Canon

Cardiology solutions

Made possible.

Made For life

Trends and challenges in Cardiology

Burden of cardiovascular disease

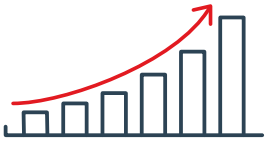
Cardiovascular disease is the most common cause of death among women and men in Europe, responsible for 3.9 million deaths in Europe each year. Cardiovascular disease is also a major cause of disability and of reduced quality of life. Due to the longevity, improved survival of people, but also the levels of obesity and the rapidly increasing prevalence of diabetes in Europe, the number of patients with cardiovascular disease will increase, placing a heavy burden on society. These factors directly have impact on rising costs for healthcare in general and put physicians under increasing pressure. As a result, optimized workflows and improved resource utilization are crucial.

Global

17.7 million lives per year

1/3 prematurely under 70 years.

This number is steadily increasing



Europe

3.9 million lives per year

Leading cause of mortality under <65 years

Estimated cost for the European Union economy

210 € billion a year

Patient-centered clinical care

At the same time, precision medicine is emerging. Better understanding of disease pathways and detailed phenotyping are needed to allow early and accurate identification of disease and to offer patient-tailored treatments. All with the ultimate goal to reduce the burden of cardiovascular disease and improve outcome and quality of life of the individual patient.

To achieve patient-centered care, fast and quantitative imaging tools that provide the highest detail and accuracy in a safe and patient-friendly manner are a prerequisite. In addition, effective use of vast volumes of medical data and cumulative information is increasingly needed.

Canon Medical, leader in diagnostic imaging systems, advanced visualization and health informatics, is committed to help you realize patient-centered clinical care.

Sources:
World Health Organization www.who.int/cardiovascular_diseases/en/
European Cardiovascular Disease Statistics 2017 http://www.ehnheart.org/cvd-statistics/cvd-statistics-2017.html.
European heart health charter http://www.heartcharter.org

What we can do for your cardiac patients:

- Best diagnostic image quality in every modality, ease-of-use, patient comfort, and product reliability to provide outstanding user experience, diagnostic confidence, and optimal workflow.
- Reduce the examination time dramatically with MR CardioLine+ by automatically detecting the required cardiac planes.
- Improve diagnosis, treatment and planning through hybrid imaging. Using Smart Fusion technology correlate the degree of coronary stenosis on CT with the information from myocardial strain derived from ultrasound in the surrounding myocardial territory.
- Capture the entire heart in a single rotation at the lowest dose using the wide area detector CT in combination with the Deep Learning Reconstruction technique AiCE (Advanced intelligent Clear-IQ Engine).
- Integrate and analyze clinical data from multiple modalities using Vitrea Advanced Visualization applications.
- Convert medical images into 3D printed models allowing patient specific models for a wide range of applications from patient education to planning of complex surgical and catheter-based interventions.
- Fuse supportive imaging data for an optimal guidance in cardiovascular interventions using the Multi-modality roadmap of the Alphenix system.
- Assess complex and advanced disease with severe calcifications and stent placement with ultra- high-resolution of the Aquilion Precision.

Working together to understand your needs and challenges drives valuable outcomes that positively impact you and your patients' future. Our vision and commitment to improving life for all, lies at the heart of everything we do. By partnering to focus on what matters, together we can deliver intelligent, high quality solutions.

With Canon Medical, true innovation is **Made possible.**

Advanced Visualization

Canon Medical makes an important contribution in Cardiac treatment. For more than 30 years, our Vitrea family of software solutions have helped clinicians deliver better care.

Vitrea Advanced Visualization is a modular viewing platform that provides a broad range of functions with the option of adding more functionality when you need it. We offer comprehensive toolsets that supply physicians with information for planning procedures and treating patients.

Vitrea is a multi-modality and multi-vendor solution. Our suite of advanced applications provide full-powered solutions for 2D, 3D and 4D advanced visualization used to process and analyze clinical data from multiple modalities – MRI, CT, CR, DX, RG, RF, US, XA, NM, PET, PET/CT and SPECT.

Vitrea Advanced Visualization is multi-vendor, which leads to consolidating the number of separate applications, and reducing the complexity of managing many independent applications and suppliers.

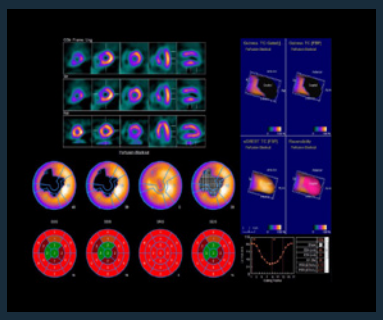
FROM VISIONS 32

"Using the advanced visualization software really enhanced our workflow. All the different items we need to access are pre-segmented and accessible from the first step. Because of the Vitrea software, many post-processing items have become a one-click solution for us."

