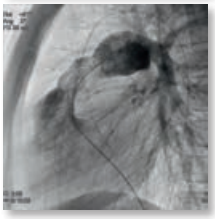

Making the difference with Philips Live Image Guidance

in treating congenital heart disease

PHILIPS

Key benefits

- Confidently reduce X-ray dose by 50% without changing your way of working
- Provide more effective, reproducible treatment with Philips Live Image Guidance
- Enhance precision, predictability, and confidence with advanced pediatric specific tools

Making the difference with Philips Live Image Guidance

As a pediatric cardiologist, your life is committed to bringing new hope to children. As you struggle to understand the complexities of a congenital heart disorder, you need pediatric tools that help you work precisely and effectively, to give your kids a better chance of a long and healthy life.

Together we make the difference in the treatment of congenital heart disease to improve patient outcomes and save lives. With our Live Image Guidance we aim to remove barriers to safer, effective and reproducible treatments, delivering relevant clinical value where it's needed most - at the point of patient treatment.

Intuitive, pediatric specific tools, integrated multi-modality imaging, and patient information are combined in an interventional lab or surgical suite. With access to enhanced live visualization and navigation you can confidently determine the optimal course of treatment with greater precision and predictability to help improve patient outcomes. With AlluraClarity with ClarityIQ you can confidently reduce X-ray dose by 50% without changing your way of working, while other Live Image Guidance tools help minimize contrast-induced complications to pediatric patients.

Crisp visualizations and fewer contrast-induced complications

At the same time, you cannot sacrifice critical image quality or anatomic information that would affect the optimal course of treatment. Our X-ray images, 3D and multimodality Live Image Guidance delivers crisp visualizations of the delicate vasculature of babies and young children. It also provides live image navigation through soft tissue anatomy, while reducing the need for contrast agent. Combined, these pediatric specific tools offer enhanced precision, predictability, and confidence.

Together, we open doors to new procedures and techniques that truly make a difference to the lives of children and their families.

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A relentless drive towards more effective and safer technologies for children

Congenital heart procedures are performed on a relatively small patient population, but they can have a huge impact on the lives of children and their families. As a medical practitioner in this area, you devote many years to training and developing your skills. At Philips, we have also devoted many decades developing innovations that will make a meaningful difference for congenital cardiology procedures. Our technologies are designed to provide children with effective, age-appropriate care that helps protect them from unnecessary contrast medium and dose.

AlluraClarity

The AlluraClarity family of X-ray systems with ClarityIQ technology sets a new standard by pushing the boundaries of ALARA (As Low As Reasonably Achievable) imaging. With AlluraClarity with ClarityIQ you can confidently reduce X-ray dose by 50% without changing your way of working.

Dedicated pediatric solutions

Our pediatrics team is made up of professionals who are profoundly committed to making a difference in the lives of children. They draw upon Philips rich and varied expertise across the care spectrum – from adult cardiology and neurology to CT, MR, critical care informatics, ultrasound, and other clinical fields – to develop new innovations for congenital cardiology. Many of these breakthroughs are based on fundamental technologies we have developed for other areas. The dramatic dose reduction we have achieved with our ClarityIQ technology is in part possible due to the unique capabilities of our MRC X-ray tube.

Dedicate pediatric solutions

Interventional X-ray

Patient critical care informatics

MRI

1900 Introduction of the world's 1st commercial X-ray tube

1952 First commercial X-ray image intensifier

1972 First dedicated neonatal monitor with specialized neonatal ECG and RESP algorithms

1979 First Compact Multiparameter Neonatal Monitor

1980 DoseWise - first integrated approach to radiation dose management for pediatrics

1988 Dedicated Pediatric protocols on MR

1989 MRC X-ray tube and SpectraBeam copper filtration system

2000 Microstream CO2 for true airway respiration on non- intubated neonatal patients

2001 SofTone MR 1st 6 channel coil – combination of Quad Head coil and 5 channel Pediatric mattress

Ultrasound

Ambient Experience

2002
1st dedicated TEE pediatric probe (S7-3t)

2004
Introduction of Allura Xper biplane flat detector system

2005
First Ambient Experience installed in a pediatrics hospital at Advocate Lutheran General Hospital, Illinois, USA

2006
Dedicated EPX settings for pediatrics on Allura Xper X-ray system

1st transthoracic 2D and 3D probe (X7-3)

2007
Introduction of 3DRA pediatric 3DRA

2007
Dedicated 8 channel Pediatric Cardiac coil

2009
Acoustic Hood for noise damping for Achieva

2010
DoseAware-real time dose feedback for physicians and staff

2012
AlluraClarity X-ray system with ClarityIQ technology reduces dose by 50% for pediatrics

2013
Introduction of EPIQ 7 ultrasound system.

Lower barriers for minimally invasive interventions

AlluraClarity – What would you choose for your kids?

Perhaps nowhere are the low dose benefits of AlluraClarity more applicable than in pediatrics. Young patients often need to undergo repeated complex interventional procedures with an accumulation of dosage. Therefore, it is extremely important to work with the lowest dose obtainable.

Two cases from the University Children's Hospital in Zürich, Switzerland demonstrate the AlluraClarity advantage.

Reduced dose balloon angioplasty – case 1

In the case of an 11-month-old female, suffering from univentricular heart syndrome, interventional balloon-dilation of a residual aortic coarctation after Norwood stage II procedure was indicated. Retrograde balloon angioplasty of the coarctation was performed and the gradient eliminated.

As this child may require further intervention in the future, reducing radiation is of critical importance. The total cumulative dose area product (DAP) achieved in this clinical situation was only 1074mGycm^2 with a frame rate of 15 fps. The whole procedure lasted just 60 minutes.

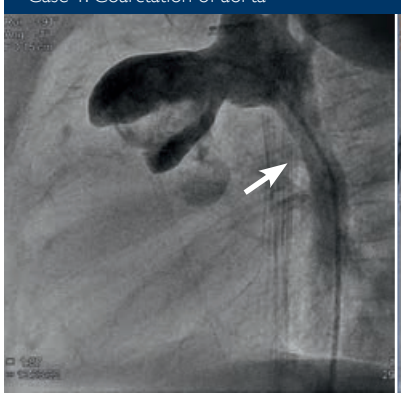
Low dose valve replacement – case 2

In a second case, a 10-year-old boy was suffering from severe pulmonary graft stenosis and moderate insufficiency. During the procedure time of 85 minutes a Melody™ valve was placed into this failing graft while exposing the patient to only 8311mGycm^2 with 15 fps. This intervention replaced a surgical valve replacement to hopefully provide the patient with enough capacity to stay out of the OR for the rest of his childhood.

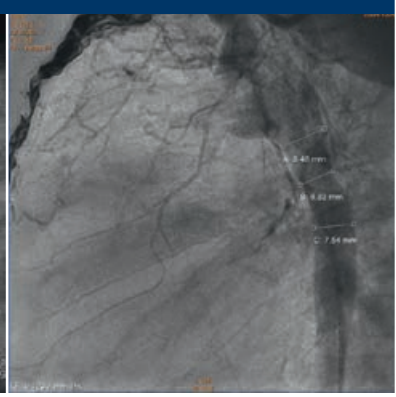
Conclusion and final results

The new AlluraClarity with ClarityIQ technology provides equivalent image quality at 50% less dose. This provides the flexibility to use the system in a personalized way for each procedure and patient.

