Turning images into answers

Philips QLAB 10 cardiac and vascular ultrasound quantification software

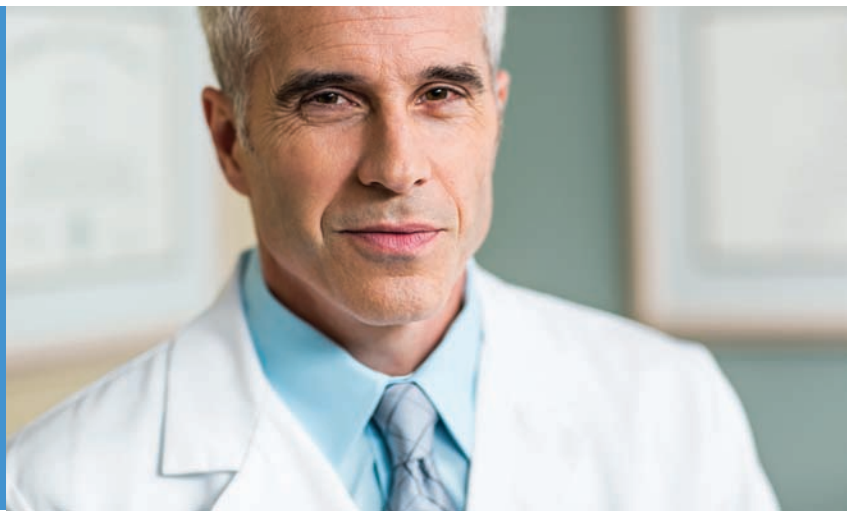
PHILIPS

Providing insight to support your clinical decisions

How do you measure confidence? For clinicians around the world, the answer is QLAB. QLAB is a collection of advanced clinical tools that are fast, easy to use, and provide you with results that are reproducible and consistent, bringing confidence to every study.

QLAB 10 adds exceptional power and intelligence to advanced quantification

- New user interface
- New Q-Apps that utilize anatomical intelligence
- Exam worklist instead of an image-based interface for ease of use
- Patient study management, image review, and advanced visualization and quantification



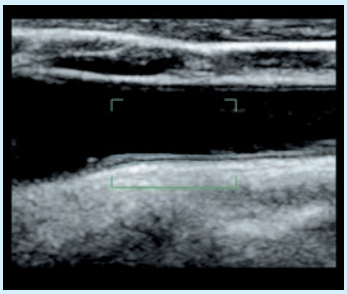
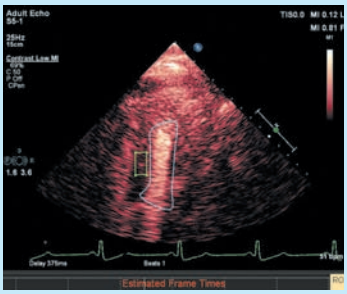
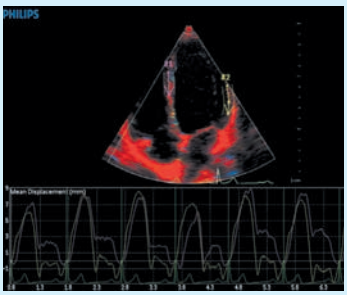
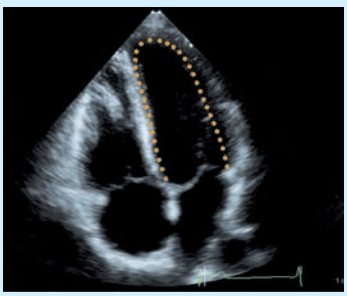
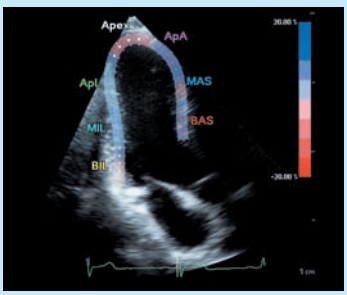
When you use QLAB, you can rest assured that each clinical tool is based on proven algorithms that have been field-tested in rigorous research environments. QLAB is designed to make it easy to get the data you need to drive decisions that can result in quality patient care and operational efficiencies.

You can customize the capabilities of QLAB with the tools that best suit your needs, whether simply to determine ejection fraction or when dealing with the complexities of managing cardiovascular disease, ischemia, heart failure, structural heart disease, or the oncology patient receiving cardio-toxic chemotherapy.

