Nanox Imaging: Company Perspectives and Short-sellers Allegations



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Executive Summary

The report presents an independent analysis of the business and technological prospects of Nanox Imaging Ltd. We have initiated this research following the publications of the Citron Research and Muddy Waters Research short sellers reports, which presented allegations of misconduct regarding the Nanox business and technological claims. Nanox is currently headquartered in Israel and is developing a digital X-ray source involving a cold cathode 'Spindt Array' enabling more efficient and economical X-ray systems for radiography and tomography.

The organization was established under the laws of the State of Israel under the name "Nanox IMAGING LTD" on December 20, 2018. At the time of incorporation, all research had already been carried out and patented by their predecessor - Nanox Imaging PLC ("Nanox Gibraltar"), a Gibraltar public company. Nanox's vision is "to increase early detection of medical conditions that are discoverable by X-ray, which we believe is key to increasing early treatment, improving health outcomes and, ultimately, saving lives."

The present analysis provide additional information regarding the specific claims made by the Citron and Muddy Waters short sellers reports, which included:

- Initial Public Offering without a Minimum Viable Product
- Unreasonably low R&D spending vs. claimed medical capabilities of their products and technology
- Fraudulent pre-sale deals with incapable distributors
- Lack of FDA approval for its technology and products

Nanox Imaging is currently without a commercially available prototype and that has raised several red flags. However, in the present report should clarify that this is not entirely true - Nanox actually has a fully operational digital x-ray which is also the core of their product offering.

Another important point is the low R&D spending that the organization published during the periods of 2018 and 2019. The present analysis reviews the major reasons why this occurred, and offers the major conclusion that this is actually only a problem if you analyse it outside of the full context of the company and its total spendings.

We will also bring the attention of the public to the other controversies presented in the short seller reports of Citron and Muddy Waters, including allegations of dubious pre-sale deals and a lack of FDA approval. On a first glance these may seem to be illogical and suspicious factors indicative of illegitimacy, but after a thorough analysis the reader of this report should be able to grasp the true motives behind them, and understand that they are, in fact, not indicative of illegitimacy or misconduct when considered within the full scope of the company's operations and industry.

Nanox Vision - About Company

Commercial and legal history

After a partnership with Sony, and over \$1B investment in developing an electron field emission technology for production of a new kind of television, the founder of the original company (Hitoshi Masuya) teamed up with Israeli entrepreneur Ran Poliakine and incorporated Nanox Imaging PLC in Gibraltar (in 2012). The purpose of forming a new company was to provide a tax planning structure allowed by the state in order to enable ongoing spending on research and development.

Several small equity rounds later (in 2018), a new entity (Nanox Co Ltd) was established in Israel which aimed to prepare the whole consortium of companies (from Japan, Gibraltar and Israel) to launch an Initial Public Offering (IPO). An additional factor behind the establishment of the new company was to appropriately reflect the correct ownership structure as management of the Nanox project moved entirely from Japan to Israel. Two years later, on 21st of August, 2020, the company initiated its Initial Public Offering with its digital x-ray source developed on the basis of the Sony electron field emission technology.

The latest investment round, executed in July, 2020, amounted to \$59 million. This brought the total capital raised by the startup since December 2019 to \$110 million. Investors included global corporations like SK Telecom, South Korea's largest wireless carrier, Industrial Alliance, Foxconn, and Yozma Korea.

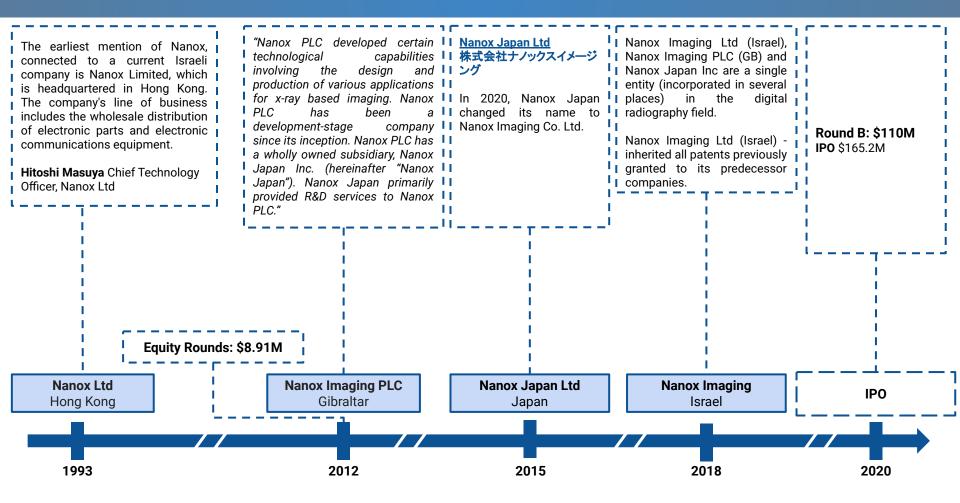
Technology and business model

After more than 20 years of research and development, with over \$1B invested, the company's team of engineers has managed to develop unique intellectual property, patents, and the capacity to design and build high-powered field-effect cathodes. Their system combined digital X-ray device Nanox.ARC and an AI cloud-based software called Nanox.CLOUD.

Nanox Imaging's proprietary **cold cathode technology** greatly improves the cost effectiveness and efficiency of X-ray imaging. At the core of the cold cathode technology is a "**chip**" **made out of nano-scale structures** developed using proprietary nanofabrication techniques and methods supported by peripheral technologies in order to translate their benefits into real-world applications.

Nanox Imaging has an additional specific feature that differentiates it from other similarly-focused technology providers: their unique **medical** screening as a service (MSaaS) business model, which allows for wide distribution and accessibility, and which charges health providers with a pay-per-scan service model.