Case 1: Coarctation of aorta



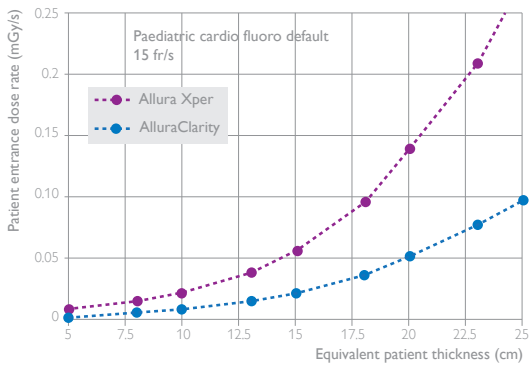
LAO 91 Cranial 1, 15 fps
Field of view: 15 cm
Angiography image demonstrating the coarctation in the aorta (arrow)

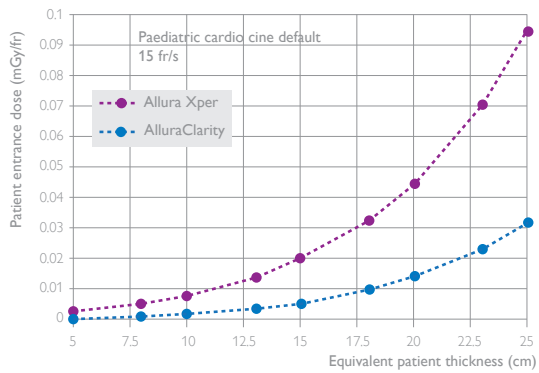


LAO 91 Cranial 1, 15 fps,
Field of view: 15 cm
Result after dilation of the coarctation. The result was satisfying with an aortic diameter at the level of the coarctation of almost 7 mm and insignificant residual systolic pressure gradient (2 mmHg).

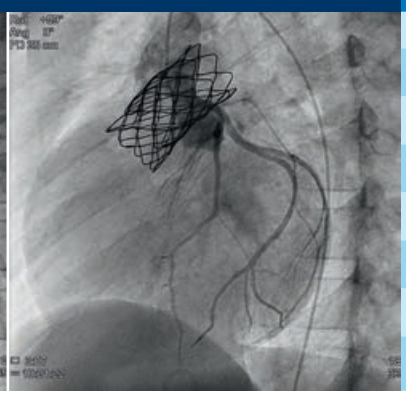
"Especially for pediatric patients it's extremely important to achieve the lowest radiation dosage, conserving at the same time the best required imaging quality, which is necessary to perform safe and successful interventional procedures in this specific patient population."

Prof. Dr. Oliver Kretschmar, University Children's Hospital, Zürich, Switzerland





Case 2: Melody™ valve implantation



Dose report	Case 1	Case 2
Fluoro time [mm:ss]	14:41	12:46
Acquired exposure runs [N]	18	10
Exposure images [N]	3150	1034
Cumulative Frontal Air Kerma [mGy]	36	13
Cumulative Lateral Air Kerma [mGy]	36	8
Cumulative DAP (fluoro) [mGycm^2]	2924	780
Cumulative DAP (exposure) [mGycm^2]	5387	294
Total Cumulative DAP [mGycm^2]	**8311**	**1074**

LAO 91 Cranial 0, 15 fps
Field of view: 25 cm
Angiogram demonstrating the stenosis within the pulmonary valve. Measurements revealed a minimal diameter of 12-13mm measured in the mid 1/3 of the graft, and a distal diameter of 18-20mm just before the pulmonary bifurcation.

LAO 91 Cranial 0, 15 fps
Field of view: 25 cm
A final exposure run was made to exclude any compression of the left coronary artery using a selective injection. The images demonstrate patent left coronary artery.

Take advantage of industry-leading image quality at a fraction of the X-ray dose, with ClarityIQ technology

AlluraClarity with ClarityIQ technology

As Philips most powerful interventional X-ray system to-date, AlluraClarity delivers relevant clinical value where it's needed most – at the point of patient treatment. Clinicians benefit from high-definition, clear visualization of even the smallest vessels.

Complex procedures can be performed with accuracy and confidence using the new AlluraClarity family of X-ray systems.

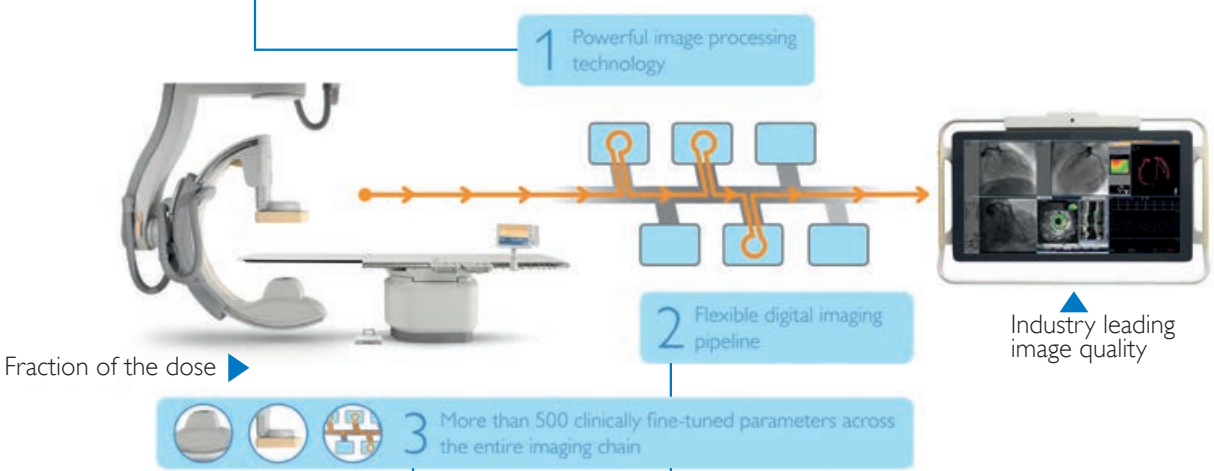
Dramatic results

In a landmark comparative study* conducted at Radboud University Hospital, Nijmegen, the Netherlands, ClarityIQ images acquired using 50% less dose were of excellent diagnostic quality for all patients.

* XCY607-130009 Clinical study end report ClarityIQ Nijmegen V1.pdf

1. Powerful image processing technology
ClarityIQ technology incorporates powerful state-of-the-art image processing technology, developed by Philips Research, all working in real-time enabled by the latest computing technology:

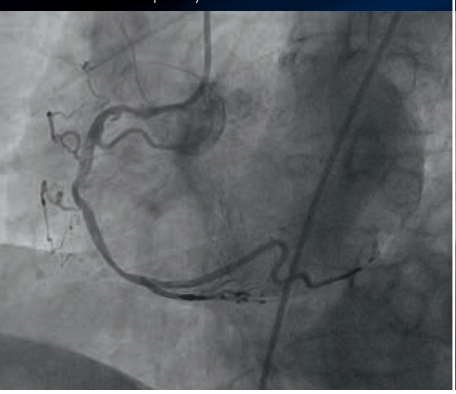
- Noise and artefact reduction, also on moving structures and objects;
- Image enhancement and edge sharpening;
- Automatic real-time patient and accidental table motion correction on live images.



