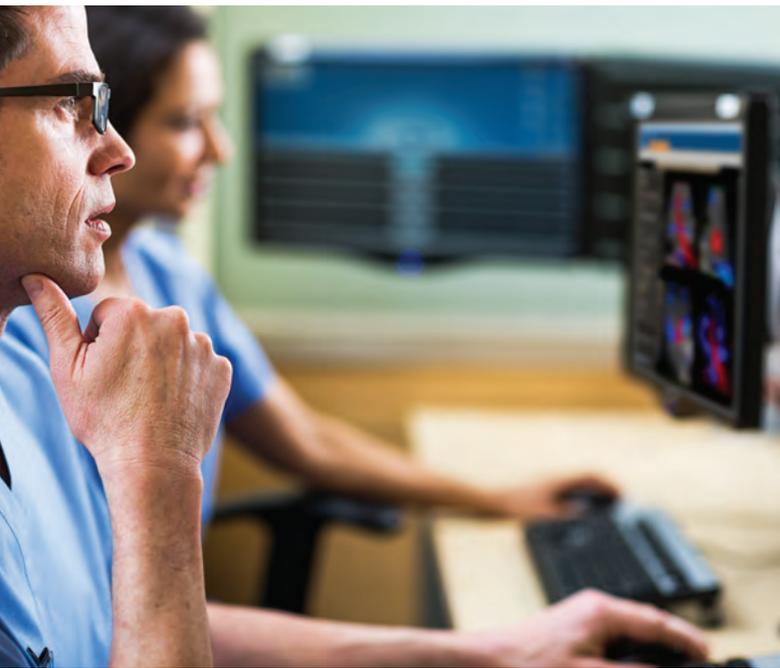# A new era in premium ultrasound

Philips EPIQ 7 ultrasound system

PHILIPS

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 today demands improved clinical information from each scan, faster and more consistent exams that are easier to perform, and a higher level of confidence, even for technically difficult patients.

Key trends in global ultrasound:

- The need for more definitive premium ultrasound with exceptional image quality and intelligence that provides automated views and quantification

- Ultrasound exam volumes continue to increase every year due to the aging global population, resulting in a demand for greater workflow and throughput

- A demand to automate most operator functions to allow for ease of use and consistency of exam between users

- The need for ultrasound to address the technically challenging patient

- Patient concern about radiation dose is resulting in a movement to use ultrasound first – even for advanced image guided therapy, replacing a number of procedures now performed using more expensive modalities

Introducing
a new era
in premium
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.

Performance
More definitive diagnoses even for your most difficult cases

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

Our most powerful architecture ever applied to ultrasound imaging

This performance touches all aspects of acoustic acquisition and processing, allowing you to truly experience the evolution to a more definitive modality.

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 without compromise. Unlike conventional systems that form the image line by line, *n*SIGHT creates images with optimal resolution down to the pixel level.

Extraordinary architecture

Proprietary *n*SIGHT Imaging incorporates the use of a new precision beamformer along with powerful massive parallel processing. This extraordinary architecture captures an enormous amount of acoustic data and then reconstructs in real time optimally focused beams, creating precise resolution for every pixel in the image.

Breaking old rules.
Creating new realities.

*n*SIGHT Imaging breaks the rules of conventional ultrasound to achieve new levels of clinical performance.

Old rule 1	You must choose between frame rate and image quality

Conventional technology

***n*SIGHT Imaging**

*n*SIGHT more than doubles the frame rate

For the first time you can experience both highly detailed ultrasound images and extraordinary temporal resolution and frame rate through virtually perfect beams with fewer transmit operations, breaking the traditional compromise of conventional architectures.

Old rule 2	You must critically place a focal zone to achieve the greatest image clarity

Conventional technology

Best resolution limited to transmit focal zone area

***n*SIGHT Imaging**

Effective reconstructed transmit beam uniformity

Now you can experience superb tissue uniformity all the way up to the skin line without the compromise of conventional transmit focus limitations through dynamic calculation and reconstruction of optimal transmit and receive focusing continually at all depths down to the pixel level.

Old rule 3	You can't escape penetration limitations and sensitivity to weak tissue signals

C9-2 PureWave curved array

Superb penetration and resolution (16 cm) on adult patient

***n*SIGHT Imaging**

Visualize extraordinary levels of detail and contrast resolution with exceptional penetration at higher frequencies even on difficult patients through ultra-wide dynamic range and unique beam reconstruction that reinforces exceptional tissue information at greater depths with less noise.