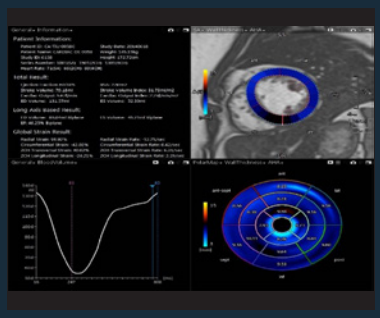
Dr. Stefan M. Niehues
Department of Radiology,
Charité University Hospital, Berlin, Germany

Charité University Hospital

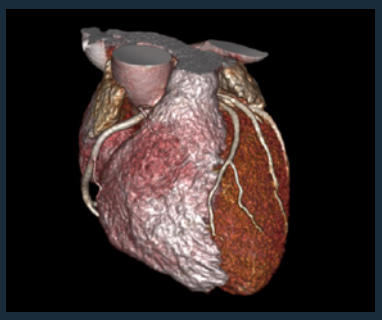
The Charité University Hospital in Berlin, Germany, is one of the largest university clinics in Europe. It has 70,000 employees and more than 7,200 students, and currently deals with more than 140,000 patients per year. Before the Hospital started to work with Canon Medical, its IT environment included large PACS with local post-processing facilities, which required the use of a specific room for examining images. This was quite inconvenient for the staff and made increasing the efficiency and capacity of the department difficult. The Vitrea Advanced Visualization software from Canon Medical enables a huge step forward for their Department.



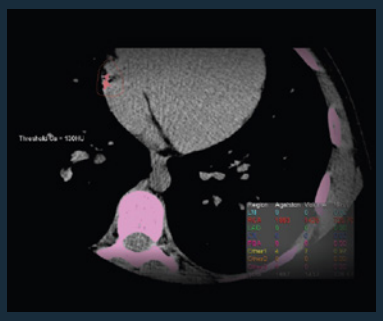
4DM poweredby INVIA



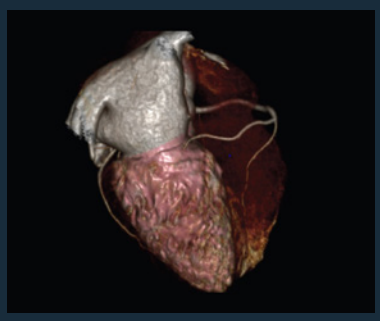
MR Wall Motion Tracking



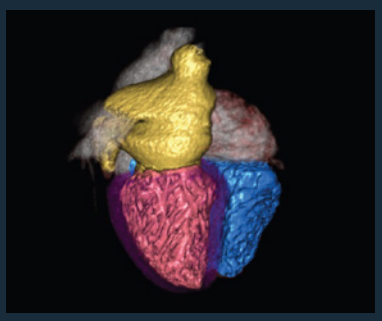
CT Cardiac Analysis



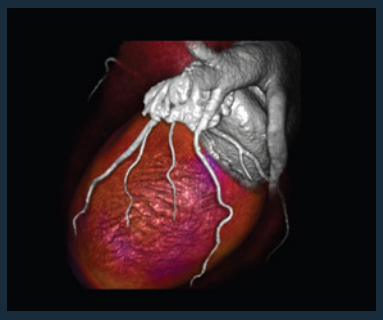
CT VScore



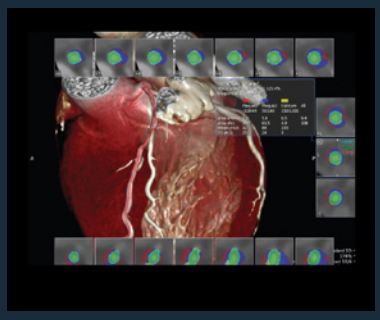
CT Cardiac Functional Analysis (CFA)



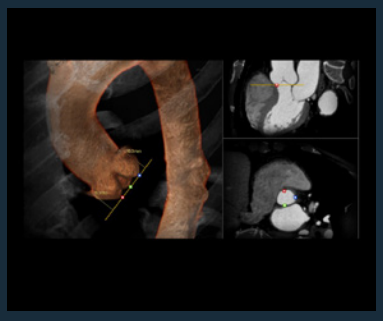
CT Multi-Chamber CFA



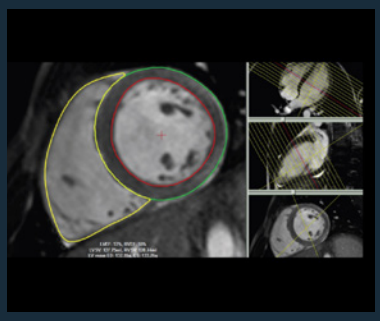
CT Myocardial Perfusion



CT SUREPlaque



CT Transcatheter Aortic Valve Replacement (TAVR) Planning



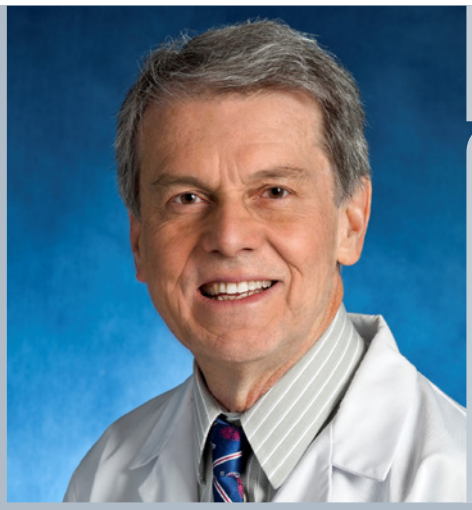
Medis Suite CVMR

Global Illumination

Magnetic Resonance

With Cardiac MRI becoming increasingly important, our systems are unique in the industry in considering all aspects of patient care. Our applications allow a wide range of new imaging capabilities providing comprehensive diagnostic imaging with high spatial and temporal resolution. The systems' open bore and the quiet examination thanks to our proprietary "Pianissimo" acoustic noise-reduction technology provide an improved patient experience.

