



# Revolutionizing premium performance ultrasound

Philips iU22 xMATRIX ultrasound system

**PHILIPS**  
sense and simplicity

# Based on your vision, to meet your needs

At Philips, we strive for change that improves and simplifies the lives of patients and healthcare providers. Advances such as PureWave crystal technology, SonoCT real-time image compounding, and SmartExam guided workflow have made the iU22 the ultrasound system trusted by over 12,000 customers worldwide. The introduction of xMATRIX technology is a true breakthrough that revolutionizes premium performance ultrasound.



Combine the strength of the iU22 ultrasound system with the power of xMATRIX, and you have an ultrasound system in a category of its own. The iU22 xMATRIX is an innovation that can increase clinical confidence, reduce exam time, and bring more information to the reading room.

Leading edge, redefined architecture. Exceptional resolution. Easy-to-use volume imaging. Built on a remarkable legacy, yet unlike anything you've ever seen.

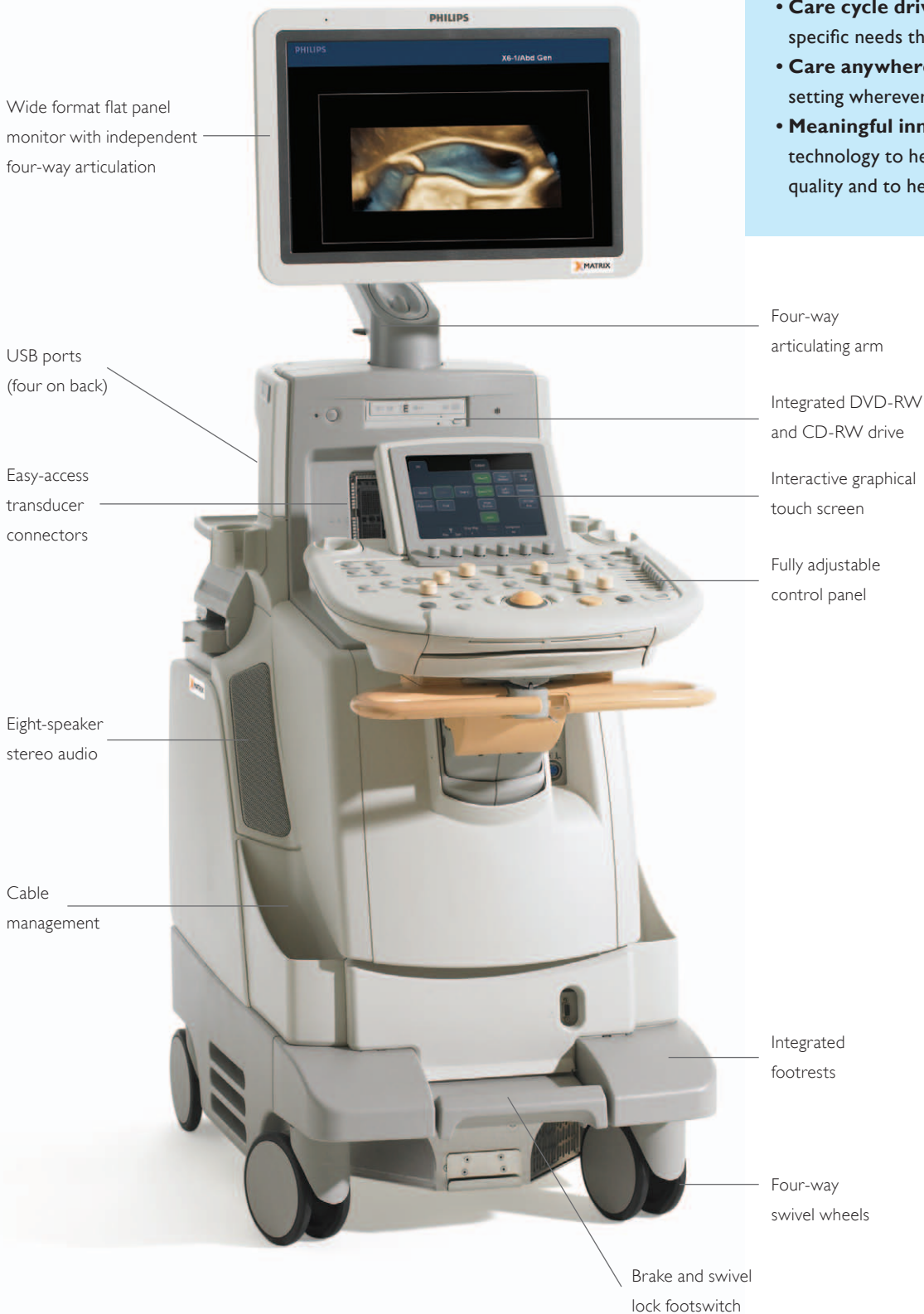
## Key advantages

- Experience a new milestone in image quality – even on technically challenging patients
- View two imaging planes simultaneously, in real time
- Acquire volume data without changing transducers and disrupting workflow

