PHILIPS

Ultrasound

EPIQ 7

The **evolution** of
premium cardiovascular ultrasound

Philips EPIQ 7 ultrasound system

The new **challenges**
in global healthcare

Unprecedented advances in premium ultrasound performance can help address the strains on overburdened hospitals and healthcare systems, which are continually being challenged to provide a higher quality of care cost–effectively. The goal is quick and accurate diagnosis the first time and in less time.

Premium ultrasound users today demand improved clinical information from each scan, and faster and more consistent exams that are easier to perform and allow for a high level of confidence, even for technically difficult patients.

The **evolution** of premium cardiovascular ultrasound

It's our most powerful architecture ever applied to ultrasound imaging – touching all aspects of acoustic acquisition and processing, allowing you to truly experience ultrasound's evolution to a more definitive modality. Supported by our family of proprietary xMATRIX transducers and our leading-edge Anatomical Intelligence, this platform offers our highest level of premium performance.

Key trends in global ultrasound

- There is a continued search for affordable healthcare solutions in order to deliver more for less with high-quality patient care.

- Echocardiography is the imaging mode of choice and exam volumes continue to increase every year.

- With echocardiography gaining prominence as a point-of-care tool (such as in the emergency department), increasing numbers of patients are being referred to cardiologists for further investigation.

Performance
More confidence in your diagnoses even for your most difficult cases

EPIQ 7 is the new direction for premium ultrasound, featuring an exceptional level of clinical performance to meet the challenges of today's most demanding practices.

Creating **new realities**,
redefining clinical expectations

*n*SIGHT Imaging goes beyond conventional ultrasound performance for new levels of definition and clarity.

Philips *n*SIGHT Imaging is a totally new approach

The Philips proprietary *n*SIGHT Imaging architecture introduces a totally new approach to forming ultrasound images. Unlike conventional systems that form the image line by line, *n*SIGHT creates images with superb resolution down to the pixel level.

Extraordinary architecture

*n*SIGHT Imaging incorporates a custom multi-stage precision beamformer along with massive parallel processing. This proprietary architecture captures an enormous amount of acoustic data from each transmit operation and performs digital beam reconstruction along with mathematically optimized focal processing to create real-time images with exceptional resolution and uniformity.

Frame rate

Conventional	***n*SIGHT Imaging**
Users must choose between frame rate and image quality	More than doubles the frame rate without impact to image quality

*n*SIGHT Imaging

creates superbly focused images with fewer transmit operations so you can experience both highly detailed ultrasound images and extraordinary temporal resolution.

Uniformity

Conventional	***n*SIGHT Imaging**
Best resolution is limited to transmit focal zone	Corrects focus during beam reconstruction for superb uniformity

*n*SIGHT Imaging

achieves superb uniformity through coherent beam reconstruction algorithms that apply mathematical focal correction coefficients continually at all depths of the image.

Penetration

Conventional	***n*SIGHT Imaging**
Penetration limitations and poor sensitivity to weak signals	Superb penetration across full range of frequencies

*n*SIGHT Imaging

architecture's ultra-wide dynamic range and unique beam reconstruction reinforces weak tissue signals allowing enhanced penetration at higher frequencies even on difficult patients.

Image quality: the numbers tell the story

Comparing EPIQ 7 to conventional premium systems shows breakthrough advances in imaging performance.*

- Up to 30% increase in penetration
  (penetration = ability to scan at depths and maintain resolution in order to complete the study)

- Up to 15% increase in axial resolution
  (increased resolution throughout the depth of image) all while maintaining frame rates

* 2013 quantitative engineering study comparing Philips iE33 ultrasound system with EPIQ 7. Dependant upon transducer, application, and TSI.

# Maximize
extreme clinical capabilities

Philips pioneered advanced technologies such as xMATRIX and PureWave. The revolutionary *n*SIGHT architecture of EPIQ 7 makes xMATRIX and PureWave even more powerful.

xMATRIX is our most leading-edge, versatile ultrasound transducer technology

No other premium ultrasound system can run the complete suite of the world's most innovative ultrasound transducers. With the touch of a button, xMATRIX offers all modes in a single transducer: 2D, M-mode, color Doppler, Doppler, iRotate, Live xPlane, Live 3D, Live 3D Zoom, and Live 3D Full Volume.

***n*SIGHT Imaging makes powerful xMATRIX technology even more so**

Use Live xPlane imaging to create two full-resolution planes simultaneously, allowing you to capture twice as much clinical information in the same amount of time. Acquire near isovoxel resolution to reveal images from any plane within the volume. Now it's all possible.