Systems:
- Vantage Galan 3T
- Vantage Orian
- Vantage Elan



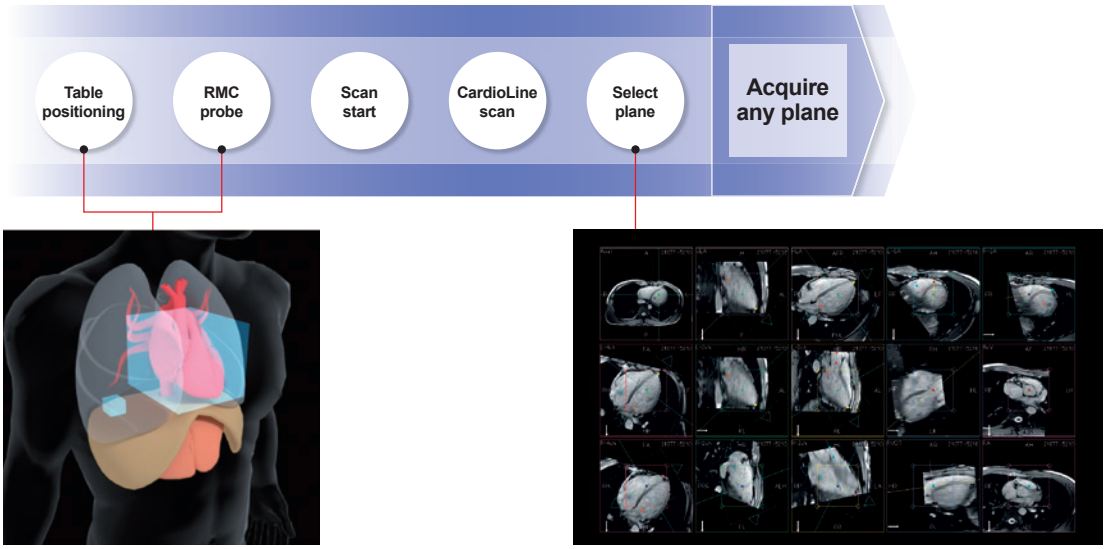
"Artificial Intelligence is a bright future for 3T cardiovascular MRI, and the Vantage Galan is at the edge to that development."

João A.C. Lima, M.B.A., M.D.
Director of Cardiovascular Imaging
Professor of Medicine, Johns Hopkins University, USA

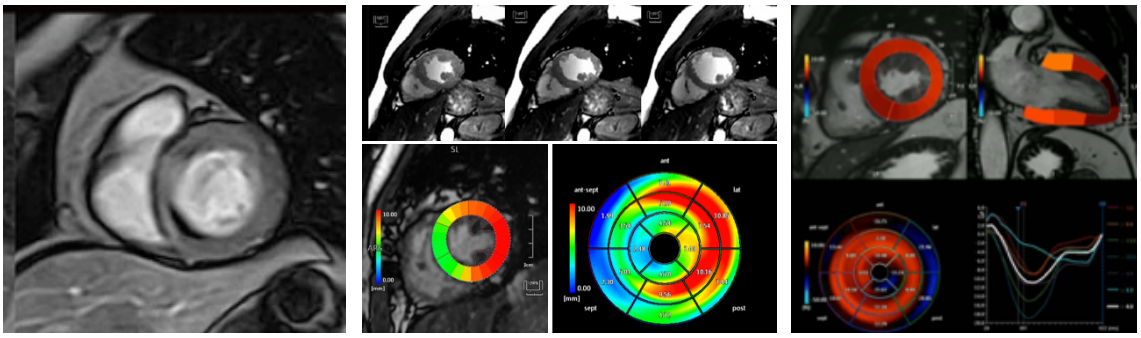
Johns Hopkins University

Johns Hopkins University (JHU) has a unique partnership with Canon Medical to collaborate on cutting-edge medical imaging research. Our Vantage Galan 3T is positioned in the Center for Advanced Imaging and Research Science (CAIRS), located in the brand new Science + Technology Park. In addition, JHU and Canon Medical have a long background in collaborative global multi-center trials such as CORE64 and CORE320.