## Our promise to you

Philips brand promise to our customers is based on four pillars:

- **People-focused:** We listen to the needs of patients and their care providers.
- **Care cycle driven:** We focus on their specific needs throughout the care cycle.
- **Care anywhere:** We enable care in any setting wherever it occurs.
- **Meaningful innovation:** We apply technology to help improve healthcare quality and to help reduce costs.



# Clinical confidence

What if we changed your idea of premium performance ultrasound resolution?



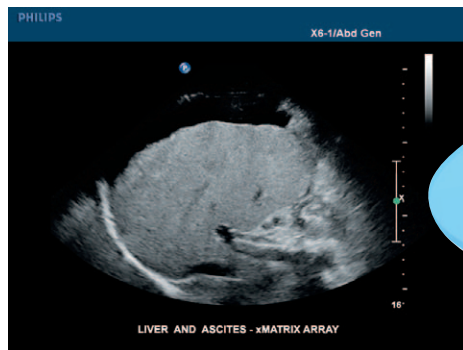
## Exceptional image quality

Exceptional image quality and resolution you need for confident diagnoses can now be found with the new iU22 xMATRIX ultrasound system. The X6-1 PureWave xMATRIX transducer features over 9,000 active elements, which is 35 times more elements than today's conventional transducers.

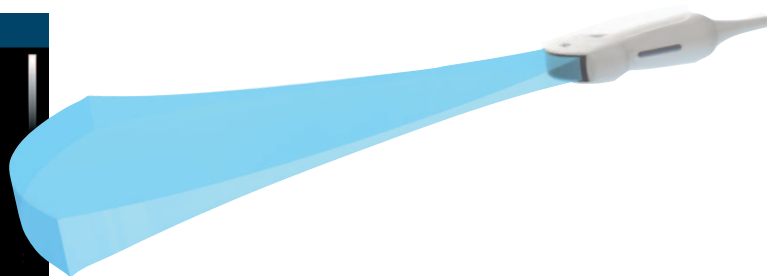
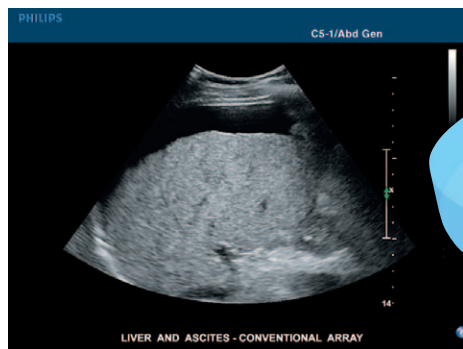
The X6-1's ultra-thin slice imaging redefines premium performance ultrasound by providing:

- Extraordinary tissue uniformity for improved textural pattern recognition
- Superb discrimination of micro-structures near, mid, and far
- Outstanding ultrasound image resolution