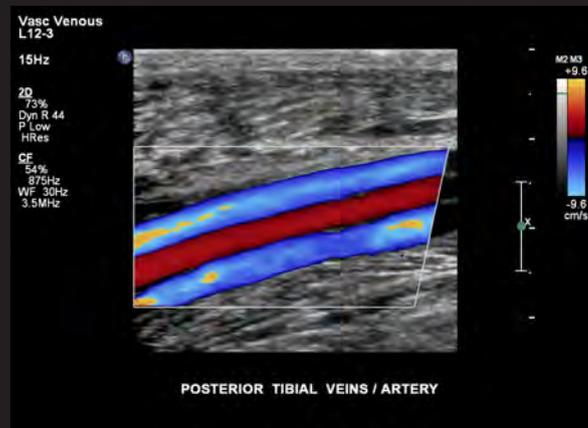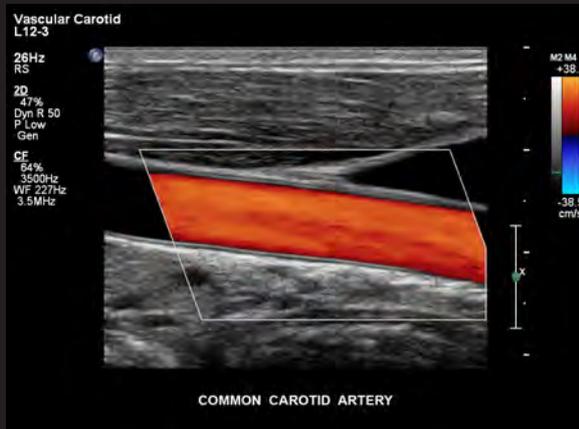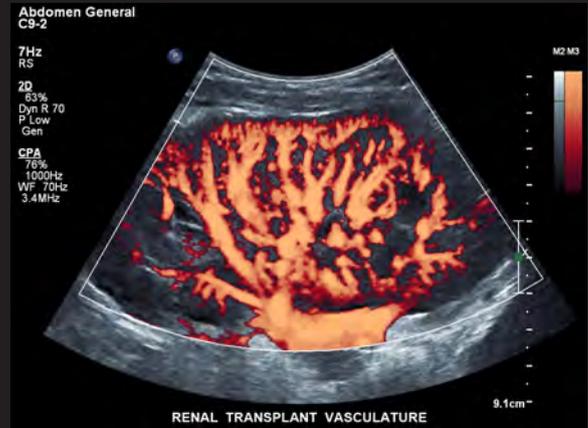**Image quality: the numbers tell the story**

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

• Up to **76**% increase in penetration
  (penetration = ability to scan at depths and maintain resolution in order to complete the study)*

• Up to **213**% increase in temporal resolution
  (ability to maintain resolution at high frame rates)*

* Quantitative engineering study comparing Philips iU22 ultrasound
  system with EPIQ 7.

Exceptional
images for a new era

Abdomen General
C9-2
34Hz RS
2D 74% Dyn R 55 P Low HRes
M2
12cm
LIVER / RIGHT KIDNEY

Abdomen General
C9-2
7Hz RS
2D 63% Dyn R 70 P Low Gen
CPA 76% 1000Hz WF 70Hz 3.4MHz
M2 M3
9.1cm
RENAL TRANSPLANT VASCULATURE

Vascular Carotid
L12-3
26Hz RS
2D 47% Dyn R 50 P Low Gen
CF 64% 3500Hz WF 227Hz 3.5MHz
M2 M4
+38.5
-38.5 cm/s
COMMON CAROTID ARTERY

Pediatric Neo Head
C8-5
24Hz RS
2D 77% Dyn R 61 P Low Res
M4
GRADE III INTRAVENTRICULAR HEMORRHAGE
9.0cm

Vasc Carotid
L12-3
38Hz RS
2D 59% Dyn R 50 P Low HGen
M2
COMMON CAROTID ARTERY DISSECTION

Vasc Venous
L12-3
15Hz
2D 73% Dyn R 44 P Low HRes
CF 54% 875Hz WF 30Hz 3.5MHz
M2 M3
+9.6
-9.6 cm/s
POSTERIOR TIBIAL VEINS / ARTERY