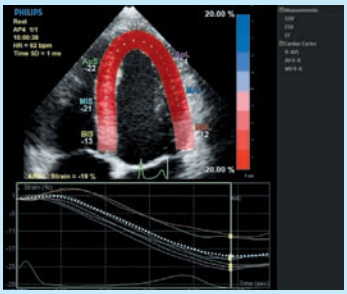
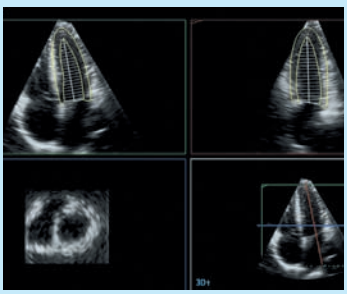
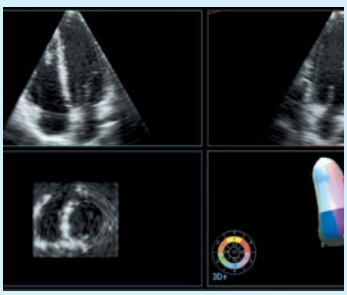
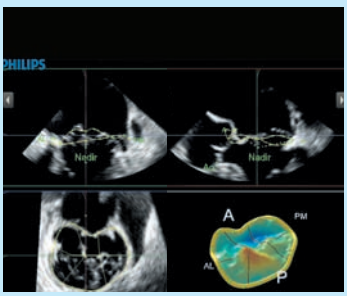
QLAB is for you if you are interested in

- Proven quantification for exams that are easier to perform, more reproducible, and deliver new levels of clinical information
- Viewing, manipulating, and measuring 3D data sets
- Advanced image analysis tools for 2D and 3D quantification and color Doppler quantification
- Performing contrast studies
- Off-cart cardiac viewing, rendering and advanced quantification in 2D, color, and 3D imaging modes
- Creating graphic files in BMP, TIF, JPG, MOV, WMV, and AVI formats for presentation purposes
- Comprehensive measurement reporting

The following Q-Apps are available with QLAB 10

Q-App	Clinical Application	Benefit	
Intima Media Thickness (IMT)	Automatic carotid intima media thickness measurement	Fast and easy access to IMT data	
Region of Interest (ROI)	Echo contrast and color images	Extract acoustic data from images	
Strain Quantification (SQ)	Provides functional data from color tissue Doppler velocities	Derive displacement, strain, and strain rate	
Advanced 2D Q-Apps			
Automated 2D Cardiac Quantification[A.I.] (a2DQ[A.I.])	• Automatic border detection of LV • Rapid access to proven 2D EF and volumes • Choose between the Biplane Simpson's method/TMAD (using annulus motion)	• The ideal tool of every echo lab, a2DQ[A.I.] gives 2D EF with one click on every patient without any manual tracing • TMAD provides a validated index that correlates with EF, which is especially useful on the technically difficult patient	
Automated Cardiac Motion Quantification[A.I.] (aCMQ[A.I.])	• Based upon 2D speckle tracking • Automatically places a ROI based upon the selected anatomical view and generates measurements of both global and regional myocardial functions • Provides a table, 17-segment bull's-eye, and a variety of waveform displays • LV ejection fraction (EF), end systolic volume (ESV), and end diastolic volume (EDV) also provided	Fast and easy way to acquire both EF and GLS at the same time on the images acquired	

*Note: Not all Q-Apps are compatible with all products. Please contact your sales representative for additional information.
[A.I.] Utilizes Anatomical Intelligence

Advanced 2D Q-Apps *(continued)*			
CMQ Stress	Based on 2D speckle tracking technology, provides a method for assessing global, regional, and local cardiac function at rest and peak exercise	Fast and easy-to-use interface designed specifically for stress echo exams	
Advanced 3D Q-Apps			
Cardiac 3D Quantification (3DQ)	View, slice, and display 3D volumes and measure distance and areas from 2D MPR views to get biplane LV volume, ejection fraction (EF), and LV mass calculations	Ability to manipulate 2D planes to get more accurate biplane 2D EF with no foreshortening	
Advanced Cardiac 3D Quantification (3DQA)	• Measures LV endocardial volumes, stroke volume (SV), and true 3D ejection fraction (EF) using 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	• Semi-automated Q-App to measure global 3D ejection fraction with no geometric assumption • Also provides simultaneous timing information for heart failure assessment	
Mitral Valve Navigator[A.I.] (MVN[A.I.])	• Easy-to-use guided tool to provide a comprehensive list of MV and its supporting anatomical measurements and calculations • Requires a volume from Live 3D TEE	• Easy-to-interpret model in eight guided steps • More basic measurements regarding annulus and leaflet can be acquired in just four steps	