## X6-1 xMATRIX array ultra-thin slice imaging



## Conventional array image





# Workflow efficiencies

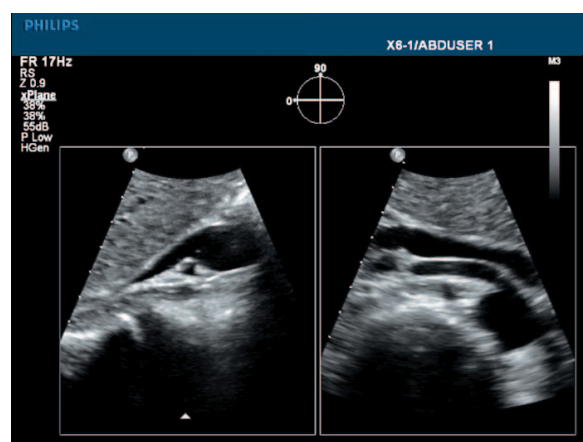
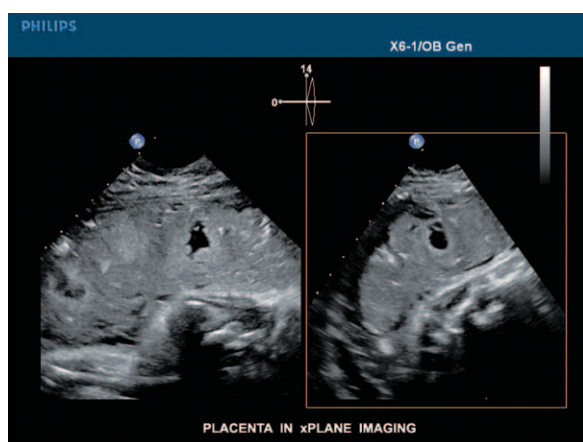
What if you could acquire two images simultaneously without moving the transducer, improving imaging precision and saving time while reducing the potential for injury?



With the iU22 xMATRIX, you can acquire two high-resolution images simultaneously without moving the transducer, improving imaging precision, speeding workflow, and saving time while reducing the potential for injury.

The X6-1 PureWave xMATRIX transducer features xPlane, which allows imaging in two planes without moving the transducer. You no longer have to rotate the transducer to see the second plane and you can maintain a reference point while surveying anatomy.

Clinical trials have shown that that xPlane reduces the number of orthogonal turns required for an abdominal exam from 20 to 30 down to fewer than five and reduces sonographer wrist strain by an average of 70 percent.



Available on the X6-1 and X3-1 xMATRIX transducers, Live xPlane imaging supports the simultaneous display of two live imaging planes.

# Removing the barriers to 3D imaging

What if we made it easy to add volume imaging to 2D exams without disrupting workflow?

A number of barriers have prevented volume imaging from being integrated into the ultrasound lab. The iU22 with xMATRIX removes those barriers, making it easy to bring significant new clinical information to ultrasound exams.

In a study of 343 cases, users judged that volume imaging changed the diagnosis in an impressive 29 percent of cases, while in 57 percent of the cases it provided additional information that increased diagnostic confidence.

**Barrier** – Obtaining volume data required changing transducers.

## xMATRIX solution

The new X6-1 PureWave xMATRIX transducer provides high resolution for both 2D and 3D imaging. As a result, there is no need to change transducers to acquire volume images, so there is no disruption to the examination.

**Barrier** – MPR images were of a lower quality than 2D images.

## xMATRIX solution

The X6-1 PureWave xMATRIX transducer produces high-resolution MPR images in X,Y,Z, or iSlice formats.

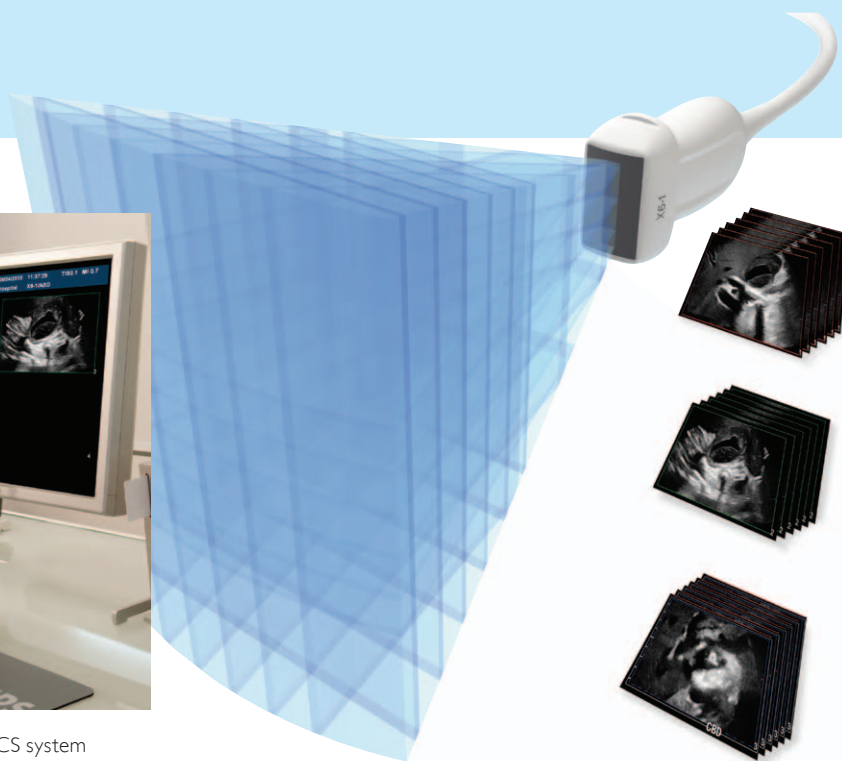
**Barrier** – Volume ultrasound data could not be viewed on PACS.