6

Sm Parts Thyroid
L18-5
52Hz
RS
2D
38%
Dyn R 56
P Low
Res
M3

THYROID LEFT LOBE

Abd Gen
C9-2
35Hz
RS
2D
61%
Dyn R 55
P Low
HRes
M2

HEPATIC VEINS

12cm

Gyn Pelvis
C10-3v
56Hz
RS
2D
50%
Dyn R 57
P Off
Gen
M3

ENDOMETRIUM

5.0cm

OB Early
C9-2
88Hz
RS
Z 1.4
2D
59%
Dyn R 52
P Low
HRes
M4

14 - WEEK FETAL PROFILE

MSK Superfic
L18-5
30Hz
R1
2D
38%
Dyn R 56
P Med
Res
M3

BIFID BICEPS TENDON

2.5cm

Breast
L18-5
45Hz
RS
2D
45%
Dyn R 60
P Med
Res
M3

BREAST CYSTS

3.0cm

Maximize extreme clinical capabilities

Philips pioneered xMATRIX advanced technology.

The revolutionary *n*SIGHT architecture of EPIQ 7 makes xMATRIX even more powerful.

xMATRIX is the 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, 3D/4D, Live xPlane, Live MPR, MPR, Doppler, color Doppler, and CPA.

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

Achieve ultra-thin 2D slices. 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. Send 3D MPRs in the X-, Y-, and Z-plane to any PACS system with MPR DICOM Export. Present superb, real-time 4D volume data in abdominal and obstetrical exams.

Greatly enhance the power of the X6-1 transducer for abdominal and OB applications

Now you can implement elevation compounding on the X6-1 with no frame-rate penalty for enhanced speckle reduction and contrast resolution at all depths. Use the X6-1 to perform real-time 4D imaging of the fetal heart or obtain a full 90° x 90° volume sweep of the liver in less than 0.25 seconds.


See dramatic improvements in 2D image clarity at all depths and volume rates across all 3D/4D modes and applications with the X6-1 transducer.

Thin slice   Live xPlane   4D
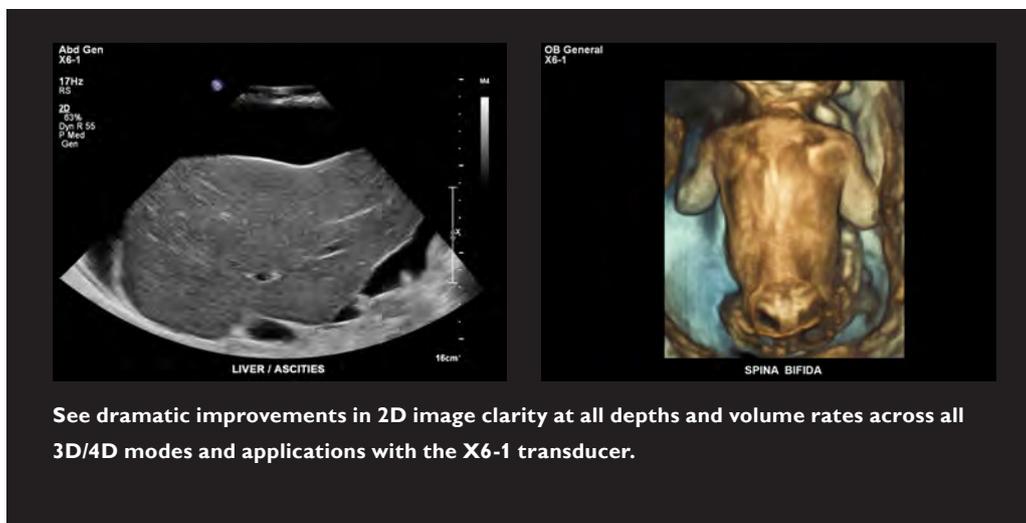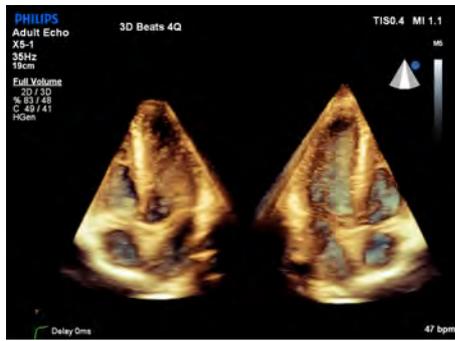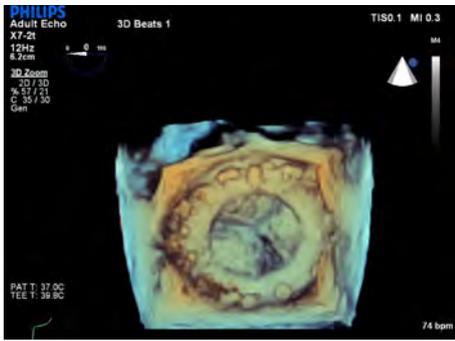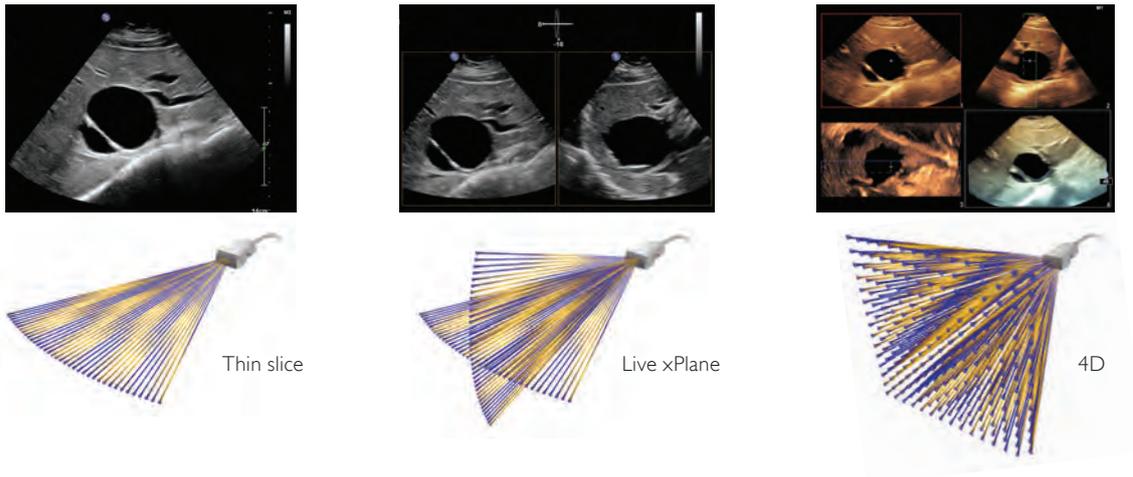
Leading-edge xMATRIX transducers for cardiology include X5-1 for adult cardiology and X7-2t
for TEE applications.