Nanox Timeline



List of Patents

- Chi Yeung. 2003. Image capture device. US20030163623A1.
- Koichi lida, Hidenori Kenmotsu, Jun Yamazaki, Hitoshi Masuya.
 2013. Devices having an electron emitting structure.
 EP2826056A1
- Norihito Nishimoto, Hitoshi Masuya, Jun Yamazaki, Hidenori Kenmotsu. 2013. Imaging device with election source array. WO2014009832A1
- Hidenori Kenmotsu, Hitoshi Masuya, Koichi lida. 2014. Electron emitting construct configured with ion bombardment resistant. US10741353B2
- Koichi lida, Jun Yamasaki. 2017. X-ray tube and a controller thereof. US20180005796A1
- Hidenori Kenmotsu, Hitoshi Masuya, Koichi Iida. 2017. X-ray tube and a conditioning method thereof. US20170301505
- Kenmotsu Hidenori, Masuya Hitoshi, Tsuchiya Tadayoshi, Nishimoto Norihito. 2019. Control method of x-ray imaging device. WO2019151249
- Hidenori Kenmotsu. 2019. Cold cathode x-ray tube and control method therefor. WO2019151248A1

- Hidenori Kenmotsu. 2019. X-ray imaging device and synthesis method of tomosynthesis image. WO2019151250A1
- Tsuchiya Tadayoshi, Nishimoto Norihito. 2019. Method for controlling x-ray tube and device for controlling x-ray tube. W02019151251
- Hitoshi Masuya. 2019. Cold cathode electron source and x-ray generator equipped with same. WO2019244874A1
- Ben Shalom Amir, Greenstein Lior, Davara Gilad, Verbuch Gusti.
 2020. System and method for providing a digitally switchable x-ray sources. WO2020141435A1
- Masuya Hitoshi, Kenmotsu Hidenori. 2020. Tomosynthesis device and method for driving same. W02020158644

Technical Characteristics



What is new in Nanox ARC?

The Nanox.ARC employs the novel digital X-ray source that is designed to be energy-efficient, smaller and can be more precisely controlled compared to existing X-ray sources.

In the medical imaging sector, using a Field-Emission-type X-ray tube has several desirable properties:

- Rapid time switching
- Rapid intensity change
- Colder mechanism
- Lifetime improvement

The Nanox tubes are significantly smaller and require less energy to operate, enabling a new generation of medical imaging devices.

Traditional systems



Nanox.ARC



The Nanox System aims to address the limitations of existing medical imaging systems on three levels:

- Digital X-ray source with the potential to significantly reduce the costs of medical imaging systems
- Technology designed to improve upon the industry standard with integrated radiology diagnostics via a cloud-based MSaaS platform.
- Business model designed to increase the availability of medical imaging

Early detection via medical imaging may potentially save millions of lives annually for cancer patients alone.

Despite the fact that a Nanox.ARC prototype is still not publicly tested, Nanox have presented results with phantom body parts in its official IPO filing on NASDAQ.

Nanox have officially submitted "a 510(k) application for a single-source version of the Nanox.ARC to an accredited Review Organization under the U.S. Food and Drug Administration's (the "FDA") Third Party Review Program" (Source: <u>Prospectus</u>)

Characteristics of the Product

9+ years of development by a Japanese and Israeli engineering team produced a stable Cold-Cathode field emission MEMS silicon.

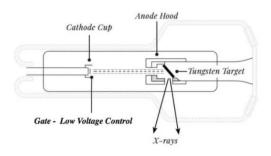
What is a Cold Cathode? The term "cold cathode" (or a "field emitter") refers to a cathode that is not electrically heated by a filament.

Nanox field emission cathode technology allows X-ray imaging to overcome longstanding impediments to innovation and market growth. This technology aims to become a novel digital standard of X-ray imaging.

The cold cathode, made of millions of nanoscale gates (called nano-spindts), digitally generates electrons and successfully replaces the thermionic filament in the X-ray tube.

"Nanox has achieved the world's first commercial-grade digital X-ray source, without the use of heat," Ran Poliakine, founder and CEO of Nanox, told Digital Trends. "Without the need to produce heat, the "cold cathode" can be made between 70-90% smaller. This also reduces the cost."

According to Nanox website info: "Cold Cathode technologies attracted first professional interest in the late 1990s to early 2000s when flat panels were considered for big-screen solutions". This indicates that the majority of the company's R&D relating to their cold cathode was finished some time ago.



cold cathode X-ray source (field emission)

Extract electrons by applying an electric field

These factors address and justify Nanox against the the short sellers reports' allegations of low R&D expenditure and comparatively small R&D staff sizes in comparison to administrative and general costs and staff size.

The overall operating expenses of this project as a whole were in recent years and moving forward appear to be focused on commercializing an already developed technology (cold cathode technology), thus necessitating comparatively less R&D expenses than previous years.

Foxconn Technology Group



Foxconn Technology Group, also known as Hon Hai Precision Industry Co., Ltd., is a Taiwanese multinational electronics contract manufacturing company headquartered in Tucheng, New Taipei, Taiwan. It is the world's largest electronics contract manufacturer and the fourth-largest information technology company by revenue.

In 2019, Foxconn Technology Group achieved a net income of 132.19 billion New Taiwanese dollars, the equivalent to approximately 4.41 billion U.S. dollars. This is an increase from the 4.24 billion U.S. dollars in profit that the company recorded in 2018.

According to some estimates, the company manufactures approximately 40 percent of all consumer electronics. Notable products manufactured by Foxconn include the BlackBerry, iPad, iPhone, iPod, Kindle, Nintendo 3DS, Nokia devices, Xiaomi devices, PlayStation 3, PlayStation 4, Wii U, Xbox 360, Xbox One, and several CPU sockets, including the TR4 CPU socket on some motherboards.

Employing more than a million people worldwide, the company was one of the world's largest employers in 2015.

From December 2019 through July 2020, Nanox entered into share purchase agreements with certain investors, under which company sold an aggregate of 6,812,000 ordinary shares to the Investors, at a price per share of \$16.00, for an aggregate purchase price of approximately \$109 million (the "Private Placement"). As part of the Private Placement, Nanox sold 312,500 ordinary shares to Foxconn Singapore Pte Ltd. for an aggregate purchase price of approximately \$5 million. The consumer tech manufacturing giant joined Nanox's previous supporters Fujifilm, SK Telecom and other private entities and boosted the project's total backing up.

