

**PHILIPS**

Ultrasound



Introducing  
a new class of  
premium ultrasound

**Philips EPIQ Elite** premium ultrasound for vascular



# Expect the exceptional

Philips EPIQ Elite is a new class of premium ultrasound featuring powerful **nSIGHT** Imaging architecture with the latest advancements in image processing and transducer technology.

## Meet your most demanding challenges

With EPIQ Elite, an exceptional level of clinical performance, workflow ease and advanced intelligence come together like never before to meet the challenges of today's most demanding practices.

## Designed for more

EPIQ Elite has clinically tailored tools designed to elevate diagnostic confidence to new levels.

## Premium ultrasound must keep advancing

Healthcare organizations are continually being challenged to provide a higher quality of care cost-effectively. 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. The goal is quick and accurate diagnosis the first time and in less time.



# Our most powerful architecture

**nSIGHT** Imaging far surpasses conventional ultrasound performance to reach new levels of definition and clarity.

Incorporating 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. This creates extraordinary real-time images with exceptional frame rate, uniformity and penetration.

## Frame rate



### Conventional

Users must choose between frame rate and image quality.



### nSIGHT Imaging

More than doubles the frame rate without impact to image quality. Creates focused images with fewer transmit operations so you can experience both highly detailed ultrasound images and extraordinary temporal resolution.

## Uniformity



### Conventional

Best resolution is limited to transmit focal zone.



### nSIGHT Imaging

Corrects focus during beam reconstruction for superb uniformity. Achieves uniformity through coherent beam reconstruction algorithms that apply mathematical focal correction coefficients continually at all depths of the image.

## Penetration



### Conventional

Penetration limitations and poor sensitivity to weak signals.



### nSIGHT Imaging

Superb penetration across full range of frequencies. Reinforces weak tissue signals with the ultra-wide dynamic range and unique beam reconstruction of the architecture, allowing enhanced penetration at higher frequencies, even on difficult patients.

## Amazing processing power – 5X more data throughput than software-based beamforming

EPIQ Elite ultrasound is uniquely designed to process acoustic data at stunning rates. **nSIGHT** Imaging touches all aspects of acoustic acquisition and image processing, allowing you to truly experience ultrasound's evolution to a more definitive modality. The EPIQ architecture processes the equivalent of 10 DVDs/sec, while many software-based beamformer architectures struggle to process the equivalent of even 2 DVDs/sec.

