

# SPECIAL visions

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Global Edition // Interventional X-Ray // No 09 // November 2024

## Interventional X-ray

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New Solutions  
to Interventional  
Cardiology at  
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**Canon**



## // EDITORIAL

Dear Readers,

I would like to express my deepest gratitude to all medical professionals for their hard work and for always giving their best under pressure in tense clinical situations.

This is the 9th edition of our VISIONS Special on Interventional X-ray, which features the voices of users of our angiography systems.

At Canon Medical, we aim to match your commitment through our core mission to deliver the best possible medical imaging and treatment solutions continuously. Just as you are dedicated to serving patients, we are dedicated to helping you succeed.

In this edition, our customers discuss their personal experiences with the innovative technologies and functions provided by our angiography system, Alphenix, and also describe how they use their systems in actual clinical practice.

The Alphenix / Evolve Edition, which was released in 2023, has many advanced features based on our state-of-the-art technologies to improve clinical workflow and minimize strain on both patients and healthcare professionals. We have introduced this unique solution at various congresses this year, some of which are introduced in this edition.

I hope you enjoy reading this edition of VISIONS Special.

Made for patients. Made for partnerships. Made for you.  
Made for Life.

**Kunitoshi Matsumoto**  
*General Manager, Vascular Systems Division,  
Canon Medical Systems Corporation*

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# Bringing Exciting New Solutions to Interventional Cardiology at EuroPCR 2024

EuroPCR is one of the world’s leading conferences in the field of interventional cardiology. It attracts around 12,000 healthcare professionals from all over the globe annually. This year, it was held between May 14-17 in Paris, France. Canon Medical Systems played a pivotal role at the event, hosting a successful symposium, which was delivered by experts in the field. VISIONS Special explored how their presentations reflected the meaningful strides Canon Medical Systems is making through innovation in interventional cardiology imaging.



Specialists in cardiac catheterization joined EuroPCR in Paris, France, to explore cutting-edge advancements in this field focused on advanced cardiac catheterization and minimally invasive treatments

The Canon Symposium, entitled “The Future of Interventional Cardiology Imaging”, was moderated by Dr. Nicolas Amabile, a renowned Interventional Cardiologist from Institut Cardiovasculaire Paris Sud (ICPS), France, and featured presentations from Dr. Lukas Altwegg, Head of Cardiology at St. Claraspital, Basel, Switzerland, and Dr. Brian Schuler, Head of Clinical Cardiac Electrophysiology at WellSpan York Hospital, York, Pennsylvania, USA. It explored how the future of interven-



From left to right, Dr. Nicolas Amabile, Dr. Lukas Altwegg and Dr. Brian Schuler

tional cardiology will rely on systems that can deliver better images for procedures, while reducing dose and contrast. Potential solutions include Canon’s αEvolve Imaging and Alphenix 4D CT, Angio-CT suite.

### Remarkable reduction in dose

Dr. Altwegg introduced αEvolve Imaging, Canon’s unique, Deep Learning technology-based coronary fluoroscopic imaging, along with his actual clinical experience.

“We are currently running a clinical evaluation phase seeking the answers to two major questions: Does this technology improve the overall fluoroscopy

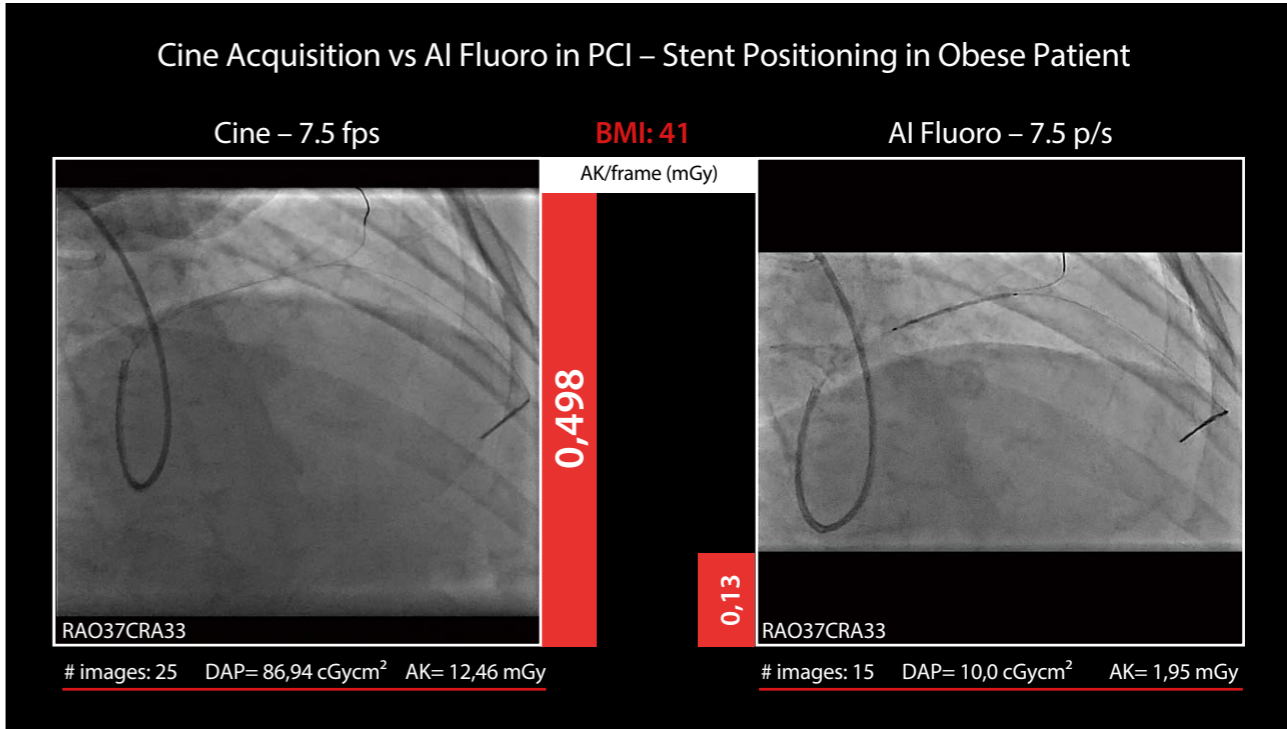
image quality and particularly with regard to the visibility of interventional tools, such as guidewires, balloon stents, and so on? Is the AI fluoroscopy image quality sufficient to replace cine runs to a certain extent?” said Dr. Altwegg. “I can tell you, yes!” During his presentation, Dr. Altwegg also shared compelling clinical images from the use of αEvolve Imaging and highlighted a statistically significant 30% reduction in radiation dose per coronary angiography examination (CAG) that he and his team have achieved after the introduction of Alphenix / Evolve Edition in their hospital.



Dr. Lukas Altwegg

“Is the AI fluoroscopy image quality sufficient to replace cine runs to a certain extent?”  
“I can tell you, yes!”

Dr. Lukas Altwegg  
Head of Cardiology at St. Claraspital, Basel, Switzerland



Dr. Altwegg presented a comparison between cine acquisition (left) and αEvolve Imaging fluoro (right), which achieved a remarkable reduction in radiation dose (74% in this case) while maintaining equivalent image quality

Dr. Altwegg highlighted that αEvolve Imaging helps to reduce the need for cine acquisition, as its fluoro-recording reliably captures essential procedural information such as device morphology, collateral vessels, and calcified lesions, at a level comparable to cine acquisition. He stated that sometimes the fluoro-recording looks even better than conventional cine run.

Developing a new gold standard

Dr. Schuler presented his groundbreaking intraprocedural Angio-CT guided left atrial appendage occlusion

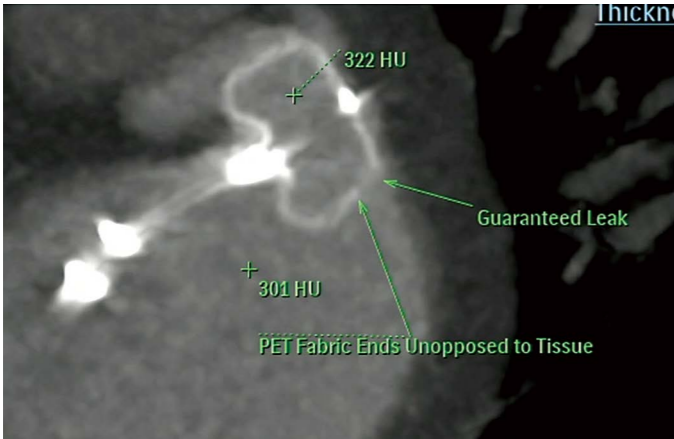
(LAAO) procedure, using Alphenix 4D CT, Canon's premium hybrid Angio-CT suite.

His innovative approach has significantly minimized the risk of peridevice leak (PDL) with minimal contrast medium and radiation dose. He outlined its potential as a new gold standard in LAAO treatment in near future.

“Intraprocedural CT guided left atrial appendage occlusion (LAAO) is the new gold standard. It is the definitive



Dr. Brian Schuler



Intraprocedural CT enables precise confirmation of device positioning prior to full deployment. In this instance, it detected an imminent leak where PET fabric was not opposed to tissue. This informed the decision to recapture and redeploy the device, ensuring successful treatment without any leakage



Alphenix Angio-CT



means of validating LAAO, prior to device release, such that, you can change the outcome of the procedure,” he remarked. “It is efficient. It takes six minutes. The patient is on the table. The Fluoro swings out. The CT slides right in. We acquire. The CT comes back. And we are ‘back in business’.”

“It is minimal radiation and contrast,” he continued. “We are averaging 4.5 mSv and 40 cc of contrast per scan. You can fully characterize the Device-LAA Alignment and Tissue Fabric Apposition. We have single-digit CT validated PDL rates, which offers the potential to reduce the risk of stroke.”

**Insights with impact**  
The symposium generated enthusiastic responses that led to engaged discussions with the audience during the Q&A session, highlighting the impact of the insights shared by Dr. Amabile and the prestigious speakers. //

Find out more about EuroPCR 2024 here:

<https://www.pcronline.com/Courses/EuroPCR>



Explore Canon αEvolve Imaging here:

<https://global.medical.canon/products/angiography/alphenix-evolve-edition-intelligent-solutions>



Learn more about Canon Alphenix Angio-CT System here:

<https://global.medical.canon/products/angiography/alphenix/4dct>

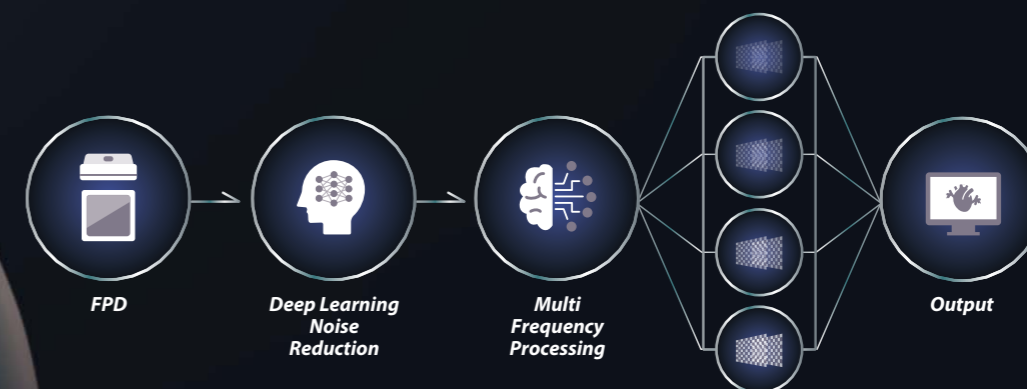




See Clearer with aEvolve Imaging,  
in real-time

Clear fluoroscopic imaging enhances confidence and can help improve clinical outcomes, procedural efficiency and reduces the frequency of digital acquisition, leading to further dose reduction for patients and operators.

With Deep Learning\* based noise reduction and multi-frequency processing aEvolve Imaging can deliver up to 2 times higher contrast-to-noise ratio compared to conventional image processing.



\*: aEvolve Imaging is not provided with a self-learning function that allows Alphenix to modify its own programs. Therefore, training of the aEvolve Imaging algorithm is not performed at the end user's site.



ANGIORAD medical team

## Inspiring a Family of Pioneers: Two Generations Work Side by Side with the Latest Technology from Canon Medical Systems

Dr. Carlos Abath is one of the world's most well-known interventional radiology (IR) pioneers. He has been a key figure in introducing IR to Latin American countries over the last 35 years. Dr. Abath founded ANGIORAD, an advanced IR center in Recife, Brazil, in 1990 to deliver cutting-edge interventional treatments to patients and form a base for a formal training program for young doctors interested in learning image-guided procedures. Today, ANGIORAD has a team of 12 interventionalists, including his daughter, Dr. Marília Abath, who joined the group five years ago. Over the years, Canon Medical Systems has collaborated with the Abath family on developing IR technology. VISIONS Special found out how well the latest systems meet everyday needs.

Created in 1990 by Dr. Carlos Abath, ANGIORAD is a society of specialists in interventional radiology and endovascular surgery, who serve the main Hospital Centers of Recife. ANGIORAD has become synonymous with pioneering the development of interventional radiology and endovascular surgery in Brazil. In addition to carrying out interventional procedures, the center has played an important role in educating IR professionals and bringing new IR knowledge and techniques to Brazil, by providing training opportunities for new IR professionals. Focused on technical mastery and the use of state-of-the-art equipment, without forgetting the ethical and human dimension of medicine, ANGIORAD has become well-known and respected, both nationally and internationally.

### Early days of IR

Dr. Carlos Abath recalls how interventional radiology evolved in Brazil, starting at the end of the 1980s:

"At that time, the most common procedures were transcatheter angioplasties, embolization, vena cava filters, and percutaneous biliary drainages," he remarked. "All of them were guided by digital angiography or fluoroscopy. Sometimes, we had to move to the Diagnostic Imaging Department, to perform cavity drainage using CT or ultrasound assistance."

"In this way, our generation of interventional radiologists acquired a lot of skills on endovascular techniques, incorporating a variety of newly launched devices, such as stents, endoprosthesis and embolic agents, he continued. "On the other side, the percutaneous non-vascular procedures remained on a secondary position until some years ago, when multidisciplinary oncologic treatment began to accelerate development."

### The emergence of a new subspecialty

In a short period of time, a new sub-

specialty started to emerge - interventional oncology - introducing ablation techniques as an alternative to surgical resection.

"Percutaneous biopsy, radiofrequency and microwave ablation, cryoablation and electroporation are now done routinely by the interventional team, using CT or ultrasound guidance," said Dr. Carlos Abath. "However, in the early days of interventional oncology, hospital diagnostic imaging departments were unprepared to receive this increasing demand. In addition, it became inconvenient for interventionalists to split their work in two separate settings."

"We found the solution for this major dilemma, creating a new complete interventional ambience, that inte-

grated angiography, CT, and ultrasound in the same room, through the installation of a hybrid equipment from Canon Medical Systems - the Alphenix 4D CT."

### High-end solutions

Today, ANGIORAD can offer a wide range of interventional procedures, including vascular accesses, angiographies, embolization, stent implants, in addition to CT-guided biopsies, tumor ablation and percutaneous drainage at the same place. Its 12-strong team of highly trained specialists uses Alphenix 4D CT to ensure the best results and excellent care in several areas, including stroke, aneurysm, oncology, and vascular malformation.