One of the company's goals is to be able to provide early detection services at a lower cost compared to traditional X-rays, as well as CT, mammogram and angiogram modalities, through a pay-per-scan business model.

- Foxconn is a leading investor in Nanox.
- Nanox has entered into a contract manufacturing agreement with FITI, a subsidiary of Foxconn for the commercial production and assembly of the Nanox.ARC. It aims to ship close to 15,000 machines in the next three years.

Nanox Imaging Products in Brief

Nanox.ARC

Using the Nanox tube's unique features, such as its fast response time, small size, and lower cost, Nanox has built a radiographic system called the Nanox.ARC.

This system uses several Nanox tubes arranged in a curve above a patient's radiographic table. Using advanced image processing techniques such as Tomosynthesis, Nanox can provide advanced imaging where no imaging existed before.



Nanox.CLOUD

The Nanox.CLOUD is designed to provide an end-to-end medical imaging service, including services such as image repository, radiologist matching, online and offline diagnostics review and annotation, connectivity to diagnostic assistive AI systems, billing and reporting.

Source: Nanox Announces Agreement With CureMetrix For Al-based Assistive Diagnostic Tool to Support Nanox Cloud Platform



Nanox.CLOUD

The Nanox.CLOUD is a companion cloud-based software that is designed to provide an end-to-end medical imaging service, including services such as image repository, radiologist matching, online and offline diagnostics review and annotation, connectivity to diagnostic assistive artificial intelligence systems, billing and reporting.

The Nanox System is designed to enable medical screening as a service ("MSaaS") to improve accessibility and affordability of early-detection services worldwide.

The system aims to enable global access for diagnosis for medical industry professionals, and makes following a number of improvements traditional approaches including:

- Medical Al systems provide decision assistive information
- Radiology specialists provide timely online diagnostics
- Hospitals and doctors get real time and global access

According to the Nanox Imaging Prospectus, the company is "actively seeking collaboration opportunities", as they anticipate that their "digital and cloud-based subscription model will bring more digital healthcare disruptors into the market."

Launching Nanox.CLOUD will maintain doctor-patient communication. According to Nanox Imaging Prospectus, the Nanox.CLOUD software prototype was developed in parrallel with Nanox.ARC.



- 1 Nanox.ARC transmits imaging data to its cloud SAAS platform
- 2 Nanox.CLOUD provides secure imaging analysis and billing services

By integrating the Nanox.CLOUD, the Nanox System aims to provide a streamlined process where each scanned image is uploaded automatically to the cloud system and matched by a human radiology expert and decision-assistive Al algorithms.

Al algorithms will provide scan reviews and diagnostics in a significantly shorter time frame than current diagnostic processes, which could substantially reduce wait-times for imaging results and increase early detection rates compared to industry standard imaging process protocols.

It is worth mentioning that the company has stated that the development and commercialization of the Nanox.CLOUD is dependent upon a number of factors including the need for a considerable investment of technical, financial, and legal resources, which may not be available to the company.

Main Partners and Customers

Partner Name	Description of the partnerships	Date	Type of Cooperation
SK Telecom	 The deployment of 2,500 Nanox Systems in South Korea and Vietnam. Partnership scope includes manufacturing MEMs X-ray chips for the Nanox.ARC. Investor - \$110M 	June, 2020	Collaboration Agreement
USARAD	 The deployment of 3,000 Nanox Systems Promotion of Nanox.CLOUD services among radiologists to join the Nanox diagnostics services platform. 	February, 2020	Collaboration Agreement
Hadasit	 Joint research and development projects The provision by Hadasit of services in connection with Products, where no innovative research will be carried out. 	September, 2019	Collaboration Agreement
University of Tokyo	The University of Tokyo is providing clean rooms to manufacture the MEMs X-ray chip.	September, 2020	Cooperative Agreement
Ambra Health	Integration Ambra's enterprise image exchange solution with Nanox.ARC systems as they are deployed via the startup's cloud network.	October, 2020	Collaboration Agreement
Hadassah	Using the Nanox.ARC for developing novel early-detection and screening protocols to promote preventive practices.	September 2019	Collaboration Agreement

Main Partners and Customers

Partner Name	Description of the partnerships	Date	Type of Cooperation
CureMetrix	Integration the CureMetrix advanced AI diagnostics solution into Nanox's planned cloud-based software platform.	March, 2020	Collaboration Agreement
Brainomix Limited	 Local integrations into health maintenance organizations, electronic health record systems, and insurance companies. To accumulate a significant number of medical images, to be used by collaborators to increase the probability of early disease detection. 	July, 2020	Collaboration Agreement
IMedis Al	Testing of the Nanox.ARC and the Nanox.CLOUD together with proprietary AI algorithms used for the analysis of brain damage caused by stroke, chest and abdominal X-rays.	August, 2020	Collaboration Agreement
Qure.ai Technologies	Offering Qure.ai's Al-powered diagnostics to a large network of radiologists who can benefit from accurate CT scan interpretation.	August, 2020	Collaboration Agreement
Lunit	Joint research with VUNO on digital X-ray and CT technology.	August, 2020	Non-binding Agreement
VUNO	Jointly development with Lunit focused on commercializing medical AI solutions based on digital X-ray and CT technology.	August, 2020	Non-binding Agreement

Technology Overview Conclusions

About the products

- The ARC platform is a unique tool that has the potential to disrupt the current Medical Imaging industry. The next chapter -Marketing, provides a detailed explanation on the impact that the new solution can provide.
- The CLOUD-based solution, supported by AI and Big Data, can bring substantial value to the healthcare sector in the coming decades. The AI algorithms have the ability to provide scan reviews and diagnostics in significantly shorter time frames than current diagnostics, which could substantially reduce wait-times for imaging results and increase early detection rates compared to currently-employed imaging process protocols. The added value that the platform can bring to the research community is also enormous.
- The company's main investors are also technological and logistic partners - this means that they are participating in the whole chain of supply - from development to distribution to their respective markets.
- No FDA approval for the Nanox.ARC Prototype the central problem at this stage. The upcoming conference will be the culmination of more than 20 years of research and development that has to be approved by the FDA in order to be commercialized.