2. Flexible digital imaging pipeline
ClarityIQ technology utilizes a flexible digital imaging pipeline from tube to display that is tailored for each and every application area such as Cardio or Neuro. This gives the flexibility to select virtually unlimited application-specific configurations and obtain superb images at a fraction of the X-ray dose for every intervention.

3. Clinically fine-tuned parameters across the entire imaging chain
With ClarityIQ technology over 500 system parameters are fine-tuned for each application area; the result of years of Philips clinical leadership. It is now possible to filter out more X-ray radiation, use smaller focal spot sizes, shorter pulses, thereby fully utilising the unique capabilities of the Philips MRC X-ray tube.

Allura Xper system



AlluraClarity system

"With ClarityIQ we are able to get images at corresponding quality but with at least a 50% reduction of radiation dose."

T.J.F. ten Cate, MD, PhD, UMC Radboud, Nijmegen, The Netherlands

"The images are of the same high quality as we were used to before. We are so enthusiastic about the results that we are now acquiring images with reduced dose."

Drs. H. Gehlman, Interventional Cardiologist, Radboud University Hospital

In the study, conducted between September and November 2012, diagnostic angiography images of the left coronary artery of 40 patients were monitored. The dose reduction recorded decreased the likelihood of sporadic effects of radiation for the cath lab personnel, while exposing the patient to considerable lower levels as well.

"DoseAware is one of the most important new tools available to help reduce occupational medical radiation exposure to physicians and staff. It's a much easier and practical way to monitor levels than conventional methods. Creating a better work environment is not only the right thing to do but our obligation."

J. Kiah, MS, RN Lab Manager, Director Cardiac and Vascular Services, Baptist Cardiac & Vascular Institute, Miami, USA

Pushing the Boundaries of ALARA

Next to AlluraClarity IQ technology, other dose reduction technologies assist in the management of radiation exposure. They include:

DoseWise

DoseWise is at the heart of our dose reduction efforts. It' s a set of techniques, programs, and practices that ensures optimal mage quality while protecting people in X-ray environments. It is based on the ALARÁ (As Low As Reasonably Achievable) principle. With every new system, we look at how we can incorporate better shielding and improve our X-ray exposure parameters to further reduce dose. That means before you even put on a lead æron, Philips has done their utmost to protect you and your patients from unnecessary dose.

Philips DoseAware* family

Philips DoseAware family offers immediate feedback on dose to increase radiation awareness and help manage occupational medical radiation exposure to physicians and staff. It provides real-time dose feedback in the examination room to track an individual's radiation exposure during each shift, as well as procedure-based data for deeper insight into staff exposure trends and behavior.

DoseAware Xtend – dedicated room solution

DoseAware Xtend is a dedicated solution for rooms with Philips FlexVision XL display. Its integration with the Allura X-ray system allows it to provide detailed feedback on scattered X-ray dose levels per procedure.

* DoseAware does not replace the thermo-luminescent dosimeter (TLD) as a legal dosimeter.

Increases radiation awareness

- Identifies the cumulative amount of X-ray dose received right after each procedure
- Reminds clinicians to take secondary lead precautions
- Sends weekly or monthly reports automatically on procedure-based staff dose to help identify individual exposure trends
- Sends procedural data on X-ray dose in DICOM RDSR format to PACS or RIS to simplify data analysis

DoseAware – flexible solution for different rooms

DoseAware can be used in any X-ray room to provide real-time feedback on scattered X-ray exposure so staff can immediately adjust their working habits to manage radiation exposure.

Advantages of a real-time dosimeter

- Provide the information necessary to manage individual X-ray dose exposure
- Show when and where X-ray dose was acquired to allow for appropriate action
- Check exposure level on the colored display in the examination room
- Archive, report, and analyze radiation data to maintain high levels of occupational safety

Smart Beam

With Smart Beam, as the name suggests, the dose is reduced by taking a more intelligent approach to the use of X-rays. To this end, the Allura family uses special SpectraBeam filters in fluoro and exposures to remove unwanted 'soft' radiation, i.e. those X-rays that hit the patient but do not have enough energy to reach the image detector.

The soft radiation is replaced by higher energy radiation, which significantly improves image quality. Alternatively, it is possible to 'trade off' some of this improved quality to further reduce dose.

Greater insight and confidence in finding and treating the problem

Enhanced 3D visualization and navigation techniques help determine the optimal course of treatment with greater precision. This is critical in pediatrics, as the variety in patient anatomy and congenital heart defects can be significant. The ability to capture and reuse 3D data as a means to reduce the need for additional contrast and X-ray during a procedure is important.

Three innovative interventional tools in the Allura family of X-ray systems can help. They may be used alone, or in a combined multimodality solution. In the skilled hands of an interventionalist, these tools may assist in:

- Improve confidence/efficacy of the intervention
- Reduce overall radiation exposure
- Reduce contrast dose
- Reduce procedure time

Three-dimensional rotational angiography (3D-RA)

3DRA provides fast, high-resolution 3D images of the cardiac anatomy from any angulation and rotation. It helps visualize complex vascular anomalies to facilitate decision making for treatment strategies. Rather than multiple 2D views, which require multiple contrast injections, a 3DRA provides a complete 3D overview of the anatomy with a single injection. The 3D image can be inspected in any view, even those that cannot be reached with regular 2D projections.

Examples of congenital cardiology applications where 3D-RA can be useful:

- Diagnosis of the branch pulmonary artery – 3D-RA facilitates a detailed visualization of the pulmonary vasculature and the anastomosis that may reveal a narrowing not seen in 2D
- Planning of Melody valve implantation – 3DRA gives a better visualization of potential compression of coronary arteries and the location/distance between the Melody valve and the coronary arteries
- Treatment decision of aortic coarctation – 3DRA provides insight into the complex spatial relationship between the aortic arc and its branching vessels, assisting in the decision between surgical repair or intervention

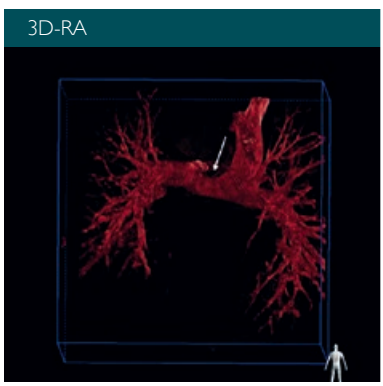
3D Roadmap

This tool facilitates complex interventions by providing live 3D image guidance for navigating vascular structures anywhere in the body.

Dynamic 3D roadmap overlays real-time 2D fluoroscopy images and a 3D reconstruction of the vessel tree acquired with the 3D-RA feature of the AlluraClarity family of X-ray systems. It improves visualization of anatomical structures and device navigation and reduces the need for additional contrast agent during navigation of devices.