2D and Live 3D image clarity with the X5-1 and X7-2 transducers.
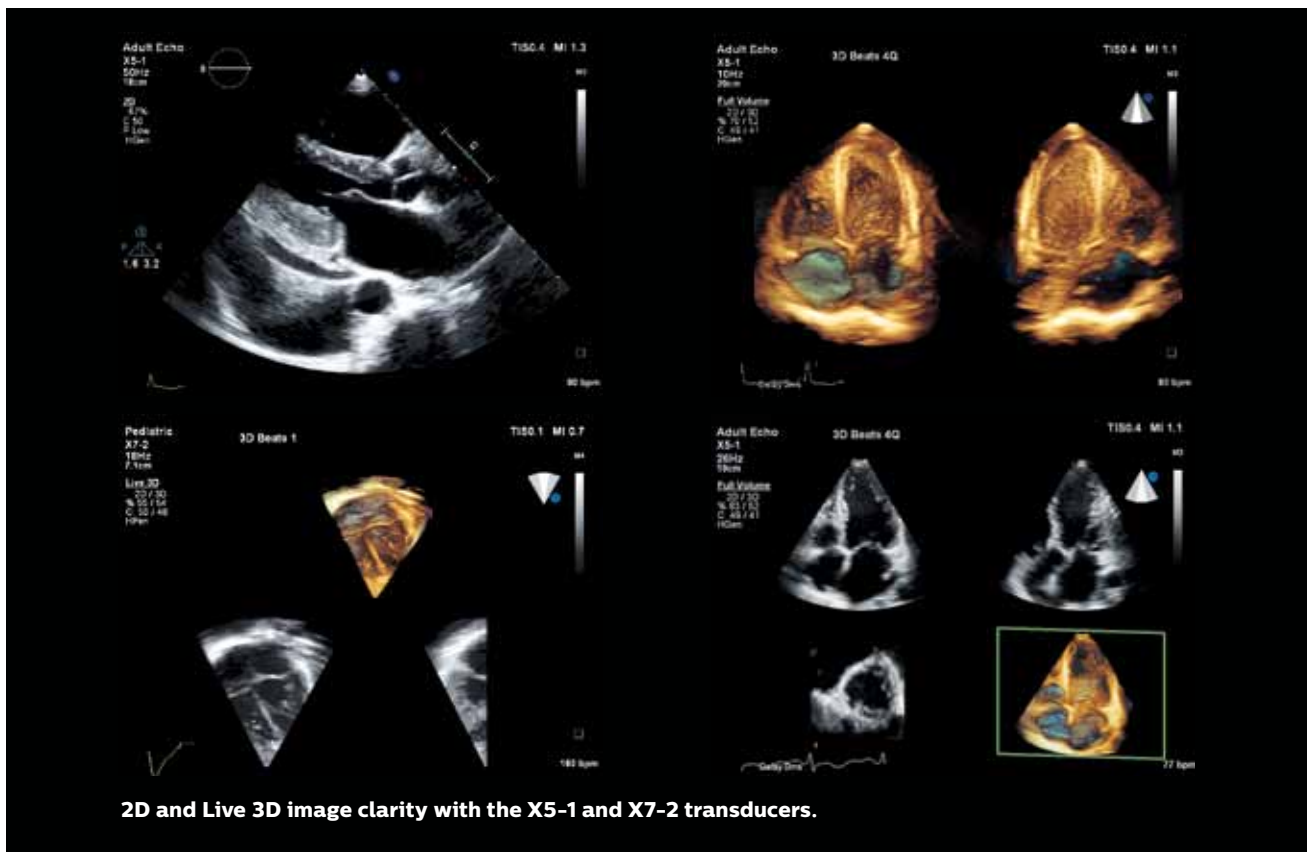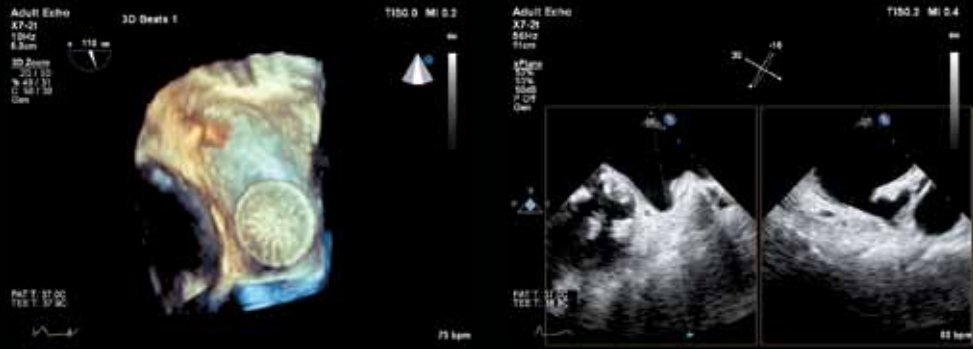
Leading-edge xMATRIX transducers for cardiology also include X7-2t for TEE applications.

nSIGHT Imaging strengthens the power of PureWave to image technically difficult patients

PureWave crystal technology represents the biggest breakthrough in piezoelectric transducer material in 40 years. The pure, uniform crystals of PureWave are 85% more efficient than conventional piezoelectric material, resulting in exceptional performance. This technology allows for improved penetration in difficult patients with a single transducer for excellent detailed resolution. All xMATRIX transducers incorporate PureWave technology.

PureWave offers the solution when imaging technically difficult patients in a wider range of applications on a cardiology platform, such as the PureWave C5-1 and C9-2 for difficult-to-image abdominal and fetal echo patients.

C5-1

C9-2

Additional PureWave transducer solutions for abdominal and fetal echo.

Designed to **reinvent** the user experience

EPIQ 7 has completely reinvented the premium ultrasound user experience. Ease of use, workflow, ergonomics, portability – we've revolutionized how you interact with an ultrasound system from every standpoint, and kept it beautifully intuitive.