## xMATRIX solution

Finally, ultrasound volume data from any volume transducer is available on any PACS (DICOM multi-frame object standard presently required for all cineloop information). Once the volume data is acquired, the iU22 will capture the X,Y, and Z MPR cineloops at the push of a button, and send them to your PACS. You can then view these ultrasound MPR images just as you view CT or MR images.



Ultrasound volume data (X,Y,Z) is available on any PACS system accepting DICOM multi-frame object standards.



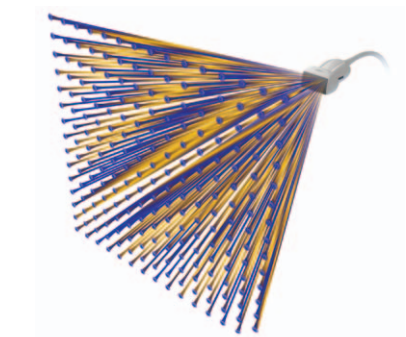
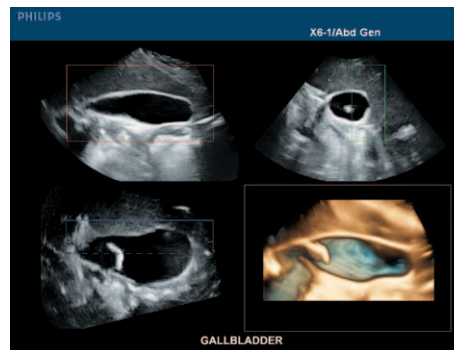
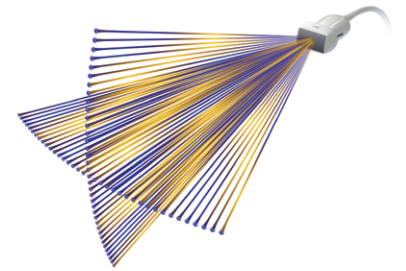
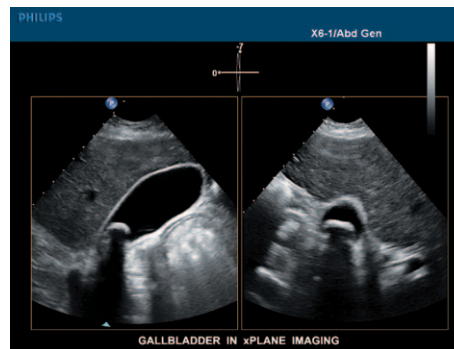
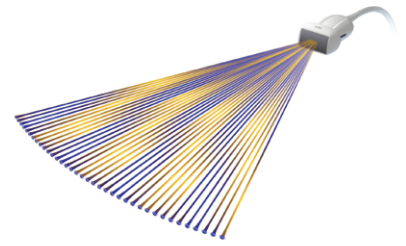
# Remarkable transducer versatility

What if one transducer could provide the ultimate versatility in clinical imaging?

The X6-1 offers all modes with one transducer – 2D, 3D/4D, Live xPlane, Live MPR, MPR, Doppler, color Doppler, and CPA – all at the touch of a button.