The world's first panoramic volume organ scan

Panoramic volume imaging uses Live xPlane imaging to acquire
a calibrated volume over an extended field of view. Easily capture,
visualize, and quantify a full organ (such as liver or pancreas),
a full uterus, or a full fetus in a 3D panoramic volume.
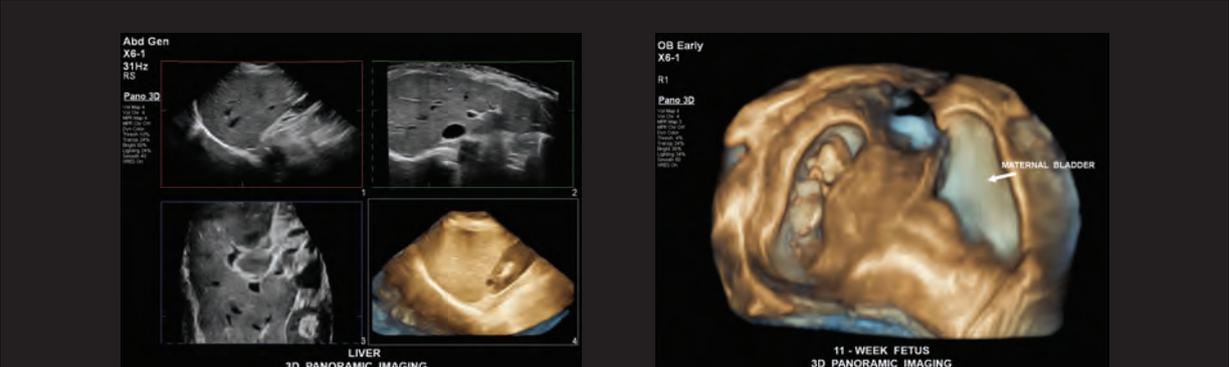
**xMATRIX panoramic volume imaging allows for whole organ acquisition, visualization,
and quantification of unparalleled views of anatomical structures and better correlation
with other imaging modalities.**

*n*SIGHT 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 and for excellent detailed resolution. All xMATRIX transducers incorporate PureWave technology.