More than 80% of sonographers experience work-related pain, and more than 20% of these suffer a career-ending injury.[1] The EPIQ tablet-like interface results in dramatic reduction in reach and button pushes, with 80% less reach and 15% fewer steps.*

Amazingly portable

At just 104 kg (230 lb), EPIQ 7 is lightest in its class and 40% lighter than the heaviest competitive premium system. Easily transport EPIQ 7 on both carpet and tile floors. Place it in sleep mode, move it, and boot up in seconds. The monitor folds down to reduce overall system height for transport, and the integrated cable hooks and catch tray are ideal for portable studies. Wireless DICOM further aids workflow.[†]

Advanced workflow

The design of the platform features "walk-up usability," meaning that users can perform an exam with minimal training.[2] The system offers the automation to drive efficiency throughout exams with features such as Real Time iSCAN (AutoSCAN), which automatically optimizes gain and TGC continuously to provide excellent images in 2D, 3D, or 4D.

Tablet-like touch interface allows quick navigation to system functions with 80% less reach and 15% fewer steps to complete an exam.

Library quiet

EPIQ 7 is almost silent when running. A noise test determined that EPIQ 7 runs at 37–41 dB, which is equivalent to the sound of a library. This is extremely welcome in small scanning/examination rooms.

Scanning comfort

Multiple degrees of articulation for both the control panel and 54.6 cm (21.5 in) LCD monitor with 720° of freedom allows for ergonomic alignment for scanning comfort, whether sitting or standing.

SmartExam

SmartExam decreases exam time by 30–50%, keystrokes by as many as 300 per exam, and results in a high level of consistency among users.[3] It is fast and easy to customize, providing consistent annotation, automatic mode switching, and missed view alerts to streamline exams.

SmartExam also drives the automation within Q-Apps, reducing the number of steps to perform more complex analysis to a ZeroClick status. The result is more time to focus on your patients, increased confidence in complete studies, less focus on requirements, less repetitive motion, less stress, and improved schedule maintenance and department efficiencies.

Auto Doppler for vascular imaging

Auto Doppler takes time-consuming color box positioning and sample volume placement from ten steps to three steps and reduces the number of repetitive button pushes by an average of 68%.[4]

Active native data

Active native data allows for post-processing of many exam parameters as well as providing the best format for Q-Apps quantification.

Set-up Wizard

Set-up Wizard allows users to step up to the system, easily establish user configurations, and get running quickly.

Easy viewing and efficient use even in darker scanning environments with a large 54.6 cm (21.5 in) wide screen and ambient lighting that provides subtle visual cues for the keyboard, OEMS, and transducer ports. Four transducer ports decrease the amount of plug/unplugging required during a day of scanning.

EPIQ 7 makes it easy to be green

25%
less power

EPIQ 7 is one of the greenest systems we have ever designed. It consumes 25% less power than our legacy premium ultrasound.

[1] Society of Diagnostic Medical Sonography, Industry Standards for the Prevention of Musculoskeletal Disorders in Sonography, May 2003.
[2] External user study where all users had over 90% success (gold standard in usability on their set tasks with no training on EPIQ, Jan 2013.
[3] University of Colorado, Protocols Study, Apr. 2007.
[4] Auto Doppler Clinical Study, Dec. 2011.
[*] Engineering study comparing Philips iE33 ultrasound system with EPIQ 7.
[†] Check for availability in your geography.

Intelligence
turning images into answers

EPIQ 7 is our most intelligent premium ultrasound system ever, offering a complete set of easy-to-use quantitative tools to turn reproducible data into information to guide treatment.

Anatomical Intelligence is the heart of EPIQ 7

More data is available than ever before, requiring tools for you to simplify and quicken the process of acquiring reproducible data and turning it into valuable information for your patients.

At the heart of the powerful EPIQ 7 architecture is our Philips exclusive Anatomical Intelligence Ultrasound (AIUS), designed to elevate the ultrasound system from a passive to an actively adaptive device. With automatic anatomy recognition, protocols for automatic functionality, and proven quantification, exams are easier to perform, more reproducible, and deliver new levels of clinical information.

Using built-in models to drive exam simplification

With AIUS, libraries of organ model data gathered across many modalities create a platform where information from a single exam can be tailored to a patient-specific organ model or Region of Interest that yields useful information in less time, with less training, and with less complexity.

Sophisticated modeling adapts certain atlas shapes to a patient's individual organ using feature data collected over hundreds of patients with various conditions. AIUS ranges from automating repetitive steps to full-blown computer-driven analysis with minimal user interaction — all using anatomic intelligence and all providing the results you need. In fact, many of our tools come with ZeroClick technology,* which means that, once loaded, the tool does it all for you.

Enhancing the power of xMATRIX TEE for interventional echo

The EPIQ 7 and Philips Allura Xper X-ray systems create a powerful combination with the new EchoNavigator feature for an exceptional level of efficiency in the interventional suite. EchoNavigator digitally links ultrasound and fluoroscopy images using anatomical data. Both active images are displayed and continuously aligned, even when one image is rotated.