About the partners

- There are two types of partners for Nanox Imaging: those aiming to assist with the development of ARC, and those working with the company on their Nanox CLOUD solution.
- The majority of the company's current collaborations were established during 2019 - 2020.
- Foxconn Technology Group (the largest investor in Nanox) is providing important expertise and resources for the production of the company's ARC system.
- SK Telecom (South Korea's biggest telecom company and the company's second-largest investor) is working with Nanox for the distribution of the system on the Korean market and the development of the MEMs X-ray chips for the Nanox.ARC
- **Brainomix Limited** is another important partner for Nanox. They specialize in the creation of Al-powered imaging biomarkers and data analysis is to provide medical insights for healthcare professionals.

Market Overview



Global CT Market

The global computed tomography (CT) market size is primarily driven by the rising share of population over 65 and an increase in cases of chronic diseases, as well as a gradual shift in medical care toward image-guided interventions and rapid technological progress in the field. The global computed tomography market was valued at US\$ 5,021.6 million in 2016 and is expected to exhibit a robust compound annual growth rate of 5.2% over the period of 2017–2025.

(Source: Coherent Market Insights)

The burden of chronic genetic diseases is on the rise across the globe, and medical imaging procedures are playing a very important role in the accurate diagnosis of these diseases. Chronic genetic diseases, such as heart disease, stroke, cancer, diabetes, obesity, and arthritis, are among the most common, expensive, and preventable of all health problem. According to the estimates of World Health Organization (WHO), non-communicable diseases (NCDs) account for 63% of all deaths (36 million out of 57 million global deaths) and 80% of the deaths occur in low- and middle-income countries (due to the lack of adequate healthcare services and equipment). (Source: www.who.int)

The above-mentioned statistics provide ample evidence that there is substantial demand for the solutions provided by Nanox Imaging, and that this demand will only grow as the size of geriatric populations increase (not only in developed nations, but also regions transitioning from one stage of economic development to another).

Key Market Players:

- Hitachi Ltd.
- Siemens AG
- Toshiba Corporation
- Samsung
- General Electric Company
- Koninklijke Philips N.V.
- GE Healthcare
- Anke Biotechnology
- Neusoft Medical System Co. Ltd
- Philips Healthcare
- Carl Zeiss Meditec
- Shenzhen Anke High-tech Co. Ltd
- NeuroLogica Corporation
- Hitachi Medical System America, Inc.
- iThera Medical GmbH

Market Perspectives

The use of X-rays and other physical waves such as ultrasound can resolve between 70% and 80% of all diagnostic problems, but almost two-thirds of the global population lack access to diagnostic imaging. In South America and the Caribbean islands, available services frequently have to deal with poor quality procedures and unnecessary radiation exposure. As a result, many diseases, such as tuberculosis, pneumonia or various types of cancer, are often misdiagnosed or go undiagnosed.

It is estimated that over 3.6 billion diagnostic X-ray examinations are conducted every year all over the world. Nevertheless, there is a wide gap in the rates of radiographic diagnosis between developing and industrialized societies. While in countries with medium health development in South America and the Caribbean region, around 400 radiological research studies per 1,000 individuals are performed per annum, and in those with low health development some 30 per 1,000 population are performed, while in the developed world the number is around 1,700.

Two-Thirds of the World's Population has no Access to Diagnostic Imaging

This is what Nanox proposes to solve. They aim to address both the shortage of imaging systems and of radiologists needed to read the scans of these systems, which results in weeks and months of waiting time for diagnoses that **may make the difference between life and death**.

Country	Average waiting time for MRI and CT test
Canada	26 days for a computed tomography (CT) scan.77 days for a magnetic resonance imaging (MRI) scan.28 days for an ultrasound.
UK	The 42 -days standard for the tests including endoscopies, colonoscopies, MRI and CT scans. "Increasing trend in the number of patients waiting longer than six weeks over the past two years" - The NHS report
US	14-28 days to get an MRI. The second highest number of MRI machines in the world.
Germany	± 44 days for outpatients and ± 5 days for inpatients for a MRI (excluding emergencies).
France	38 days an oncologic patient must wait for a MRI scan.
Netherlands	18 days for MRI scans. 8-9 day for CT
India	> 365 days waiting list (hospital having only one MRI machine).
Australia	North and West: 60 days for MRI scans. East: 49 days for MRI scans. South: 27 days for MRI scans; Average wait time for CT is 27.7 hours
Russia	Several months for MRI scans.
Israel	52 days for an MRI.

Customers to Date

Customers Name	Description of the partnerships	Number of pcs	Date	Location
SPI Medical	The deployment and operation of 630 Nanox Systems (comprised of the Nanox.ARC and the Nanox.CLOUD).	630	September, 2020	Mexico
Golden Vine	Providing medical imaging services at affordable prices for communities of varying socio-economic status.	500	June, 2020	Taiwan, Singapore
Distribution Partners	The deployment and operation of 600 Nanox Systems comprised of the Nanox.ARC and the Nanox.CLOUD to provide medical imaging services.	600	May-June, 2020	Russia, Belarus
The Gateway Group	The deployment and operation of 1,000 Nanox Systems comprised of the Nanox.ARC and the Nanox.CLOUD.	1000	March, 2020	Australia, New Zealand, Norway
Promedica Bioelectronics	 The deployment and operation of 500 Nanox Systems comprised of the Nanox.ARC and the Nanox.CLOUD. Providing medical imaging services at affordable prices for communities of varying socio-economic status. 	500	June, 2020	Italy
SK Telecom	The deployment of 2,500 of the Nanox.ARC systems in 2021.	2500	June, 2020	South Korea, Vietnam
USARAD	The deployment of 3,000 Nanox Systems, under Nanox's MSaaS (Medical Screening as a Service).	3000	February, 2020	USA
LATAM Business Development Group	Latam BD Group is a business consulting and development firm specializing in the Latin American markets.	1000	July, 2020	Brazil

Customer Regional Distribution

USARAD

USARAD is a radiologist-run and operated full-service subspecialty radiology and teleradiology company that provides teleradiology services.