PureWave offers enhanced technology for imaging technically difficult patients in a wide range of applications:
• PureWave C5-1 and the new PureWave C9-2 for difficult-to-image abdominal and OB patients
• PureWave S5-1 for difficult-to-image cardiology patients and transcranial applications
• PureWave C10-3V for difficult-to-image early obstetrical and gynecological exams
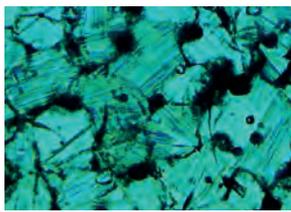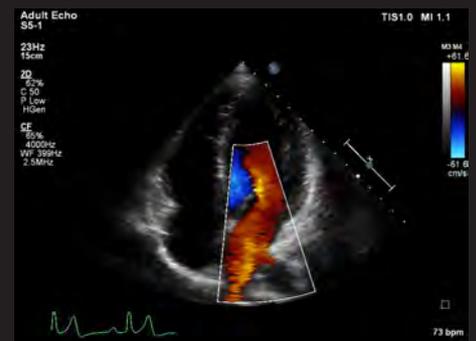

Conventional   (x800)

PureWave   (x800)

PureWave crystals have virtually perfect uniformity for greater bandwidth and twice the efficiency of conventional ceramic materials. The result is excellent imaging and Doppler performance.

Q-App quantification applications

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

| General imaging Q-Apps	Cardiology Q-Apps
• Intima Media Thickness Q-App (IMT) • General Imaging 3D Quantification Q-App (GI 3DQ) • Region of Interest Q-App (ROI) • MicroVascular Imaging Q-App (MVI) • Fetal Heart Navigator (FHN)	• Strain Quantification Q-App (SQ) • Cardiac 3D Quantification Q-App (3DQ) • Cardiac 3D Advanced Quantification Q-App (3DQ Advanced) • CMQ Stress Q-App

Elastography for more definitive information about tissue stiffness

EPIQ 7 is uniquely designed to support both strain and shear wave methods of elastography. Highly sensitive strain imaging requires no external compression and can be used to assess relative tissue stiffness across a variety of applications. Shear wave elastography utilizes unique pulsing schemes to generate and measure the propagation speed of shear waves through tissue. This technique produces an absolute measure of tissue stiffness that has proven helpful in assessing diseases such as liver fibrosis.

UTERINE FIBROADENOMA

LIVER ELASTOGRAPHY POINT QUANTIFICATION

BREAST LESION ELASTOGRAM
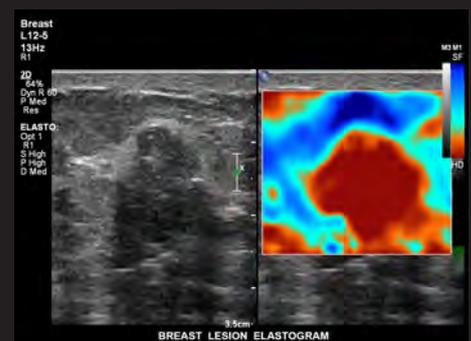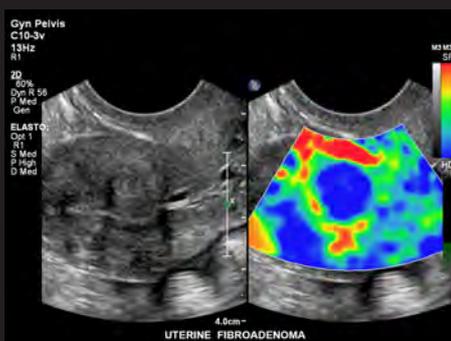
Access to multimodality images

Use multimodality query retrieve to view DICOM images such as CT, NM, MR, mammography, 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.
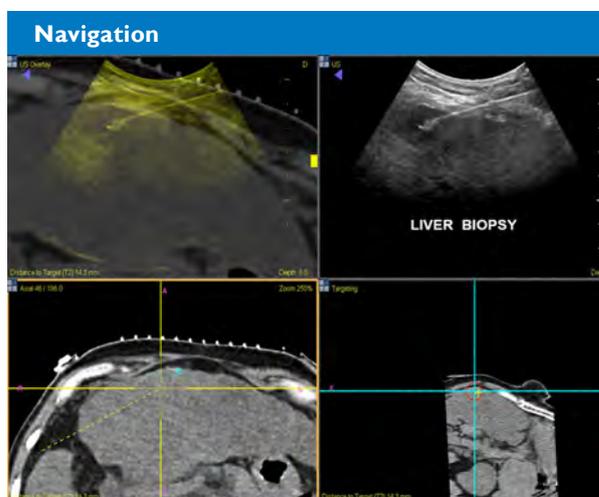