Automation

Automated 2D Cardiac Quantification[A.I.] (a2DQ[A.I.]) with ZeroClick technology

The ideal tool of every echo lab, Automated 2D Cardiac Quantification[A.I.] with ZeroClick technology uses AIUS for an Auto-ROI to drive the Q-App and provide rapid access to proven 2D EF and volumes. AutoEF is available during the study and so fits in with an everyday echo protocol.
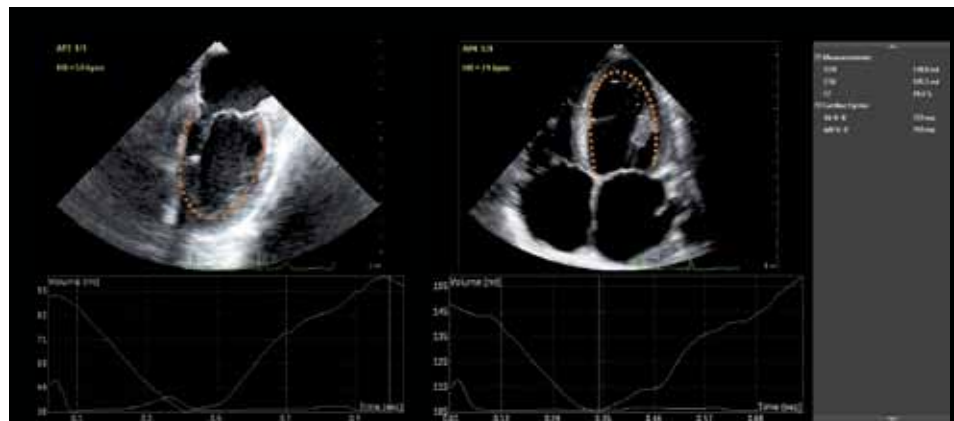
a2DQ[A.I.] with ZeroClick for fast, reproducible EF on all your patients.

Automated Cardiac Motion Quantification[A.I.] (aCMQ[A.I.]) with ZeroClick technology for adult echo

The ZeroClick technology of the Automated Cardiac Motion Quantification[A.I.] (aCMQ[A.I.]) uses speckle mechanics to provide reproducible 2D Global Longitudinal Strain (GLS) speckle measurements. A proven EF is also calculated by using the Auto-ROI that drives the automation within the aCMQ[A.I.] Q-App.
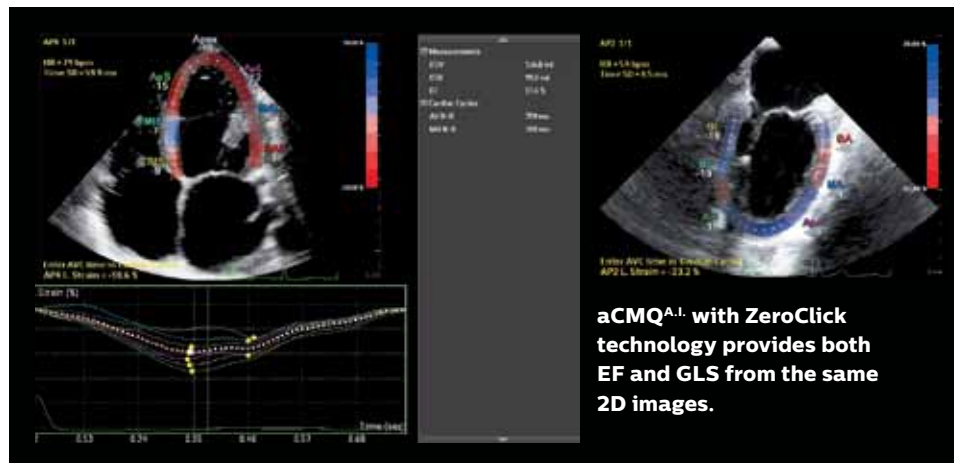
**aCMQ[A.I.] with ZeroClick technology provides both EF and GLS from the same 2D images.**

*Edit option

Navigation

The Mitral Valve Navigator[A.I.] (MVN[A.I.])

The Mitral Valve Navigator[A.I.] (MVN[A.I.]) is designed to take a Live 3D volume of the mitral valve and turn it into an easy-to-interpret model in eight guided steps, providing access to a comprehensive list of MV measurements and calculations. Internal comparison of MVQ to MVN[A.I.] tools measures 89% fewer clicks.[5]

MVN[A.I.] saves steps at each part of the process

• Annulus data is acquired with 74% fewer clicks,[5] which also provides leaflet tracing with no user interaction.

• MVN[A.I.] guides the entire process using simple commands and clear graphics, making this a much easier tool to use than previous mitral quantification tools.