EPIQ

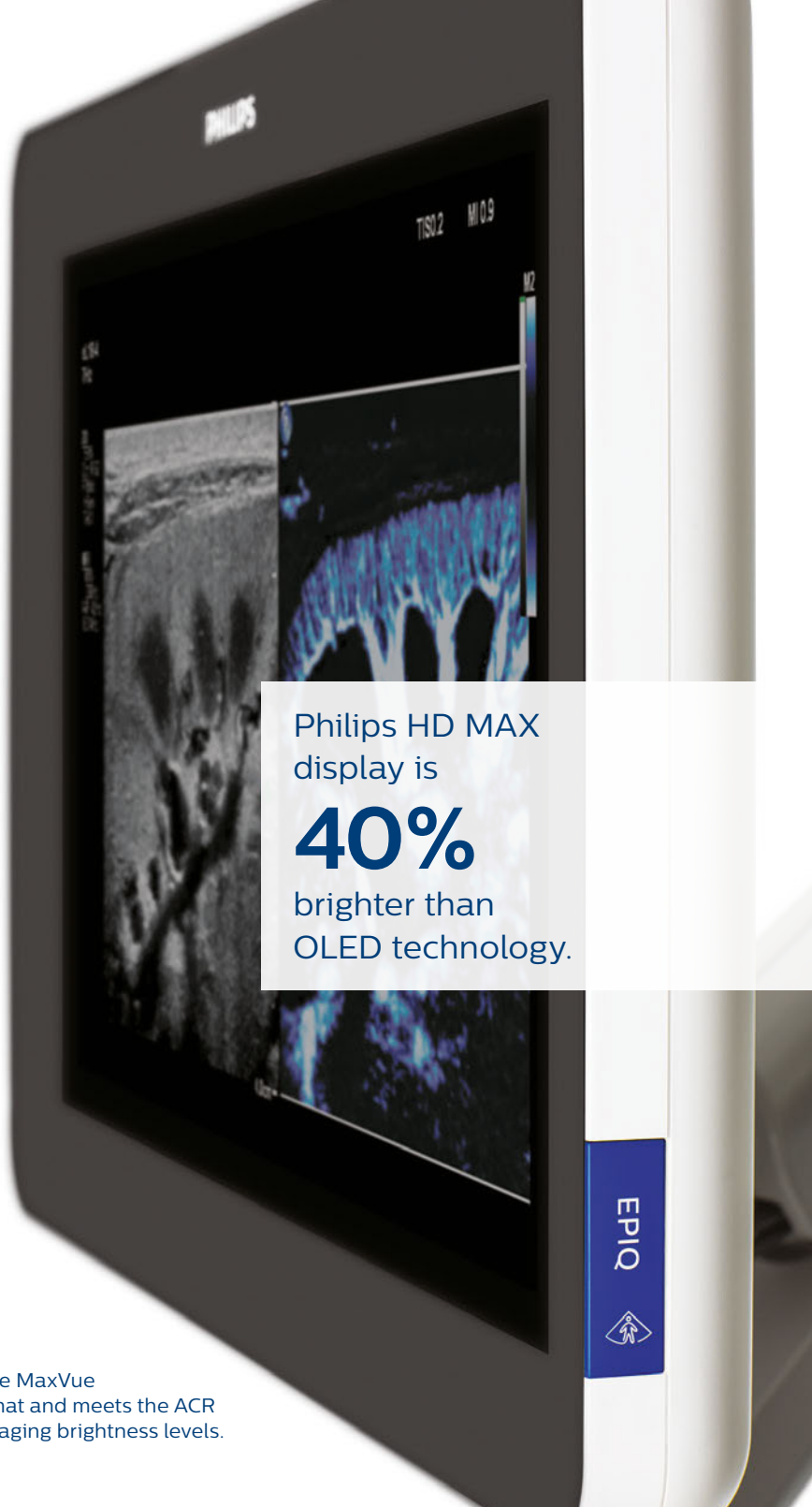


# Visualize more accurately

## Philips HD MAX display

This new immersive 24" display monitor offers the ultimate ultrasound visualization experience, with an ultra-wide color gamut of 10-bit color depth that uses billions of colors for accurate color reproduction.

In addition, it provides high-contrast dynamic range and enhanced black levels for subtle delineation of grayscale values. HD MAX features superb off-angle viewing for visualization of clinical images throughout the scanning room.



Philips HD MAX display is **40%** brighter than OLED technology.


HD MAX display is designed for the MaxVue high-definition image display format and meets the ACR display standard for diagnostic imaging brightness levels.



EPIQ Elite processing power  
Equivalent to processing 10 DVDs/sec



Processing power of other beamformer architectures  
Equivalent to processing 2 DVDs/sec



# Elevate tissue definition

EPIQ Elite ultrasound features XRES Pro, our next-generation high-resolution image processing approach that elevates tissue definition and clarity to new levels.



## XRES Pro

XRES Pro offers reduction of artifacts with excellent delineation of structural anatomy.

### XRES Pro is next-generation image processing

At real-time frame rates, XRES Pro uses multi-parametric precision filters that subdivide image elements, analyze this data and then apply advanced algorithms to sharpen borders and interfaces and provide superb tissue conspicuity. XRES Pro also offers enhanced assessment of plaque morphology. XRES Pro allows you full adjustability to match the level of enhancement to clinical imaging requirements for elevated diagnostic confidence with virtually all patients.

# Detect, visualize and characterize

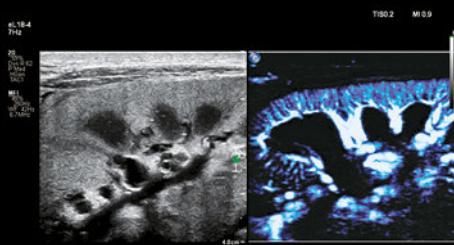
## MicroFlow Imaging offers remarkable detail in assessing blood flow

MicroFlow Imaging (MFI) is designed to detect slow and weak blood flow anatomy in tissue. This proprietary approach overcomes many of the barriers associated with conventional methods to detect small vessel blood flow with high resolution and minimal artifacts.

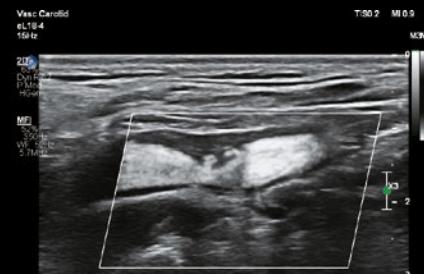
MFI maintains high frame rate and 2D image quality while applying advanced artifact reduction techniques to reveal small vessel anatomy.



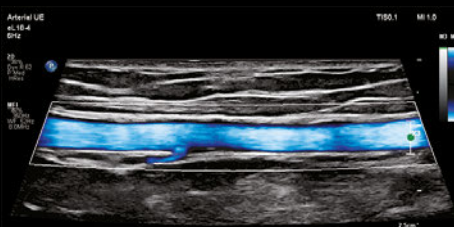
## MicroFlow Imaging



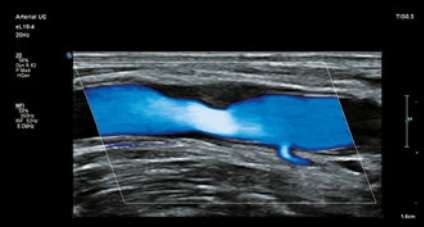
**MFI demonstrates subtle flow patterns within a renal transplant.**



**eL18-4 PureWave with MFI reveals flow detail surrounding a vulnerable plaque in the carotid artery.**



**MFI reveals exceptional flow resolution in an upper extremity vein.**



**MFI reveals high-resolution flow around thrombus collection.**

**93%** of users felt MFI helped detect slow blood flow and enhanced resolution of flow in vascular exams.\*

**81%** of users felt MFI helped visualize and characterize subtle flow disturbances around stenotic plaque.\*

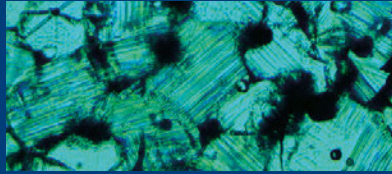
\* External user study on EPIQ Elite based on 27 respondents. Study report available upon request.

# Simplify the difficult



The power of PureWave for exceptional imaging even on technically difficult patients

PureWave crystal technology represents the biggest breakthrough in piezoelectric transducer material in 40 years. The pure, uniform crystals of PureWave have virtually perfect uniformity for greater bandwidth and twice the efficiency of conventional ceramic materials.