Location: USA Date: February, 2020 Number of pcs: 3000

SPI Medical

SPI Medical is a distributor of specialty pharma products and medical devices.

Location: Mexico **Date:** September, 2020 **Number of pcs:** 630

LATAM Business Development Group

Latam BD Group initiates, develops and promotes business between innovative companies and the Latin American markets, in various technology fields such as life sciences, medical devices, advanced agriculture. Fintech.

Location: Brazil **Date:** July, 2020 **Number of pcs:** 1000

Distribution Partners

JSC Roel Group; Clarity Medical Solution

Location: Russia, Belarus **Date:** May-June, 2020 **Number of pcs:** 600

SK Telecom

SK telecom is a wireless telecommunications operator

in South Korea.

Location: South Korea,

Vietnam

Date: June, 2020 Number of pcs: 2500

Promedica Bioelectronics

Promedica Bioelectronics S.r.l. is operating in the field of marketing and technical management of high-technology equipment of Diagnostic Imaging and Oncology Therapy.

Location: Italy Date: June, 2020 Number of pcs: 500

Golden Vine

Golden Vine is led by Ms. Pepi Liao, a second generation of the Liao Wan Lung, family, who is the founder and chairman of CB CERATIZIT – one of the largest global suppliers of Tungsten Carbide to leading medical imaging vendors.

Location: Taiwan, Singapore

Date: June, 2020 Number of pcs: 500

The Gateway Group

Australia's largest independent product distributors including health, wellness, medical supplies and devices.

Location: Australia, New Zealand, Norway

Date: March, 2020 Number of pcs: 1000



About Customers

- Nanox Imaging is currently lacks an FDA approved prototype and is trying to gain as many customers as possible in order to substantiate their 15,000 units manufacturing plans with pre-sale orders before the product can even be tested by their distributors. This is a highly unusual method for a small company, as pre-sale strategies are mainly used by large corporations (e.g. Apple). However, it is an aggressive and reasonable approach for Nanox considering that they cannot send a prototype for testing ahead of regulatory approval and have to close deals that are contingent upon clearances in every country. This overall strategy, while reasonable in the full context of their operations, is nonetheless a major risk that should be monitored closely.
- Other factor impacting their decision to pursue mass distribution via pre-sales-contingent contracts could be attributed to the need to provide investors with assurance that the company has generated large enough traction on the target market.
- According to allegations, there are some cases mentioned among consumers that where cannot afford (according their financial results) the number of machines they signed to purchase. This could be considered as irrelevant because the Nanox business model does not require their distributors to finance the systems, placing that responsibility upon the medical centers that will be operating the systems, which need to provide financial assurances in the form of a specific minimum of service fee guarantees. The distributors and partners that signed with Nanox are committed to onboard end-user clinics that will provide back-to-back service fee guarantees through the distributors so that the burden of financial due diligence is focused on the end-user clinics and not Nanox partners.

Even though suspicions were raised surrounding the first batch of clients of the young startup, this is actually quite normal for companies at Nanox's current stage of development (lacking commercially available products). The purpose of generating such large number contracts is to provide the company's various stakeholders with sufficient market traction and to reassure them of the technology's marketability.



Investors and Investments



Investor Regional Distribution

Industrial Alliance Insurance and Financial Services Founded in 1892. IA Financial Group is a life and health insurance company that offers a wide range of life and health insurance products, savings and retirement plans, RRSPs, mutual and segregated funds, securities, auto and home insurance, mortgage loans and other financial products and services. Investor Location: Canada Date: Jul 28, 2020 4 Equity Rounds were done by Nanox Imaging PLC (Gibraltar). Overall \$8.91M were collected. **Investor Location: US Date:** 2014-2017

SK Telecom

SK telecom is a wireless telecommunications. operator in South Korea. SK telecom is dedicated developina advanced telecommunications technologies for the mobile lifestyle.

Investor Location: South Korea

Date: Jan 16, 2020; Jun 4, 2020; Jul 28, 2020

Foxconn Technology Group

Foxconn is an electronics company that manufactures computers and servers.

Investor Location: Taiwan Date: Jan 16, 2020; Jul 28, 2020

FUJIFILM

Fujifilm develops and sells consumer products and business products related to photography.

Investor Location: Japan

Date: Jan 16, 2020

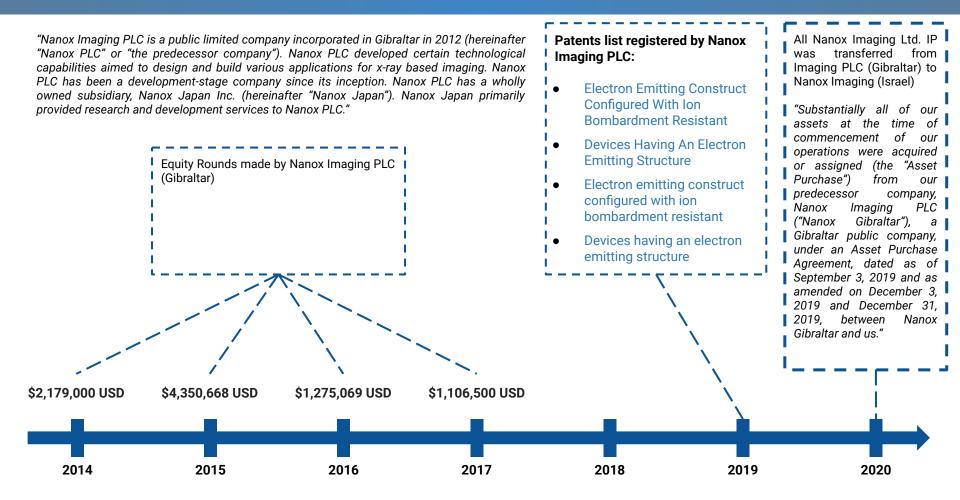
Yozma Group

The Yozma Group is a venture capital firm specializing investments in all stages of development of a company with a focus on early stage.