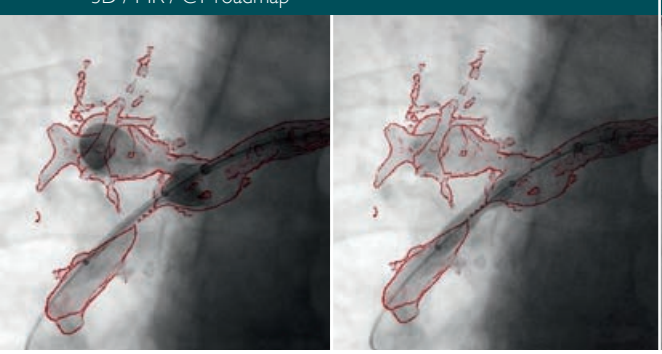
MR/CT Roadmap

Imaging from a previously acquired MR or CT scan can be reused and overlaid by fluoroscopy to guide procedures. MR/CT Roadmap lets clinicians follow the advance of guide wires and catheters real-time, thereby reducing X-ray dose and contrast medium during interventions. Both 3D Roadmap and MR/CT Roadmap automatically adjusts the 3D images to gantry changes and any lateral or longitudinal table movements. For even better visualization, it offers enlarged full-screen mode and 4x digital zoom.



3D-RA reconstruction of the pulmonary arteries.

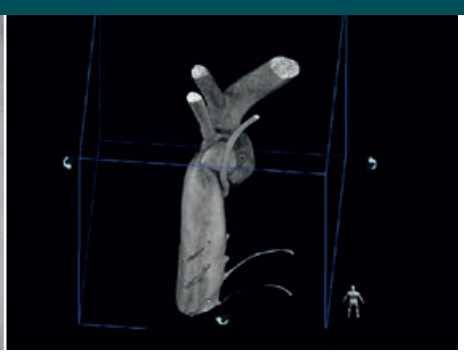
3D / MR / CT roadmap



Live overlay on 3D/MR/CT roadmap improves visualization of anatomical structures and device navigation by re-using preoperative CT or MR angiographic images.

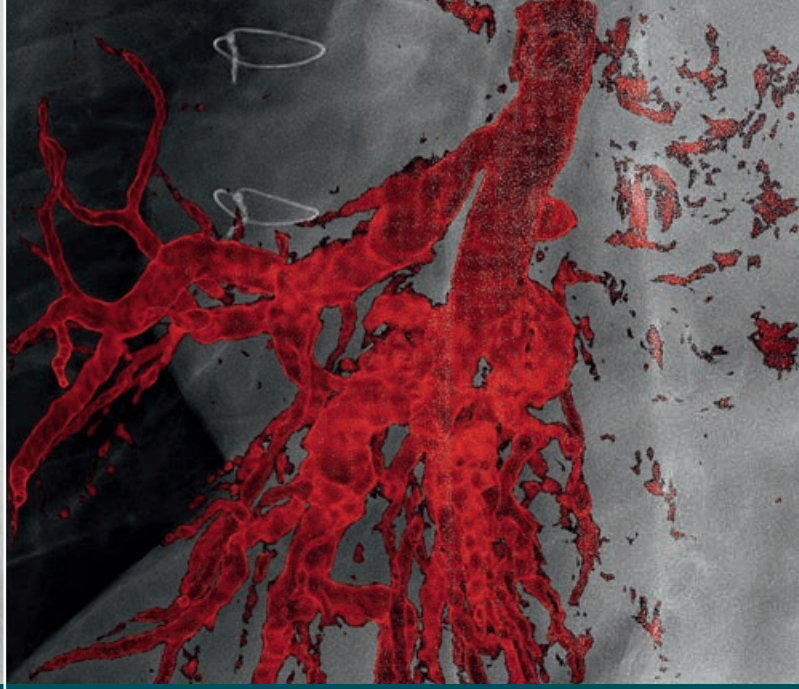
3D-RA: Improved Procedural Planning

A single rotational scan provides input for the 3D-RA reconstruction.

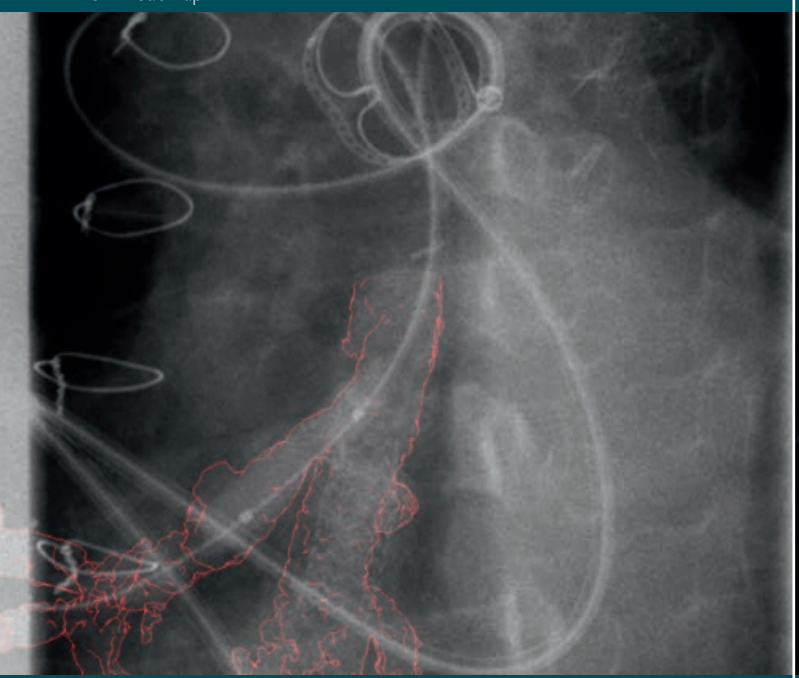


3D-RA reconstruction of the aortic arc, allowing you to plan the optimal treatment.

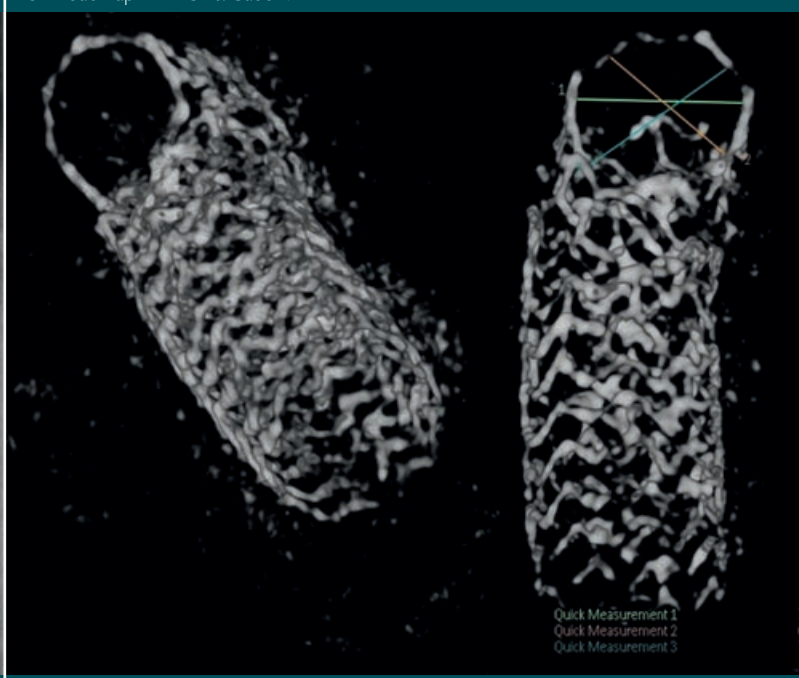
3D Roadmap in AP



3D roadmap in LAO40/Caud27



3D Roadmap: balloon inflation of sidebranch



3D RA of stent after ballooning side branch.