Multimodality retrieve
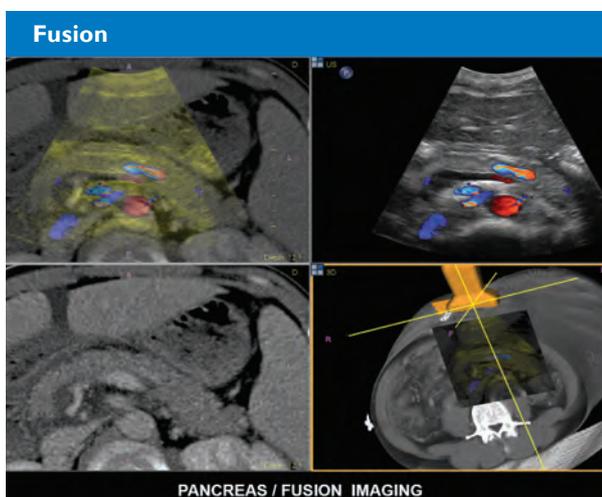
Pancreas assessment using US and CT fusion.

Needle navigation helpful in guiding biopsy of small and difficult-to-access lesions.

Fast and effective image fusion

Make confident decisions even in challenging diagnostic cases with new fully integrated fusion capabilities that feature streamlined workflows to allow clinicians to achieve fast and effective fusion of CT/MR/PET with live ultrasound.

By combining imaging modalities directly on the ultrasound system, you now have access to an even more powerful diagnostic tool with advanced visualization, allowing for fast decisions compared to without fusion.

Advanced needle navigation

Needle navigation is a performance-enhancing tool for challenging interventional cases such as a hard-to-visualize small-lesion biopsy or difficult-to-access ablations that are close to critical structures. Procedures may now be completed in less time and with fewer confirmatory scans.

A new reusable adaptive needle tracker, and an expanded range of coaxial needle-tip tracked instruments offer you a wide range of compatibility with biopsy and ablation devices depending on the degree of procedure complexity.

Revolutionize
your contrast exam

Contrast-enhanced ultrasound (CEUS) workflow is now seamlessly integrated into virtually any exam. EPIQ 7 provides instant optimization of CEUS studies and exceptional performance across multiple agents and applications.

*n*SIGHT Imaging allows higher sensitivity to lower bubble concentrations while providing exceptional temporal resolution during critical wash-in/wash-out phases. Among leading ultrasound manufacturers, Philips offers the world's only live 3D contrast system for general imaging with real-time 3D contrast data for dynamic clinical assessment.
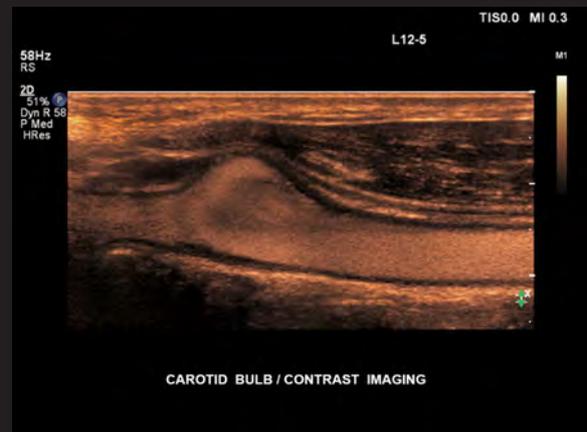
The high-order parallel processing provided by *n*SIGHT Imaging allows for higher 2D and 3D frame rates during contrast imaging so that no dynamic information is lost.

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] With EPIQ 7 a new tablet-like interface results in dramatic reduction in reach and button pushes, with 40% to 80% less reach and 15% fewer steps.*

Advanced workflow

The design of the platform features "walk up usability" meaning that users can perform an exam with minimal training. 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 optimal images are achieved in 2D, 3D, or 4D.

Amazingly portable

At just 104.3 kg, 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.

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.

Tablet-like touch interface allows quick navigation to system functions with 40% less reach and 15% less steps to complete an exam.

1. Society of Diagnostic Medical Sonography, Industry Standards for the Prevention of Musculoskeletal Disorders in Sonography, May 2003.
 * Engineering study comparing Philips iU22 ultrasound system with EPIQ 7.
 † Check for availability in your geography.