## With xMATRIX technology, you can:

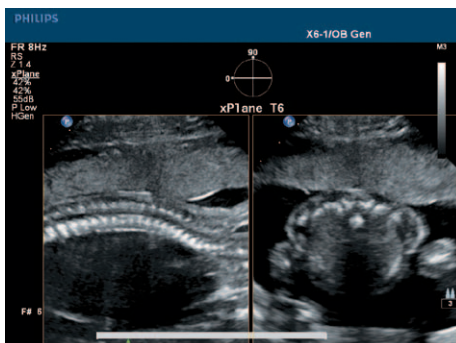
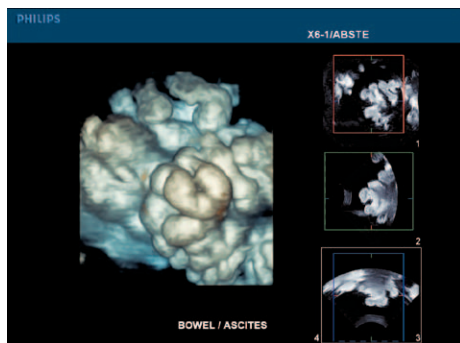
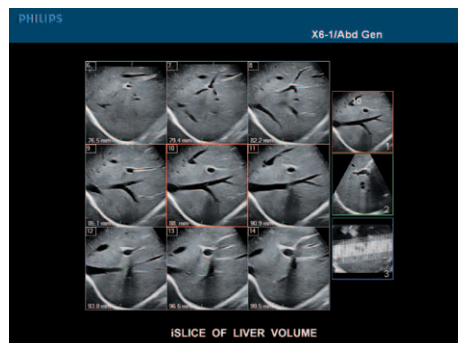
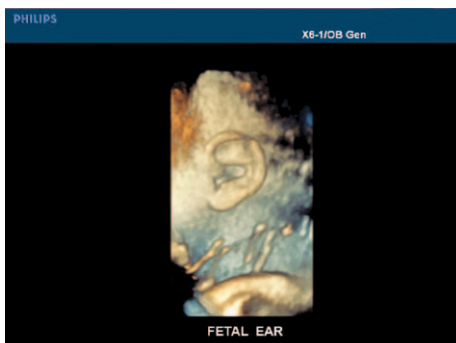
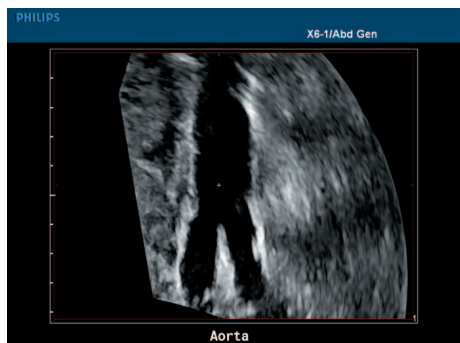
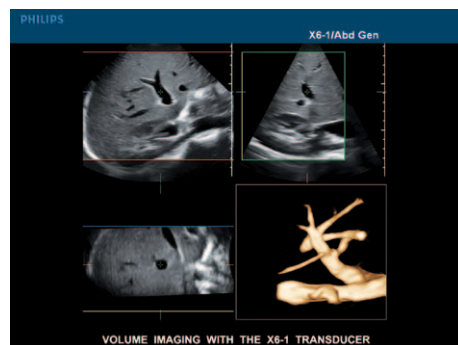
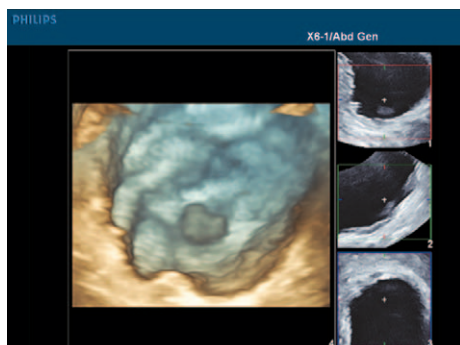
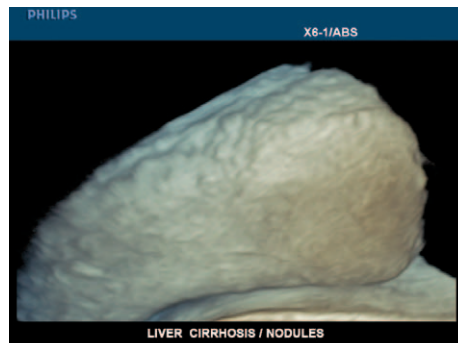
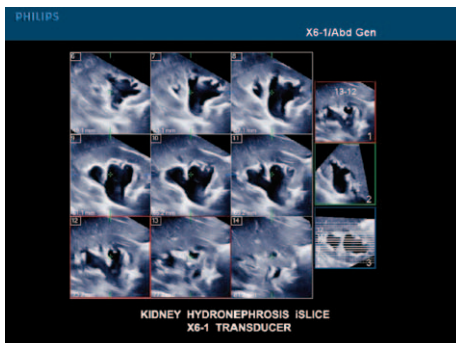
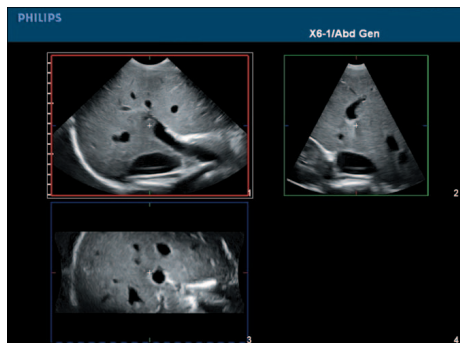
- Achieve ultra-thin, 2D slices
- Use Live xPlane imaging to create two full-resolution planes simultaneously, allowing you to capture twice as much clinical information in the same amount of time
- Acquire near isovoxel resolution that reveals superb images from any plane within the volume
- Send 3D MPRs in the X,Y, and Z plane to any PACS system with MPR DICOM Export
- Present smooth, real-time 4D volume data in abdominal and obstetrical exams