"The advantages are clear, the use of percutaneous ablation and transcatheter embolization in a single stage,



Dr. Carlos Abath and Dr. Marília Abath at the Alphenix 4D CT room at Real Hospital da Beneficência Portuguesa in Recife, Brazil

*“Today, working with my father is a deeply enriching experience. We spend considerable time together, discussing cases and performing joint procedures. I continue to learn from him daily about medicine, interventional radiology, and life.”*

Dr. Marília Abath,  
ANGIORAD, Brazil

with correlation between angiography and axial images, results in a more effective and safer procedure,” said Dr. Carlos Abath. “Finally, I’m spending more time with my daughter, interchanging experiences, and skills. I’m proud of her competence, and sense of humanity. The excellent technology that unites two generations of Interventional Radiology and offers the best care for our patients”.

“My father and I have always shared common interests,” remarked Dr. Marília Abath. “As he was already working as an Interventional Radiologist when I was just one year

old, the technology and innovations in the specialty have been a part of my life from a very early age.”

“As a child, when asked about his profession, I was fascinated and proud to gather an understanding of angiographies and embolizations,” she continued. “Not too long into my teenage years, I had the opportunity to shadow some of his procedures out of leisure and curiosity. My career choices naturally evolved from this, leading me to become an Interventional Radiologist at the beginning of 2019, focusing on interventional oncology, specializing in percutaneous procedures.”

#### A deeply enriching experience

“Currently, technology enables us to perform hybrid procedures that combine percutaneous and endovascular access, and manage complex cases with significantly greater safety and quality, thereby promoting personalized, precise, and effective treatments,” she said. “The Alphenix 4D CT captivates us and continues to open new possibilities.”

#### Training future generations of IR specialists

ANGIORAD is one of the few Training Centers in interventional radiology in Brazil. According to the profile,



Dr. Carlos Abath and Dr. Marília Abath performing together a complex interventional case

*“We found the solution for this major dilemma, creating a new complete Interventional ambiance, that integrated angiography, CT, and USG in the same room, through the installation of a hybrid equipment from Canon Medical Systems - the Alphenix 4D CT.”*

Dr. Carlos Abath,  
ANGIORAD, Brazil

objectives, previous experience and availability of each professional, ANGIORAD offers different modalities of teaching such as internships in the specialties of interventional radiology and endovascular surgery and interventional neuroradiology, workshops on basic and advanced techniques. It also hosts national and international symposia that receive doctors from various states of the country, including doctors from abroad, and also performs medical consulting for other colleagues from all over Brazil and abroad. //



#### Canon's Angio-CT solutions

Canon's Alphenix 4D CT offers more possibilities to deliver safer, better patient treatment. With a streamlined workflow in a single setting, there is no need to transfer patients between rooms, improving patient care and boosting productivity. Switch easily between CT and angiography systems to diagnose, treat or verify across a wide range of clinical applications.

Alphenix 4D CT seamlessly integrates our flexible Alphenix interventional system with the advanced Aquilion CT imaging suite into one versatile solution.

*“The Alphenix 4D CT captivates us and continues to open new possibilities.”*

Dr. Marília Abath,  
ANGIORAD, Brazil

Find out more about Canon's Alphenix 4D CT system here:

<https://global.medical.canon/products/angiography/alphenix/4dct>

Watch Dr. Abath's presentation about Alphenix 4D CT

<https://youtu.be/F9EGUkFKly0>



Quickly diagnose, treat and verify  
with confidence.

Alphenix 4D CT seamlessly integrates our flexible Alphenix interventional system with the advanced Aquilion CT imaging suite into one versatile solution. With the ability to see, diagnose, plan, treat and verify in the same room, Alphenix 4D CT helps you prioritize safety, speed and efficiency during complex interventions.

Seamless integration  
**Alphenix 4DCT**



## Creating a New Future for Interventional Radiology in Argentina

Argentina has an extensive healthcare system that is delivered through hospitals and clinics run by national, provincial, and local authorities, as well as private organizations. However, interventional radiology (IR) is still emerging as a medical discipline in the country, and its uptake in everyday clinical practice lags behind other countries. In 2023, there were only approximately 100 intervention rooms for interventional cardiology, interventional radiology, vascular interventions and neuro-interventions in the country. VISIONS Special explores the role that Canon Medical Systems is playing in changing this situation by equipping healthcare professionals in Argentina with world-class interventional technology and expertise.



Ms. Miyu Koide (middle) from Canon Medical Systems' International Sales Department, Latin America & Canada Group (LAC), Canon Medical Systems Argentina (CMSAR) Service Manager Guido Alejandro Nicolini (left) and CMSAR ex-Vice President Takuya Yamaji (right) at Canon Medical's headquarters



Members of Canon Medical Systems Argentina (CMSAR) holding the commemorative plaque for their business award

Most of Argentina's intervention centers are private or connected to universities. While all kinds of procedures are performed in existing interventional centers, including uterine fibroid embolization, prostatic embolization, pelvic congestion syndrome, TACE, peripheral embolization, angioplasty in vascular accesses, hepatic and pulmonary thrombolysis, etc., some procedures are only performed in very limited places, such as hepatic radioembolization, which is only performed in three places in Argentina. In addition, there are currently very few IR training centers in the country. Due to this, Argentinian IR experts are initially trained outside the country, particularly in Europe.

With public health issues that include high rates of cardiovascular and cerebrovascular diseases, as well as emergency medicine and cancer in Argentina, interventional treatments hold great potential for safer, more direct, less invasive procedures that can significantly reduce demands on hospitals, healthcare professionals and patients. The Argentinian

Ministry of Health (MOH), together with the support of the Inter-American Development Bank and the United Nations Development Program set out to improve IR capacity in the country. Canon Medical Systems was able to meet the requirements of a large-scale Interventional X-ray system project in Argentina.

**Award-winning collaboration**  
Canon Medical Systems Argentina S.A. (CMSAR) and Latin America & Canada Group (LAC) of Canon Medical Systems provided a large number of Canon Medical Systems' Alphenix Core + Interventional X-Ray systems in response to an invitation to tender issued by the Argentinian MOH. The two Canon Medical Systems subsidiaries worked closely together to successfully negotiate the complex and divergent tender conditions. The collaboration won a Canon Medical Group Business Award in 2023 – An accolade that recognizes teams that have overcome difficulty through tireless efforts and motivation to achieve outstanding results related to productivity improvement, efficiency improvement, product

quality improvement, sales promotion, or cost reduction.

Ms. Miyu Koide from Canon Medical Systems' International Sales Department, Latin America & Canada Group (LAC) was the Project Manager for the bid.

"According to data, the total Interventional X-ray system market in Argentina was not big, so we were very determined to win this bid," she remarked. "CMSAR and the International Sales Department were deeply committed to satisfying all related parties during every stage of the process during this project."

Argentina has suffered from high inflation rates and political instability for many years, and the project was conducted with the support of the Inter-American Development Bank and the United Nations Development Programme. Due to this structure, there were strict conditions placed on the bidding vendors.

"With the full cooperation of the

*"With the full cooperation of the departments within Canon Medical Systems and the tremendous efforts of CMSAR, we were ultimately successful in receiving the order for 10 Alphenix Core + Interventional X-ray systems."*

*Ms. Miyu Koide. Canon Medical System's International Sales Department, Latin America & Canada Group (LAC)*

departments within Canon Medical Systems and the tremendous efforts of CMSAR, we were ultimately successful in receiving the order for 10 Alphenix Core + Interventional X-ray systems," continued Ms. Koide.

#### Fast, accurate installation

Ms. Koide recalls some of the considerable challenges that had to be overcome to succeed.

"As Argentina's MOH received financing for the project from external organizations, there was a strong requirement for early installation and

inspection. In order to complete the inspection within 180 days, it would be necessary for the order input, manufacturing, and shipping to occur within about three months from the conclusion of the contract and the purchase order being received," she explained. "At the time, there were still many delays in delivery dates due to the COVID-19 pandemic and its impact on parts and materials. In some cases, it was taking more than six months for products to ship. To address this, even before we received the order, we negotiated with the manufacturing section to enable early shipment. Our

manufacturing department managed to produce 10 units within the very short delivery window despite the difficulties of part shortages."

"Thanks to the tremendous cooperation of Canon Medical Systems' Manufacturing and Systems Divisions, we were able to ship the systems four months after the order was received," she remarked.

#### Streamlining internal processing

The project has led to enhanced processing in warranties. Originally, when

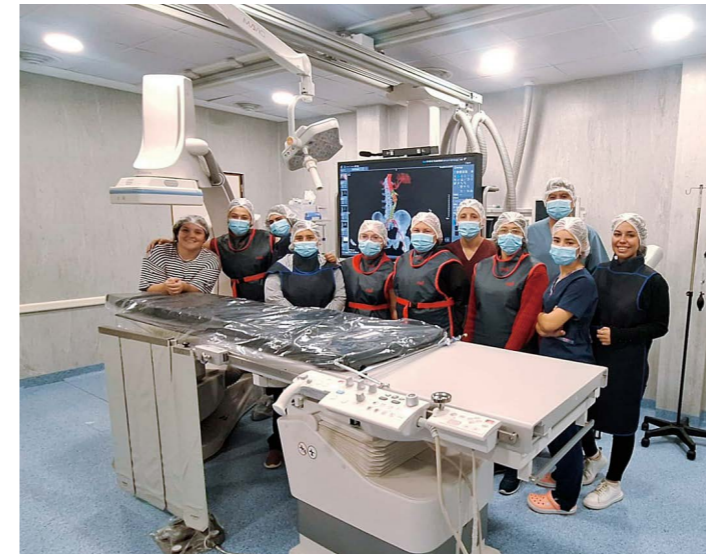


Hospital de la Provincia de La Pampa, one of MOH installation site



it came to offering the two-year warranty, CMSAR, adjusted their system, and then the purchase was transferred to the Argentinian MOH. However, on the accounting side, processing is required in the system every month. This means that for 10 Interventional X-ray systems, corrections would have been required more than 100 times a year. In the face of this, Ms. Koide gained cooperation from various departments within the company including Financing & Accounting to streamline this process.

“The bid process also incentivized



Hospital Interdistrital Evita, Formosa, one of MOH installation site



Hospital de complejidad creciente, Santa Rosa, La Pampa, one of MOH installation site

*“I believe that we were successful in this bid not only due to great efforts but also the cooperation of many people across many departments.”*

*Ms. Miyu Koide, Canon Medical System's International Sales Department, Latin America & Canada Group (LAC)*



Hospital Regional Lamadrid, Monteros, Tucumán, MOH installation site.

Canon Medical Systems to restructure the warranty program system for direct-to-consumer projects. This new structure can be used for future projects in other regions,” she commented.

#### Cooperation across departments

Ms. Koide was pivotal in the success of this large-scale bid and helped stimulate the creation of new structures within Canon Medical Systems.

“I believe that we were successful in this bid not only due to great efforts

but also the cooperation of many people across many departments. I would like to thank them once again for their hard work,” she said. “As long as we are doing business in Argentina, the political and economic situation will be a challenge. I believe that we will again see cases with special conditions that will require the response of the entire company, not just the International Sales Department and CMSAR. I hope to continue working with those people in the company that supported us in this project, and to keep expanding sales in Argentina.” //

Argentina has nearly 3,000 hospitals, over 3,300 operating rooms, and approximately 118,000 hospital beds. It has the highest hospital bed density in the Latin American and Caribbean region, with a total of 5.2 hospital beds available per 1,000 population. It also has one of the highest ratios in the number of physicians per 1,000 population. It also has three main healthcare programs: public health care, social security programs, and private health care.

**Find out more about Canon's Alphenix System here:**

<https://global.medical.canon/products/angiography>





Dr. Ali Raza  
Peshawar Institute of Cardiology,  
Khyber Pakhtunkhwa, Pakistan

# Saving Lives in Pakistan

The Peshawar Institute of Cardiology – Medical Teaching Institution (PIC-MTI) is a relatively new heart and vascular hospital in Khyber Pakhtunkhwa, Pakistan. The hospital was established in 2021 to provide high-quality care for patients in the area with cardiac, vascular, and pulmonary conditions. The institute offers a wide range of clinical services, advanced diagnostic and therapeutic options, and state-of-the-art treatment through the use of cutting-edge technology. In addition to providing clinical services, they are also focused on advanced training of healthcare professionals, as well as academic research. VISIONS Special explored how the Institute’s new Alphenix Interventional Cardiology solutions and collaboration with Canon Medical Systems support clinical progress.

**Addressing significant needs**

PIC-MTI is the largest healthcare project undertaken by the Health Department of the Government of Khyber Pakhtunkhwa (KPK) in recent times. As the first specialty hospital of its kind, it will not only cater to cardiac patients in KPK but also adjoining Afghanistan.

“All activities are supported by cardiac diagnostic facilities, such as Cardiac MR, and CT Angiographies, Electrophysiological studies, and

Nuclear Cardiology,” said Professor Syed Shakar Ahmed Shah, Medical Director at the PIC-MTI. “PIC-MTI aims to provide ethical, evidence-based, and cost-effective treatment for the people of KPK, and the dream has come true.” “Recent studies show that in Pakistan with every passing hour, 46 people are dying of cardiac ailments. One in four in middle aged adults in Pakistan has prevalent coronary artery disease. Annually 250,000 people die due to cardiac diseases in Pakistan, which is an alarming figure in itself and,

therefore, the need for a dedicated and specialized cardiac treatment facility in KPK has never been greater before,” said Dr. Nayamat Shah, Hospital Director at the PIC-MTI. “We aim to be the premier center for all sorts of cardiac ailments in adults and children. We are introducing tertiary care cardiac procedures, like ventricular assist devices and percutaneous, minimally invasive valve replacements, and beating-heart coronary bypass

surgeries. Our vision is to initiate heart transplant surgeries soon. The hospital aims to make it easy for patients, their families, and medical institutions to use the cardiac care services the PIC-MTI offers.”

#### Supporting a high-volume service

Dr. Ali Raza is an Interventional Cardiology Consultant at the PIC-MTI. He specializes in Structural

Heart Disease and complex PCI. Dr. Raza was previously a Consultant at Wythenshawe Hospital, in Manchester, UK – A well-known heart and lung transplant center.

“We started with our Alphenix from Canon Medical Systems from the beginning. We have been using it now for more than three years”, he remarked. “PIC-MTI started initially with low volume services, but now

*“Alphenix has got a very good resolution and high safety profile. It's very user friendly for staff. It comes with very good integrated systems and software as well, such as Vitrea and others. It can integrate with other machines and imaging systems”*

Dr. Ali Raza  
Peshawar Institute of Cardiology,  
Khyber Pakhtunkhwa, Pakistan



Dr. Ali Raza's team

we're becoming one of the highest volume services, with more than 10,000 procedures being performed each year. We are the highest-volume center in Pakistan for performing Coronary Intervention, Structural Heart Disease, and TAVI procedures.”

“When we increased to that volume, we found that the Alphenix system was really beneficial,” he added. “It gives you a wide space, and is very suitable to high-volume centers, such as our

own, because it is so easy to use and we could allocate our staff to different positions and utilize them optimally, while still keeping up with our volume. We can operate it with minimum staff with a lot of ease and comfort.”

#### Ease of use

Dr. Raza had gained experience of the Alphenix system from working in hospitals in the UK and Canada previously.

“The Alphenix works very well. It has got a very good resolution and a high safety profile. It's very user friendly for staff. It comes with very good integrated systems and software as well, such as Vitrea and others. It can integrate with other machines and imaging systems,” he said. “We are very happy with its performance.”