Scanning comfort

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

Efficiency is built in

Integrated efficiency tools address the expanding demand for greater throughput and exam consistency.

SmartExam

SmartExam decreases exam time by 30-50%, keystrokes by as many as 300 per exam, and results in a higher level of consistency among users. It is fast and easy to customize, providing consistent and accurate annotation, automatic mode switching, and missed view alerts to streamline exams. 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 67.9%.

Active native data

Active native data allows for post-processing of many exam parameters.

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 wide screen and ambient lighting that provides subtle visual cues for the keyboard, OEMS, and transducer ports.

EPIQ 7 makes it easy to be green

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

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.

Anatomical Intelligence is the heart of EPIQ 7

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 advanced organ modeling, image slicing, and proven quantification, exams are easy to perform, more reproducible, and deliver new levels of clinical information.

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.*

a2DQ with ZeroClick for fast, reproducible EF on all your patients.
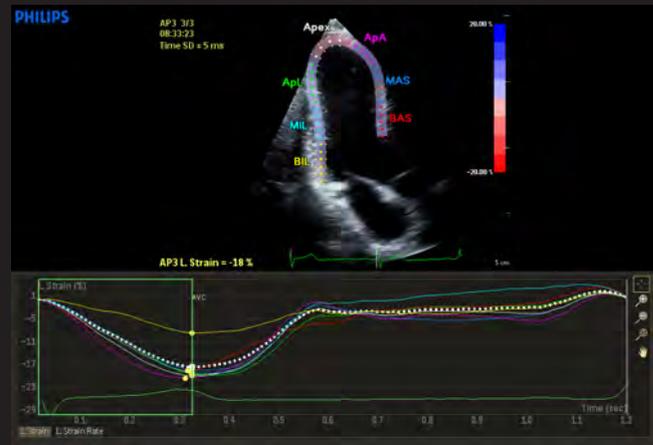
aCMQ with ZeroClick technology provides both EF and GLS from the same 2D images.
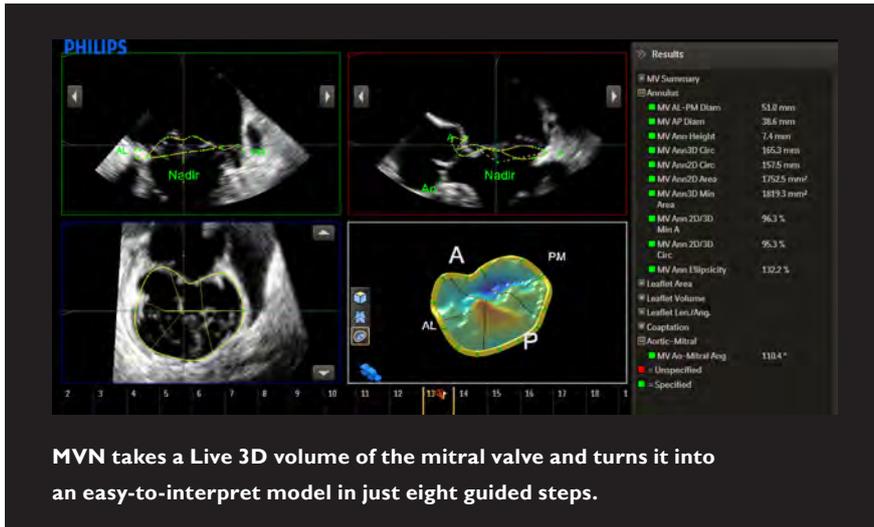
Automation

Automated 2D Quantification (a2DQ) with ZeroClick technology for adult and pediatric echo

The ideal tool of every echo lab, Automated 2D Quantification 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.

Automated Cardiac Motion Quantification (aCMQ) with ZeroClick technology for adult echo

The ZeroClick technology of the Automated Cardiac Motion (aCMQ) uses speckle mechanics to provide reproducible 2D Global Longitudinal Strain (GLS) speckle measurements. An accurate EF is also calculated by using the Auto-ROI that drives the automation within the aCMQ Q-App.

*Edit option

MVN takes a Live 3D volume of the mitral valve and turns it into an easy-to-interpret model in just eight guided steps.

Navigation

The Mitral Valve Navigator (MVN)

The Mitral Valve Navigator (MVN) 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. Compared to previously available tools, MVN models and measures with 89% fewer clicks.