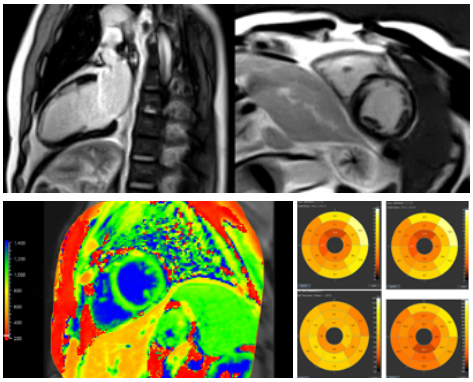
Faster workflow, simplified acquisition and quantitative analysis
Using SUREVOI+ and CardioLine+, automatic detection of heart allows for complete workflow automation from table positioning to fully automated cardiac planning using standardized views. Comprehensive quantitative analysis and reporting is offered through the Medis Post-Processing solutions MR QMass® and QFlow®.



Comprehensive diagnosis
We offer a wide variety of applications, such as cardiac cine, MR perfusion, and delayed enhancement sequences as well as contrast-free, free-breathing MR coronary angiography, free-breathing cine.
A full diagnostic workup is offered, allowing comprehensive evaluation of cardiac anatomy and function. Detailed myocardial tissue characterization using T1 and T2* mapping completes the quantitative approach.



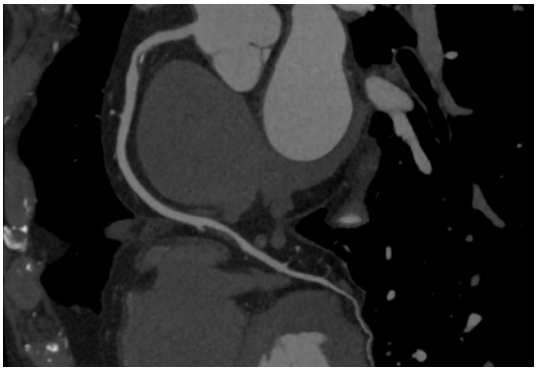
Comprehensive assessment of myocardial ischemia, including quantification of myocardial strain and wall motion parameters.



Deeper myocardial tissue characterization from Late Gadolinium Enhancement (LGE) to T1 mapping.
PSIR (Phase Sensitive Inversion Recovery) provides contrast in late-enhanced imaging by using a more robust nulling of healthy myocardial signal without an inversion time (TI) calibration scan. Accordingly, cardiac examinations can be completed with fewer breath holds and greater patient comfort. Our MOLLI (MOdified Look-Locker Inversion recovery) sequence enables the acquisition of a full T1 map within a single breath hold, providing quantitative assessment.

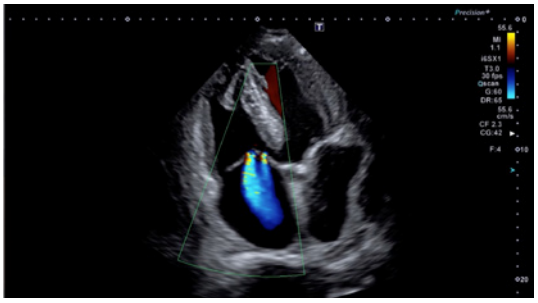
Ultrasound

A broad echocardiography product portfolio provides top image quality in greyscale and Color-Doppler in 2D and 3D, ease-of-use, combined with many workflow enhancements. Based on pioneering developments in speckle tracking in 3D (3D WMT = Wall Motion Tracking) and in 2D, tools for a comprehensive analysis of myocardial function facilitate better and faster diagnostics for functional heart disease. Bringing 3D echocardiography and 3D Cardiac CT together a combined anatomical and functional analysis can be provided in an advanced AI-driven unique approach.

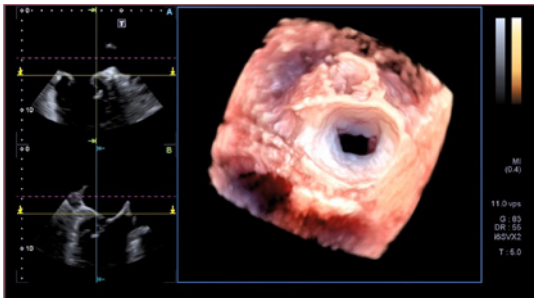


2D Greyscale Imaging: parasternal long axis view

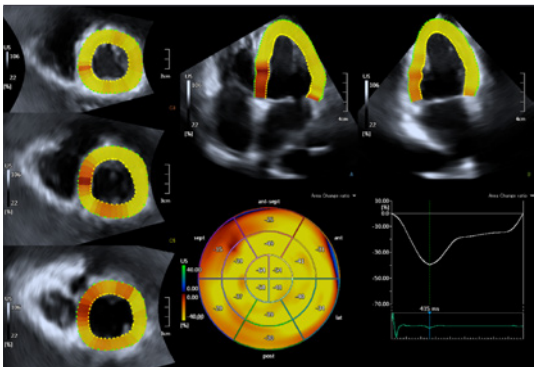
2D Wall Motion Tracking: Segmental Longitudinal Strain of the LV