“Ease of use was a main factor in choosing the Alphenix,” he contin-

*“We perform different complex procedures, which can last as long as few hours. The tube never heats up during the procedure. Especially in TAVI, which generally takes longer than other treatments, there was no downtime throughout the entire process.”*

Dr. Ali Raza  
Peshawar Institute of Cardiology,  
Khyber Pakhtunkhwa, Pakistan



ued. “We perform different complex procedures, which can last as long as a few hours. The tube never heats up during the procedure. Especially in TAVI, which generally takes longer than other treatments, there was no downtime throughout the entire process. The safety profile of this machine is excellent. We regularly monitor our radiation dosages, and for that, we have seen that it protects from higher doses of radiation. The resolutions are excellent and achieves high-quality pictures, which improves our patient safety as well.”

In addition to the very high resolution achievable, Dr. Raza finds the Alphenix software sophisticated. “The paradigm of cardiology is expanding every day and with this machine, we can encompass more,” he said. “Even in a very crowded type of situation, or when we have much volume workload and turnover of patients”.

He also recognizes that the Alphenix can be integrated easily with other systems.

“We use their software which is associated with the Vitrea software as

well,” he explained. “We are about to publish a paper that compares Vitrea with 3mensio and the initial outcomes have shown that even new beginners can do their TAVI analysis very well with the software that is provided with the Alphenix. Alphenix has better integration with the other systems as well, like IVUS, or FFRs.”

“In addition, Alphenix Core +’s 5-axis geometry provides more space for a transesophageal echo machine, anesthesia machines, and the IVUS system. This results in more space with better resolution and less radiation.”

### Exceeding expectations

Dr. Raza has been pleasantly surprised by the capabilities of the Alphenix. “I have found that it is very user friendly,” he said. “You can use it even with limited staff and you can still get the same quality of images with it, even with the lower frame rates, whereas you have to increase the frame rate, increase radiation with other machines. You get less dose and great image quality with the Alphenix.”

“We recently completed 7 TAVI procedures over the course of one day

in 10 hours. This is a significantly high number of TAVIs to be undertaken in this time period and we used the Alphenix system. We did not encounter any issues with the machine. The machine still delivered a high and safe performance for our patients,” he explained.

The exceptional after sales service offered by Medequips, the local distributor in Pakistan, and Canon has impressed Dr. Raza and his team.

“We get an excellent after sales service for the Alphenix,” he said. “Considering in Pakistan that we get very high-volume usage and the system is busy most of the time, it really helps that the Alphenix is a system which you can use with so much ease and comfort.”

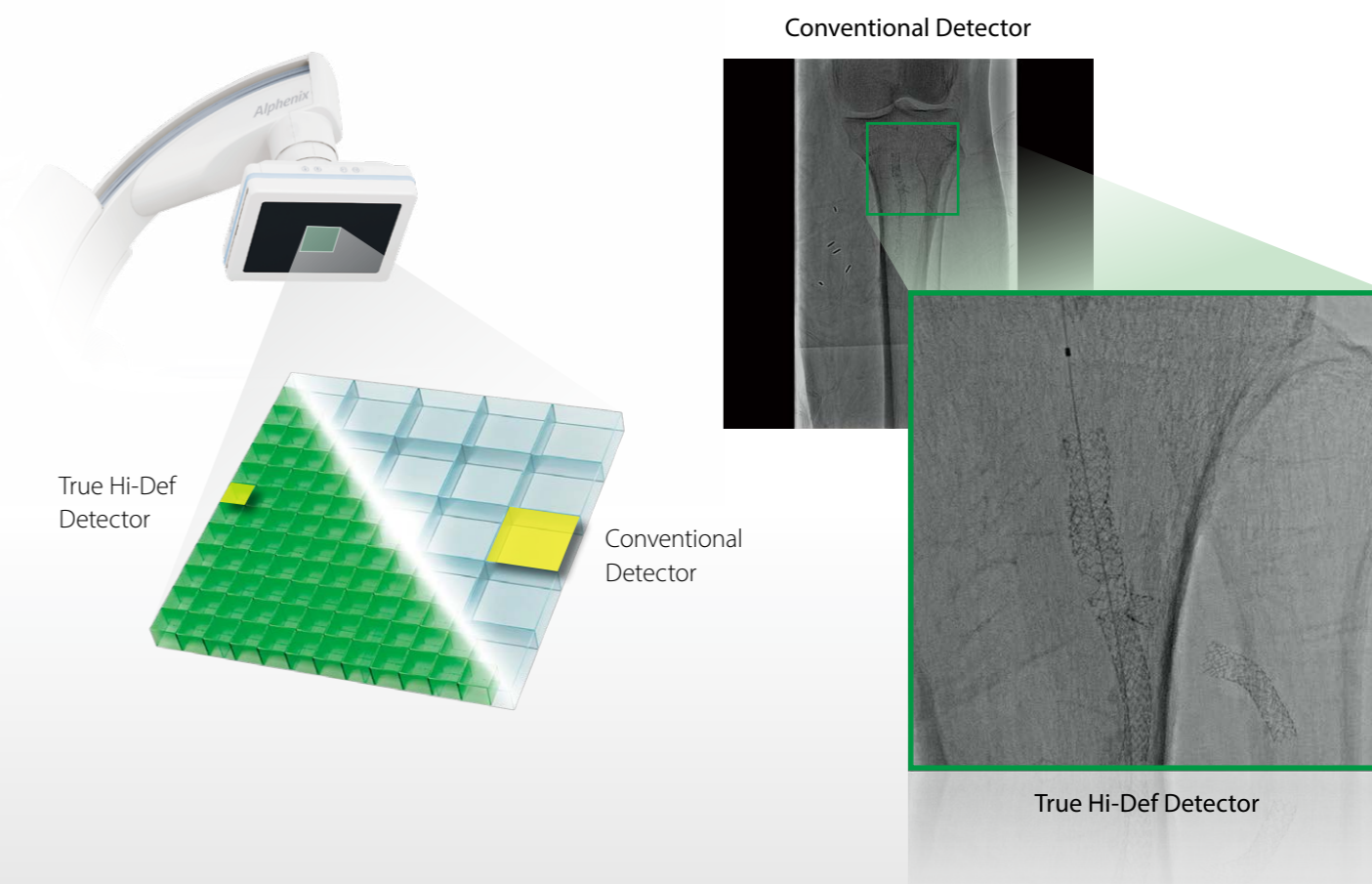
“Together with the software which comes with the Alphenix, it’s integration with other systems. The space that it occupies enabling better usage of the other space in the cath lab resolution, I would recommend it to my colleagues and peers. There will also be the ability to use the system in other places.” //

***“We recently completed 7 TAVI procedures over the course of one day in 10 hours. This is a significantly high number of TAVIs to be undertaken in this time period and we used the Alphenix system...The machine still delivered a high and safe performance for our patients.”***

**Dr. Ali Raza**  
Peshawar Institute of Cardiology,  
Khyber Pakhtunkhwa, Pakistan

**Canon**  
CANON MEDICAL

## Refine and Redefine Intervention Using High-Definition (Hi-Def) Technology



More than twice the spatial resolution of conventional flat panel detectors, to visualize fine details with the ability to facilitate interventional procedures.

“During the critical parts of the case when you deploy a complex intravascular device – for example, a coil, a stent, a flow diverter, an endosaccular flow disrupter, anything where you really need to appreciate how the device is behaving in a small space and it is of critical implication – there’s nothing that comes close to the ability to visualize these implements than Hi-Def technology.”

**Adnan SIDDIQUI, M.D., Ph.D. FACS FAHA FAANS**  
Vice Chairman and Professor  
Gates Vascular Institute

Professor Sang Hyun Suh,  
Department of Radiology, Gangnam Severance  
Hospital / Chief of Cerebrovascular Center,  
Gangnam Severance Hospital, South Korea

## Enabling New Possibilities in Cerebrovascular Intervention

The Cerebrovascular Center at Gangnam Severance Hospital in Seoul, South Korea, is focused on the diagnosis and treatment of cerebrovascular diseases. It is staffed by a team of medical professionals who are specialized in a wide range of disciplines, including neurology, neurosurgery, radiology and rehabilitation. As well as hospital treatment, the Cerebrovascular Center also assists with the patient's return to home and community after recovery through its rehabilitation and prevention services.

The Center has a long history of dedication to early detection, prevention, and treatment of cerebrovascular diseases. It was the second healthcare facility in South Korea to introduce MR Angiography (MRA) in November 2002. It relies on the latest technology to shorten the time of diagnosis and treatment of cerebrovascular diseases as far as possible. And to advance its ground-break-

ing research and ensure that it can implement the latest techniques for the benefits of patients, the Center has installed an Alphenix Hybrid Angiography CT Interventional System from Canon. Professor Sang Hyun Suh, Chief of the Cerebrovascular Center at the Gangnam Severance Hospital explains to VISIONS Special how this supports their intricate work.

## Challenging procedures

Interventional procedures for cerebrovascular diseases, such as cerebral infarction and cerebral aneurysm, play a vital role in diagnosing and treating patients. They are on the rise, thanks to advancements in angiography techniques. Cerebrovascular angiography is the most accurate diagnostic method designed for visualizing the morphology of the cerebrovascular system and is a prerequisite for performing cerebrovascular interventions.

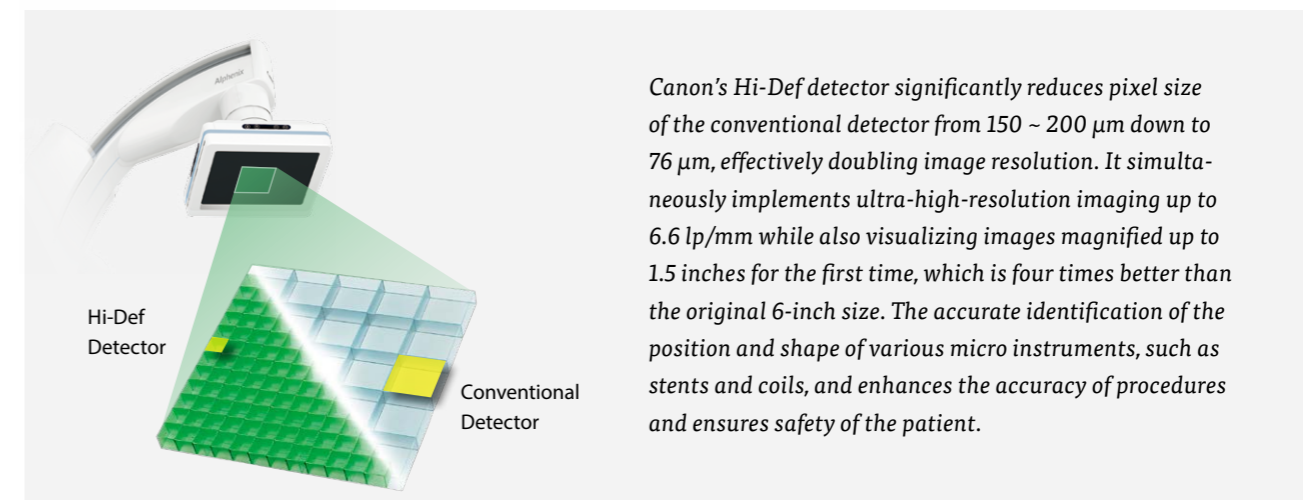
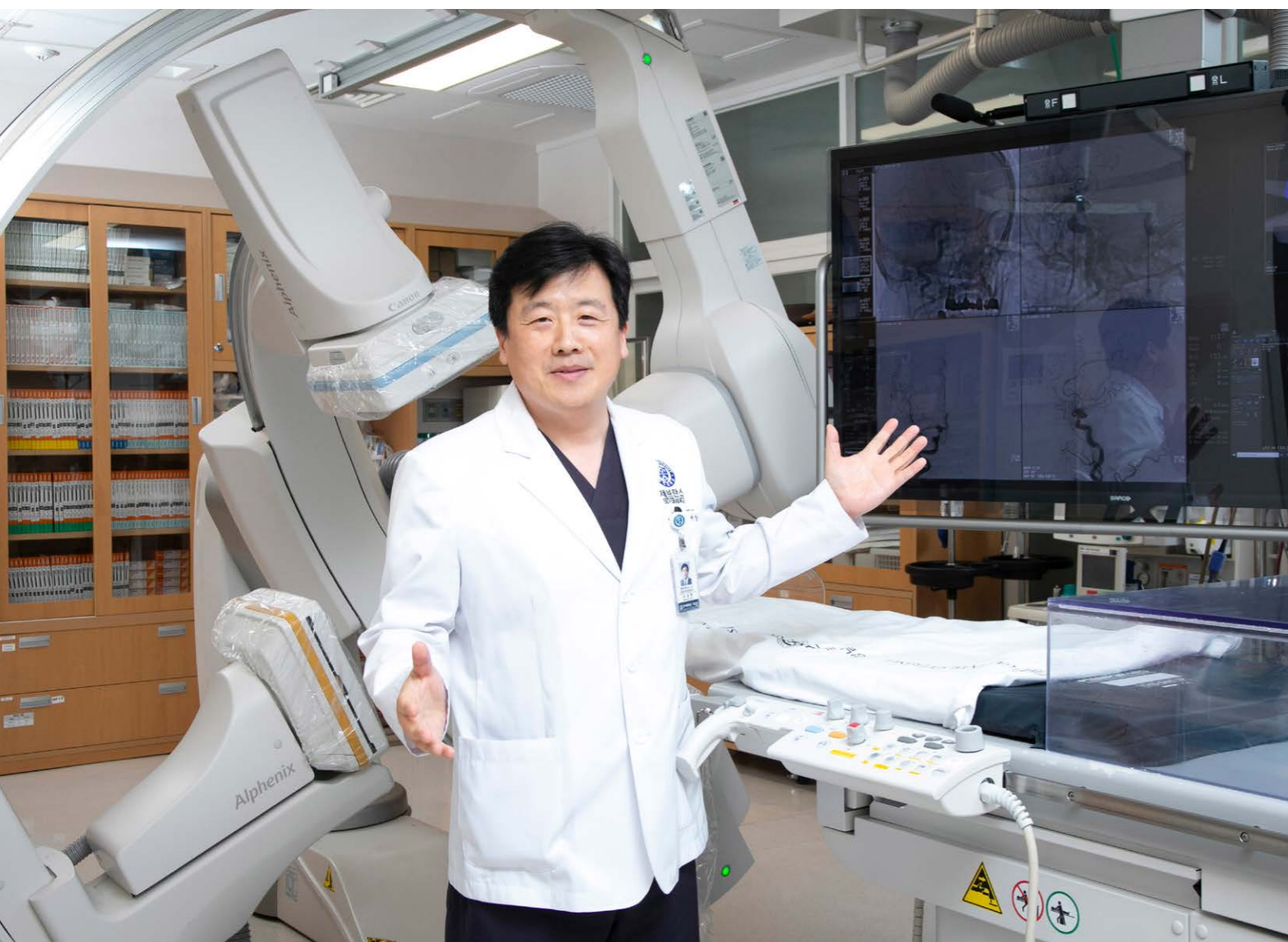
“The most common procedures that we perform in our Angio Suite involve emergency treatment for patients with cerebral hemorrhage caused by ruptured cerebral aneurysms and for

patients with sudden blockage of blood vessels,” said Prof. Suh. “Additionally, angiography is performed to confirm abnormalities detected on MRI or CT scans.”