3D Roadmap in AP: overlap at bifurcation, inadequate for intervention
The ostium of the side branch is not clearly visible in the Allura 3D-RA in AP position because of overlapping vessels.

3D Roadmap in LAO40/Caud27: clear view on bifurcation
The bifurcation is clearly visible in the Allura 3D-RA in 40 LAO/27 Caudal position.

3D Roadmap: balloon inflation of sidebranch
The 3D Roadmap image shows the balloon inflated in the side branch.

3D RA of stent after ballooning side branch
A post-procedural Allura 3D-RA shows the stent struts open in the side branch to enable adequate blood flow.

"I have found that the 3D-RA tool is very beneficial for my pediatric patients to efficiently manage radiation dose, contrast dye, and procedure time."

Dr. Seong-Ho Kim, Chairman,
Department of Pediatrics

3D-RA and 3D roadmap case study: Treatment of pulmonary artery stenosis

Catheter based treatment of a complex pulmonary artery stenosis requires in-depth understanding of the location and dimension of the stenosis. Using standard angiograms, requires several X-ray acquisitions to make a complete evaluation. Dr. Seong-Ho Kim, chairman of the department of pediatrics at the Sejong General Hospital, Korea used 3D-RA and 3D roadmap during treatment of a pediatric patient with a stenotic side branch of the right pulmonary artery.

Patient

A 13 year-old male patient weighing 43 kg was brought to the cath lab for a pulmonary artery stenosis intervention. A side branch of the RPA is stenosed, due to a right pulmonary artery (RPA) stenting procedure in 2013. This patient was born with a ventricular septal defect (VSD) and major aorto-pulmonary collateral arteries (MAPCA). A Rastelli procedure was performed in 2002 to reconstruct the outflow from the right ventricle to the pulmonary arteries (PA). Several procedures followed in subsequent years: a reconstruction of the RPA, dilatation and stenting of the left pulmonary artery (LPA), and dilatation and stenting of the RPA.

Selection of projection angle

Allura 3D-RA was used to provide a better visualization of the bifurcation, which helped the physician to plan the treatment strategy and therapeutic approach. This data set was reconstructed into a 3D volume rendering. The 3D volume provided a detailed visualization of the pulmonary vasculature and bifurcation from any angulation and rotation, allowing the physician to select the projection which would allow him to precisely treat the lesion of interest. The AP projection showed overlapping vessels at the bifurcation which obscured visibility of the ostium of the side branch of the RPA. The projection was changed to 40 LAO and 27 Caudal, which provided a clear view of the bifurcation.

Balloon dilatation

The 3D volume was then overlaid on live fluoroscopy, providing a 3D Roadmap. This Roadmap was used to navigate the guidewire to the correct position and deploy the balloon, without the need to use additional contrast. After dilatation of the side branch, a second 3D-RA was done to check the dilatation result.

Method and materials used

An Allura 3D-RA acquisition was made on the AlluraClarity FD10/10 biplane X-ray system. The acquisition protocol was: a 4 sec, 240 degree (120 LAO/120 RAO) rotational angiogram at 30 frames/sec using a 25 cm field of view. A total contrast volume of 60 cc (2/3 contrast and 1/3 saline) was injected at 12 cc/s with an injection delay of 1 sec before acquisition. The contrast was diluted 2/3 contrast to 1/3 saline which resulted in an actual contrast load of 40 cc.

Conclusion

The view of the stenosis in the bifurcation of the RPA was obscured in the AP view. Without using Allura 3D-RA, the physician would have had to acquire several additional 2D angiograms to get a clear view of the lesion. The projection angle to navigate the guidewire to the correct side branch was selected based on the 3D-RA model. Only one 3D-RA was required to get a detailed visualization of the bifurcation and to select the precise projection angle for treatment, thereby saving X-ray dose, contrast medium, and time. After balloon deployment in the side branch, a second 3D-RA reconstruction clearly showed the stent struts open at the side branch enabling adequate blood flow.

Intuitively combining live X-ray and echo guidance for Structural Heart Disease repair

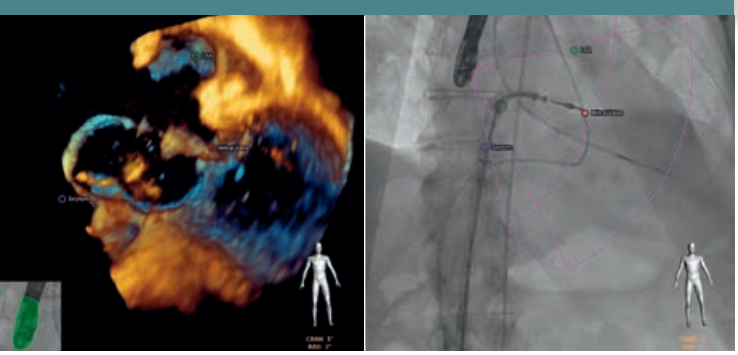
Work with clinical confidence by having access to superb quality images, unique live 3D imaging capabilities and innovative imaging solutions. This will support you in planning, visualization and Live Image Guidance of even the most challenging procedures.

EchoNavigator

Increasing numbers of patients with structural heart disease (SHD) can be treated with catheter-based techniques. One of the main challenges is visualization; Live 3D transesophageal echocardiography (TEE) imaging provides critical insights into soft tissue anatomy, and function and flow information. At the same time, X-ray is invaluable for visualizing devices. Both images, however, are represented separately in a different orientation and so valuable time is spent mentally aligning them.

Key benefits

- Intuitively combines live 3D TEE echocardiography and fluoroscopic images. Brings TEE echocardiography and fluoroscopic images together, in real-time.
- Understand where you are in the 3D space more quickly.
- Anatomical landmarks in Echo are overlaid on X-ray for guidance of devices.
- Directly controllable at tableside, which facilitates communication with the echo operator.
- Promotes teamwork within the heart team in the lab.



> "We're integrating two separate medical images and bringing them together in a way that makes performance of these interventions more straight-forward."
>
> Professor John Carroll, MD, Interventional Cardiologist, University of Colorado, Denver

EchoNavigator tackles this issue head-on by intuitively bringing live 3D TEE and fluoroscopic images together, in real-time, for a quick understanding of the 3D space. Images from both modalities are automatically aligned by tracking the TEE transducer position and orientation in the X-ray image. As a result, relevant soft tissue anatomy can by visualized in the X-ray. Markers placed on the soft tissue structures within the echo image, automatically appear on the X-ray for context and guidance. This provides clear targets for catheter navigation. The interventional operator can directly control the EchoNavigator at tableside, which facilitates communication with the echo operator. All of this is designed to simplify navigation, device placement and promotes communication within the heart team during structural heart disease procedures.