MVN saves steps at each part of the process:

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

• MVN 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 can be seen on the screen as they become available, speeding the process of accessing required data
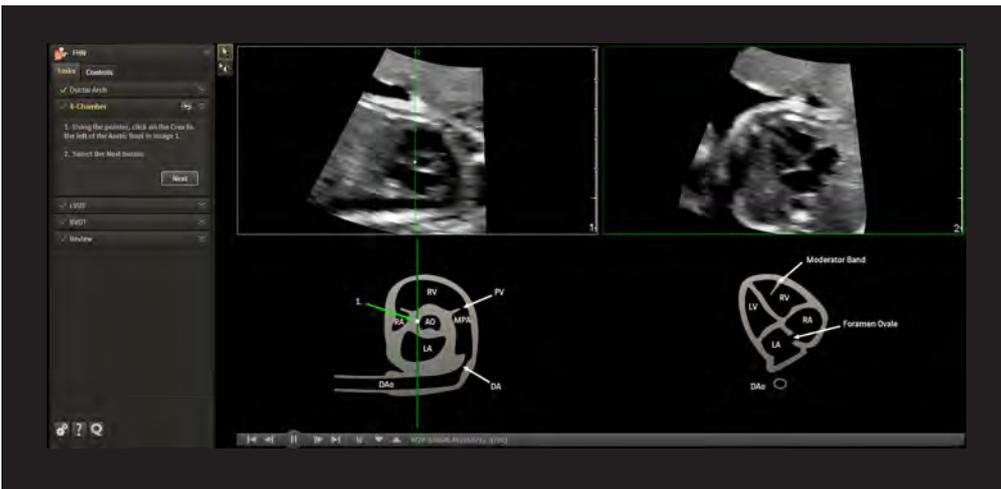
Fetal Heart Navigator

xMATRIX technology allows you to acquire the fetal heart volume in as little as two seconds, while Philips Fetal Heart Navigator automatically aligns the ductal arch view as a baseline for other views. A series of simple instructions and reference 2D schematics guide you through the next three views to give you a complete picture.

In the future, AIUS is expected to bring organ modeling and advanced quantification to many clinical applications, promises to deliver accurate clinical information in less time and truly elevate ultrasound to a more definitive modality.

Aorta Model | Carotid Model | Auto Image Fusion | HeartModel
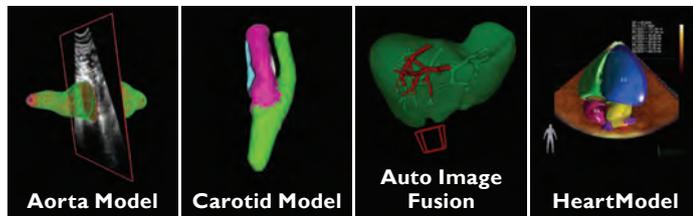
Advanced support services are
proactive

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.

Pro-active 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.

and predictive

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

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.

* Check for availability in your geography.
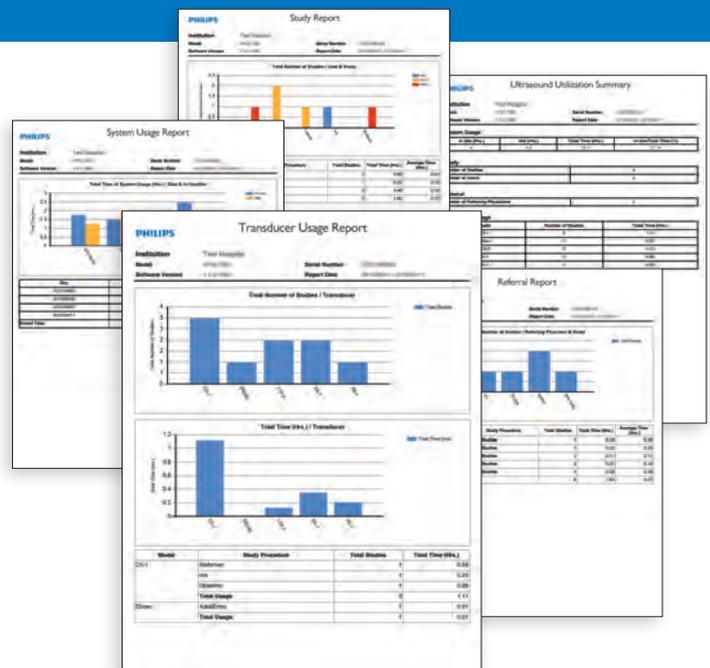
Philips offers the only ultrasound utilization tool that provides individual transducer usage and the ability to sort by exam type.

Please visit www.philips.com/EPIQ