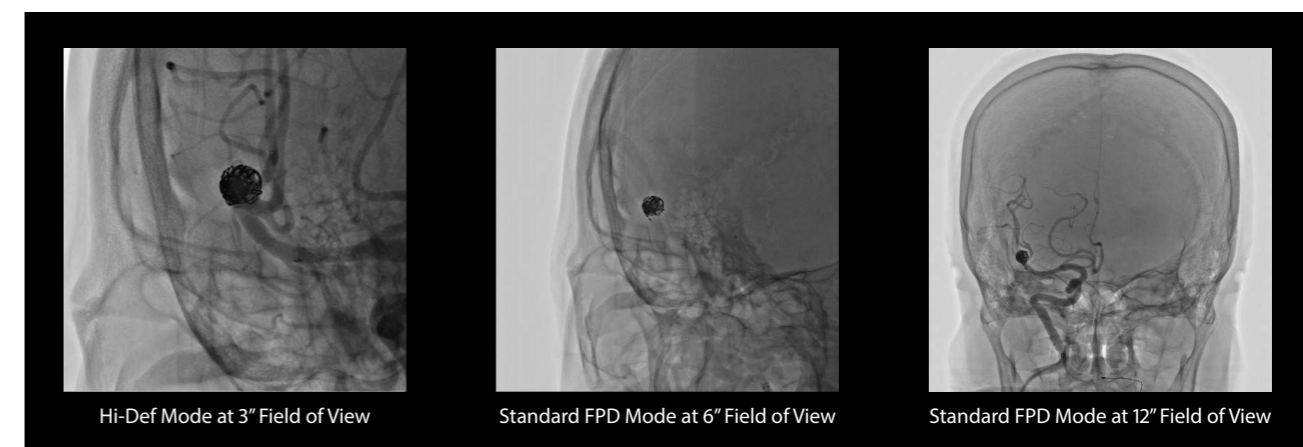
“Cerebrovascular interventional procedures are considered particularly challenging because it is not easy to accurately manipulate associated materials, such as small catheters, stents, and coils in tiny and complex cerebral vessels, while simultaneously viewing X-ray images in real-time with contrast media. Highly precise and swift procedures are required with high-quality imaging equipment and skilled specialists,” he continued.

As small instruments, such as coils and stents must be inserted into complex blood vessels, monitoring their micro-movements is important for increasing the accuracy of the procedure and ensuring patient safety.

“In the past, image resolution was not sufficient to accurately monitor blood vessel images, and the skill of the specialist was extremely important when inserting coils or stents, said Prof. Suh. “However, the recent emergence of equipment featuring ultra-high-resolution imaging has greatly benefited these procedures. The Alphenix supports safe and accurate cerebrovascular interventional procedures with the ‘Hi-Def (High- Definition) detector.’”



*Canon's Hi-Def detector significantly reduces pixel size of the conventional detector from 150 ~ 200  $\mu\text{m}$  down to 76  $\mu\text{m}$ , effectively doubling image resolution. It simultaneously implements ultra-high-resolution imaging up to 6.6 lp/mm while also visualizing images magnified up to 1.5 inches for the first time, which is four times better than the original 6-inch size. The accurate identification of the position and shape of various micro instruments, such as stents and coils, and enhances the accuracy of procedures and ensures safety of the patient.*



## Reassurance

The Alphenix allows the procedure to be performed while clearly visualizing the insertion of coils or stents, which reduces the procedure time and allows medical staff to be reassured about the results of the procedure.

Detector technology with the Alphenix includes Real-Time Auto Pixel Shift (RAPS), which corrects pixels in the image in real-time to reduce blurring caused by patient movement. RAPS technology not only corrects movements in the vertical and horizontal directions but also enables real-time correction for localized rotations enabling precise identification of the shape and position of blood vessels.

“Various types of new correction technologies are helpful for procedures. In the Alphenix, precise imaging with Hi-Def detector and real-time

correction technology (Real-time Auto Pixel Shift) are also proving to be more helpful than before,” said Prof. Suh. “In the past, medical professionals’ experience and know-how significantly influenced interventional procedures. However, recent advancements in system processing ability facilitate quick processing of large amounts of image information in real-time, thereby reducing decision-making time during the procedures.”

## Reduced dose

Ultra-high-resolution imaging can improve the accuracy of procedures, but as interventional procedures require high-quality real-time imaging their radiation exposure is typically higher than that of general radiographic examinations, primarily due to the use of radiation during interventions.

However, advancements in technology are not only improving the resolution of images but also reducing radiation dosage.

“Through the Alphenix, I can see that Canon is making numerous efforts to reduce radiation dosage. True-Hi definition technology serves to provide ultra-high-resolution images with minimal dose, ensuring accurate and safe interventions,” said Prof. Suh. “In addition, various technologies that minimize the dose exposed to the patient during the procedure and the Dose Tracking System (DTS) technology that visualizes the patient’s 3D image in color, both enable real-time observation of actual exposure and facilitate data management to control the radiation dosage. The technology for real-time image correction is also related to low radiation dosage.”



Gangnam Severance Hospital, South Korea

The roles of interventional procedures have expanded over many years, and it seems that it will continue to broaden even further in the future.

“I believe that in the future, there will be a variety of intervention procedures aimed at improving quality of life available to patients beyond the area of treatment,” said Prof. Suh. “To achieve this, reducing radiation exposure will be the key challenge. This is because

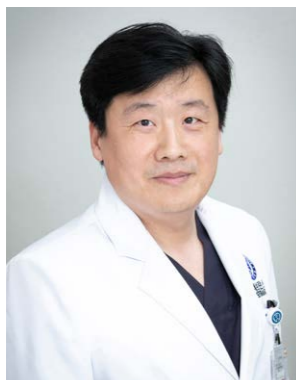
the most important element in the field of interventional procedures is how well it can manage X-ray exposure for both patients and operators.”

“Equipment manufacturers should pay more attention to the advancement of technology that can produce good images even with a small dose of X-rays. Medical professionals are required to carry out their procedure with more attention to the patient’s

radiation exposure pursuant to ALARA (as low as reasonably achievable; it refers to the principle of reducing exposure to the extent possible). Of course, strenuous efforts are being made through activities such as academic societies. However, it is essential to make additional optimal efforts by gathering and analyzing more accurate and meaningful data to ensure patient safety.” //

**“Canon’s Alphenix is an innovative, multi-modality solution that will improve clinical outcomes, lead to workflow optimization, and increase cost-efficiency.”**

*Professor Sang Hyun Suh,  
Department of Radiology, Gangnam Severance Hospital / Chief of Cerebrovascular Center,  
Gangnam Severance Hospital, South Korea*



**Professor Sang Hyun Suh**  
Department of Radiology, Gangnam Severance Hospital / Chief of Cerebrovascular Center,  
Gangnam Severance Hospital, South Korea

[Education]

- Bachelor’s Degree in Medicine, Yonsei University
- Master’s Degree in Medicine, Yonsei University
- Doctoral Degree in Medicine, Gangwon National University

[Main Career]

- Former 12th President of the Korean Society of Interventional Neuroradiology
- Professor, Department of Radiology, Yonsei University
- Chief, Department of Radiology, Gangnam Severance Hospital
- Chief, Cerebrovascular Center, Gangnam Severance Hospital

# Canon Medical Systems Advancing Partnership with ASCs

Ambulatory Surgery Centers (ASCs) are healthcare facilities focused on providing same-day surgical care, including diagnostic and preventive procedures. ASCs can provide a high level of care without the need for patients to go to a hospital or clinic, reducing the load on major healthcare facilities, shortening waiting times for patients, and yet providing the same, high level of care. Alongside other medical specialties, they are increasingly important in interventional cardiology. Canon Medical Systems provides high quality imaging solutions for ASCs that are proving invaluable. Our ceiling mounted and floor mounted systems include Canon Alphenix Interventional X-Ray with Fysicon QMAPP® hemodynamics solutions and devices. Additionally, we offer customized finance options, real-time 3D site-planning, continued operational support, and more. VISIONS Special explores how Peak Heart & Vascular in Arizona, USA, has found the Alphenix Core + an asset in their ASC practice.

## The benefits of Ambulatory Surgery Centers (ASCs)

Outpatient surgery can be far less stressful for patients than hospital surgery. This is increasingly performed in Ambulatory Surgery Centers (ASCs).

ASCs can offer significant cost savings of up to 60%\* less compared to hospital surgeries. This is because they focus on simpler, lower-risk procedure cases, and have lower overhead and fixed costs. Insurance companies also prefer ASCs for their cost savings.

They are also often more conveniently located than hospitals which makes access easier, and often cheaper for patients.

Healthcare professionals working within ASCs generally feel they have more control over their work and work schedules, which can lead to better pre- and post-operative care.

Peak Heart & Vascular, based in Arizona, USA, was established in 2020 to provide treatment for the full spectrum of cardiovascular diseases, including coronary artery disease,



congestive heart failure, all types of arrhythmias, peripheral artery disease, thoracic and abdominal aneurysms, and carotid artery stenosis. It is staffed by cardiologists, interventional cardiologists, electrophysiologists, and vascular surgeons.

“The ASC along with Office Based Lab (OBL) really allows us to provide a more complete experience for patients,” remarked Dr. Tarpan Patel, Interventional Cardiologist at Peak Heart & Vascular. “Within such a facility, you can control your staffing along with your inventory and your workflow

\* <https://www.psadocs.com/why-chose-an-asc-over-a-hospital/#:-:text=By%20being%20specialized%20in%20specific,And%20this%20benefits%20everybody.>



processes, and really create an efficient model for patient experience. You can create a more cost-effective experience for your payers, along with your patients. And, you can really have a full control of the outcomes that come out of this. In the hospital setting, unfortunately, schedules are bound by the hospital administration. Many procedures have now come to the ASC along with OBL space which also have further allowed us to give this great experience to our patients.”

“The interventional cardiology space is really moving increasingly to the outpatient environment,” added Stephen Smith, Vascular Surgeon at Peak Heart & Vascular. “Our practice is very busy and we’re actively looking to recruit other physicians. We have opportunities from a geographic standpoint. Not only do we have a large patient base in the Phoenix Metropolitan area, but we also have a growing business of patients in the Northern Arizona areas of Cottonwood, Prescott, and Flagstaff. I think that as we continue to grow, we are going to need to add partners and also facilities in the northern part of the state as well.”

**Optimal footprint and flexibility**

Peak Heart & Vascular chose to collaborate with Canon Medical Systems to equip their facility and opted for an Alphenix Core + floor unit from Canon.

“My whole experience in the hospital sector was with ceiling mounted imaging equipment and initially I wanted to go with a fixed imaging system. The reason we went with the floor model is because of the systems I went to visit and looked at, they were happy with their floor model and the five-axis system where it can really get out of your way. It's got a small footprint that's on the actual floor, as opposed to some other models, with a really large footprint that mean you're always stepping on the thing. That was what made me at least initially interested in the floor mounted system. And when

we started looking into the finances of it, we saved about \$100,000 for not having to do the infrastructure of the ceiling. So cost wise, it made sense too. And we’ve been happy with it. This is our second floor system.” explained Dr. Stephen T. Smith.

“It's quite amazing how many angles I can move the camera around. I'm amazed by the ability of the floor mounted unit,” explained Dr. Patel. “I often perform coronary interventions, along with peripheral interventions and am frequently changing access sites on the same patients within minutes. I'm able to move my camera to position myself better to save my back, make it easier on the patient themselves, and reduce radiation exposure to myself along with the staff.”

“I've had experience using other systems in a hospital setting, and we were not able to do that, as compared to the Canon system that we have currently,” he continued. “I find everything that we do easy on the Alphenix Core + system. Even deep vein cases and iliac vein stenting, the toughest coronary cases, where you have dense calcium, or if we are treating a very morbidly obese patient. This system has not failed us once.”

“I like to move around, depending on where I'm going to be working on the patient. So, sometimes I'm accessing left groin, sometimes I'm

accessing right. And so, what's nice about the Alphenix Core + is that with a touch of button, we can move my working screen from the left side of the big screen to the right side the big screen, so, it is a lot closer to me,” said Dr. Smith. “With just a few little touches, I can go from road mapping to the regular screen. When I'm doing Intravascular Ultrasound (IVUS), we can throw IVUS up on the screen. We have our vitals up there all the time, but we can move around where and enlarge the screen, and if I really want to see it well, we can make that full screen (58-inch screen). Really easy workflow. And the built-in tablet comes with that too.”

To optimize their efficiency, the team aim to reduce the amount of time that they spend in between cases. The mobility of the components of the Alphenix Core +, including its screen, table and camera, contribute to this.

“The tablet has been amazing,” said Dr. Patel. “As an operator, along with my RT that is with me in the case, we are interchangeable now, because we have a tablet. I do not have to rely on a third person to go behind the lab in the control room to change the settings. The other amazing feature on the tablet is I'm able to change the screen configuration at any moment so if in the middle of the case changes or we change your different access site and I want the hemodynamics on

a different part of the screen, I don't need someone else to do it for me. I could do it myself even, which reduces minutes in the case, which means a lot when you're trying to get through nine patients in a day and get your staff home sooner. Every time we have to keep our staff an hour later, that's an additional cost to the surgery center. And so, every minute really matters.”

**Patient monitoring**

Monitoring patients is critical throughout the interventional cardiology process. The Alphenix Core + comes with Fysicon QMAPP (a Canon company) - a patient monitoring solution that accommodates all stages of the patient experience.

“We do a lot of coronary PCI, as well as electrophysiology. We work with Atrial Fibrillation (AFib) ablations in here. And so the hemodynamic monitoring is important for us,” said Dr. Smith. “Integrating it into the system directly had been really nice.”

“We use QMAPP the most in coronary cases,” said Dr. Patel. “We can use a tablet to create the zero. In general, that can be the most annoying thing that we have to do when we’re doing IFR measurements or FFR measurements. Previously, we were constantly having to zero and then re-zero throughout the case. And the fact that you have a tablet readily available, and you can just click on a button without having to ask someone else to do it for you. It just makes the case go much quicker.”

**QMAPP - Heart of the Cardiac Lab.**

QMAPP is a patient monitoring solution that accommodates all stages of the patient experience, from pre-op, throughout procedures, and beyond, to post-op. It handles all the recording, integration, analysis and reporting of clinical processes. QMAPP provides all the hemodynamic calculations that you would expect from a future-ready, hemodynamic measuring system. Additionally, QMAPP provides vital



alarms, so an immediate response can be facilitated for the wellbeing of patients.

It is a compact, lightweight device that connects with a single cable and integrates with everything in the lab to enhance workflow. QMAPP's CPU is conveniently located in the control room beneath the desk, so it doesn't occupy any technician workspace. The system's compact size means that it can be easily positioned and attached to the table using a moveable din rail clip.

With a module for every application, the core of the QMAPP Reporting Module is able to collect data and connect to other systems and applications in the lab. The modular design brings flexibility and efficiency to workflow. Through its features and use of international standards such as HL7 and DICOM, worklists, dosimetry data, export of a report, or parts of a report, and storage of the report in PACS and EMR, QMAPP can be embedded deeply into workflow. The QMAPP Reporting Module provides all the relevant information required for decision-making

and a broader range of functions than other similar products.

**A clear choice**

The Alphenix Core + is not the first Canon system that Peak Heart & Vascular have acquired. The service and support that they have received from Canon has also been important in their choice, as well as high product quality.

“Our whole goal is designed around again keeping the level of quality at, or better than, hospital standards and having made that decision, we began to look at partners to use. We actually went on a site visit and viewed in a hospital that had multiple systems set up and were able to interview essentially the radiologist and the cardiologist who were using Canon systems, and they had nothing but glowing things saying about it,” said Dr. Smith. “Quite some time has passed and we've been very happy with it, in fact. This is our second system. We've got a third getting built. And it's been a great partnership for us. From an image quality standpoint, it's on par with the best.”