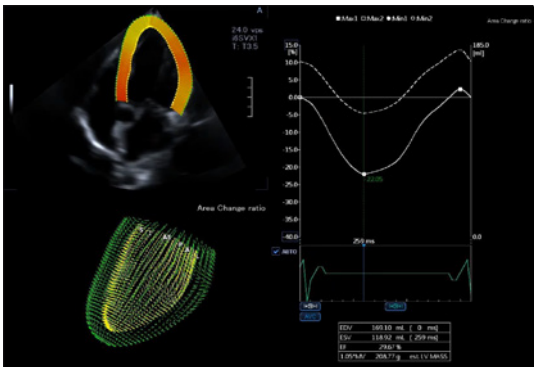
2D-Doppler Imaging: Regurgitant Jets



3D TEE: mitral valve visualized with surface rendering mode



3D WMT: Multiplane and Polar View of LV Rotation



3D WMT: Single Plane Myocardial Contractility and 3D Volume Display of Myocardial Motion Vectors

Products:
- Aplio i-series CV
- Aplio Platinum Series
- Aplio a-series
- Xario g-series
- Viamo c100

"Fusion of the coronary morphology of CT with the cardiac function from Ultrasound is a clear step forward in the diagnosis of cardiac diseases. 3D Wall Motion Tracking (3DWMT) on the Aplio i900 provides true 3D tracking of the cardiac tissue and can detect abnormalities of cardiac mechanics due to pathology such as CHD."

Prof. Jose Luis Zamorano
Chief of Cardiology

Professor of Medicine at the University Alcala de Henares, Madrid, and the Chief of Cardiology at the University Hospital Ramón y Cajal Carretera de Colmenar
He obtained his medical degree from the University Complutense in 1987 and his doctor in Medicine in 1991. He received his board certification in Cardiology in 1993 before joining as an Associate Professor the faculty at the Complutense University. Dr. Zamorano has a broad range of research interests including heart failure, ischemic heart disease, cardiovascular risk factors and cardiovascular imaging modalities. Within these fields, Prof. Zamorano has published over 340 articles in peer-reviewed journals. Currently he is Vice President of the European Society of Cardiology.

Computed Tomography

Volumetric CT allows you to scan patients while maintaining an extremely high success rate, even in unselected patients. Each scan provides incredible motion-free images of the coronary arteries with homogeneous contrast enhancement. Combined with AiCE (Advanced intelligent Clear-IQ Engine), the Deep Learning Reconstruction, unmatched image quality is routinely obtained.

Systems:
- Aquilion Precision
- Aquilion ONE / GENESIS Edition
- Aquilion Prime SP

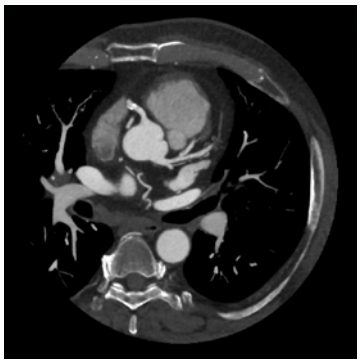
FROM VISIONS 22

"With Canon's unique Volume CT systems we acquire the entire functional heart in one single rotation."

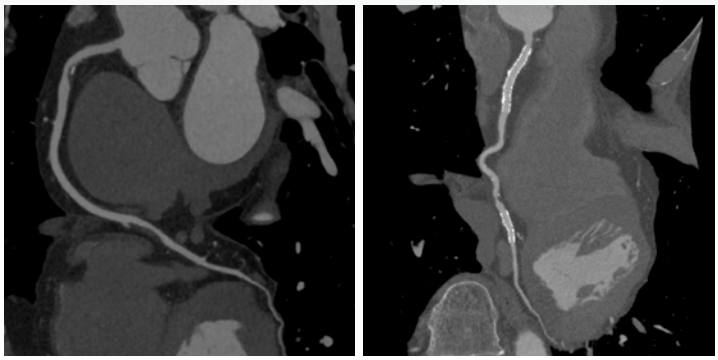
Dr. Klaus Kofoed
Cardiologist,
Rigshospitalet, Copenhagen, Denmark

Rigshospitalet, Copenhagen, Denmark

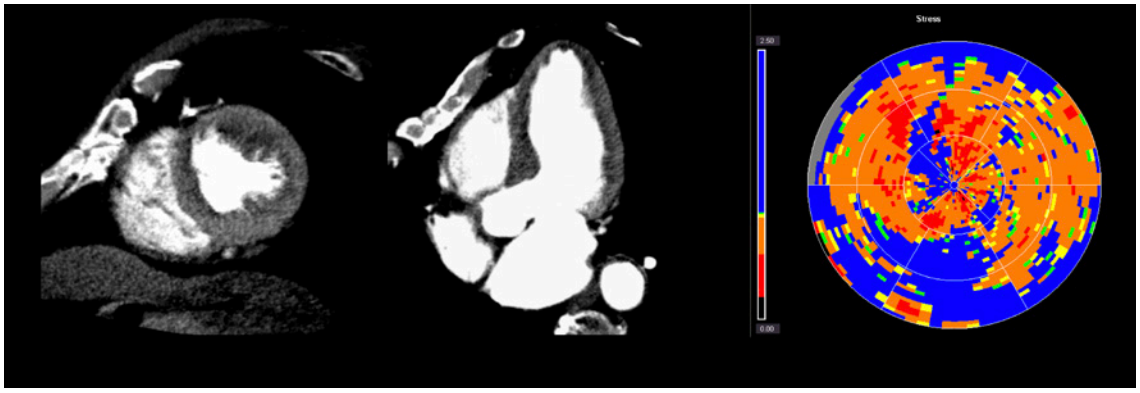
Rigshospitalet is a highly specialised hospital which, with a few exceptions, covers all medical specialist areas. The Cardiology department provides innovative and comprehensive care for patients with complex diseases of the heart, blood vessels, and circulatory system. The Cardiology department is part of an advanced cardiovascular center, equipped with the latest technologies and facilities, and tailored around the needs of cardiovascular research. The areas of expertise make the department a national cardiac referral centre for other hospitals in the eastern part of Denmark on a 24/7 basis.