# Simply superb

What if you had superb images across a wide range of applications to enhance diagnostic confidence?





# Smart workflow tools deliver efficiency and intelligence

What if you could easily program your personal protocols for any application into your premium performance ultrasound system and never again have to type in any annotation?

To respond to your needs for greater efficiency, the iU22 xMATRIX system is redefining workflow through built-in intelligence that automates many time-consuming activities and provides valuable guidance through potentially challenging types of exams.

## SmartExam automatically plans and processes application protocols

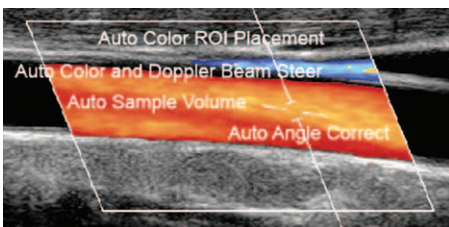
With SmartExam guided workflow, designing a new type of exam is easy. Perform the exam, and the iU22 remembers every step of the protocol, automatically recording required views, annotation, body markers, mode changes, and quantification. And with SmartExam Shuffle you can send images to your PACS in the order assigned, even if it doesn't match the order in which they were acquired, which aids consistency of ultrasound image review.

### A recent study found that SmartExam

- Decreased examination time by 30-50 percent
- Reduced keystrokes by 300 per exam
- Improved consistency and quality of exams
- Assisted in department reimbursement and accreditation by increasing consistency

## Auto Doppler speeds vascular exams

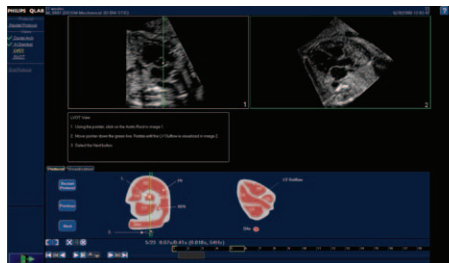
Auto Doppler automates the most repetitive manual controls, speeding and standardizing vascular exams by offering automatic grayscale optimization, automatic sample volume placement in area of greatest velocity, automatic spectral Doppler optimization, automatic angle correct, and automatic color optimization. This helps to standardize exam outcomes and speed patient throughput.



Auto Doppler takes time-consuming color box positioning and sample volume placement from ten steps down to three steps and reduces the number of repetitive button pushes by an average of 67.9 percent.

## Fetal Heart Navigator simplifies fetal heart exams

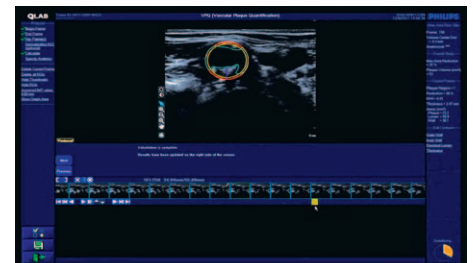
The new Fetal Heart Navigator aids the clinician in locating the required views of the fetal heart to aid in anomaly detection. After automatically aligning to the ductal arch view as a baseline for the other views, FHN provides a series of simple instructions and matching the 2D schematics to guide the clinician through obtaining the next three views required by the ISUOG guidelines.



Instructions and schematics prompt simple adjustments for 4C, LVOT, and RVOT views.

## Automated quantification to assess cardiovascular risk

Now there is a simple way to obtain the quantification numbers that indicate the risk of developing cardiovascular disease. The Philips Vascular Plaque Quantification tool non-invasively uses 3D technology to automatically visualize and quantify the overall volume of vascular plaque in the carotid artery, which may help determine who is at an increased risk for stroke or vascular disease.



VPQ uses 3D technology to visualize and quantify the overall volume of atherosclerotic plaque in the carotid artery.