"I am very happy with the partnership with Canon," he emphasized. "As far as equipment goes, and that's the Number One thing, that's been great, as well as working with the Canon Medical team, their support team, and the Canon Finance team."

"Anybody that's looking to put something like this together quickly learns that this is a big undertaking financially and a lot of capital is required," he continued. "This is not just for the equipment but for the build out and the financing of the building and the tenant improvements associated with it. So, it's very important have a financial partner in this with you. And it's very nice to have it related to one of your main partners, which is the biggest piece of equipment, who is an integral in setting the whole thing up. that has actually been one of the easier steps in helping the thing get up off the ground." //

**Listen to more feedback from Dr. Patel and Dr. Smith at Peak Heart & Vascular here:**

<https://us.medical.canon/specialties/asc-obl/experience/>



**Learn more about Canon's Alphenix System here:**

<https://us.medical.canon/products/angiography/interventional-cardiology/>



**Learn more about ASCs:**

<https://us.medical.canon/specialties/asc-obl/>



## Canon Medical Systems and ASCs

Ambulatory Surgery Centers - known as ASCs - are modern healthcare facilities focused on providing same-day surgical care, including diagnostic and preventive procedures.

ASCs have transformed the outpatient experience for millions of patients by providing them with a more convenient alternative to hospital-based outpatient procedures with a strong track record of quality care and positive patient outcomes.

Canon's flexible solutions are designed to support the unique needs of the ASC/OBL environment. Our ceiling mounted and floor mounted systems provide the flexibility to be installed in existing and/or new space. This includes Canon Medical Systems' Alphenix Interventional X-Ray labs with Fysicon QMAPP hemodynamics solutions, and devices. Additionally, we offer customized finance options, real-time 3D site-planning, continued operational support with award winning applications and customer service teams, states Ketan Shah, Product Manager/Business Development at Canon USA.

## What makes the Canon Alphenix Core + so agile?

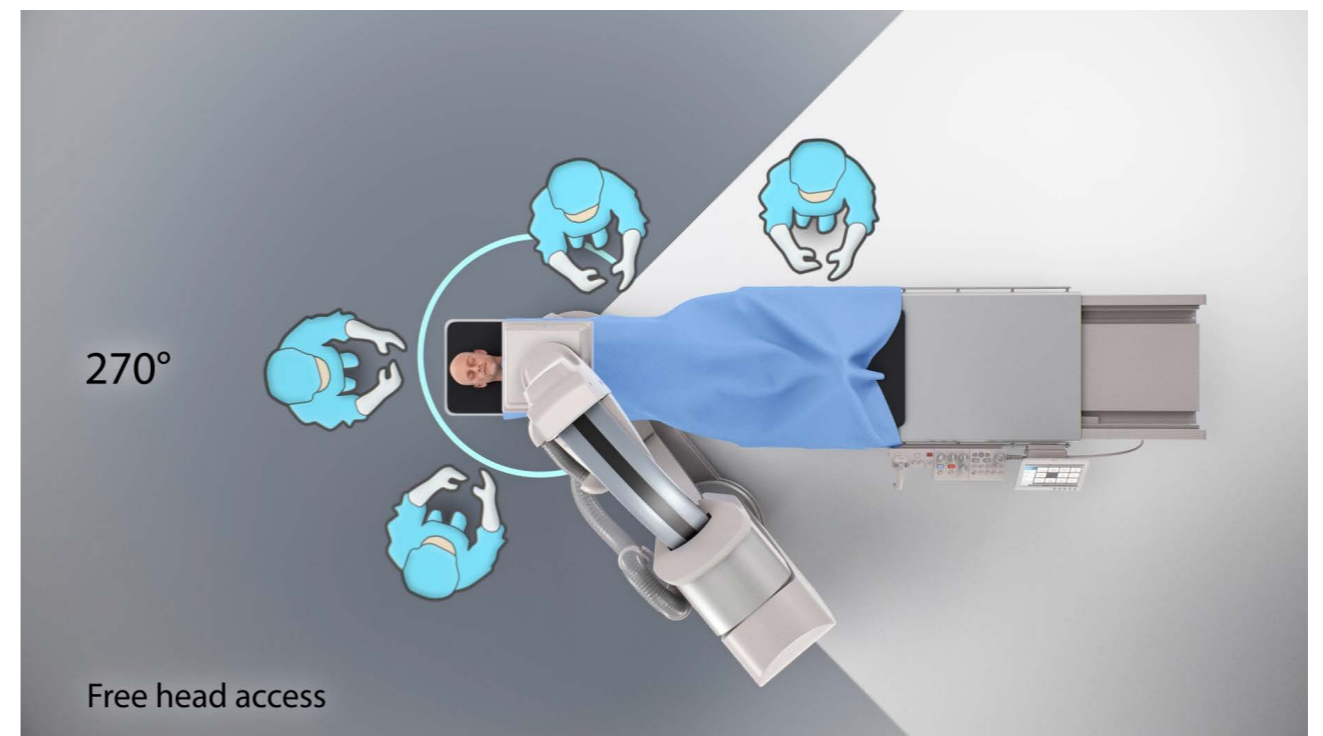
Canon's Alphenix Core + has been designed to provide unprecedented patient access and flexible anatomical coverage from any angle. Here's how it achieves outstanding agility:

- It has the most compact profile in the industry.
- It has a particularly slim base.
- Its C-Arm base is long and located far enough away from its table base to enable coverage of a full operating range.
- Its compact X-ray tube is mounted along the C-Arm Axis and forms a streamlined part of the C-arm.
- Its FPD elevator is exceptionally slim, enabling much wider movement of the SID for cardiac study. This supports the angles required for LAO or RAO, and cranial caudal.
- Control of the C-Arm is possible from the front or the back.
- The system is spacious, with head-end space that provides access for multiple physicians as well as an anesthesia machine and anesthesiologist.



*"It's quite amazing how many angles I can move the camera around. I'm amazed by the ability of the floor mounted unit."*

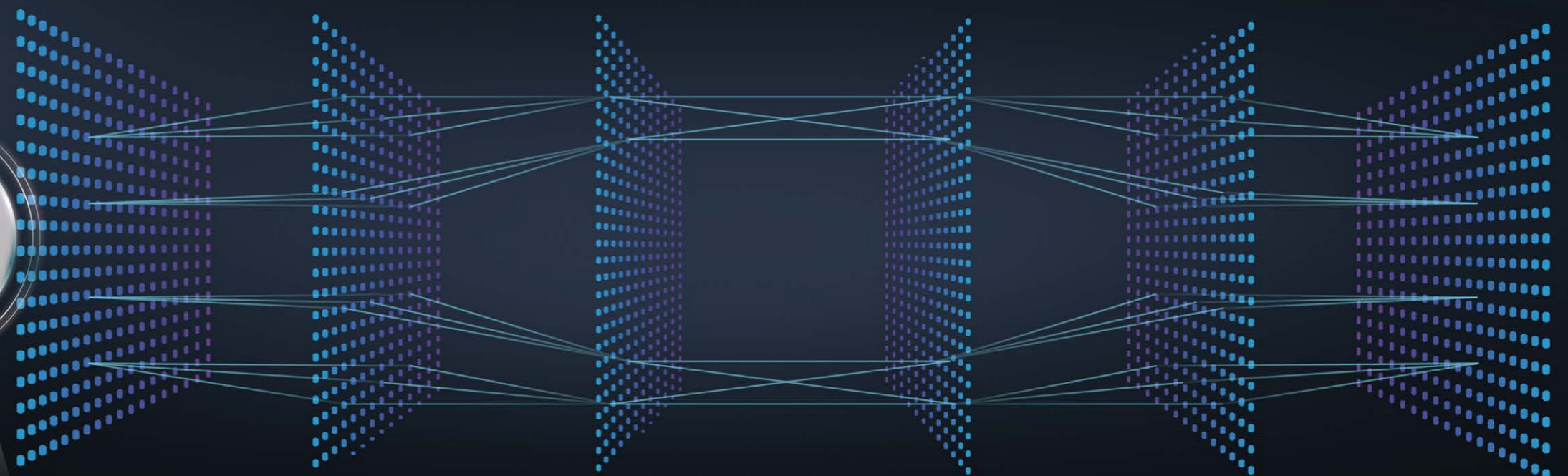
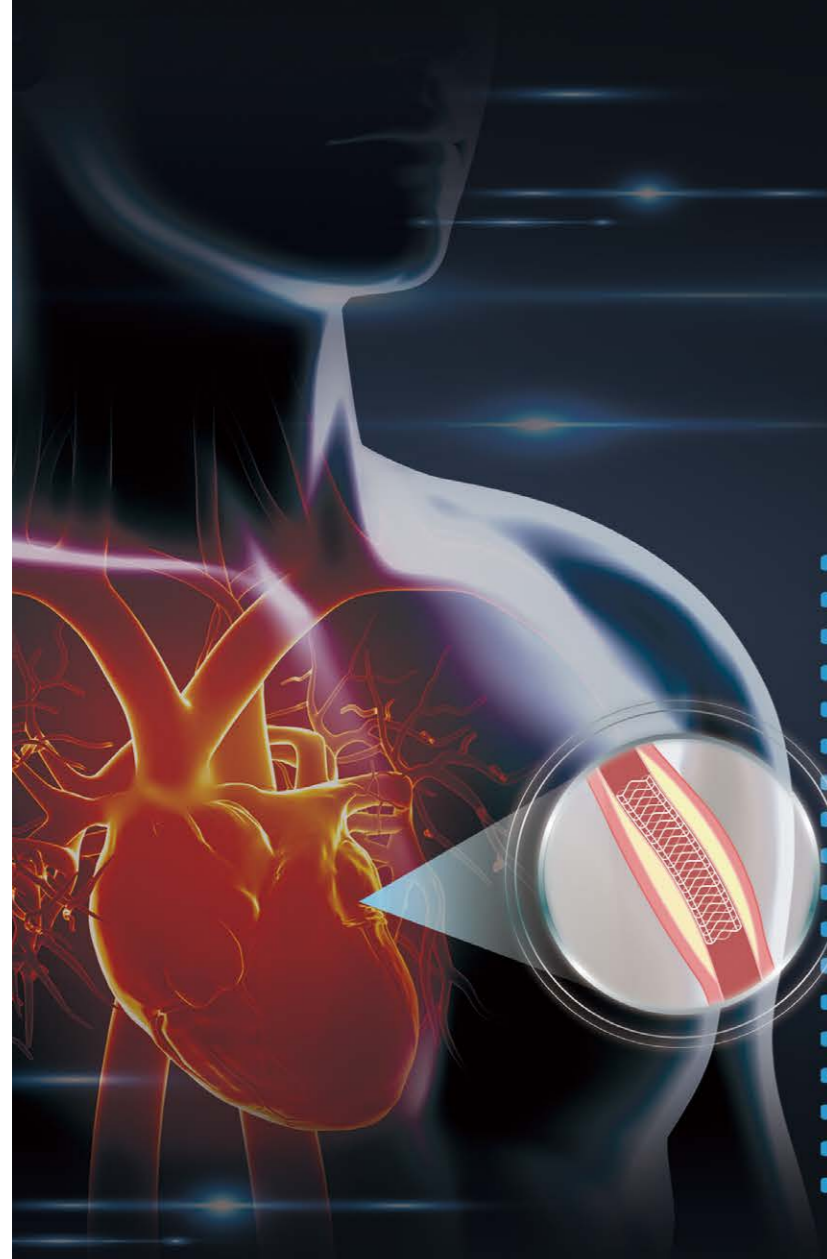
Tarpan R. Patel, MD, FACC,  
Interventional Cardiologist,  
Peak Heart & Vascular, prescott, Arizona, USA





## Accurate Stenting with Dynamic Device Stabilizer (DDS)

Interventional cardiologists face challenges with stent visualization, device positioning and expansion. DDS utilizes Deep Learning\* to automatically detect balloon markers in real-time, magnifying and stabilizing the image on a separate screen to assist visualization and assessment. Structures like stents that surround the balloon markers can be accurately evaluated for precise placement and deployment.



\* DDS is not provided with a self-learning function that allows Alphenix to modify its own programs. Therefore, training of the DDS algorithm is not performed at the end user's site.

# Turning Passion into a Product

## The Development of Canon Medical Systems' Dynamic Device Stabilizer

Canon Dynamic Device Stabilizer (DDS) provides interventional cardiologists with a better view of devices during PCI procedures, eliminating the impact of cardiac motion on imaging and enhancing stent visibility. It can be used not only for digital acquisition, but for fluoroscopy as well for a smoother workflow and to allow you to see enhanced images for clinical decision-making while reducing radiation exposure. VISIONS Special explored the development story of DDS with the inventors of the innovation.



DDS was invented by Canon Medical Systems' Dr. Takuya Sakaguchi (Healthcare IT Division, and Research & Development Center) and Mr. Hisato Takemoto (Vascular Systems Marketing and Promotion Department). Currently available as a commercial product, DDS was refined and tested through an extensive development process that took over 10 years. Now it utilizes Deep Learning to automatically detect balloon markers in real-time and magnify and stabilize images on a separate screen to assist stent visualization and assessment during PCI procedures. In 2023, it received the Prize of the Chairman of the Japan Institute of Invention and Innovation at the National Commendation for Invention.

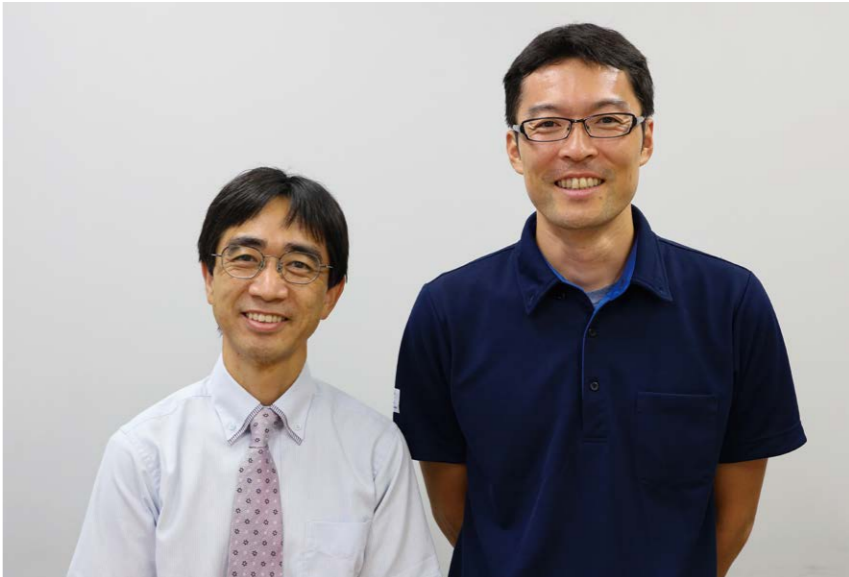


At the award ceremony venue of Japan's Institute of Invention and Innovation  
From left: President Takiguchi, Dr. Sakaguchi, Dr. Nambu (former employee), Mr. Takemoto

**Addressing an important need**  
Ischemic heart disease accounts for approximately 20% of deaths worldwide. The main medical intervention is endovascular treatment, through which, narrowed heart vessels are opened from within. Endovascular treatments place less burden on the patient, but require a high level of skill to perform. Devices must be placed at the treatment site - a beating heart - with absolute accuracy.