*Note: Not all Q-Apps are compatible with all products. Please contact your sales representative for additional information.
[A.I.] Utilizes Anatomical Intelligence

Accurate and fast ejection fraction calculations

An essential component of nearly every echo exam, ejection fraction is among the chief echocardiographic parameters predictive of impending left ventricular dysfunction and clinical deterioration, and is an important factor to consider when planning surgical correction.

Common methods, such as M-mode or 2D distance (M-mode parasternal long axis) measurements are quick and well-established. However, they may sacrifice accuracy for speed, which is particularly problematic given that small differences in ejection fraction can indicate considerable differences in patient management.

The QLAB solution suite for ejection fraction (EF)

- Automated Cardiac 2D Quantification[A.I.] – a2DQ[A.I.]
- Automated Cardiac Motion Quantification[A.I.] – aCMQ[A.I.]
- Cardiac 3D Quantification – 3DQ
- Advanced Cardiac 3D Quantification – 3DQ Advanced

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

The ideal tool of every echo lab, a2DQ[A.I.] with ZeroClick technology utilizes anatomical intelligence and uses Auto-ROI to drive the automatic border detection of the LV and provide rapid access to proven 2D EF and volumes.

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

The ZeroClick technology of aCMQ[A.I.] uses speckle mechanics to provide reproducible 2D Global Longitudinal Strain (GLS) speckle measurements. Speckle provides predictive information in many cardiac pathologies and has been validated to show outcomes in heart failure and aortic stenosis. An accurate EF can also be obtained simultaneously, giving you access to both EF and GLS at the same time.

Cardiac 3D Quantification (3DQ)

Cardiac 3D Quantification (3DQ) allows you to view, crop, rotate, and perform advanced measurements, such as biplane LV mass and EF, on Live 3D echo images. Because 3DQ uses the 3D data set generated by an xMATRIX transducer, it avoids some of the geometric problems that are common with conventional 2D methods of measuring EF, such as apical foreshortening.

Cardiac 3D Quantification Advanced (3DQA)

Cardiac 3D Quantification Advanced (3DQ Advanced) revolutionizes echo quantification and extends the diagnostic power of Live 3D echo by providing semi-automated, on-cart and off-cart analysis of true LV volumes – using all the voxels to generate a full 3D endocardial border. 3DQA computes 3D LV global and regional volumes and EF, allowing a complete LV function and timing assessment in few minutes.

Less guesswork in diagnosing ischemia

Stress echo can be the first line of defense in diagnosing ischemia. But if the study is inconclusive, stress echo becomes a time-wasting detour on the road to diagnosis and treatment.

One of the biggest challenges to conclusive studies is obtaining consistent views at rest and peak stress. Subjective and operator-dependent, stress echo diagnosis can be an exercise in frustration for patient, cardiac sonographer, and physician alike, and indeterminate studies lead to unnecessary time, expense, and radiation exposure in the cardiac cath lab. Philips has developed echo system technologies that help make it easier to get the images you need for conclusive results. PureWave crystals produce exceptional image quality at frequencies from 1 to 5 MHz, enabling imaging of technically difficult patients with excellent penetration and few artifacts.

The X5-1 xMATRIX transducer with iRotate provides an innovative new way to complete an entire stress echo protocol, including acquisition of four-chamber, two-chamber and three-chamber 2D images, from the same window following peak exertion without moving the transducer.