• Results derived from MVN[A.I.] can be seen on the screen as they become available, speeding the process of accessing required data.
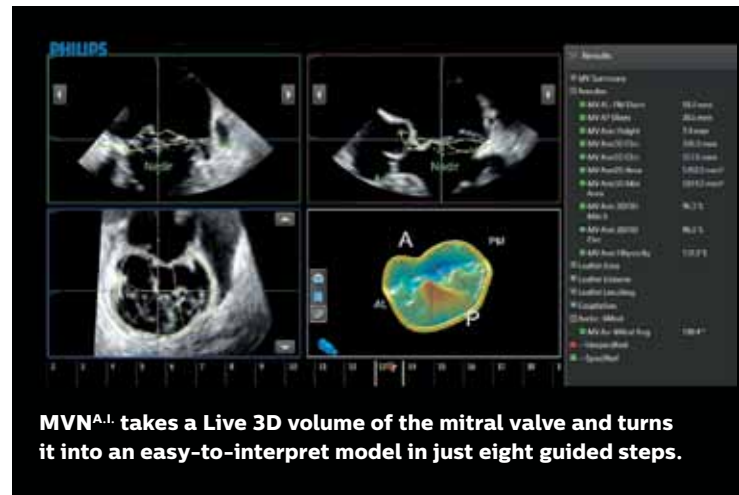
MVN[A.I.] takes a Live 3D volume of the mitral valve and turns it into an easy-to-interpret model in just eight guided steps.

[5] 2013 QLAB 9 MVQ and QLAB 10 MVN click comparison internal study.

Q-App quantification applications

EPIQ 7 offers a wide variety of sophisticated Q-Apps to quantify ultrasound image information including our latest AIUS Q-Apps.

Q-Apps	Clinical application	Benefit
IMT (for vascular)	Automatic carotid intima media thickness measurement	Fast and easy access to IMT data
ROI	Echo contrast and color images	Extract acoustic measurements from images
Strain Quantification (SQ)	Measures the myocardial velocity from color tissue Doppler	Derive displacement strain and strain rate
CMQ Stress	Speckle quantification of stress echo images	Decrease the subjectivity of stress echo analysis
3DQ	View, slice, and display 3D volumes and measure distance and areas from 2D MPR views	Bi-plane LV volume, ejection fraction (EF) and LV mass calculations
3DQA	Global LV volumes and timing	Measure LV endocardial volumes, stroke volume (SV), and true 3D ejection fraction (EF) using a semi-automated border detection in 3D space. Offers timing assessment for each of 17 minimal regional volumes and determines a synchronicity index for all volume segments or a user-selectable group of volume segments.

| AIUS Q-Apps	Clinical application	Benefit
Automated 2D Cardiac Quantification[A.I.] (a2DQ[A.I.])	AutoEF for 2D images	Fast and reproducible biplane EF
Automated Cardiac Motion Quantification[A.I.] (aCMQ[A.I.])	Speckle quantification of global and regional strain data	Both EF and speckle data simultaneously assist with LV function assessment
Mitral Valve Navigator[A.I.] MVN[A.I.]	Takes a Live 3D volume of the MV and provides qualitative and quantitative data of the valve and its surrounding structures	Easy to understand data
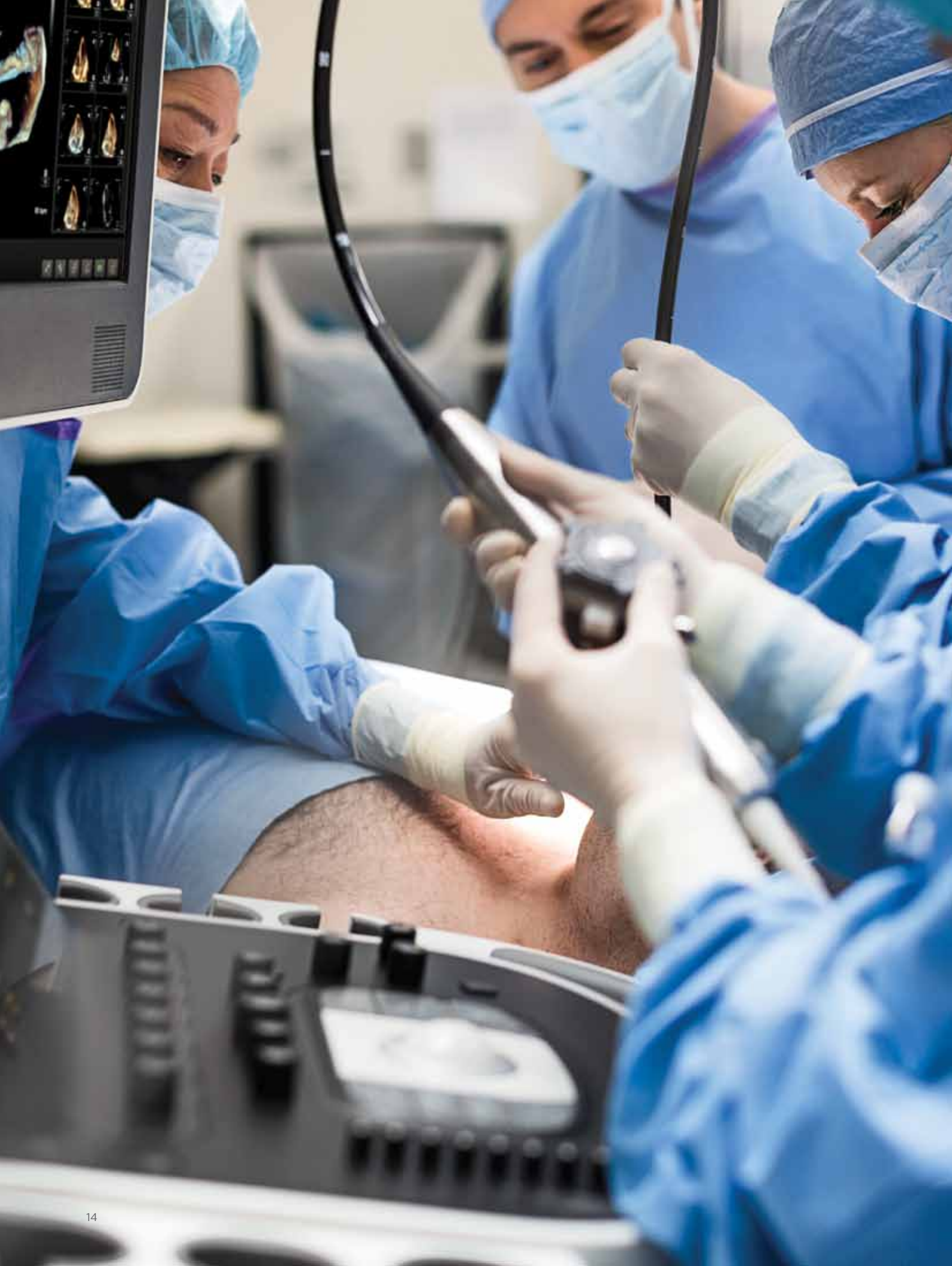
EchoNavigator