With DDS, X-ray images of the area subject to treatment are acquired continuously. Devices that also move with the heart, are detected in each image. Motion correction is applied, so that the devices appear in the same position in each image. Enlarged and enhanced dynamic images are immediately displayed. In other words, devices that would normally keep moving along with the heart appear stationary in the real-time fluoroscopy image viewed by the physician. This improves the visibility of devices and is expected to improve placement accuracy.

**Tenacity**  
During his training in 2003, Dr. Sakaguchi saw that physicians often had difficulty recognizing the narrowed parts of vessels clearly in X-ray images.



Dr. Sakaguchi (left) and Mr. Takemoto (right) spoke about their passion

"Initially, I presented an idea to physicians that focused on the narrowed stenosis, but their response was not overly positive, so I gave up the idea at that time," he said. "In 2008, after sitting on the idea for four or five years, a new colleague, Mr. Takemoto, and I, tried changing the target to a stent marker. This idea was well-received by physicians, so we took on the challenge of applying for a patent."  
"Looking back at my notebooks from

that time, I had generated 20 to 30 ideas. This was one of them," he recalled. "About 80% of the ideas to provide clear image were related to improving image quality, but this one represented a completely different approach to the problem. By considering the user's fundamental needs, the medical professionals, I could come up with the solution of stopping the movement of what they want to recognize (the stent) in real-time."



Dr. Sakaguchi's notebooks

**Invented following close observation of clinical practice**

Mr. Takemoto has worked alongside Dr. Sakaguchi since 2008. They collect clinical data from the sites visited and bring it back to the office to process, improving the technology and brushing up their ideas.

“Mr. Takemoto comes up with ideas that I would never think of,” remarked Dr. Sakaguchi. “I don't think that this patent would have been completed if it were just me working on it.”

“I often come up with ideas when I am actually observing clinical practice. I try to pay close attention to situations in which the physician is having difficulty or where the physician and technician aren't communicating well and the

procedure is not going smoothly. These are the moments in which I think that there might be something we can do to make treatment easier,” said Mr. Takemoto. “It is difficult to really grasp what physicians are facing by just listening to explanations or looking at information that we receive from somebody. Even if you listen to the words of a physician describing their needs or concerns, it is difficult to understand the real intentions of those words.”

“By actually wearing a surgical gown, washing your hands, and entering the cath lab to stand next to the physician, you can finally understand their point of view,” added Dr. Sakaguchi. “Once the procedure begins, you will witness bleeding and falling heart rates. By watching how staff react to these

events, you can think about how our systems should operate to be the most useful.”

Mr. Takemoto thinks that a lot can be learned about clinical practice from academic conferences streamed online, but emphasized that onsite visits are fundamental.

“With video, you can see the physician's hands, or you can view fluoroscopic images with added audio, but there's a lot more going on at actual clinical sites,” he said. “I think there is a big difference in the amount of information that can be obtained onsite versus online. With video, you can't feel the tension in the room, or see the movement or signs of distress of staff who aren't visible on the screen.”

“By considering the user's fundamental needs, the medical professionals, I could come up with the solution of stopping the movement of what they want to see (the stent) in real-time.”

Dr. Takuya Sakaguchi  
Healthcare IT Division



From left: Dr. Takuya Sakaguchi, Ms. Mika Takaya, Mr. Takahiro Yamaguchi, Mr. Kunio Shiraishi, Mr. Hisato Takemoto  
Mr. Yuichiro Watanabe (top left) was unable to attend the interview, so we interviewed him at a later date

**Registering a patent**

Once the development team assimilated their ideas, the next step was to apply for a patent. Patents create the shape of the future. To ensure they are successful, demand, passion, and quantity, are all essential.

“There are two things that I think are necessary for invention,” said Mr. Takemoto. “The first is that there is a real clinical need for the idea, physicians and technicians must really want it. The second is that you, as an engineer, have the passion to turn that idea into a product. Even if a patent is not immediately of practical use, it may become useful in the future.”

“I always say that quantity is much more important than quality regarding

patents. If you don't produce quantity, the quality won't improve. So, for the first 10 years, I think that producing quantity is more important,” remarked Dr. Sakaguchi. “As Mr. Takemoto says, patents don't apply to the present, but rather, they apply to 10 years in the future. Even if a great engineer comes up with 100 patents, it is still difficult to know if the inventions will be successful or not in the future. Only after 10 years have passed and times have changed will we start to understand.”

“Of course, it's important for young engineers to be able to work quickly and efficiently, but on the other hand, new things are happening daily at sites and clinicians are facing new challenges. I want young engineers to not only be satisfied with completing the

tasks at hand but to go further and look closely at what is happening in clinical practice so that they can figure out what to tackle next,” he added.

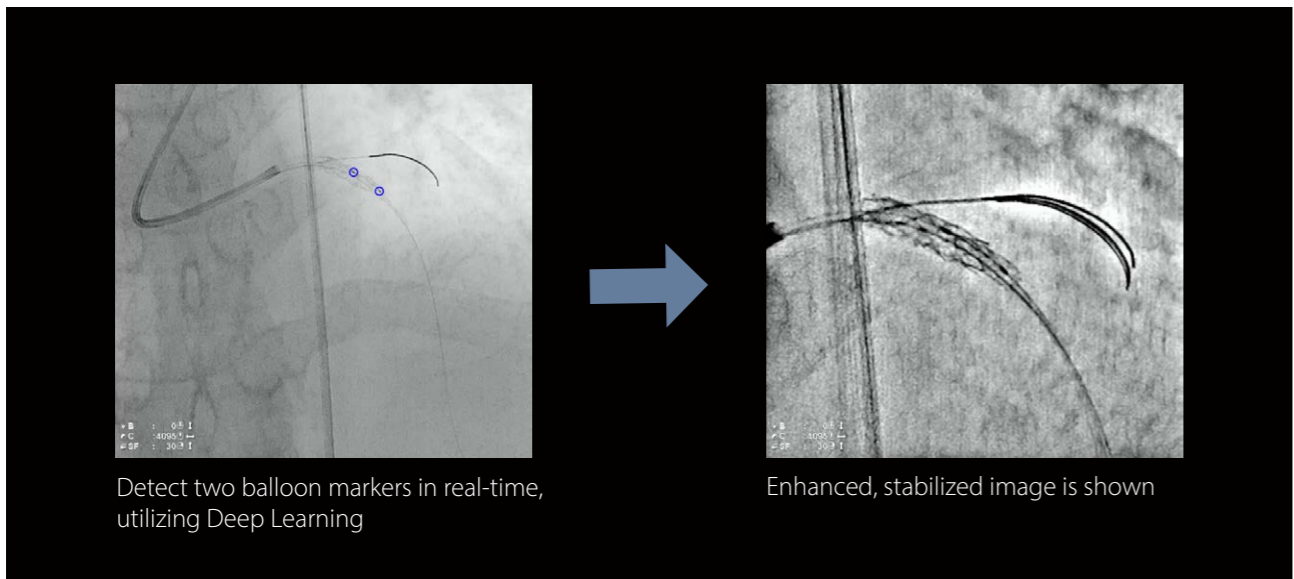
**Bringing the idea to market**

While Dr. Sakaguchi and Mr. Takemoto initiated the development of DDS, a development team was appointed to create the commercial product. Several other staff have been instrumental in the story of DDS.

Mr. Shiraishi worked on creating a DDS simulator and verifying a success rate that would allow for commercialization. He was also involved in investigating how to create DDS images and how to process them. Mr. Watanabe was appointed Project Leader for DDS Development in 2014 when the

“I was amazed by how well the algorithms and processing methods were devised. I felt we should do our best to bring it to market as soon as possible.”

Mr. Kunio Shiraishi  
Vascular Systems Development Department



Detect two balloon markers in real-time, utilizing Deep Learning

Enhanced, stabilized image is shown

technology was proven, and it was time to bring it to market.

Ms. Takaya and Mr. Yamaguchi were not involved in the initial commercialization of DDS but started working on it after 2020. They were mainly involved in improving marker detection performance and fixed display of devices.

“When I first saw the DDS technology, I thought that it was a good to have but a difficult technology to implement,” said Mr. Shiraishi. “I was amazed by how well the algorithms and processing methods were devised. I felt we should do our best to bring it to market as soon as possible.”

“I thought that the concept idea itself was very interesting. I first saw an image of a moving heart during a live demonstration at an academic conference that I attended,” said Mr. Watanabe. “Dr. Sakaguchi was watching the live demonstration with me, and I remember him commenting: ‘It’s hard to see moving images, I think it would be easier for the physician to see if we could stabilize the image.’ I remember being surprised because stabilizing the image was such a unique solution to the problem.”

“The concept itself is very simple,

it just involves finding something specific in an image. However, since there are many structures in the body that appear similar to the markers, it is really difficult to identify the two correct markers in a noisy image,” added Mr. Yamaguchi.

### Development challenges

The DDS development team met a few hurdles in bringing DDS to market, which they overcame.

“Marker visibility depends on various factors such as the way X-ray is applied, the C-arm angle, and reflections of bones,” explained Mr. Watanabe. “The difficult thing about DDS is that it has to accurately detect markers in real-time in a variety of conditions.”

“To be usable in clinical practice as a real-time display, the time from image generation to marker detection must be a matter of milliseconds, but that is not possible at the basic research stage. At the commercialization stage, we must get to the several-millisecond range but also must balance the tradeoff between performance and speed,” he added.

“With the heart, you don’t always find what you’re looking for in the middle of

the monitor,” said Mr. Shiraishi. “What you need is for the physician to realign it on-site, but they often don’t have time for that.”

“When it comes to commercialization, another difficult thing is that even if the technology is amazing, if it is difficult to use, or if the processing is too slow to keep up with medical procedures, the product will fail,” said Mr. Yamaguchi.

“If you have experienced the tension of an operating room, you will know that you can’t ask a physician to ‘just click here once,’” explained Ms. Takaya. “If you create a product without this knowledge, it likely won’t be accepted by physicians.”

### Supporting physicians

Ms. Takaya explained some of the feedback.

“Because stents are difficult to see in normal fluoroscopic images or digital acquisition images, users want to use this software to confirm stent position,” she said. “I have received many comments such as ‘I want to use this software because of those times that I can’t see the stent properly.’”



Scene of the roundtable discussion

“The way that angiography systems are used differs depending on the facility and the physician, even if the procedure is the same. Similarly, DDS is used in various ways, with some physicians only using it during digital acquisition, and others also using it during fluoroscopy,” she said.

Dr. Sakaguchi comments, “As the population of Japan is aging, the demographic of medical staff is aging as well. If you show the same image to

a physician in their 20s and a physician in their 60s, they will see the image differently because of retina sensitivity due to age. Although we are currently discussing imaging and image processing, it’s time to start thinking about whether we can change the way images are presented depending on the individual person viewing them and their environment. We are nearing the end of the era in which we show things moving in 3D as 2D images, so I think

there is still room for improvement for this technology.”

“Just as each person has different apps installed on their smartphone and uses it in a different way, different physicians use our products in different ways,” emphasized Mr. Takemoto. “As far as possible, we must focus on the areas that are commonly used by everyone.” //

### Find out more about DDS here:

Customer testimonial video

<https://www.youtube.com/watch?v=3Nbe3y-EMTA>

Press release of the award winning at Japan’s Institute of Invention and Innovation

<https://global.medical.canon/News/PressRelease/Detail/133850-834>

### Find out more about our cardiology solutions here:

<https://global.medical.canon/products/angiography/alphenix-evolve-edition>



# Exploring Scientific and Clinical Functionalities of Alphenix 4D CT in UZ Brussels

Prof. Johan de Mey, M.Sc. Pieter T. Boonen, Prof. Nico Buls, Prof. Dimitri Aerden

The Alphenix 4D CT has been revolutionizing research in Interventional Radiology at the Department of Radiology, UZ Brussels University Hospital (Brussels, Belgium). Prof. Johan de Mey, the Head of Department, has selected Canon's Alphenix 4D CT to bridge the powerful image quality of CT with the versatility and flexibility of angiography. Together with his team, M.Sc. Pieter T. Boonen, Prof. Nico Buls, Prof. Dimitri Aerden, and Prof. Jef Vandemeulebroucke, he showed the benefit of using the Alphenix 4D CT to improve the evaluation of critical limb ischemia, providing valuable information on the anatomy of the blood vessels, the hemodynamic of the blood flow, and the tissue perfusion. In the future, Prof. de Mey and his department are eager to look forward and take advantage of all the clinical capabilities that this clinical system offers.

### Meeting UZ Brussels

UZ Brussels is a university hospital that is part of the Vrije Universiteit Brussel (VUB) located in Belgium. This hospital offers a broad high-quality medical service, investing in innovative and cutting-edge medical equipment, and developing novel research. In 2020, the Alphenix 4D CT from Canon was installed in the Department of Radiology.

The department encompasses both diagnosis and intervention, being also involved in several research projects on medical applications. On a daily basis, Alphenix 4D CT is used for biopsies to collect clinical information regarding suspicious tissue in the body. However, more can be done in interventional radiology, for instance, with a system that integrates two powerful and robust medical modalities,

CT and angiography, in only one room. Following a patient-centric approach, the patient does not need to be transferred between two rooms anymore to be diagnosed, treated, or verified after treatment. This possibility of easily switching between CT and angiography in one setting without moving the patient, improves patient care, decreases procedure time, and makes the procedure less logistically challenged. Therefore envisioning the improvement of clinical workflow and integration of cutting-edge methods and technology, Alphenix 4D CT brought to the department the urge to search for new and innovative methodologies for cardiology and interventional oncology.



Scientific team, UZ Brussels, Belgium in front of their Alphenix 4D CT. From left to right: Pieter T Boonen, Prof. Johan de Mey and Prof. Nico Buls

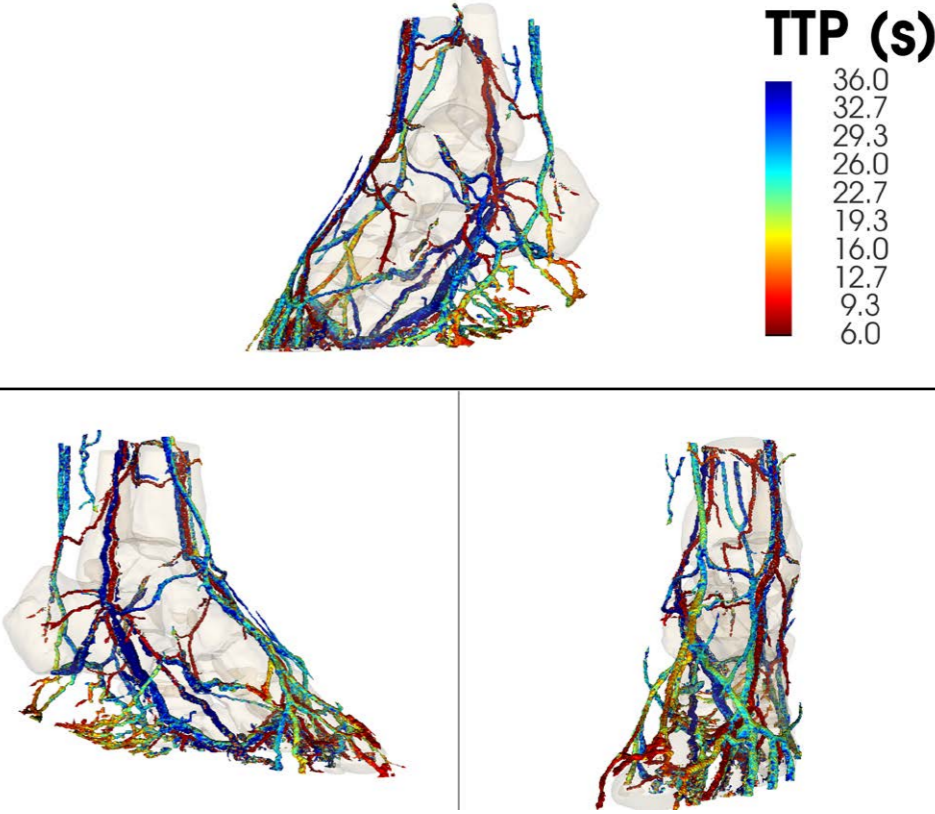


Illustration from the scientific study from Boonen et al. published in European Radiology Experimental<sup>2</sup>. This figure shows the parametric map indicating the contrast arrival (time-to-peak in seconds) for blood vessels, being red indicating the early arrival of the contrast and blue indicating the late arrival of the contrast

### Breakthroughs in the diabetic foot field

The most recent work from Pieter T. Boonen, Prof. Nico Buls, Prof. Dimitri Aerden, Prof. Jef Vandemeulebroucke, Prof. Johan de Mey, and their team was published in Radiology and European Radiology Experimental<sup>1,2</sup>. Radiology and European Radiology Experimental are two highly esteemed academic journals in the field of radiology and medical imaging. In these papers, they presented a methodology to assess the hemodynamic effect of critical limb ischemia in the foot using Alphenix 4D CT functionalities and perfusion imaging. In the first publication, the researchers applied this methodology to one patient with diabetic foot disease and already showed the benefits of using it to evaluate and plan the treatment of this disease. In the second publication, they extended the work to two more patients. This methodology, requiring a minimal contrast of only 2 mL, enables the acquisition of valuable information on blood vessel anatomy, hemodynamics, and tissue perfusion. The obtained hemodynamic parameters correlated well with intra-arterial digital subtraction angiography (IADSA) findings, surpassing it in assessing venous blood flow and inflammatory hyperperfusion.