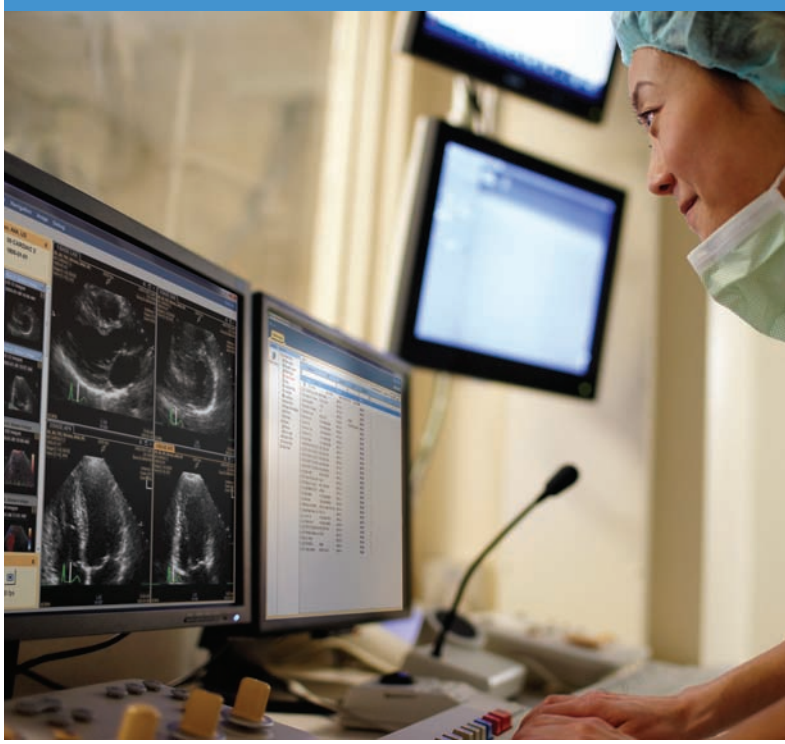
QLAB tools can be accessed on the Q-Station workstation, which is fully compatible with Philips StressVue ECG. All stress stages and views can be sent to Q-Station from StressVue, where they are automatically loaded for efficient global and regional quantification using CMQ Stress.

The QLAB solution suite for ischemia

Complementing these technologies, QLAB offers several tools that enhance the efficacy, efficiency, and objectivity of stress exams.

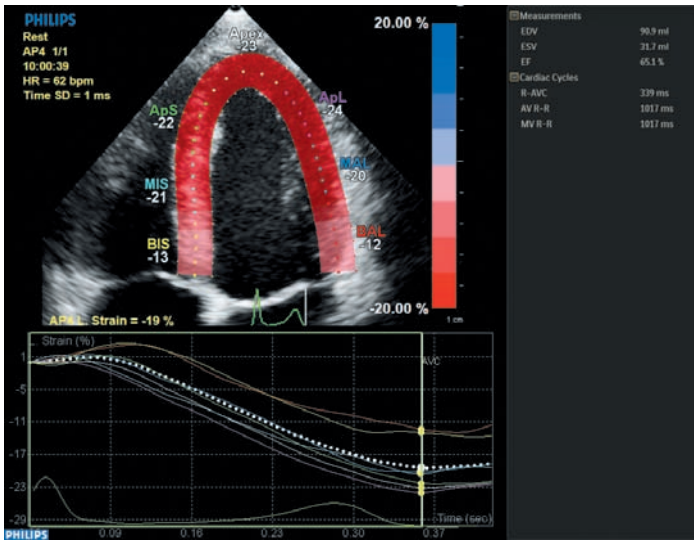
Ischemic heart disease

- Automated Cardiac Motion Quantification[A.I] – aCMQ[A.I]
- Automated Cardiac Motion Quantification Stress Echo – CMQ Stress
- Parametric Quantification and Region of Interest – PQ and ROI
- Any of the EF Q-Apps



CMQ Stress

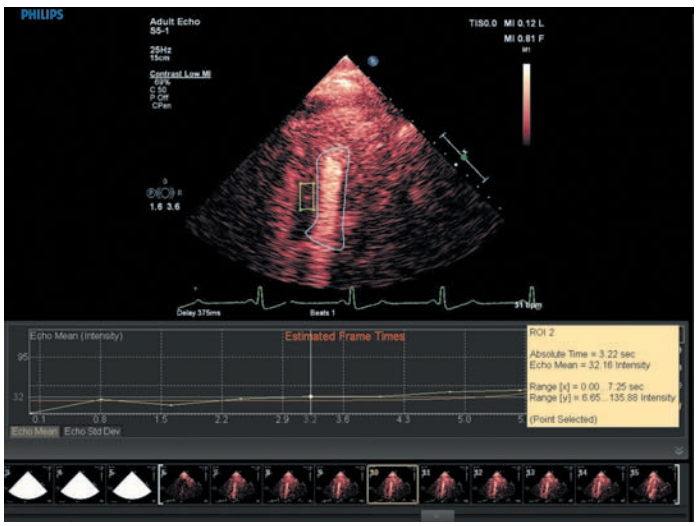
Based on 2D speckle tracking technology, CMQ Stress provides a new method for assessing global, regional, and local cardiac function at rest and peak exercise. These clinical tools offer a suite of measurements and parametric displays to analyze the layers of the myocardium and their mechanics without tissue Doppler imaging angle dependency limitations. Using the 17-segment ASE left ventricular model, CMQ Stress provides additional information for many clinical applications such as regional ventricular wall motion and global assessments.