iXR integration

Connectivity to EchoNavigator via our digital network link enhances communication on modern structural interventions using 3D TEE. Users can appreciate anatomy with multiple views of Live 3D TEE, availability of virtual echo scanning, and echo target localization on fluoro.

The real-time integration of EchoNavigator between fluoroscopy and Live 3D TEE provides automatic registration and tracking – all controlled tableside.
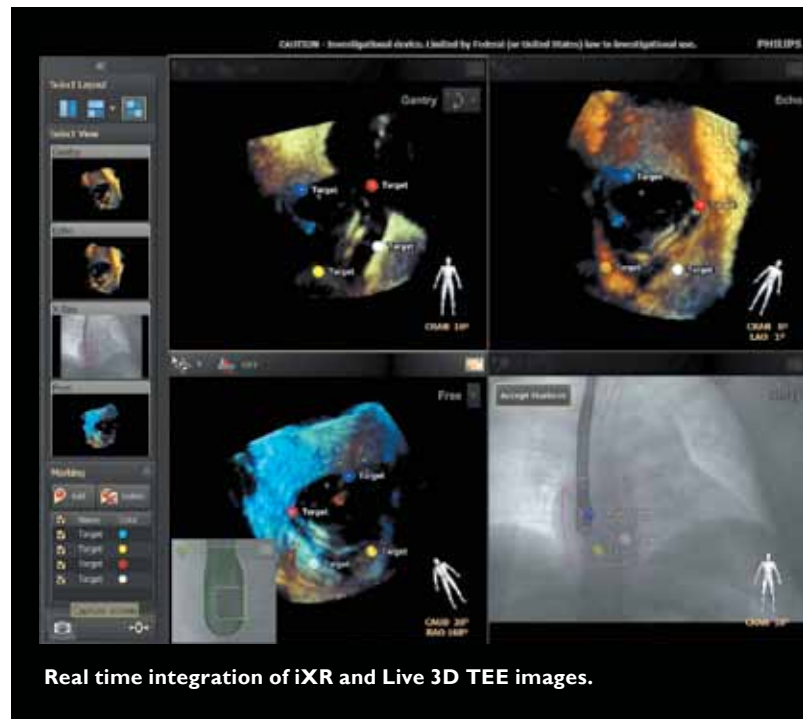
Real time integration of iXR and Live 3D TEE images.

Multimodality Query Retrieve allows side-by-side comparison on any DICOM image.

Access to multimodality images

Use the EPIQ 7 multimodality query retrieve to view DICOM images such as CT, NM, MRI, iXR, cardiac X-ray, and ultrasound. Easily compare past and current studies without the use of an external reading station and even review these multimodality images while live imaging.
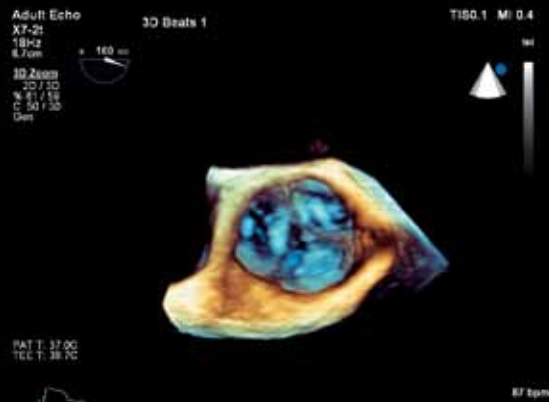
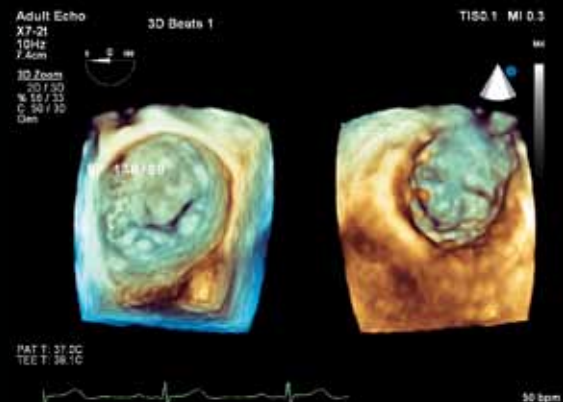# New levels
of clinical information
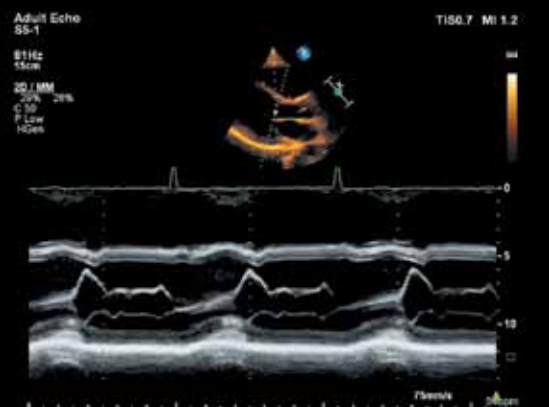