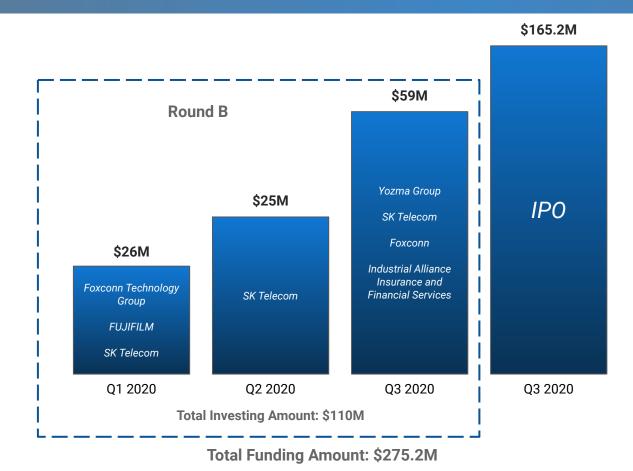
Investor Location: South Korea

Date: Jul 28, 2020

Nanox Imaging PLC - Offering and Sales Amounts



Investment Rounds in Nanox Imaging



Less than a month after Nanox raised \$59 million in funding, the company announced that it raised \$165.2 million in an initial public offering. And after its shares were priced at \$18 for its debut on the Nasdaq Global Market later under the NNOX ticker, it opened at \$20.34, a moderate increase of 13%, and closed out the day at \$21.70, up 20.6% compared to its offer price.

Overall, in 2020 the company managed to raise money in three funding rounds - in Q1, Q2 and Q3. The participating investors were all large technology corporations operating in the the fields of electronics, telecommunications and medical equipment development. The biggest participant in the funding rounds was **Foxconn Technology Group** - the world's largest electronics contract manufacturer and the fourth-largest information technology company by revenue.

Source: Nanox Imaging

Investments History

Investors Name	Funding Round	Date of Investments	Lead Investor	Investment Amount (in million USD)
YOZMA HOWATALLA Alliance Insurance and Financial Services	Series B round	July 28, 2020	N/A	\$59M
SK telecom SK Telecom	Series B round	June 4, 2020	SK telecom SK Telecom	\$25M
SK telecom FOXCONN FOXCONN FUJIFILM Fujifilm	Series B round	January 16, 2020	FOXCONN* Foxconn	\$26M

Team Behind



C-Level Analysis

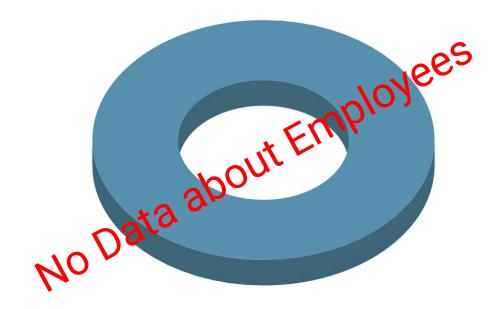
Name	Position	Description
Ran Poliakine	Chief Executive Officer and Chairman of the Board	The founder of the first wireless charging company (Powermat), a serial entrepreneur focusing on global life-changing technologies and inventions across multiple verticals
ltzhak Maayan	Chief Financial Officer	Mr. Maayan has served in financial leadership positions in multinational companies including Perrigo, Cisco Systems, and Elscint.
Gilad Yron	Chief Business Officer	Coming from Kornit Digital where he was Executive VP Global Business, and Stratasys, where he held the position of Senior VP Products, Mr. Yron is a veteran of international corporations.
Yoel Raab	Chief Technology Officer	Mr. Raab has decades of product development experience, and a BSc. and MSc. in applied physics & microelectronics.
Amir Ben Shalom, Ph.D.	Chief Science Officer	With over 250 patents granted and pending, Dr. Ben Shalom is a scientist, engineer, author, and a renowned expert in high-power analog circuits and electro-optics.

Ran Poliakine was attacked by short sellers in their reports and presented as someone who lacks professional experience in the healthcare industry. This claim is easily falsifiable given that Mr. Poliakine's position is managerial and the main scientific process in the company is supervised by Amir Ben Shalom, Ph.D. at his position as Chief Scientific Officer (CSO). Dr. Ben Shalom is currently holding a B.Sc. in physics and mathematics from HU Jerusalem, M.Sc. and Ph.D. in Electrical Engineering from Tel-Aviv University.

Dr. Ben Shalom is also the head of the exhibits department and principal curator at the Bloomfield Science Museum Jerusalem. He is also the former co-founder and chief scientist of Powermat Technologies, a leader in wireless power solutions, and CTO and advisor to several companies developing cutting-edge technologies.

We found three resources and they provided following info:

DevelopEX	ResearchGate	Justia.Patents
3 books		
≈ 50 articles	14 Articles	
≈ 200 patents		141 Patents



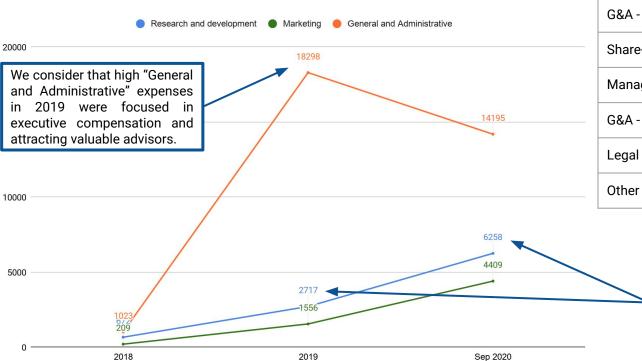
There is no available information about employees besides the C-level executives and Board of directors of the company.

Nanox Imaging has 50-60 employees and 24 of them serve upper level roles in positions such as: directors, managers, VPs and C-level executives.

This component of the analysis could not be conducted due to the lack of publicly-available information.

We assume that the majority of R&D workers were engaged in the Japanese or the Gibraltarian entity and were not disclosed due to safety precautions. One of the reasons for that could be the need to safeguard valuable Intellectual property from competitors.