This study integrates into the peripheral arterial disease (PAD) field. PAD manifests as a circulatory problem that results in the narrowing or blockage of the peripheral arteries, reducing the blood flow to the extremities. Typically, it results in patients developing critical limb ischemia, which leads to severe consequences for patients with diabetes (e.g., diabetic

*“Acquiring the dynamic 4D CT images with intra-arterial contrast administration, substantially reduced the amount of contrast agent used (2 mL).”*

food disease). This disease is usually assessed with IADSA, which provides morphological and hemodynamic information about the lesion, but it does not provide information on tissue perfusion. In addition to this, IADSA only delivers 2D information on the structures. Therefore, an image modality that allows for volume projections, like dynamic four-dimensional computed tomography (dynamic 4D CT) may be an alternative to get more details about the structures in the image. However, recent studies reported the use of high levels of the contrast agent when acquiring dynamic 4D CT images.

In this work, the researchers included data from three patients with diabetic foot disease and a high suspicion of critical limb ischemia. Between January 2021 and August 2021, these patients underwent a dynamic 4D CT examination in combination with a diagnostic IADSA in the Alphenix 4D CT room at the UZ Brussel diabetic foot clinic.

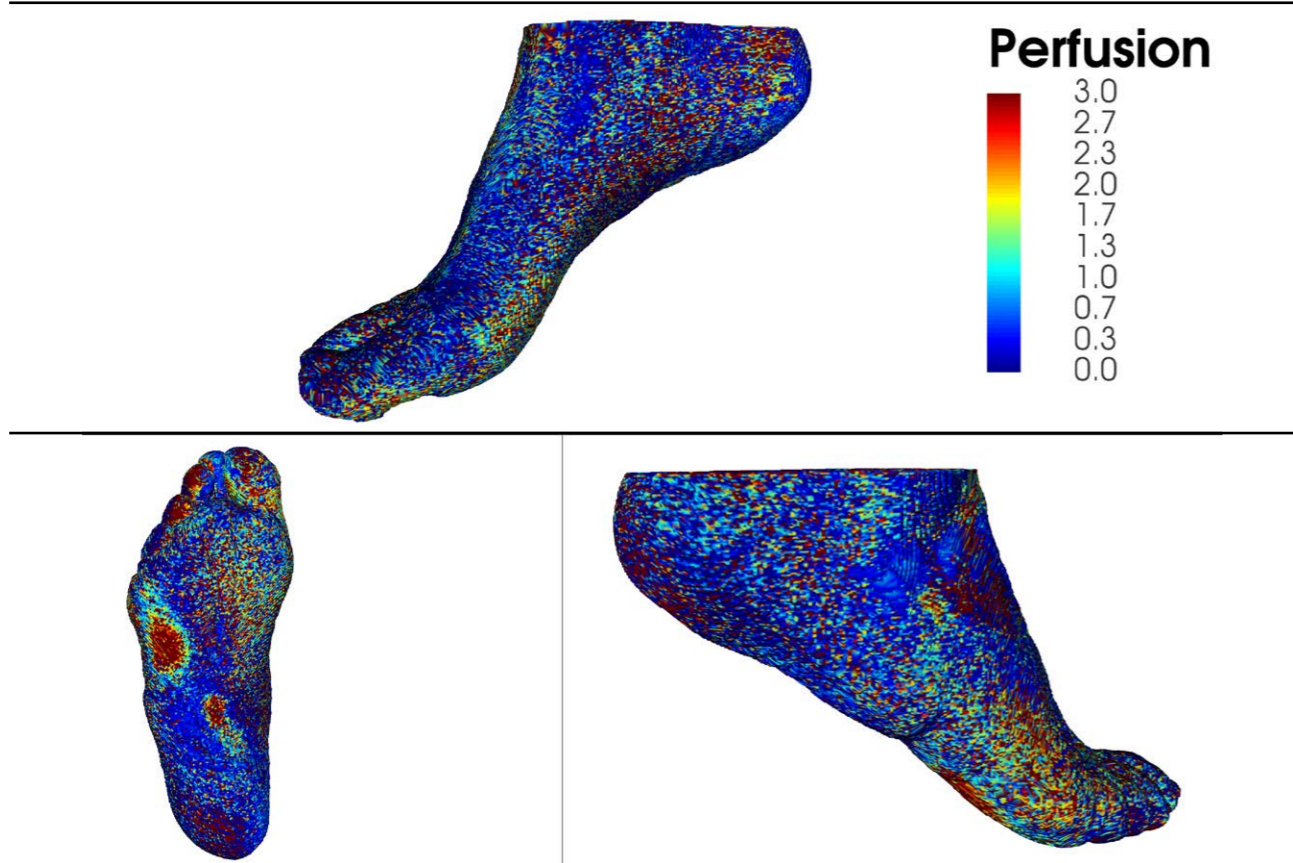


Illustration from the scientific study from Boonen et al. published in *European Radiology Experimental*<sup>2</sup>. This figure shows the parametric blood flow map indicating the perfusion values (mL/g/s) derived from dynamic 4D CT imaging, being blue indicating the low perfusion values and red indicating the high perfusion values

With the approach of acquiring the dynamic 4D CT images using the Alphenix 4D CT, the amount of contrast agent used was very low (2 mL) as a result of the selective intra-arterial injection for the CT acquisition. Other studies reported the intravenous injections of 40 to 80 mL of contrast agent when the patient undergoes a dynamic 4D CT examination. The use of only 2 mL of contrast agent in these procedures has a clinical benefit, especially for patients with diabetes and chronic kidney

disease, since the use of a high amount of contrast increases the risk of contrast-induced nephropathy in these patients.

In addition, a more detailed and informative assessment of blood flow and tissue perfusion was achieved with dynamic 4D CT images than with stand-alone IADSA. On the morphological and hemodynamical levels, dynamic 4D CT and IADSA correlated. However, as previously mentioned, dynamic 4D CT also allows obtaining perfusion maps, in which, as expected, the values of the affected tissues were significantly higher than those of the normal tissue, which is suggestive of inflammatory hyperperfusion.

In closing, this exploratory study showed that the methodology introduced by the researchers has the potential to provide anatomical and hemodynamic information on vascular structures, and insights on tissue perfusion with a minimal amount of contrast. The technique has the potential to contribute to a better diagnosis of critical limb ischemia in the future.



Canon's Alphenix 4D CT installed in the Department of Radiology, UZ Brussels, Belgium

*“Angio-CT allows for 3D image fusion guidance that can improve the procedure time and reduce the amount of used contrast.”*

### Stepping into the future in UZ Brussels

After the successful outcomes already achieved by the team, they are now planning to move forward and incorporate the cutting-edge multimodal capabilities of our Alphenix 4D CT into new research and clinical applications. Cardiology, interventional oncology, and interventional radiology are three clinical pillars for which they see the benefit of using Alphenix 4D CT not only for advanced diagnosis but also for advanced treatment. In cardiovascular applications, dynamic 4D CT imaging offers a dynamic visualization of the heart and blood vessels, providing crucial insights into cardiac function and blood flow.

This technology could enhance diagnostic precision in identifying coronary artery diseases, aneurysms, and other cardiovascular conditions, leading to more informed treatment decisions. In interventional oncology, the implementation of dynamic 4D CT imaging allows for real-time imaging during minimally invasive procedures. By capturing dynamic changes in tumor vascularity and surrounding structures, clinicians could navigate interventions with increased accuracy, potentially improving the efficacy of treatments such as embolization and ablation. Finally, in interventional radiology, Canon's Alphenix 4D CT can be a perfect solution for Endovascular Aneurysm

Repair (EVAR) procedures and its most common related complication called endoleaks. EVAR is a minimally invasive technique that is commonly conducted to repair abdominal aortic aneurysms (AAAs) using a stent-graft. This treatment has emerged as an alternative to open aneurysm repair procedures. However, EVAR can be affected by endoleaks, which are blood leaks outside the stent-graft and back into the aneurysm sac. There are different types of endoleaks, depending on the vessels that cause the inflow into the aneurysm sac. With Alphenix 4D CT, it will be possible to assess and treat this clinical complication within one room and by avoiding extra logistic actions. Moreover, using dynamic 4D CT imaging would be highly beneficial to determine the information about the hemodynamics of the blood flow to improve the endoleaks diagnosis and treatment. Next to these clear advantages, image fusion between CT image data and angiography is fast and straightforward since the patient is positioned on the same table, which means that no registration between the two imaging modalities is necessary. This three-dimensional image fusion guidance can improve the procedure time and reduce the amount of used contrast. Another strong advantage of this image fusion is the additional confidence given to the vascular surgeon and/or interventional radiologist during the procedure to improve patient outcome.

The Alphenix 4D CT is therefore shaping up to be a game-changer in the Department of Radiology, at UZ Brussels. With their interest in integrating the Alphenix 4D CT into their clinical routine, we can foresee that the road ahead is bright, bringing improved diagnostics and better treatment for all. //

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**Prof. Johan de Mey**  
Head of Department,  
Department of  
Radiology, University  
Hospital of VUB  
(UZ Brussels).



**Pieter T. Boonen**  
PhD Researcher,  
Department of  
Radiology, University  
Hospital of VUB  
(UZ Brussels).



**Prof. Nico Buls**  
Medical Physics Expert,  
Department of  
Radiology, University  
Hospital of VUB  
(UZ Brussels).



**Prof. Dimitri Aerden**  
Vascular Surgeon,  
Department of  
Vascular Surgery,  
University Hospital of  
VUB (UZ Brussels)

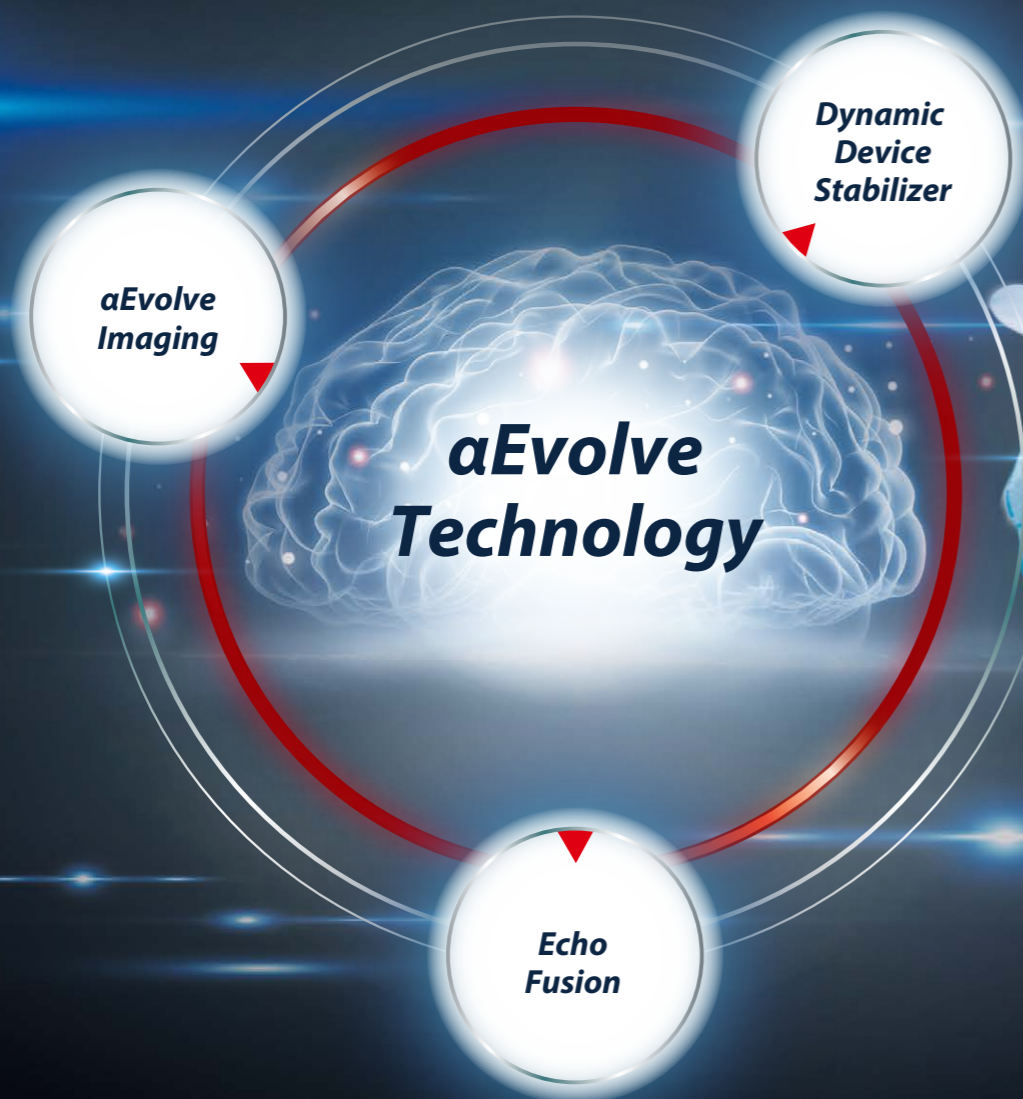
**Joana Boita - Co-author**  
Product Manager Interventional X-ray  
Canon Medical Systems Europe.

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- <sup>2</sup> Boonen, Pieter T., et al. "Combined evaluation of blood flow and tissue perfusion in diabetic feet by intra-arterial dynamic 4D CT imaging." *European Radiology Experimental* 7.1 (2023): 44.



## Alphenix / Evolve Edition: Intelligent Solutions Powered by aEvolve Technology



Introducing Altivity, our bold new approach to AI innovation that uses smart technologies to make a whole new level of quality, insight and value across the entire care pathway possible.