Training

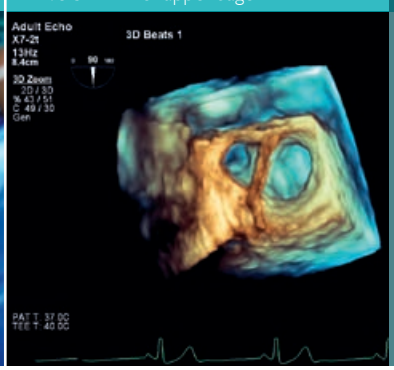
Our Peer to Peer training programs offer an interactive program on site with experienced users. These training programs provide in depth details on how to use the technology in clinical practice, and provide you with the confidence to implement these advanced imaging functionalities in your daily routine and to take your expertise to the next level. We also provide excellent training of Live 3D TEE and EchoNavigator to help develop a rapid and thorough understanding of these breakthrough SHD treatments.

"The beauty of good imaging is that you don't have to imagine too much"

Professor J Zamorano, Head of Cardiology, University Hospital Ramon y Cajal, Madrid

Philips EPIQ 7 ultrasound system

Live 3D TEE of appendage



3D zoomed appendage and pulmonary vein.

- Live 3D transesophageal echocardiography allows the viewing of mitral valves, aortic valves, inter atrial septum, the left atrial appendage and all chambers of the heart with unique perspectives.
- Philips Live 3D TEE provides real-time 3D and live xPlane views. These tools provide many beating-heart views that were previously seen only during cardiac surgery.
- Live 3D TEE features prominently in recent professional society recommendations regarding echocardiography in trans-catheter interventions. (EAE/ASE* Recommendations for the Use of Echocardiography in New Transcatheter Interventions for Valvular Heart Disease.)

* Journal of the American Society of Echocardiography Volume 24, Issue 9, September 2011, Pages 937–965 EAE/ASE Recommendations for the Use of Echocardiography in New Transcatheter Interventions for Valvular Heart Disease • Jose L. Zamorano et al.

A new era in premium cardiovascular ultrasound

The Philips EPIQ 7 ultrasound system incorporates our most powerful architecture ever applied to ultrasound imaging – touching all aspects of acoustic acquisition and processing. Supported by our family of proprietary xMATRIX transducers and our leading-edge Anatomical Intelligence, this platform offers you accurate diagnosis, first-time right, which is faster and easier to perform than before. You get improved clinical information from each scan and a higher level of confidence. The EPIQ 7 supports the live 3D TEE for children above 20kg, as well as the minimultiplane TEE for infants above 3.5 kg.

EPIQ 7: Designed to reinvent the user experience

Better user experience to promote consistency and efficiency

Biplane versatility helps reveal hidden pathologies

Congenital heart defects can be hard to predict and visualize, requiring quite extreme and exotic projections to visualize each child's unique anatomy. Achieve the challenging projection views you require with Philips Allura's unique lateral double C-arm. It can make steep cranial/caudal projections to reveal hidden pathologies or missing anatomical structures. It allows, for instance, a four chamber view of the atrial septum. Two views are created with a single contrast injection. By combining a 20 x 20 cm lateral with a 30 x 40 cm frontal, you get full flexibility for imaging infants, young children, and adults without panning to support a broad range of patients.

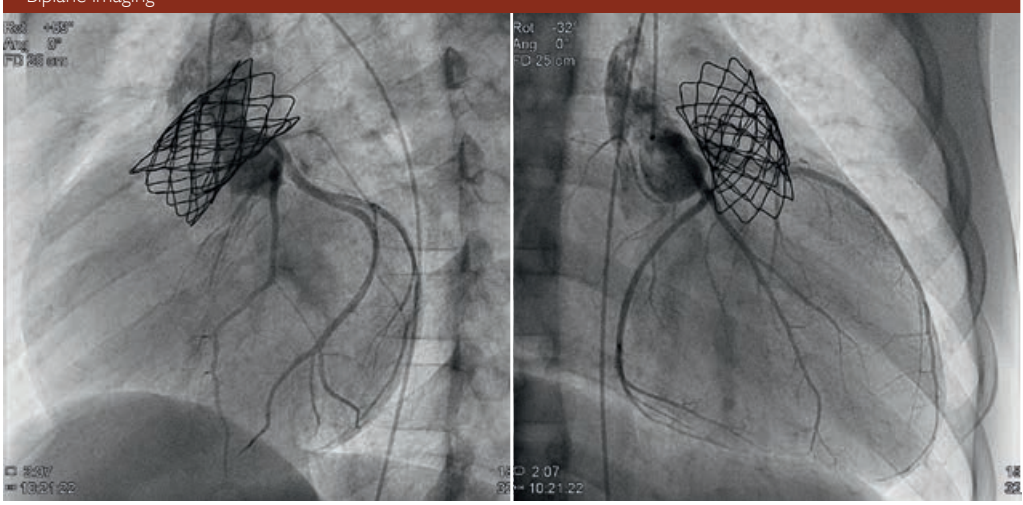
The frontal and lateral C-arms can be independently positioned, allowing full patient access for the heart team. There is plenty of space at the head side for the anesthesiologist and echocardiologist without interfering with the rest of the team. The FD10/10 and FD20/10 biplane systems have a very small footprint to allow maximal floor clearance.

Hybrid Suite

The interventional and surgical environments are rapidly evolving as interventional treatment and surgery converge in hybrid procedures. Interventions are performed for increasingly complex diseases, while surgical procedures are becoming less invasive. Patient populations are also becoming broader as more children with congenital heart disease survive into adult life. In addition, the availability of new devices expands the number of treatment options.

With the Hybrid Suite from Philips, a full range of procedures can be performed in a single room, virtually without compromise. Several key innovations support the heart team in carrying out long and often complex congenital heart procedures with a high degree of comfort and confidence. Using the unique FlexMove or FlexMove XL, the ceiling mounted C-arm can be easily moved as required anywhere around the table – and then conveniently parked out of the way during open surgery. This gives the team room to work close to the patient and frees up the head area so the anesthesiologist/echocardiologist can work with greater ease.

Biplane imaging



Biplane visualizations can provide a more complete picture of the situation. For instance, on the frontal plane in this case, the branch of the left pulmonary artery (left image) appears to fill completely. However, the lateral image (right) shows that only the posterior segment is filling.

"In the hybrid room you feel completely relaxed. You know every time you can switch from open surgery to catheter-based, or from catheter-based to open surgery. So you feel great."

Prof. Dr. M. Lachat MD, Vascular Surgeon, Zürich University Hospital, Zürich, Switzerland

MAQUET MAGNUS operating table

MAQUET MAGNUS operating table

The Allura systems are the only biplanes that can be seamlessly integrated with the best-in-class MAQUET surgical table for a truly multifunctional room suitable for conventional surgery, hybrid surgery, or interventions. The two are completely synchronized and benefit from automatic position control (APC), bolus chase procedures, and 3D software tools. The table can be outfitted with a radio translucent tabletop for endovascular and hybrid procedures, or a modular tabletop for open surgery.

Tabletops can be easily exchanged using the transporter, allowing smooth transfer of patients between procedures.

"Children who are nervous when they arrive are mesmerized by the pleasant environment, which often allows examinations to be completed more quickly."

Jojanneke de Leeuw, radiology technician,
Jeroen Bosch Hospital, 's-Hertogenbosch, The Netherlands

The Ambient Experience Interventional Suite

For the patient

Personalizing the environment allows the patient to become a partner in their procedure

A treatment environment that puts children at ease

Let's face it, a child is generally unhappy at being in a hospital. They can feel apprehensive, nervous and in some cases plain scared. Especially when they have to undergo several procedures over a longer period. You want to make them feel more at ease, but that's difficult to do when the surroundings look, sound and smell so different from home.