Conventional PZT (x800)



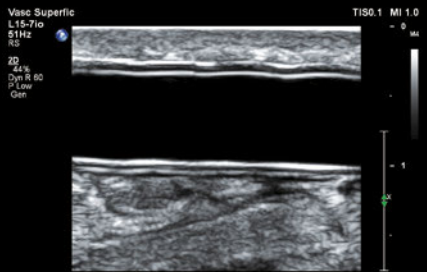
PureWave crystal (x800)

PureWave crystal technology is 85% more efficient than conventional piezoelectric material, resulting in exceptional clinical performance. This technology allows for improved penetration in difficult patients with a single transducer while maintaining excellent detail resolution, superb Doppler sensitivity and exceptional shear wave elastography performance.

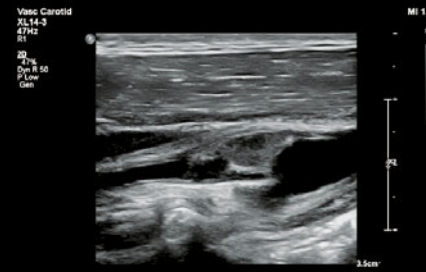


EPIQ Elite features a full range of transducers that supports virtually any vascular application.

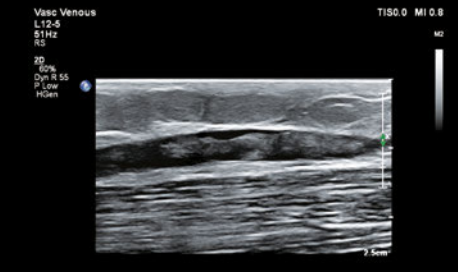
# Exceptional image performance for your vascular lab



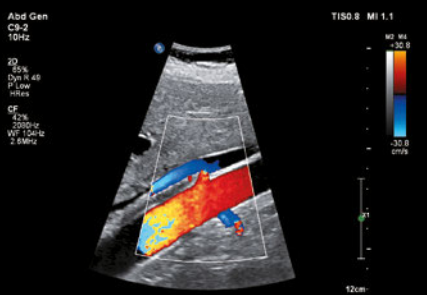
L15-7io image showing superb visualization of a venous dialysis access graft



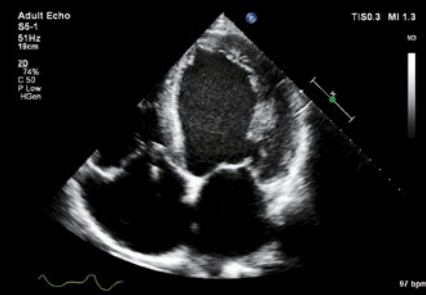
XL14-3 image showing exceptional detail of a complex plaque in a carotid artery



L12-3 image showing excellent near-field resolution of superficial venous thrombosis



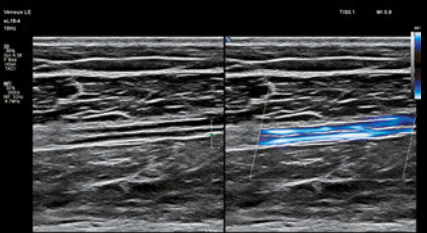
C9-2 image of the abdominal aorta



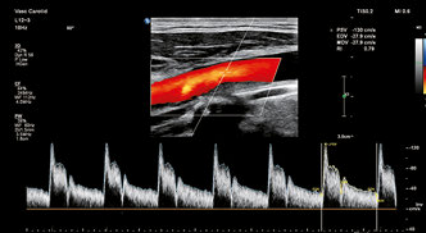
S5-1 PureWave sector provides superb penetration and clarity for cardiac imaging



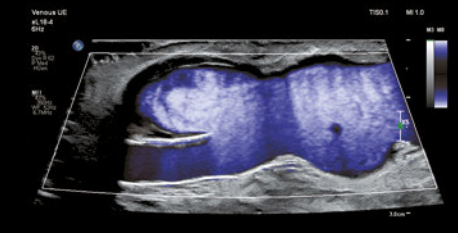
eL18-4 image of a venous varicose vein



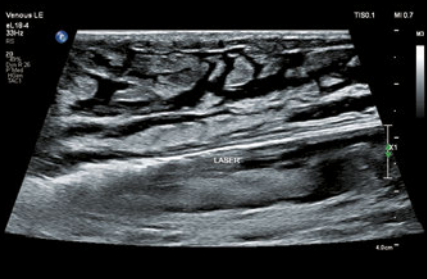
Lower extremity detailed image of peroneal veins using the eL18-4 transducer



L12-3 image of color flow and Doppler in a CCA with soft plaque



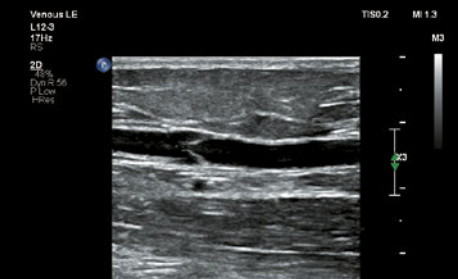
eL18-4 trapezoidal image of an upper extremity AVF aneurysm



Visualization of laser ablation using the eL18-4 transducer



L12-3 image showing excellent detail in the common carotid artery



Lower extremity venous detail of valve leaflets using the L12-3 transducer



Introducing the XL14-3 xMATRIX transducer –  
the world's first xMATRIX linear array transducer



# Choose the leading edge

EPIQ Elite features a true breakthrough in imaging, the XL14-3 transducer, which offers multi-dimensional focusing for ultra-thin slice imaging to enhance diagnostic confidence when assessing vascular disease.