Altivity is Canon Medical's new approach to AI innovation. aEvolve Technology, under the Altivity brand, was designed specifically to address the growing complexities of interventional cardiology. Leveraging Artificial Intelligence, a Evolve Technology provides innovative solutions to support high quality, safe, and efficient diagnosis and treatment while improving the experience for patients and healthcare workers.



# Pioneering Advances in Interventional Cardiology Spread Through Global Collaboration

Chronic Total Occlusion (CTO) is a complete or nearly complete blockage of one or more coronary arteries. The blockage is caused by a build-up of plaque within a coronary artery that compromises blood flow to the heart. CTO is common in patients with coronary artery disease. Around 20-25% of patients with coronary artery disease also have a chronically blocked artery. Successful treatment requires intricate procedures. However, interventional cardiologists are able to achieve better and better success rates in treating CTOs thanks to advances in technology, as well as international collaboration that accelerates the exchange of knowledge on innovations and techniques. In addition to bringing new innovative solutions to interventional cardiologists, Canon Medical Systems supports academic forums that enhance learning and progression.

"The average success rate of CTO treatment in India has reached almost 90% in the last few years," said Dr. V. Surya Prakasa Rao, Chairman of the Indo Japanese CTO Club (IJCTO) 2024 and Director of Interventional Cardiology at Care Hospital Banjara Hills, Hyderabad, India. "This is similar to achievements in Japan. Cooperation between India and Japan has been made possible through platforms like the IJCTO and advancements in hardware, angiosystems, and procedural improvements. In particular, workshops like IJCTO help practitioners achieve perfect CTO PCI. These efforts have contributed to the 90% success rate of Indian CTO treatment in recent years."

**A prestigious academic partner**  
IJCTO was founded in 2012 in collaboration with the Japanese CTO Club. It has become a prestigious academic partner in interventional cardiology, especially for CTO.

This year's IJCTO 2024, was held from June 7-9 in Hyderabad, India. The conference attracted approximately 800 interventional cardiologists who



specialize in CTO treatments from across India and Southeast Asian countries. This year, a new Women's Cardiology forum was included in the IJCTO program.

"As of 2012, Japan was more advanced in CTO treatment, but recently, India's CTO treatment techniques have become comparable to those in Japan," said Dr. Kenya Nasu, Vice President

of Mie Heart Center, Mie, Japan, and Chairperson of CTO Club NAGOYA @ IJCTO 2024. "I felt that the technology and knowledge regarding CTO have improved significantly compared to before."

"So far, the conference has been built up over the past 10 years on the relationship between only Indian and Japanese practitioners," remarked Dr.

Rao. "However, in the near future, we would like to expand this academic interaction to other regions, including countries in Southeast Asia and the Middle East. I would like to see advances in technology and hardware spread to many continents, and India is now working at the same level as other countries."

## Opening new windows of opportunity for interventional cardiologists

IJCTO 2024 featured a joint seminar co-hosted by Indian and Japanese doctors, and supported by Canon Medical Systems Corporation entitled: "CTO CLUB NAGOYA@IJCTO 2024". During the seminar, Dr. Shunsuke Matsuno, Director of the Interventional Cardiology Department at The Cardiovascular Institute, Tokyo, Japan, gave a presentation on Canon Medical Systems' αEvolve Imaging.

αEvolve Imaging is a new image-processing realized with denoising powered by Deep Learning technology and multi-frequency processing.

It reduces noise in fluoroscopic images in real-time, while increasing the contrast and visibility of devices such as guidewires, coronary stents, and contrast-enhanced vessels.

This is incorporated in Canon Medical Systems' Alphenix / Evolve Edition Angiography system, which was introduced in August 2023 and has opened new windows of opportunity for interventional cardiologists.

Utilizing artificial intelligence in real-time, Alphenix / Evolve Edition is designed to enhance imaging while enabling reduced time and radiation dose during routine and complex percutaneous coronary intervention (PCI) and structural heart disease (SHD) procedures, improving safety for clinicians and patients.

In his presentation at IJCTO, Dr. Matsuno highlighted that αEvolve Imaging allows physicians to reduce the radiation dose without compromising image quality. Furthermore, enables physicians to minimize the frequency of cine acquisition during

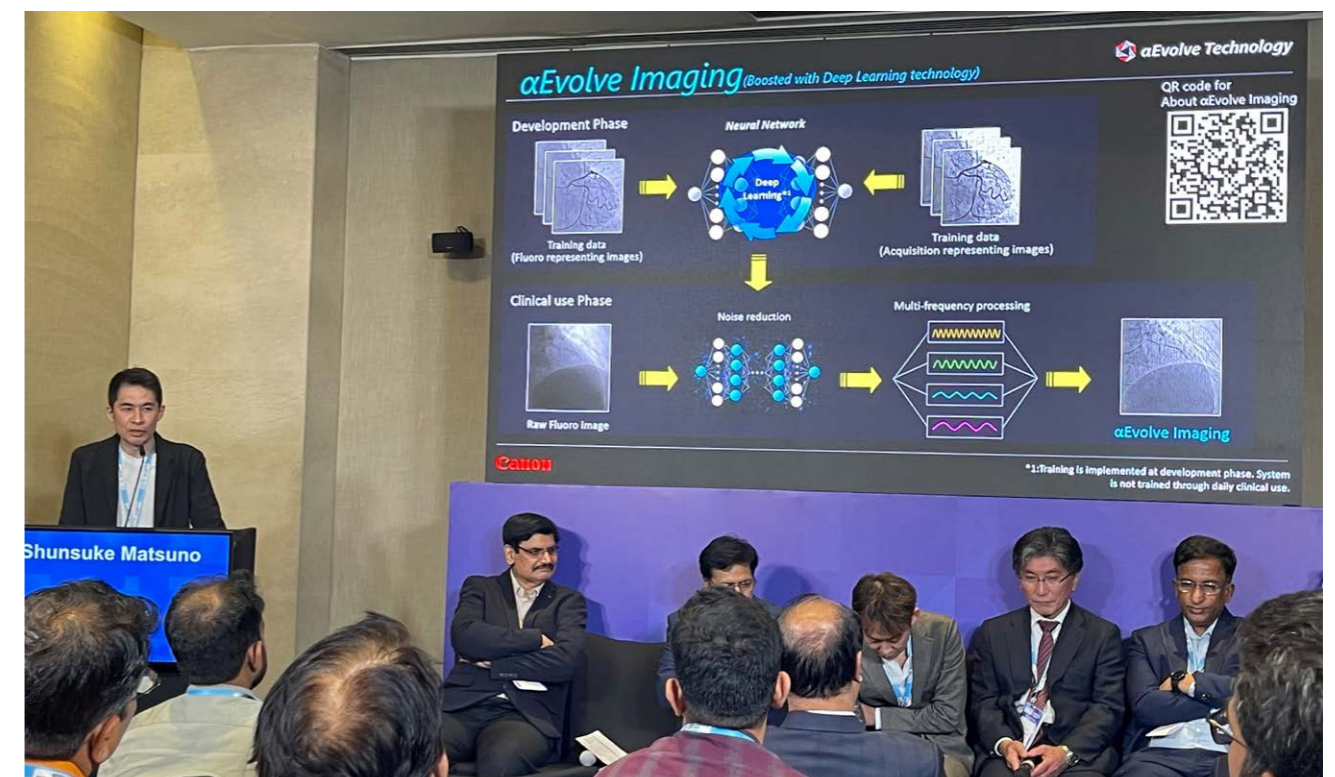
PCI procedures, by replacing them to αEvolve Imaging fluoroscopy images.

## Continual collaboration

The future of CTO treatment looks promising with continued international collaboration and innovation at events such as IJCTO. The advancements in technology and the spirit of academic exchange push the boundaries of interventional cardiology towards creating a brighter and healthier future for patients worldwide.

"CTO Intervention in India has been quite successful over the last decade because of the fruitful collaboration between Japanese and Indian doctors," said Dr. Sharath Reddy Annam, Director of Interventional Cardiology at Medicover Hospital Hyderabad, India, and Course Co-Director of IJCTO 2024. "Moving forward, this collaboration should continue. That's crucial because most innovations happen in Japan."

He also pointed out the need for better training programs: "What is lacking in India now is proper fellowship training for fellows," he added. "We strongly



hope that Japanese institutions will collaborate with us to welcome the next generation of Indian CTO interventionists for fellowship programs and inspire them."

"Rather than going to India to teach something, we are shifting towards sharing our extensive experience with Indian doctors. It is true that the technical level of expert Indian doctors is improving, but India is a large country with a wide range of treatment needs, so there are many more potential Indian doctors who need educational opportunities," explained Dr. Nasu "Currently, the educational environ-

ment, including CTO treatment, is entering a phase where the educational programs are being created by Indian doctors. Collaborating with Indian doctors in educational positions and providing indirect support will be our contribution from Japan."

With India's growing expertise and sustained support from Japan, the world can expect groundbreaking developments in CTO treatments and beyond. The future is bright for CTO intervention, with innovations and collaborations paving the way for even greater achievements in the field. //



Dr. V. Surya Prakasa Rao - Chairman of IJCTO 2024

(Second person from the right)

Find out more about IJCTO 2024 here:

<https://www.ijcto2024.com>



Find out more about Canon's Alphenix / Evolve Edition Angiography system for interventional cardiology here:

<https://global.medical.canon/products/angiography/alphenix-evolve-edition>



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Wim Nijwening,  
Nursing Leader Emergency Care and Senior  
Intervention Nurse HCK,  
Canisius Wilhemina Ziekenhuis,  
Netherlands

## Canon Medical Systems Hemodynamic Solution - Broadening the Possibilities with “Just one Push on the Button”

The Canisius Wilhemina Ziekenhuis (CWZ) is a top clinical teaching hospital that serves the Nijmegen area of The Netherlands. CWZ has 653 beds and covers 26 different medical specialties, including Cardiology, for which, it provides a 24/7 service including diagnostic and interventional procedures from two dedicated, cardiac cath labs. Approximately 1,500 coronary angiographies and 1,000 PCIs are performed there annually. CWZ has been using various products of Fysicon (a Canon Company since 2018) for more than 20 years. One of these is QMAPP®, a compact and advanced hemodynamic monitoring system that can now be integrated into Canon's Alphenix suite, enabling streamlining with cath lab workflows and delivering hemodynamic functionality to the fingertips, via a tableside tablet.

Wim Nijwening, Nursing Leader Emergency Care and Senior Intervention Nurse HCK at CWZ, shares his experiences of working with the system and explains the possibilities that it offers through meeting many challenges in the cath labs at CWZ.



### Why did CWZ choose this system?

The tablet came with Canon's Alphenix system. We were interested in the integration with QMAPP on the tablet - We had been waiting for this integration possibility in a system for some time. It is used a lot, especially because we often need to work with just two staff. The distance between our registration room and our procedure room itself is considerable, and previously required us to divide our attention between circulation and registration work. All we have to do now is start up those patients in QMAPP, and beyond that, we don't have to get behind the controls. We can now carry out hemodynamics on the tablet, and the PC with the EPD is already in the back of the

room. This makes it perfect for taking samples and FFR measurements. Room 1 has a tablet integration, Room 2 doesn't yet. Now that we use the tablet so much in Room 1, we do really miss this in Room 2.

### Could you describe the workflow at the cath lab before and after introducing Alphenix tablet with QMAPP functions integrated?

The measurements that we make in QMAPP are automatically registered in the right place in our EPD. Prior to this, we were required to enter them manually, which is an approach that is much more prone to error. With tablet integration, the manual transfer of measurements is a thing of the past.

Just one push on the button and the sample is processed correctly.

### What was the biggest challenge without tablet integration?

Our biggest challenge in the cath lab was getting between patients and the registration room. It caused a lot of disruption when we wanted to take a sample but were out of the room. The advantage is that the nurse at the table now controls both the fluid management system (the system used to administer the contrast) and the tablet (used to process the samples). This eliminates the need to coordinate when the fluid management system should remain quiet and hold on giving contrast while making a sample.

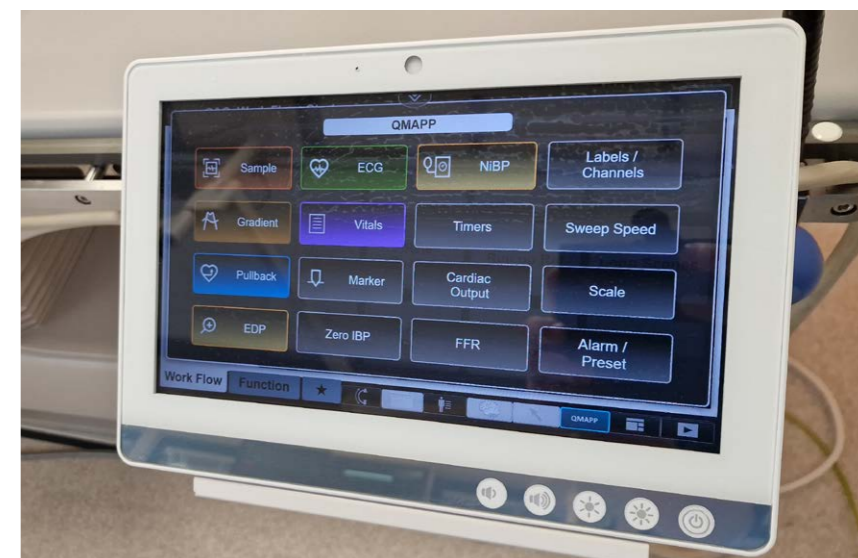
*“Now, we can stay with the patient, monitor and guide them better.”*

Wim Nijwening,  
Nursing Leader Emergency Care and Senior Intervention Nurse HCK,  
Canisius Wilhemina Ziekenhuis, Netherlands

It is now in the hands of the same nurse through use of the tablet. The nurse has the most time for this. Our other staff are often extremely busy during shifts.

### What were your expectations of tablet integration and have they been fulfilled?

That it offers a logistical advantage. It requires little- or no training. Everyone immediately understood how it worked. The tablet has large logical buttons containing all necessary functions. Although there are some points that can be improved, QMAPP integration to the Alphenix tablet has become an important part of the workflow.



QMAPP integrated Alphenix tablet

### Which functionality in the tablet has the most added value for you?

Sampling

a weekend, when I was on-call and it was very busy. We were able to test it right away. One press on the button and it just works. You can rely on it.

### Did it take you a lot of time to get used to using the tablet?

No, because it is so familiar. No training was required to get started. We used the tablet for the first time during

### Would you recommend Alphenix tablet with QMAPP integration to other physicians and colleagues?

Yes. Definitely. We are very happy

with it. It is especially valuable to us that the lines of communication with Fysicon are short. If you want something different there are possibilities for that. We also really feel that we can contribute to improvements because our suggested changes are actually implemented.





QMAPP, a compact and simple technology in the cath lab, makes your Alphenix suite more efficient

One example of the cooperation between Fysicon and our department is the introduction of the option "Get worklist". Worklist update required up to one minute. This was often inconvenient, especially at the time when an emergency patient arrives. In consultation with Fysicon, an additional option has been added to actively refresh the worklist. This eliminates the need to wait and saves precious time. The system should be very convenient for all users. //

**"I would 100% recommend it to others to start using this Alphenix tablet with QMAPP integration."**

Wim Nijwening,  
Nursing Leader Emergency Care and Senior Intervention Nurse HCK,  
Canisius Wilhemina Ziekenhuis, Netherlands

#### Learn more about:

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QMAPP integration here:



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