High patient anxiety can have consequences for the medical team. This can also have consequences for the medical team. Clinical staff can become frustrated because examinations take longer and throughput decreases. It also affects motivation when efforts to reassure and relax patients are in vain.

With Ambient Experience we can create a purposefully designed healthcare environment (including technology, spatial design and workflow), addressing these issues. You create the conditions in which children feel more at ease, clinicians are able to work more effectively and which can change the community perception.

For the staff

Clinicians benefit from advanced Ambient Experience features that increase efficiency and improve working comfort

For the patient

Dynamic lighting produces a soft, pleasant effect. With Ambient Experience children can select a theme from the touchscreen. Immediately the dynamic Ambient Lighting produces a warm welcoming atmosphere in the room. Walls appear to fade away. Thematic video with sound provide a positive distraction that helps the child to relax. This calming atmosphere enhances interaction between the child and staff.

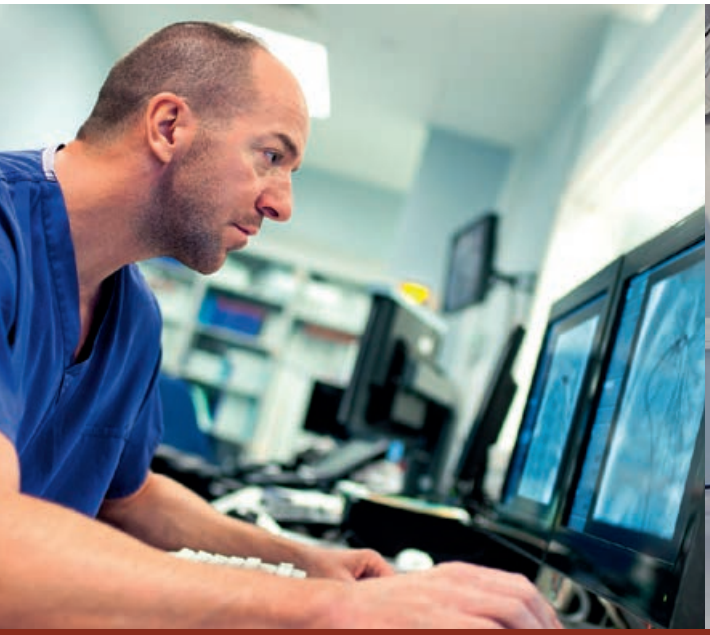
For your staff

Architectural enhancements optimize room design. In true collaborative fashion, we work with your in-house team to effectively reduce clutter, recess the cabinetry, and improve the lighting. Open, stress-free surroundings provide your staff with an unique interventional environment. With the support of our global organization, we help you create a welcoming and effective environment that will revolutionize the way medical procedures are performed.

Demonstrating value

The Ambient Experience Interventional Suite can differentiate you from other healthcare facilities. This flagship service can enhance the image of your hospital in the eyes of all stakeholders. It supports better communication with the patient, and can provide a more efficient working environment with the potential to impact staff morale, retention, and recruitment. Ambient Experience demonstrates your dedication to people focused healthcare.

Ambient Experience is a purposely designed healthcare environment. With a refreshingly creative eye, Ambient Experience integrates technology, spatial design, and workflow improvements to create a more comfortable, stress-reducing environment for both patients and staff.



Streamlining workflow for complex congenital procedures

When working to save a child's life, a medical team wants to focus fully on what needs to be done. Philips offers many flexible ways to enhance workflow and help reduce distractions and clutter in the cath lab or hybrid environment. These solutions contribute to a well-organized, smooth running procedure.

Everything you need to see

A pediatric cardiology suite performs a large variety of procedures, each requiring their own types of images and information. The FlexVision XL monitor allows for easy viewing and magnification of any image in the lab – from X-rays to pre-acquired patient CT and MR scans – at tableside.

This large, high-definition eight-megapixel LCD screen layout can be adapted on the fly to physician preferences and examination requirements – per procedure type or case. Information from several multi-modality imaging sources is integrated into one view. This allows the entire team to understand and share information during each step of the procedure.

The SuperZoom feature clearly brings small aspects of anatomy and data into focus without sacrificing resolution. With this feature, the screen can be placed further from the table, thereby freeing up space.

Zoom in on fluoroscopy images without increasing dose

Pediatric structures can be small and difficult to visualize. Our Dual Fluoro option allows you to also magnify live fluoroscopic images two times without increasing radiation dose. The zoomed fluoroscopy images are displayed on the live monitor. This feature can be used on both frontal and lateral fluoroscopy images.

Physiomonitoring

Philips Xper Flex Cardio, a small hemodynamic system, seamlessly integrates with the Allura portfolio. It optimizes workflow and improves the productivity in the lab through easy exchange of data. Xper Flex Cardio also provides advanced ECG analysis in the cath lab with ST mapping and STEMI-CA.

Relevant information at hand

In this flexible, fully integrated environment, Philips cardiology informatics, tools and real-time information are all within reach, making it easy to carry out all aspects of procedures.