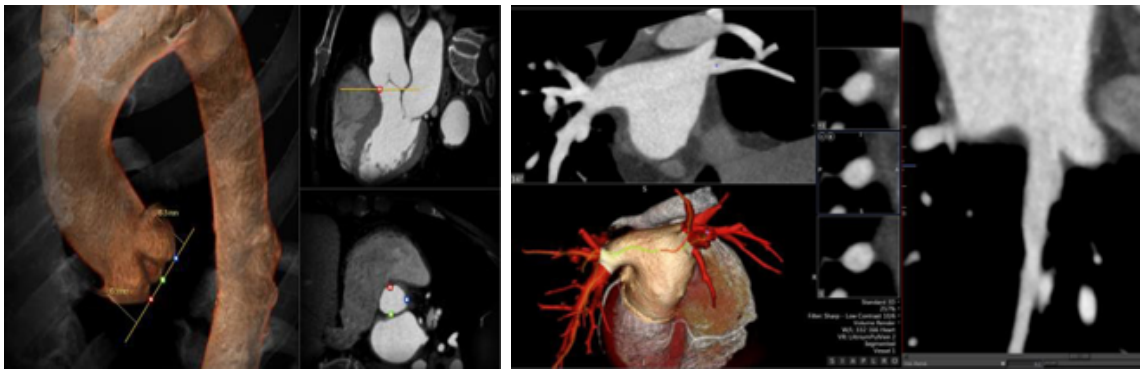
AiCE - Deep Learning Reconstruction
AiCE is a revolutionary approach to CT reconstruction that leverages Deep Learning Neural Networks providing superb image quality, three to five times faster than traditional model based iterative reconstruction techniques.



Ultra-High Resolution CT
Clear visualization inside a coronary stent and detailed plaque delineation with Ultra-High Resolution CT. The Aquilion Precision is the world's first UHRCT capable of resolving anatomy as small as 150 microns, providing CT image quality with resolution typically seen only in cath labs.



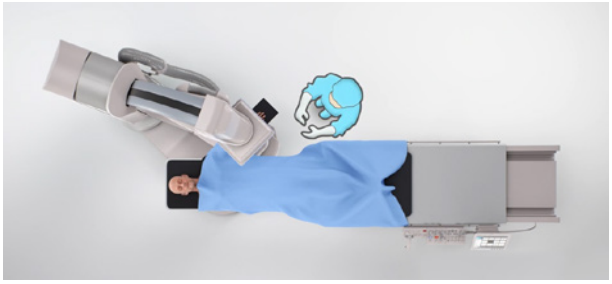
Myocardial Perfusion Imaging
Accurate identification of flow-limiting lesions requiring revascularization using myocardial perfusion imaging. Whole-heart acquisition in a single rotation at ultra-low dose using Aquilion ONE / GENESIS Edition.



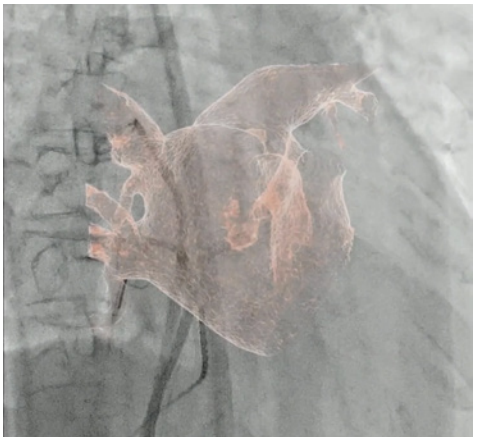
CT Planning
Detailed pre-procedural planning, including applications to guide you through structural heart disease or EP interventions.

Interventional X-Ray

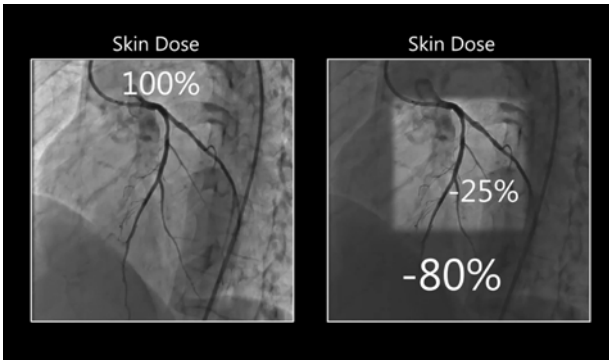
Our interventional systems deliver images with greater clarity and precision, better supporting your decisions and improving patient outcomes. Combined with industry-leading dose optimization technologies, enhanced workflow, and a new set of features, the Alphenix family will provide your patients with safer, faster, and better treatments.