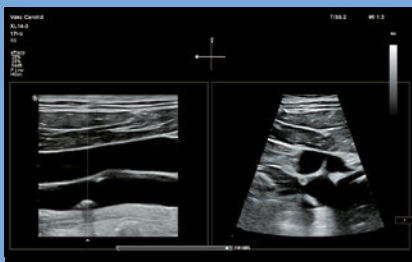


# Breakthrough xMATRIX technology



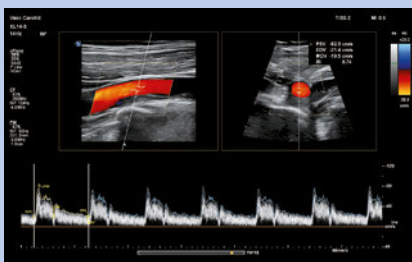
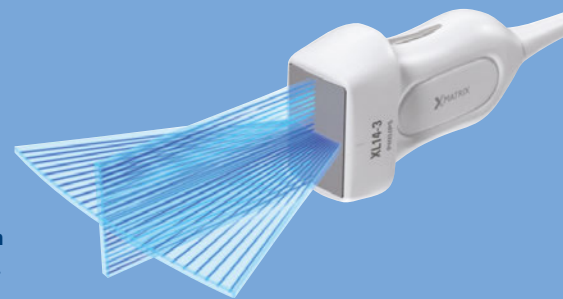
Multi-dimensional electronic focus produces ultra-thin slice imaging for superb images of vascular anatomy and plaque morphology.

**Benefit: higher diagnostic confidence when assessing stenosis and vulnerable plaque.**



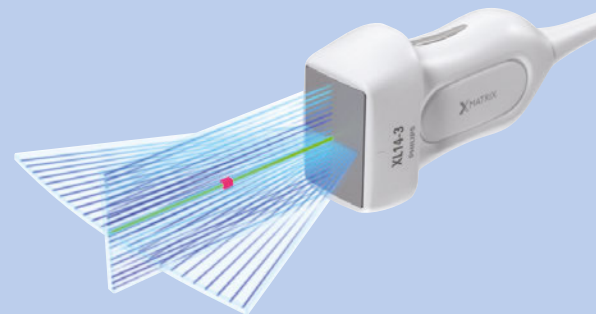
xPlane imaging goes beyond the conventional approach to vascular exams by visualizing real-time images of both longitudinal and transverse planes simultaneously.

**Benefit: eliminates the need to rotate the transducer to acquire orthogonal views – a simple move of the trackball can provide complete anatomical evaluation.**



xPlane pulsed Doppler mode allows precise placement of the Doppler sample volume using longitudinal and transverse reference images.

**Benefit: reduces sample volume placement errors and provides greater reproducibility and consistency between users when sampling significant stenosis.**



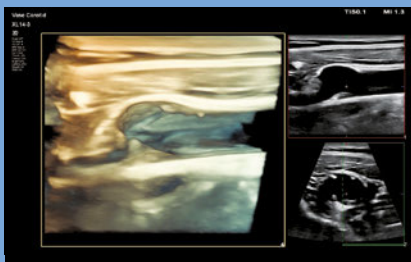
**96%** of users surveyed preferred to use XL14-3 to assess vulnerable plaque.\*

**70%** of users believe that using xPlane imaging could reduce carotid exam time by 20%.\*

\* External user study on EPIQ Elite based on 27 respondents. Study report available upon request.

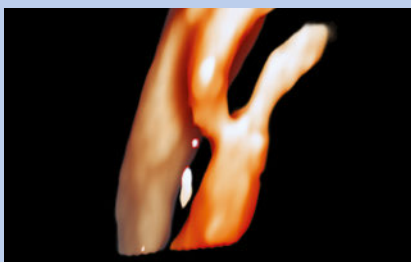
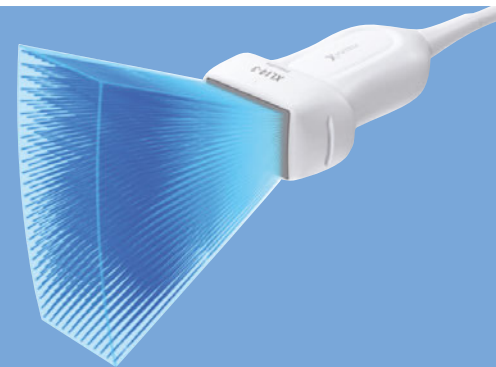


# New diagnostic tools, new era in ultrasound



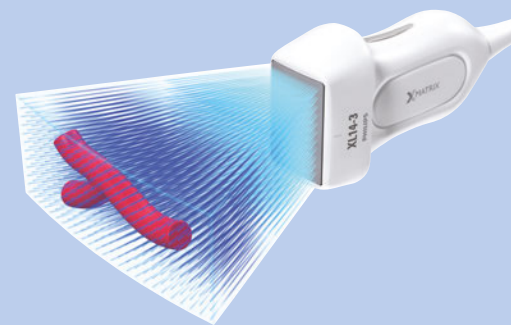
Electronic 3D/4D volume acquisition of vascular anatomy provides new insight into plaque spatial location and composition. Visualize vessel casts using 3D flow data for direct assessment of stenotic or tortuous conditions.

**Benefit: now 3D and 4D visualization provides an ideal communication tool to facilitate clinical decisions and enhance patient consultation.**



The 3D/4D user interface also offers the ability to generate a vessel cast using flow data.