Consolidated Statement of Operations Data: (\$ in thousands)



General and Administrative Expenses:	2019 (\$ in thousands)
G&A - salaries and wages	461
Share-based compensation	14,967
Management fee	534
G&A - professional services	1,470
Legal fees	417
Other	449

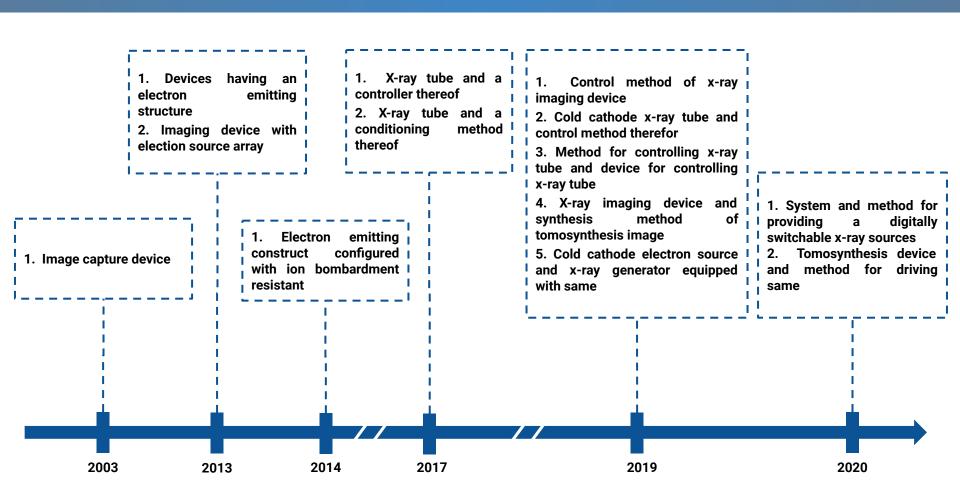
Because the technology used by Nanox was developed and patented earlier, R&D expenses are not high.

Based on the list of the company's technological partners signed by Nanox in 2020, we can assume that the company's main R&D focus is the Nanox.CLOUD system.

Intellectual Property



Nanox's Patents Timeline



Patents overview

Title (Year)	Patent No.	1st Inventor	Description
Image capture device**	US200301 63623A1	Chi Yeung	An image capture device and an x-ray emitting device are introduced comprising an electron receiving construct and an electron emitting construct separated by a spacer.
Devices having an electron emitting structure	EP282605 6A1	lida Koichi	An image capture device comprising an electron receiving construct and an electron emitting construct, and further comprising an inner gap.
Imaging device with election source array*	WO201400 9832A1	Norihito Nishimoto	An electron emitting construction comprising a plurality of pixel units arranged in an array.
Electron emitting construct configured with ion bombardment resistant **	US107413 53B2	Hidenori Kenmotsu	An electron emitting construct design configured to facilitate radiation in the X-ray spectrum (preventing a cold cathode from damage by ion bombardment in high-voltage applications).
X-ray tube and a controller thereof	US201800 05796A1	Koichi lida	An X-ray tube comprises a vacuum vessel; a cathode and an anode fixedly disposed inside the vacuum vessel; and a rotary mechanism that rotates the vacuum vessel.
X-ray tube and a conditioning method thereof*	US201703 01505A1	Hidenori Kenmotsu	The X-ray tube includes an electron emission, an anode unit, and a focus structure disposed between the electron emission unit and a target unit.

^{*-} the patent was abandoned

Source: Taking an X-Ray to Nanox Imaging

^{** -} the patent was granted

Patents overview

Title (Year)	Patent No.	1st Inventor	Description
Control method of x-ray imaging device	WO201915 1249A1	Hidenori Kenmotsu	The control method of an X-ray imaging device will reduce the number of X-ray tubes configuring a distributed X-ray source.
Cold cathode x-ray tube and control method therefor	WO201915 1248A1	Hidenori Kenmotsu	A cold cathode X-ray tube capable of preventing time-dependent decrease in anode (stable operations for a long period of time.).
Method for controlling x-ray tube and device for controlling x-ray tube	WO201915 1251A1	Tsutchiya Tadamoshi	A method for controlling an X-ray tube will provide an X-ray imaging device and a method for synthesizing a tomosynthesis image.
X-ray imaging device and synthesis method of tomosynthesis image	W0201915 1250A1	Hidenori Kenmotsu	An X-ray imaging device that increases the possibility that a distributed X-ray source can be adopted, and a synthesis method of tomosynthesis images.
Cold cathode electron source and x-ray generator equipped with same	WO201924 4874A1	Hitoshi Masuya	Providing a modular structure for an X-ray source which allows for the replacement of a cold cathode electron source (facilitating the production and maintenance of an X-ray source).
System and method for providing a digitally switchable x-ray sources	W0202014 1435A1	Gusti Averbuch	A digital switching unit operable to selectively connect a low voltage driving circuit to activate a field emission type electron emitting construct.
Tomosynthesis device and method for driving same	WO202015 8644A1	Hidenori Kenmotsu	An X-ray imaging device that increases the possibility that a distributed X-ray source can be adopted, and a synthesis method of tomosynthesis images.

^{*-} the patent was abandoned

Source: <u>Taking an X-Ray to Nanox Imaging</u>

^{** -} the patent was granted

Intellectual Property Analysis

There are 13 patent families assigned to Nanox Imaging LTD, Nanox Imaging PLC (GB) and Nanox Japan Inc, filed from Aug. 2012 to Jan. 2019. Our analysis identified two patents that have been granted and several that have been abandoned, with all others still pending. The majority of the company's IP appear to be inherited from Nanox Inc.

The majority of Nanox patents appear to derive from work performed prior to the incorporation Nanox, based on research performed at Sony.

Unfortunately, Nanox has not released any data on their device specifications, including current density, power or spot size, precluding the ability of comparing their values to market averages.