Managing cardiology information throughout the care process

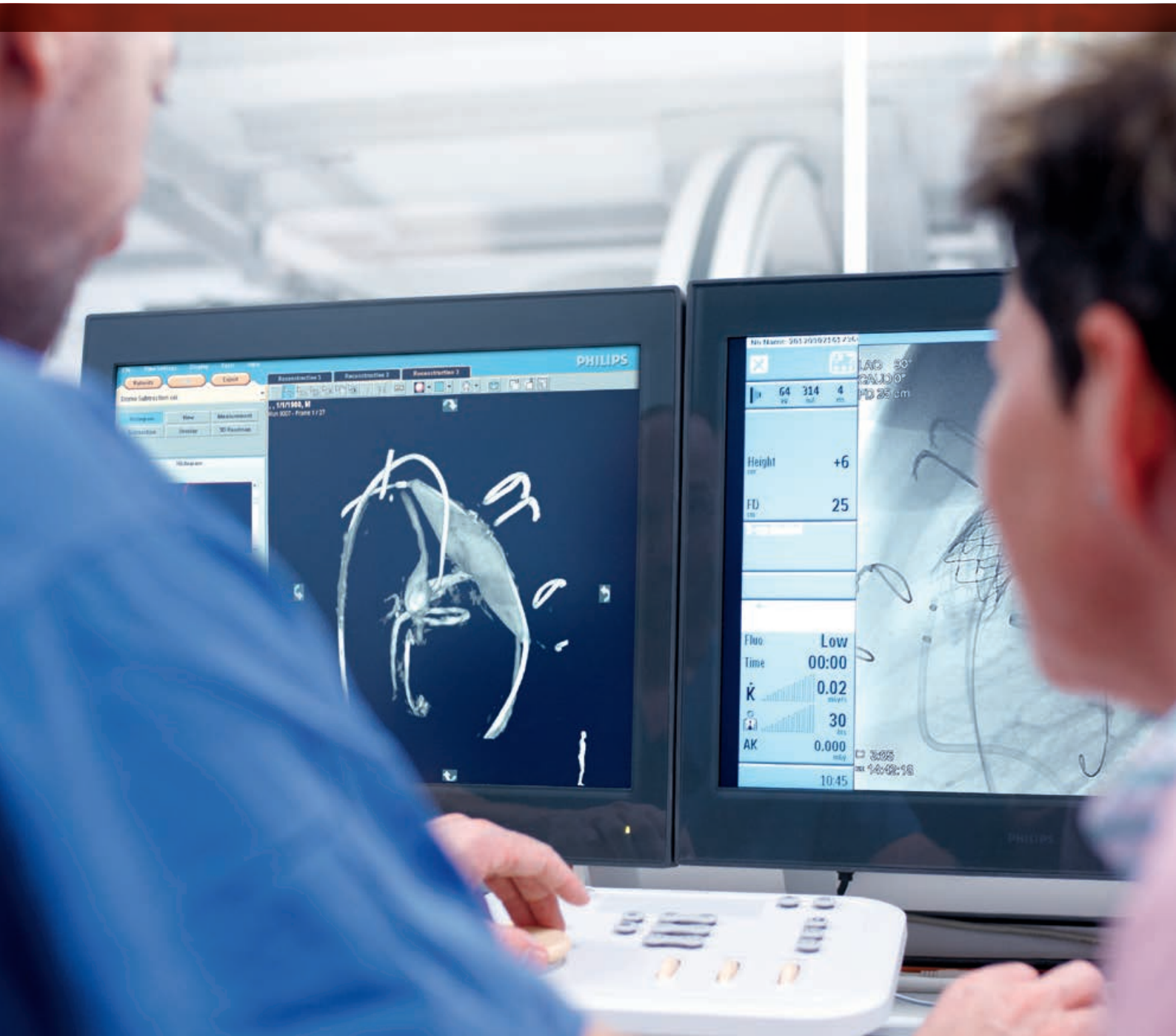
Philips CVIS (Cardiovascular Information Management System) is a unique software solution that enhances the clinical and financial performance of the cardiology department. It unifies silos of discrete cardiac information collected at the point of care into a single powerful database. This cardiac database is searchable and actionable to support clinical, qualitative, and business analysis and reporting needs.

Multi-modality image management

Xcelera cardiology PACS or the enterprise-wide IntelliSpace PACS solutions can handle image management, clinical analysis, and reporting. IntelliSpace is a powerful tool for advanced image review and analysis. It offers the flexibility to diagnose and collaborate virtually anywhere. In addition, iSite PACS integrates into existing infrastructure, enabling all departments to realize a return on investment at each stage of deployment.

Cath lab workflow solution

Xper IM and Xper Flex Cardio feature intuitive innovations that create a more efficient workflow in the cath lab department, including direct access to acquired images, physiomonitoring, scheduling, inventory management reporting, and statistics.



Increased economic value

Philips is committed to working closely together with customers. The purchase of a new interventional suite and interventional tools demonstrates a long-term commitment to patients and personnel. We offer a comprehensive portfolio of service options, training programs for staff and deliver financing options to help optimize the economic value across the total life-cycle of the systems.

RightFit Service agreements

From premium service plans to standard service support, there is a RightFit Service Agreement to suit every need. The perfect mix of on-demand support, immediate parts and service, and comprehensive business solutions helps hospitals deliver quality patient care.

Exceptional support is a priority

The Philips global service network is ready to assist when necessary. Field engineers, remote service technicians, and front line call-agents support all systems with a world-class services network. The goal: help customers succeed in every phase of system ownership, from planning to start-up, through peak usage and renewal.

A Remote Services option provides advanced system troubleshooting that helps lessen downtime even further. Equipment remains reliable through remote system diagnoses and fast repair.

Education and training

Regular training is critical to help the medical staff to better master clinical procedures, get more out of the equipment, and build professional and clinical skills. Better-trained staff improves the overall level of service and operation.

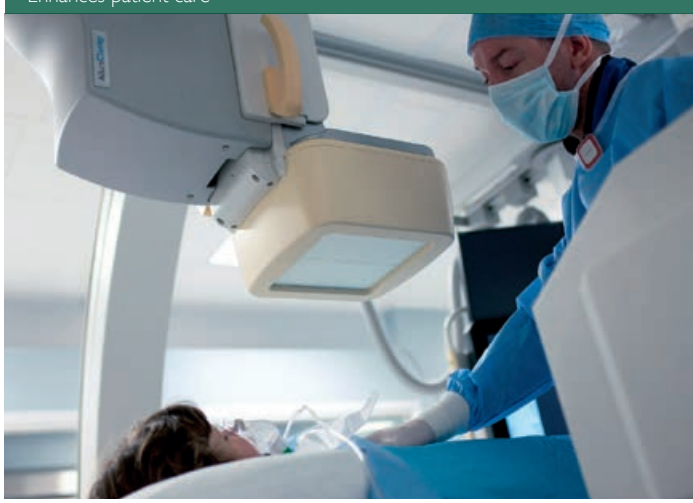
As an example, Philips has established Peer-to-Peer training programs for physicians interested in learning about EchoNavigator. Participants visit peers in the hospital, who are expert in the clinical use of EchoNavigator, and receive a comprehensive two-day program combining class room tutorials, hands-on training. They work closely with these experienced users during real cases.

More knowledgeable personnel have a higher chance of obtaining accurate results.

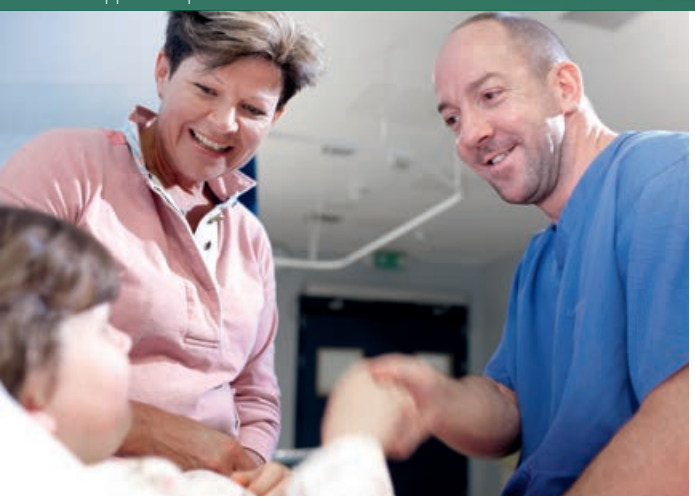
Financial options are plenty

Philips Medical Capital makes it surprisingly easy to arrange financing to address capital budget requirements, manage increasing patient volume and achieve clinical superiority. Philips ProPlus combines equipment, service, and financing in one simple offering to help:

Enhances patient care



Appeals to patients and staff



- Stretch capital budget and enhance monthly cash flow
- Lock-in equipment and service costs for up to five years
- Avoid unexpected equipment or maintenance costs
- Simplify financial management and reduce administrative burdens
- Get the equipment necessary to deliver a high level of quality care
- Enhance organization's reputation and profit potential

Our Live Image Guidance solutions stand at the forefront of interventional care. For planning, diagnosis, and therapy, they support the skills of clinical professionals like you.

Making the difference where it really matters.

www.philips.com/congenitalheartdisease

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