**Benefit: 3D vessel casting allows the direct visualization of flow for further analysis of stenosis or tortuous conditions.**



**85%** of users believe that 3D/4D will influence clinical decisions and enhance patient consultation.\*

**78%** of users believe that visualizing vessel cast using 3D/4D flow data will assist in providing direct assessment of stenotic or tortuous conditions.\*

\*External user study on EPIQ Elite based on 27 respondents. Study report available upon request.




# The leading edge in 3D/4D

**100%** of users believe they will integrate 3D/4D ultrasound visualization into their vascular exam based on icon-driven workflow.\*

With the XL14-3 transducer, intuitive icon-driven workflow simplifies 3D/4D

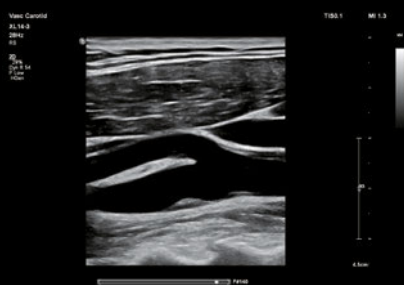
The EPIQ Elite proprietary icon-driven 3D/4D workflow simplifies the examination and allows you to experience a new dimension in vascular imaging. Instantly select rendered options with a single touch of an AutoVue icon. The TouchVue interface allows finger manipulation of the volume from the touchscreen. Now 3D/4D vascular information can be easily added to the vascular exam, eliminating the need for complex conventional user interfaces.

What used to take **10** steps with a conventional interface now takes **just 1**



\*External user study on EPIQ Elite based on 27 respondents. Study report available upon request.

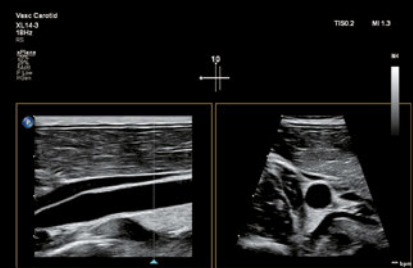
# The XL14-3 transducer brings a new dimension



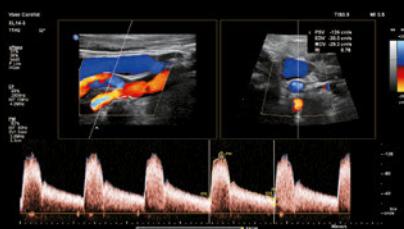
Exceptional detail resolution of carotid bifurcation with plaque using the XL14-3 multi-dimensional focusing capability.



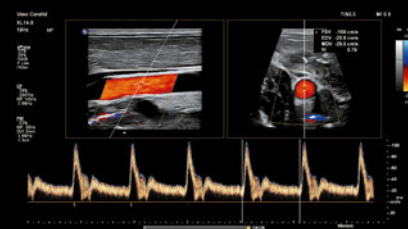
High-definition zoom of intimal wall detail using the XL14-3 xMATRIX array.



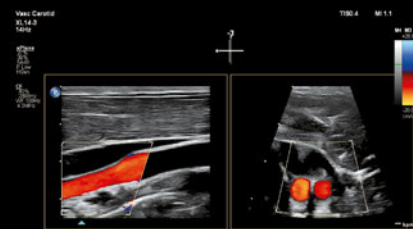
Simultaneous Live xPlane imaging showing the carotid artery in orthogonal planes.



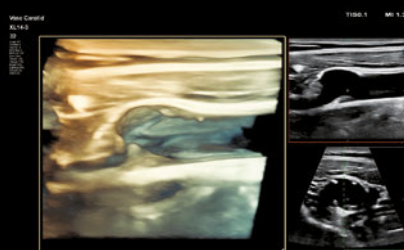
Live xPlane color Doppler easily documents flow in two planes simultaneously.



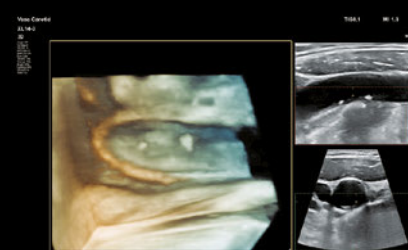
Accurate placement of pulsed wave Doppler sample volume using two imaging planes for reference.



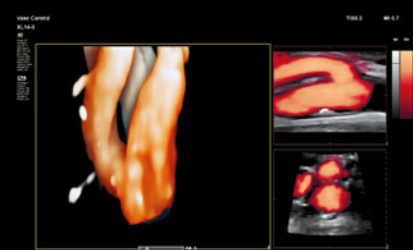
Precise sample volume placement using two reference planes assures acquisition of elevated velocities at stenotic regions.



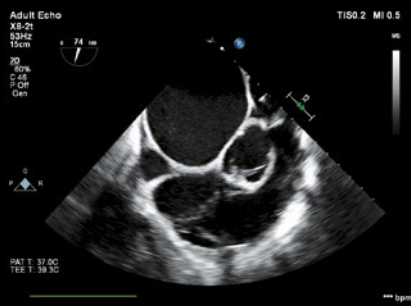
3D/4D imaging using the XL14-3 transducer shows stunning visualization of vascular anatomy.



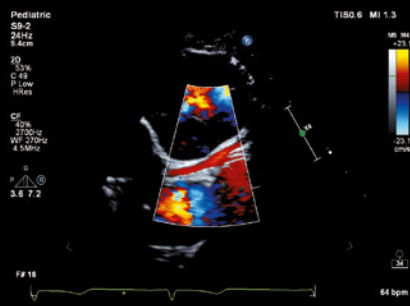
3D/4D imaging reveals greater insights into plaque location and structure.



