall financial performance is achieved in terms of revenues, revenue growth, operating margin, and other key financial metrics

**Customer Acquisition**: Customer-facing processes support efficient and consistent new customer acquisition while enhancing customer retention

**Operational Efficiency**: Company staff performs assigned tasks productively, quickly, and to a high-quality standard

**Growth Potential**: Growth is fostered by a strong customer focus that strengthens the brand and reinforces customer loyalty

**Human Capital**: Commitment to quality and to customers characterize the company culture, which in turn enhances employee morale and retention

## **About Frost & Sullivan**

Frost & Sullivan is the Growth Pipeline Company<sup>™</sup>. We power our clients to a future shaped by growth. Our Growth Pipeline as a Service<sup>™</sup> 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<sup>™</sup>. 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)