Dilated cardiomyopathy using EchoPen preset
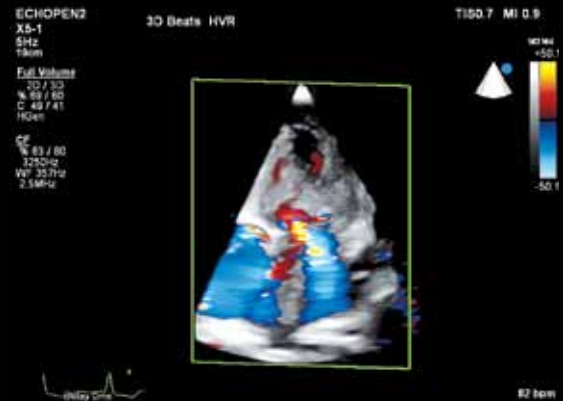
Mitral and tricuspid regurgitation in Live 3D
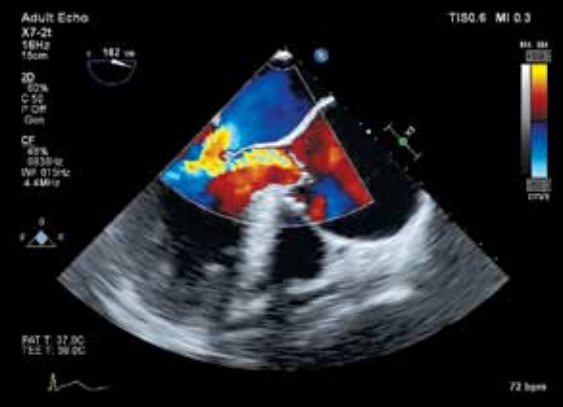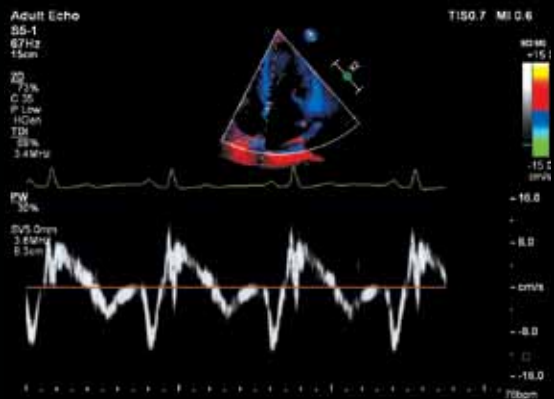