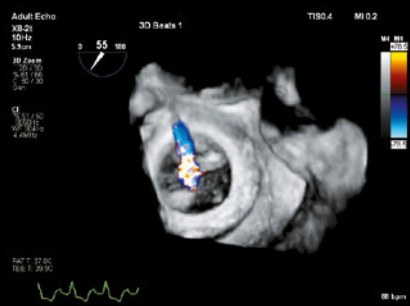
3D vessel cast allows direct analysis of flow disturbance as a result of plaque in the carotid artery.



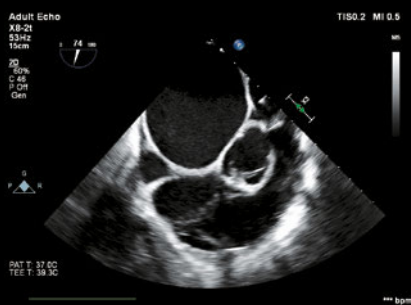
**X8-2t Live 3D TEE showing visualization of multiple Watchman devices closing left atrial appendage.**



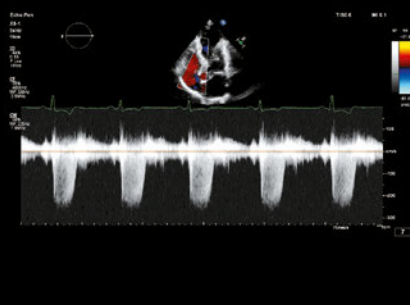
**S9-2 PureWave sector array with highly sensitive color Doppler showing superb detail of pediatric coronary artery.**



**Live 3D color Doppler image demonstrating regurgitant blood flow with a mitral valve replacement device.**



**X8-2t transesophageal 2D image showing excellent visualization of normal right-side anatomy.**



**X5-1 xMATRIX with CW Doppler demonstrating waveform characteristic of tricuspid regurgitation.**



**X8-2t Live 3D TEE visualization of Barlow's mitral valve prolapse.**

# Assess completely

Cardiac imaging with exceptional structural and functional assessment

EPIQ Elite supports a full range of cardiac imaging, including adult and pediatric applications. Philips offers the widest range of 2D and 3D transthoracic and transesophageal diagnostic transducers to meet your echo needs across your patient population, from fetal to adult congenital.

Advanced xMATRIX transducers provide a complete 2D and Live 3D assessment of cardiac structures and enables our most advanced quantification tools for echocardiography. Depth of imaging capability combined with streamlined cardiac workflow reduces the steps and time needed for these especially challenging exams.

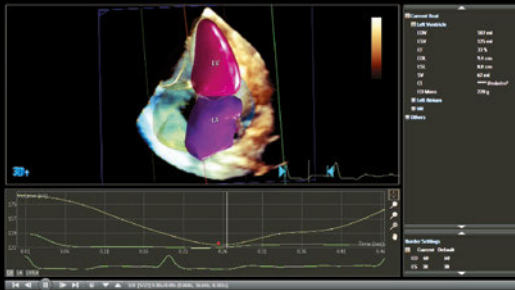


# Put intelligence to work for you

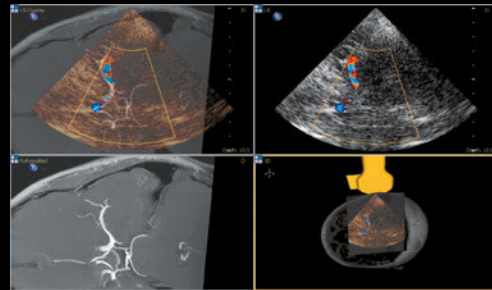
AIUS leverages machine intelligence for faster, more reproducible analysis

At the heart of the powerful EPIQ Elite architecture is our Philips exclusive Anatomical Intelligence for 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 capabilities range from automating repetitive steps to full computer-driven analysis of raw data with minimal user interaction. AIUS can provide advanced screening documentation and assisted measurements, as well as organ and structure detection for automatic registration and advanced quantification.



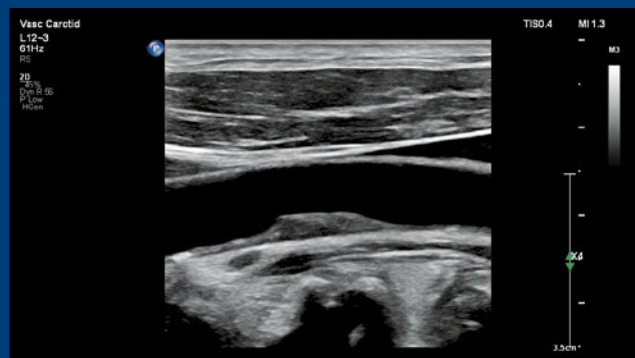
AIUS Dynamic HeartModel automated 3D quantification resulted in a time savings of 83% compared to conventional measurement methods.



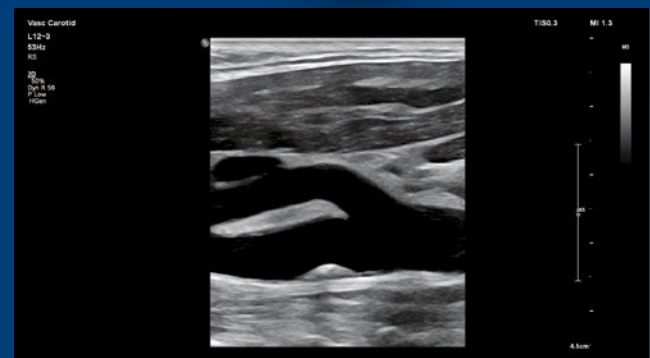
Transcranial fusion imaging using color Doppler allows correlation of anatomical structures as well as providing real-time flow data.