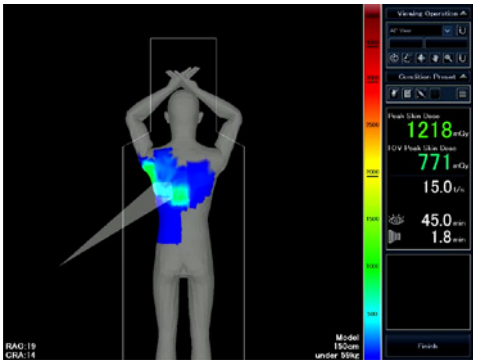
Radial access
Our complete Alphenix family has a unique flexibility in C-arm movement and positioning, allowing you to work in a comfortably position without the need to reposition the table or your patient.



Multi Modality Roadmap
Multi Modality Roadmap enables the overlay of a 3D prepared dataset from 3D Angio, CT or MR on live fluoroscopy in real time to provide additional 3D information of vessel architecture, surrounding anatomy or simple landmarks.



Spot ROI
Spot ROI reduces dose outside the region of interest while still allowing visualization of the surrounding anatomy to aid device placement. Spot Fluoro uses a novel Automatic Brightness Control algorithm which permits asymmetric collimation to dramatically reduce patient dose as well as scatter radiation to clinical staff.



Dose Tracking System (DTS)
DTS estimates dose delivery to the patient's skin in real time and displays it on a color-coded map, allowing the physician to choose a different approach during a long procedure avoiding regions where dose thresholds are almost reached.

Systems:
- Alphenix Sky +
- Alphenix Sky
- Alphenix Biplane
- Alphenix Core +
- Alphenix Dual plane

FROM VISIONS 31

"The Biplane enables both simple and complex interventions to be carried out in clinical practice. With the complicated redesign and installation process almost complete, the hospital has already started to benefit from this state-of-the-art investment. The system clearly improved our technological capacity, provides multiple viewing options and better head access, as well as significantly reducing radiation exposure."

Prof. Dipen Shah
Director of the Cardiac Electrophysiology Unit, University Hospital Geneva (HUG), Geneva, Switzerland.

University Hospital Geneva (HUG)

HUG is the largest university hospital in Switzerland and operates eight hospitals in the Canton of Geneva with in total more than 11.000 employees and currently deals with more than 63.000 patients per year. The HUG leads top-level medical research and actively contributes to progress in medicine through advanced research in medical and healthcare disciplines.

Fysicon

The new modalities for Cardiology

Fysicon: a Canon Medical group company since 2018.
With unique advanced technologies and clinical evidence in the field of hospital IT systems and workflow as the backbone of its business, Fysicon is well-known for developing and manufacturing product families such as cardiovascular monitoring systems and selling them globally. In particular, equipment for reading cardiac waveforms and analyzing cardiac function has been highly evaluated by customers as an advanced product with compact design and intuitive operability. Fysicon's modalities will complement Canon's Cardiac Portfolio

Due to population aging, prevalence of cardiac diseases and abnormalities such as arrhythmia and myocardial infarction that have been increasing recently, are raising the importance of minimal-invasive treatments that minimize patient discomfort. A wide variety of diagnostic systems (such as X-ray angiography systems) are used as frontline support in such treatment.

QMAPP® Hemodynamic Monitoring.
QMAPP is designed, developed and manufactured in the Netherlands
QMAPP is designed to help you make examinations even more efficient, by housing all parameters in a front-end and making operation intuitive in order to make the workflow as optimal as possible.

In addition to monitor all vital functions, it incorporates 32 bipolar channels of intracardiac ECG. QMAPP is perfectly suited for use in hybrid labs, diagnostic and/or (intervention catheterisation labs during cardiac and radiology procedures. QMAPP consists of both hardware and software components.

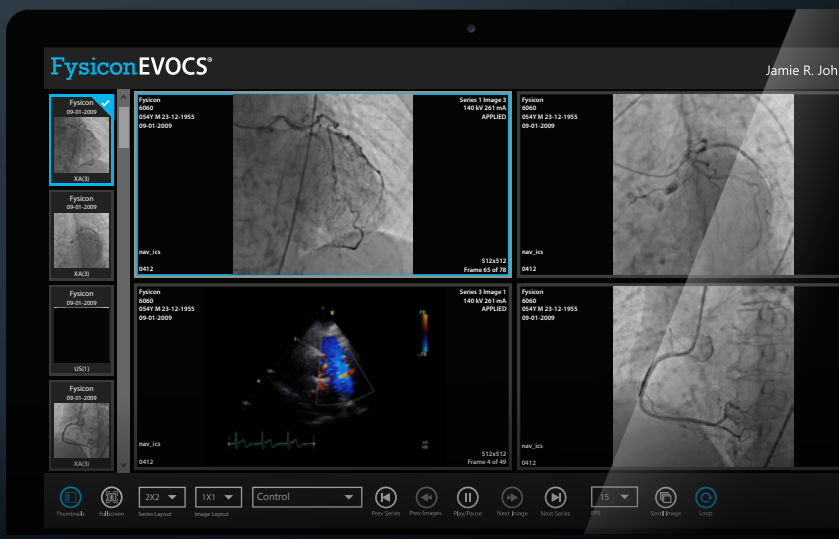
More operational space and freedom of movement
QMAPP does not need forced cooling, making cross-contamination through this system impossible. The design is user-friendly and is connected with one single cable and fixated to the standard DIN rail of the X-ray or operating table, which increases the operational space and freedom of movement at the lab. A QMAPP amplifier is interchangeable, just by disconnecting the cable, without any loss of examination data.