Normal aortic valve

Normal mitral valve in dual imaging
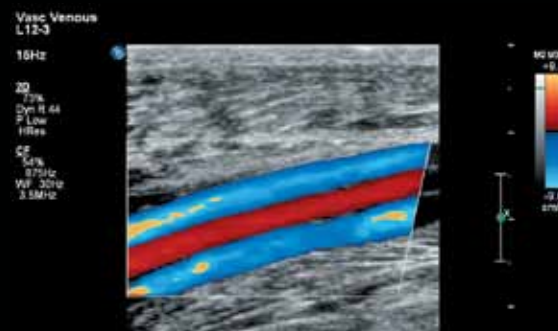

Anatomical M-mode of PLAX

Mitral regurgitation

Tissue Doppler PW

Fetal echo – four-chamber heart

Common carotid artery bifurcation

Posterior tibial veins and artery
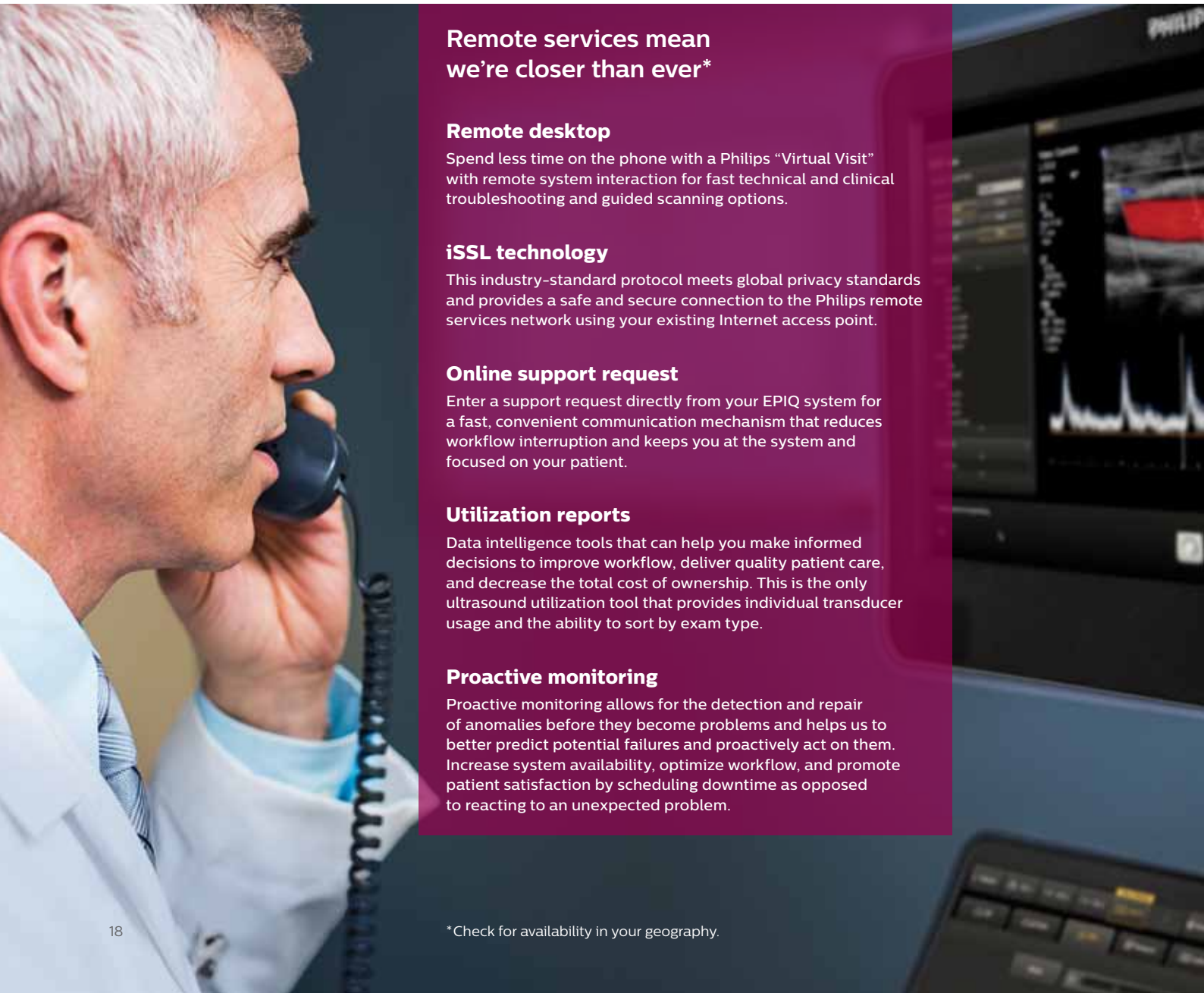

Mitral regurgitation

Fetal echo – aortic arch

Advanced **support services**
are proactive and predictive

We understand your challenges: uncertain economic times, changing healthcare landscapes, and the impact of healthcare reform. We know that efficient workflows and system uptime are critical success factors in running an effective healthcare business.

Philips is committed to offering innovative solutions to provide you with world-class services that move from reactive to proactive and with predictive service models that provide high system availability and enhanced workflow to help you deliver high-quality patient care.

Remote services mean we're closer than ever*

Remote desktop
Spend less time on the phone with a Philips "Virtual Visit" with remote system interaction for fast technical and clinical troubleshooting and guided scanning options.

iSSL technology
This industry-standard protocol meets global privacy standards and provides a safe and secure connection to the Philips remote services network using your existing Internet access point.

Online support request
Enter a support request directly from your EPIQ system for a fast, convenient communication mechanism that reduces workflow interruption and keeps you at the system and focused on your patient.

Utilization reports
Data intelligence tools that can help you make informed decisions to improve workflow, deliver quality patient care, and decrease the total cost of ownership. This is the only ultrasound utilization tool that provides individual transducer usage and the ability to sort by exam type.

Proactive monitoring
Proactive monitoring allows for the detection and repair of anomalies before they become problems and helps us to better predict potential failures and proactively act on them. Increase system availability, optimize workflow, and promote patient satisfaction by scheduling downtime as opposed to reacting to an unexpected problem.

*Check for availability in your geography.

The remote desktop allows Philips service engineers to gain a live view of your system's console for remote operation, real-time clinical troubleshooting, and issue resolution.

Exceptional serviceability

Philips offers the only ultrasound utilization tool that provides individual transducer usage and the ability to sort by exam type.

The system features superior modular design for rapid repair, getting your system up and running quickly.

Intelligent software architecture

Software is easily optimized, maintained, and restored by the service user without risk to patient data, giving you peace of mind when dealing with software anomalies and confidence that your data is safe.

This software architecture takes patient data privacy to a new level. Patient data is stored on a separate partition and physical location to provide protection and ease of removal, providing you total control of your data.

Clinical education solutions

Our comprehensive, clinically relevant courses, programs, and learning paths are designed to help you improve operational efficiency and enhance patient care.

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Please visit **www.philips.com/EPIQ**