## Elevated vascular imaging with the L12-3 ERGO transducer

- Ergonomic and lightweight
- Superb vascular imaging for carotid and upper and lower arterial and venous exams
- Supports advanced MicroFlow Imaging for vascular applications
- XRES Pro next-generation image processing for enhanced border definition and exceptional plaque conspicuity



XRES Pro next-generation image process reveals subtle details of plaque morphology.

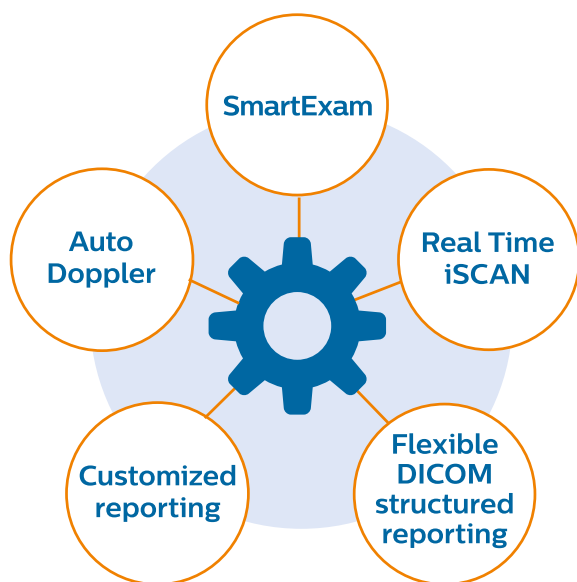


XRES Pro enhances border definition and elevates detection of plaque.

# Interact intuitively

## Designed to elevate the user experience

EPIQ Elite has completely reinvented the premium ultrasound user experience. From ease of use to workflow to ergonomics to portability, we've revolutionized how you interact with an ultrasound system from every standpoint.



The EPIQ tablet-like interface results in 40% to 80% less reach and 15% fewer steps<sup>1</sup>

SmartExam decreases exam time by 30-50%, keystrokes by as many as 300 per exam<sup>2</sup>

Auto Doppler takes 10 steps to 3 steps and reduces the number of button pushes by an average of 68%<sup>3</sup>



# Protect your patients

Powerful system security protects sensitive patient data



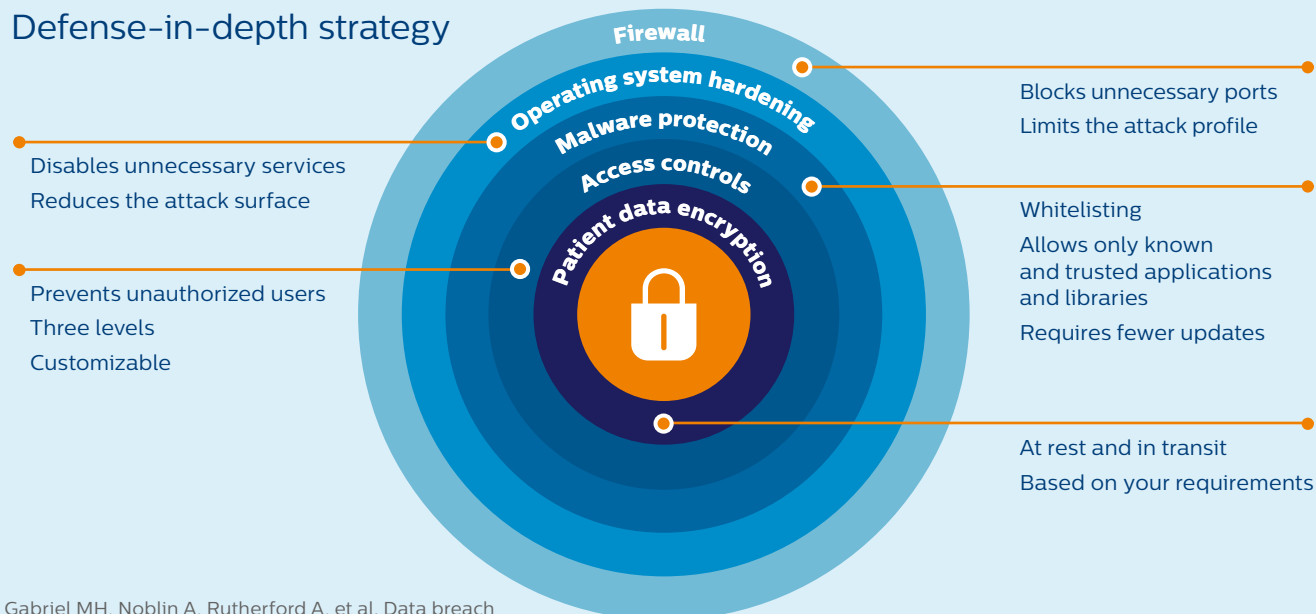
Hospitals and healthcare organizations are spending more to protect their systems and patient data from cyberattacks. Of healthcare providers, one-third of large data security incidents occur in hospitals.\* That is why healthcare cybersecurity spending will exceed \$65 billion over the next five years.\*\*

Ultrasound devices are highly mobile and can exist in a wired or wireless environment. As a result, Philips has made security a high priority for ultrasound systems. The EPIQ Elite

platform is built on Windows 10 OS and features a powerful defense-in-depth principle with an outstanding set of data security comprising of five core layers.