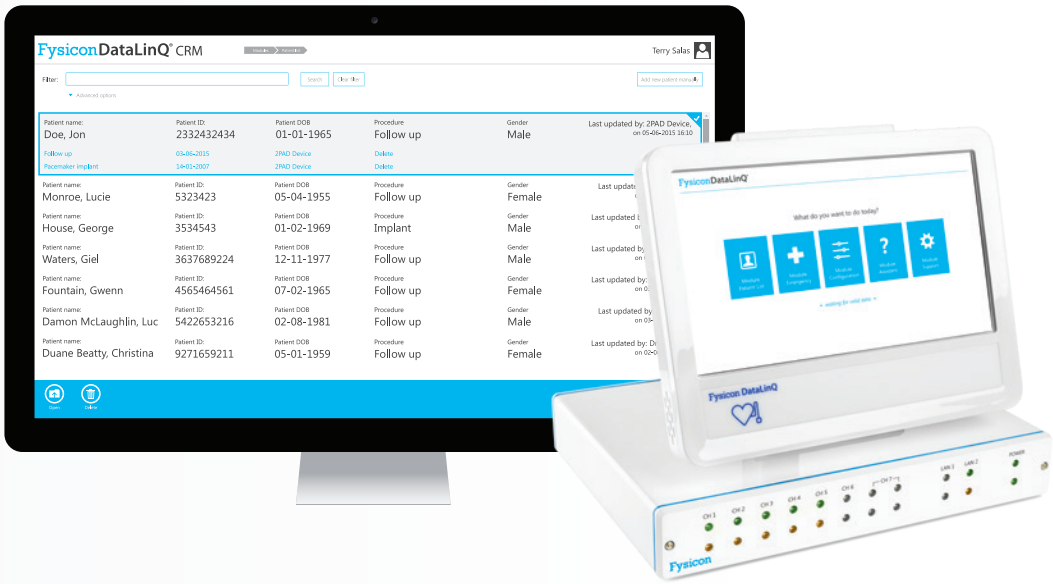
QMAPP and it features
QMAPP is a hemodynamic monitoring system equipped with a relational database, local storage, statistical analysis functions and extensive reporting options. It registers used materials and implants with a barcode reader. It automatically calculates all hemodynamic values you would expect from a hemodynamic monitoring system. Thanks to connectivity – such as a worklist, dosimetry data, export of a report (or parts thereof), storage of the final report in your PACS and, of course in your EMR – You can integrate QMAPP even further into your department's workflow.

QMAPP Reporting Module
The QMAPP Reporting Module makes a stand-alone hemodynamic measuring system "the heart" of a department-wide Clinical Information and Management System. Such a system handles the recording, integration, analysis and reporting of clinical processes. If you are searching for optimal performance and efficiency in your cath lab, you need detailed statistical information, which the QMAPP Reporting Module can provide you instantaneously, so you are able to make the best decision. Various interfaces are available, such as for planning, inventory management, statistics, support of national database(s) and connections to HIS/RIS/EMR, among other things, using standards like HL7 and DICOM.

EVOCS® Medical Image Communication
Solution for safe storage and sharing of medical images and reports between hospitals and health care professionals.

With EVOCS, medical professionals can save, evaluate and report a wide and diverse range of diagnostic information faster and more efficient. Patients can be treated or referred faster as images can be immediately shared with other specialists. EVOCS provides access to patient data from various information sources, such as PACS and the RIS Systems, and integrates these with (DICOM) modalities such as MRI, CAT/CT, DEXA, PET, X-ray, echo and electrocardiography.





DataLinQ® Cardiac Rhythm Management
DataLinQ offers comprehensive and integral management of pacemakers and other cardiac devices in one organised data management system.

DataLinQ offers integral management of pacemakers and other heart devices in an organised data management system. DataLinQ provides structure for all pacemaker, ICD, loop recorder and remote device administration. It integrates a variety of data that comes from the various pacemaker programmers and remote monitoring systems into one powerful and organized database. This is an important improvement in efficiency that saves you time. Time that you can dedicate to those who really need you: your patients.

Canon

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Canon Medical Systems Corporation meets internationally recognized standards for Quality Management System ISO 9001, ISO 13485. Canon Medical Systems Corporation meets the Environmental Management System standard ISO 14001.