# Technically difficult patients are now less difficult

What if you could visualize tiny anatomical structures with exquisite detail on even technically challenging patients?

Those familiar with the iU22 know that it is an excellent system for imaging technically difficult patients. Now the iU22 system with PureWave technology makes it even easier, with four transducers for imaging technically challenging patients.

With a fully sampled matrix phased array of 9,212 elements, the X6-1 PureWave xMATRIX transducer delivers the ultimate in clinical versatility – excellent 2D and 3D with one transducer – even on technically difficult patients.

## **PureWave C5-1 transducer**

The size and shape of the PureWave C5-1 transducer facilitates access and comfort during scanning, and PureWave crystal technology supports exceptional image clarity even on difficult patients. In a six-site global study comparing 321 cases, use of the C5-1 was shown to:

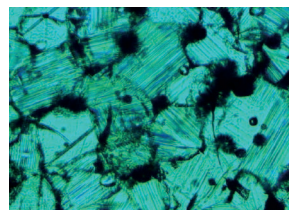
- Reduce exam times by as much as 38 percent
- Reduce pain and fatigue from scanning in as many as 85 percent of the cases
- Reduce pushing required to achieve penetration of an organ or structure in as many as 93 percent of the cases
- Create a marked improvement in color sensitivity in as many as 86 percent of the cases
- Reduce a recommendation for additional studies with CT or MR due to an inadequate ultrasound study in as many as 69 percent of the cases

## **S5-1 PureWave transducer**

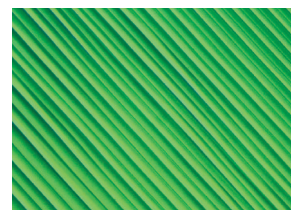
The S5-1 PureWave transducer for adult, pediatric, and congenital heart disease applications features Philips exclusive PureWave crystal technology, which is clinically proven to improve penetration in difficult-to-image patients. PureWave reduces clutter so clinicians can view fine structures in excellent detail.

## **C10-3v PureWave IVT transducer**

The C10-3v PureWave IVT (intravaginal transducer) is the highest frequency PureWave transducer to date, delivering exceptional detail and contrast resolution throughout the depth of field. In particular, the C10-3v is helpful for early obstetrical exams or gynecological exams, potentially alleviating the need for referral for CT or MR exams, and thus streamlining care.



**Conventional** (x800)



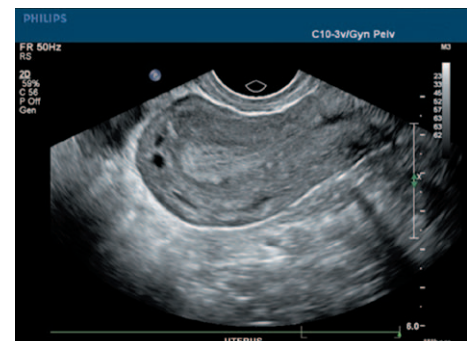
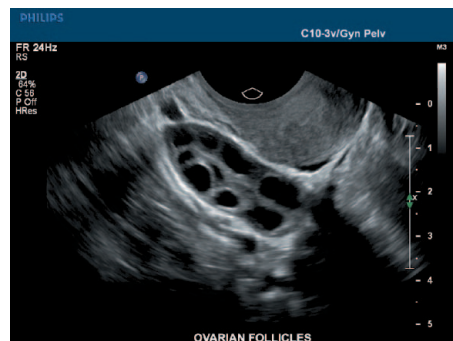
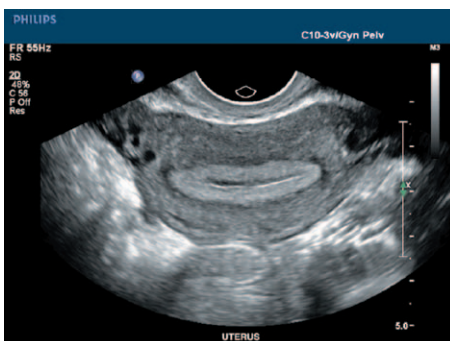
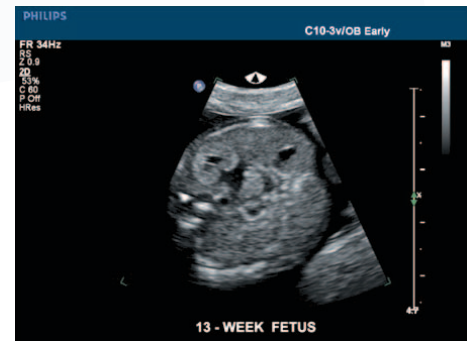
**PureWave** (x800)

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.