Defense-in-depth strategy uses a multi-layered defense that is more difficult to penetrate than a single barrier. This is a basis for best practices in medical device security. Philips recognizes the importance of securing your medical devices and protecting your patient data. Together we can maintain a secure environment by remaining vigilant and identifying the ever-changing cybersecurity threat landscape.

## Defense-in-depth strategy



\* Gabriel MH, Noblin A, Rutherford A, et al. Data breach locations, types, and associated characteristics among US hospitals. Am J Manag Care. 2018;24(2):78-84.

\*\* Black Book Annual Cybersecurity Survey May, 2018.

# A smart investment

Built to withstand the rigors of daily use, EPIQ offers low operating costs and is backed by Philips support and value-added services. The EPIQ system boasts a low total cost of ownership, making it a smart investment.

## Enhance uptime

- Modular design for enhanced reliability and rapid repair
- Philips remote services\* monitoring, which corrects issues using a standard Internet connection, reducing the need for service calls
- Access to our award-winning service organization

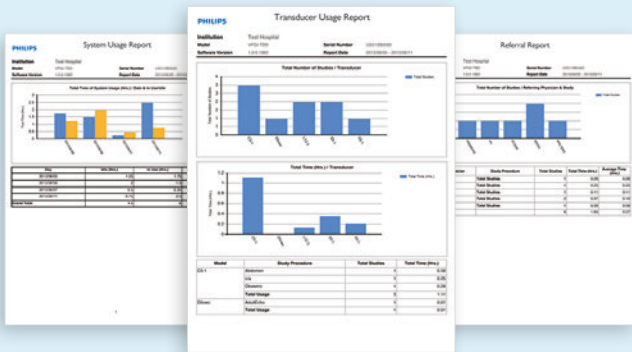
## Responsive relationships

The value of a Philips ultrasound system extends far beyond technology. With every EPIQ system, you get access to our award-winning service organization, our competitive financing, and educational programs that help you get the most out of your system.

EPIQ offers a defense-in-depth strategy, implementing a suite of security features designed to help clinical IT professionals and healthcare facilities provide additional patient data privacy and virus protection, as well as protection from unauthorized access via the ultrasound systems on hospital networks.



Support request button for immediate access to Philips support.



Philips OmniSphere data intelligence tools help you manage your department, maximize resources and improve workflow.



## Exceptional serviceability

The system features a superb modular design for rapid repair.

\* Not all services available in all geographies; contact your Philips representative for more information. May require service contract.

# Count on us as your patients count on you

The value of a Philips ultrasound system extends far beyond technology. With every EPIQ system, you get access to our award-winning service organization,\* competitive financing, and educational tools that help you get the most out of your system.\*\*

## Always there, always on

We work as one with your team to keep your EPIQ system running smoothly.

### Remote service capabilities maximize efficiency

Easy, rapid technical and clinical support through remote desktop enables a virtual visit with a Philips expert.

If you prefer to keep your know-how in-house, the OmniSphere Remote Technical Connect application† allows your BioMed team remote access to Philips systems on your network so that you can have remote service capabilities your way.

### Proactive monitoring solutions maximize uptime

Philips proactive monitoring increases system availability by predicting potential system disruptions and proactively acting on them, letting you focus on what is most important – your patients.

### Immediate support request at your fingertips

The support request button allows you to enter a request directly from the control panel, for a fast and convenient communication mechanism with Philips experts without leaving your patient, minimizing workflow interruption.

### On-cart transducer test provides confidence in your transducer quality

On-cart transducer test provides a non-phantom method to test EPIQ transducers at any time, giving you confidence in your diagnostic information.

## Sharing risk, increasing the return on your investment

Partner with us to maximize utilization and uptime of your EPIQ system.

### Utilization reports for confident decision-making

Data intelligence tools can help you make informed decisions to improve workflow, deliver quality patient care, and decrease the total cost of ownership. The on-board utilization tool provides individual transducer usage data and the ability to sort by exam type. The OmniSphere Utilization Optimizer takes this a step further by providing easy-to-use charts and graphs for all of your applicable† networked Philips systems.

## Understanding your needs, designed for you

Our flexible RightFit service agreements, education offerings, and innovative financing solutions can be adapted to meet your needs and strategic priorities.

- **Technology Maximizer Program:** helps keep your system performing at its peak by continuously providing the latest software from Philips at a fraction of the cost of the same upgrades purchased individually over time.
- **Xtend Coverage:** lets you choose additional service coverage for your ultrasound equipment at the time of purchase to more easily calculate your total cost of ownership.
- **Clinical education solutions:** comprehensive, clinically relevant courses, programs, and learning paths designed to help you improve operational efficiency and enhance patient care.

## 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.

• Business optimization tools such as OmniSphere allow you to use the power of data and connectivity to generate actionable insights and enhance productivity to improve your return on investment.

\* Philips is rated number one in overall service performance for ultrasound for 25 consecutive years in the annual IMV ServiceTrak survey in the USA.

\*\* Optional. Not all services available in all geographies; contact your Philips representative for more information. May require service contract.

† Check with your Philips representative for system compatibility.



1. 2013 engineering study comparing EPIQ with Philips iU22 ultrasound system.
2. University of Colorado, protocols study, April 2007.
3. Auto Doppler clinical study, December 2011.

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