Using iRotate Stress, apical views are acquired and analyzed in CMQ Stress, providing global strain, peak, and time-to peak strain.

Parametric Quantification

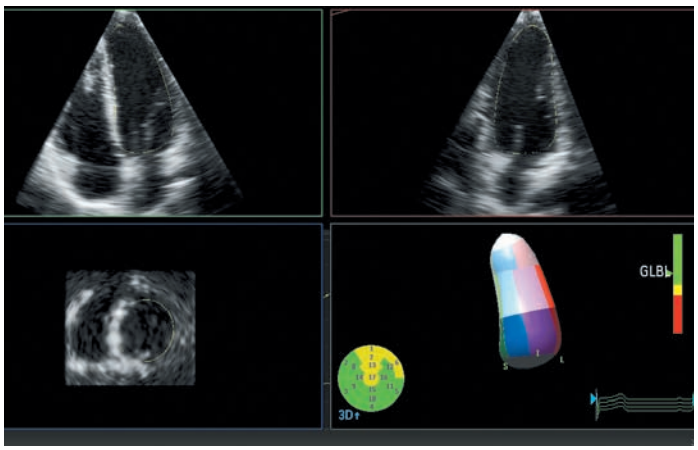
Parametric Quantification (PQ) helps you review and analyze contrast intensities within the heart, further capture information that is either complex or not readily apparent in the original images, and express that data in an easy-to-interpret, color-coded format.



Parametric Quantification supports color-coded representation of contrast intensity and replenishment rate.

Managing heart failure patients

Cardiac Resynchronization Therapy can improve the survival rates of heart failure patients who respond to this therapy. However, the established method of assessment doesn't always accurately predict a positive response, resulting in inefficient and ineffective use of an expensive therapy. Any new assessment method must be easily integrated into standard echo studies. In addition, it would be useful to have a tool to plan where to place pacemaker electric leads to correct the asynchronous beating of the left and right ventricles.



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

aCMQ[A.I.] based on 2D speckle tracking technology provides a method for assessing global and regional cardiac function. It offers a suite of measurements and parametric displays to analyze trans-myocardial mechanics without tissue Doppler imaging angle dependency limitations. Using the 17-segment ASE left ventricular model, aCMQ[A.I.] provides additional information for many clinical applications such as ventricular wall motion and mechanical synchrony assessments with the time-to-peak measurements provided.

3DQ Advanced

In addition to accurate data for assessing global function based on LV volume, EF, and stroke volume, 3DQ Advanced allows simultaneous display of 17 regional waveforms, enabling temporal comparisons between segments. This is a potentially valuable tool for cardiac synchronization studies based on regional timing data and for any investigation of segmental severe ischemic heart disease. The ability to perform objective segmental comparisons may also play a valuable role in assessing the effect of therapeutic or mechanical interventions such as cardiac resynchronization therapy.

The QLAB solution suite for heart failure

QLAB offers comprehensive 2D and 3D advanced quantification tools for assessing heart failure patients.

- Intima Media Thickness – IMT
- Automated Cardiac Motion Quantification – aCMQ[A.I.]
- Advanced Cardiac 3D Quantification – 3DQ Advanced