According to Nanox Imaging Prospectus: "We rely upon a combination of patents and trade secrets to protect the intellectual property related to our proprietary technologies. Our success depends significantly on our ability to obtain and maintain intellectual property protection with respect to our technology and products."

This fact limits the scope of our analysis strictly to publicly-disclosed patents, given that trade secrets are, by nature, undisclosed.

It is notable that among among the company's initial inventors, Hidenori Kenmotsu is the most-featured inventor on the company's patents. However, according to available information on current staff, he is not a current member or employee of the company.

According to information presented in the <u>Nanox Imaging Prospectus</u>, the company is expecting of rise of their expenditure in connection with continuing the research and "hiring additional quality control and scientific personnel".

Nanox's patent portfolio protects the Nanox core x-ray source capabilities for at least 9 additional years. Presently, the company is expecting to increase the size of its R&D department with additional employees to enable technology roadmap development.

We still lack experimental comparison between the Nanox tube and a conventional tube of the same power but we expect to have more information during the upcoming unveiling at the RSNA 2020 conference.

Source: Taking an X-Ray to Nanox Imaging

Conclusions



Allegations by short sellers

In September 2020 two Research Analytics agencies, supposedly backed by short-selling hedge funds, published their report, criticizing Nanox and claiming its valuation is close to \$0:

Citron Research published their report on 15.09.2020 (currently the report is archived on their website and not public). In this report Citron claims Nanox made false statements to both SEC and the investors to inflate the stock value. According to recent findings, Citron Research has mislead their readers in a range of misrepresentations, including references to the state of Nanox technology (they have completely disregarded the Nanox digital x-ray tube) and the Nanox commercial contracts.

Another short-seller, Muddy Waters Research, published its report on 22.09.2020, a week after the Citron report appeared in public. This report was severely deficient in facts and analysis, compared even to Citron's report. Muddy Waters claimed Nanox did not have a real product to show which is a misrepresentation of the facts since Nanox has a fully operational digital x-ray (the core of their product offering). They have misled their readers by omitting this fact and presenting solely the lack of commercially available Nanox.ARC prototype as evidence to their allegations.

Both reports showed Nanox shares down, but they recovered over 100% of their value during November ahead of the RSNA conference in Chicago, where the company will run a live demonstration of their prototype. One more consequence of short-seller's reports turned our in several class action lawsuits from USA legal firms, which is classic practice for this situation.

A notable fact is that the terms of use and disclaimer on Muddy Waters' page discussing Nanox were more than four times the length of its actual analysis of the company. One more consequence of the short-seller's reports turned our in several class action lawsuits from USA legal firms, which is classic practice for this situation. (Source: <a href="Maintenance-Issaeconstant-Iss

There is a change.org petition against Citron's repeatedly deliberate false and misleading reports, particularly against Andrew Left who has been sued and convicted by regulators and governments: (Source: Appeal to FINRA and SEC Enforcements to Investigate Andrew Left of Citron Research).

Both reports showed Nanox shares down, but they recovered in November, just before the RSNA conference in Chicago, where the company will run a live demonstration of prototype.

However, investors should thoroughly examine short-sellers reports to make their own decision. Also, they should understand, that short sellers hedge funds do not produce products, but gain profit on their short-selling strategies. The only way to prove the technology for startups is to run live demonstration of the product, as well as actual sales. Investing in companies on early-stage R&D and pre-launch of the product stages considers several risks, which an investor should take to gain his profit.

Prototype Demonstration

Nanox will demonstrate its novel technology (Nanox.SOURCE) and medical imaging system (Nanox.ARC) at RSNA 2020, which is being held November 29 - December 5 in Chicago.



The demonstration will include a technology section elaborating on Nanox's first commercial-grade digital x-ray source followed by a live demonstration of the Nanox.ARC in a range of 2D and 3D medical imaging procedures.

The demonstration will be led by Mr. Ran Poliakine, Chairman and Chief Executive Officer of Nanox, and will be live streamed globally. It will include a professional radiology Q&A session followed by lectures and presentations of clinical applications of the Nanox.ARC medical imaging system by well-known radiologists and Company distribution partners.

"We are pleased to invite everyone to witness first-hand our technology and the Nanox.ARC at the RSNA. We have an ambitious goal of making medical imaging widely available on a global basis to promote preventive healthcare through early detection. Two-thirds of the world's population currently have no access to medical imaging, and we aim to improve this statistic. We look forward to this demonstration which will allow people to see the depth and validity of our technology." - Mr. Poliakine.

Despite a dynamic activity, there has been no public viewing of the Nanox digital X-ray system announced in 2019.

Thus the presentation will become the key point of the project and dispel all the doubts and misunderstandings about the product.

Comparative Analysis (SWOT analysis)

The company established in 2018 (Nanox Imaging Ltd) was created with the sole purpose of properly facilitating an IPO and attracting investments. The new entity went public without having a minimum viable product or a prototype at the time. Now the market ambitions of Nanox Imaging are hanging entirely on the success of the prototype demonstration, which will take place at the beginning of December, 2020 which will mark the culmination of 20 years of research and development. With the SWOT analysis below we aim to give a general overview of the organization's market position:

Strengths

- Mobility of product and relatively low price (as was promised by developers);
- Large and established R&D partners
- Large and stable investors
- Two products types: Hardware and Cloud app
- Disruptive business model
- CSO with a strong scientific background.

Opportunities

- Large and ever growing Total Addressable Market
- Ties and partnerships in Asia (some Asian regions, such as Japan and China, are anticipated to further the development of advanced medical imaging technology).
- Cloud technologies will allow the collection of vast amounts of health data and thus will help healthcare research and early detection in preventive healthcare.

Weaknesses

- No commercially available prototype
- No FDA approvals
- Company demonstrating the prototype 5 months after IPO
- No public information on R&D team (which is not entirely necessary as stealth startups tend to operate this way in order to protect their intellectual property)

Threats

- Upcoming conference and prototype demonstration. This is a particularly important event that will have an enormous impact the viability of the company's efforts and future commercial prospects.
- Several class action lawsuits which could possibly damage Nanox's brand, investor sentiment and customer loyalty.

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