Advancing treatment of structural heart disease

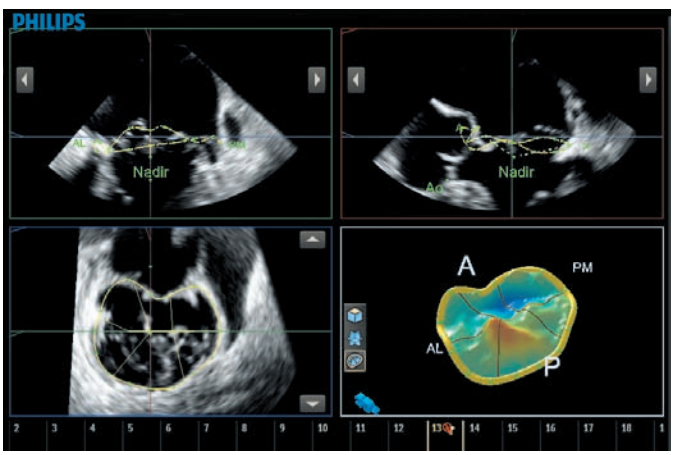
As the incidence of structural heart disease rises, accurate visualization and measurement methods are increasingly desired to perform complex therapies. Reference studies have shown that patients with mitral valve repair live longer than patients with replaced valves, and measurement of structures is essential to determine device size.[1] Pre-planning consultations with surgeons can improve OR efficiency if they include accurate information that surgeons may use to choose therapy methods and devices. In addition, as minimally invasive repair techniques come to the forefront for patients who cannot withstand surgery, confidence of the landscape is even more important in the absence of direct visualization.

Cardiac 3D Quantification (3DQ)

Cardiac 3D Quantification (3DQ) allows you to view, crop, rotate, and perform advanced measurements, such as biplane LV mass and EF, on Live 3D echo images. It gives you the 2D distance and area measurements on the MPRs, providing you access to 2D views that you can't get with a traditional 2D transducer.

3DQ Advanced with Aortic Valve Area (3DQA)

3D-based LV stroke volume measurements obtained from 3DQ Advanced may prove to be a valuable tool for surgical planning because they provide data for objective aortic valve area assessment.



Mitral Valve Navigator[A.I.] provides 3D MPR measurements of the mitral valve anatomy and associated structures as well as a model to aid with understanding and communication.

The QLAB solution suite for structural heart disease

- Cardiac 3D Quantification – 3DQ
- Advanced Cardiac 3D Quantification – 3DQ Advanced with Aortic Valve Area (AVA)
- Mitral Valve Navigator[A.I.] – MVN[A.I.]

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

Mitral Valve Navigator[A.I.] (MVN[A.I.]) provides 3D MPR measurements of the mitral valve anatomy and associated structures. It also enables accurate 3D modeling of the annulus, leaflets, and aorta. Based on Live 3D TEE information, MVN[A.I.] provides you with a clinical decision support tool to help enhance diagnostic confidence, surgical planning, follow-up care, and communication between clinicians and with patients. MVN[A.I.] takes a Live 3D volume of the mitral valve and turns it into an easy-to-interpret model in eight guided steps. It guides you through the entire process using simple commands and clear graphics, making this a much easier tool to use than previous mitral quantification tools. MVN[A.I.] allows the user to work to a basic model, which looks at the annulus and basic leaflet data in four steps, all the way to an advanced model that includes coaptation and segmentation of the MV leaflets.

1. Mohty D, Orszulak TA, Scaff HV, Avierinos JR, Tajik JA, Enriquez-Sarano M. Very long-term survival and durability of mitral valve repair for mitral valve prolapse. 2001 Sep 18:104(12 Suppl 1):11-17.

Working for you

Philips offers a variety of configurations that make it easy to integrate QLAB into your connected departmental workflow. You can use QLAB on the EPIQ 7 and EPIQ 5 ultrasound systems, on the Philips specialized Q-station, on many third-party PACS systems,* and even on home and office computers.

You can use QLAB on

- EPIQ 7 ultrasound system
- EPIQ 5 ultrasound system
- iE33 xMATRIX ultrasound system
- iE33 ultrasound system
- iU22 xMATRIX ultrasound system
- iU22 ultrasound system
- CX50 ultrasound system
- CX30 ultrasound system
- HD15 ultrasound system
- HD11XE ultrasound system
- PACS from several manufacturers*
- Your home or office computer

* Check with your PACS manufacturer or Philips Account Manager for available QLAB solutions.

QLAB on Xcelera

Philips also offers QLAB on Xcelera, our leading echo lab management system. Depending on the version of QLAB installed, the 2D and 3D quantification modules on Xcelera can provide you with the same QLAB functionality as other QLAB products, allowing you to perform cutting-edge quantitative analysis when and where you desire. Also, QLAB on Xcelera has the same interface as other QLAB products, and most of the computational results generated in QLAB can be integrated into Xcelera clinical reports. You can also populate your Xcelera image database with images captured in QLAB. QLAB clinical results can now benefit from exclusive Xcelera trending reporting capabilities and be shared across Xcelera clients. The Xcelera application is designed to seamlessly integrate future QLAB enhancements.

Please visit www.philips.com/QLAB

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