# Exceptional detail

What if you could offer your patients the clinical confidence aided by the highest frequency PureWave transducer to date?

C10-3v PureWave transducer is the highest frequency PureWave transducer to date with exceptional detail and contrast resolution throughout the field of view.



# One-button solutions enhance ease of use

What if the operation of a premium performance ultrasound system was addressed with a few one-button controls?

Ease of use is one of the top three requirements for a premium performance ultrasound system. That is why the iU22 xMATRIX is designed to operate using a small number of one-button controls that assure that you are able to acquire excellent images with the least amount of effort.

## A healthier workplace

Because surveys indicate that 80 percent of sonographers are scanning in pain and 20 percent of them will suffer a career-ending injury, the iU22 was designed with the user's health in mind. With a keyboard and monitor that can move independently, users can stay in a neutral position while scanning. The virtually flickerless flat panel monitor is easy on users' eyes, while flexible transducer cables reduce tension and muscle strain.



**iSCAN** one-button optimization quickly and automatically adjusts system parameters in both 2D and Doppler modes based on patient and exam types. It decreases keystrokes while ensuring excellent image clarity in each exam.



**iFOCUS** Intelligent Focusing Technology automatically computes beam characteristics for a selected region of interest, and then provides excellent detail resolution and tissue uniformity.



**iOPTIMIZE** Intelligent Optimization instantly adjusts system performance for different patient sizes, flow states, and clinical requirements.



# Grow your practice with new services

What if you could correlate areas of interest between modalities and improve interventional procedure accuracy with image fusion and instrument navigation?

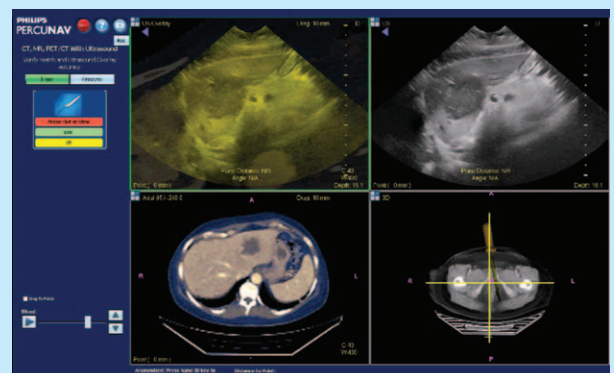


The iU22 provides both integrated image fusion and navigation capabilities to help you increase diagnostic confidence and offer new interventional services that improve the utilization of ultrasound.

Equipped with PercuNav image fusion and navigation technology, the iU22 enables query retrieve of CT, MR, and PET/CT volumes. This enables diagnostic radiologists to benefit from fused images that can help clarify diagnosis and the interventional radiologists to guide biopsy and ablation instruments to a region of interest when performing needle-based procedures.

## **The iU22 ultrasound system with integrated PercuNav image fusion and instrument navigation**

- Provides improved diagnostic confidence for abdominal imaging
- Increases diagnostic confidence during abdominal biopsy and ablation interventional procedures in which the lesion is difficult to visualize or near a critical structure
- Features Philips motion compensation and respiratory gating to decrease inaccuracy from patient breathing or movement, so clinicians can confidently proceed with interventions
- Works with both the X6-1 xMATRIX and the C5-1 transducers



# Elastography provides new tools

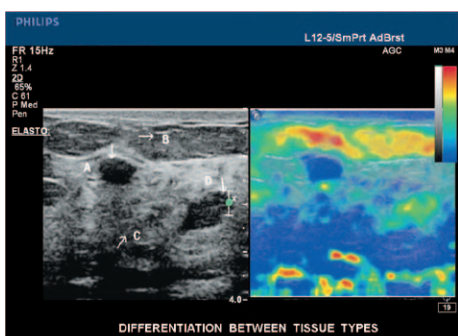
What if you could provide a new method of detecting abnormalities?

Studies have shown that a combination of sonography and ultrasound elastography, a technique that enables evaluation of tissue stiffness, could potentially reduce unnecessary biopsies.\* You can add this valuable diagnostic tool to your services by using a range of transducers to perform elastography with the iU22 xMATRIX.

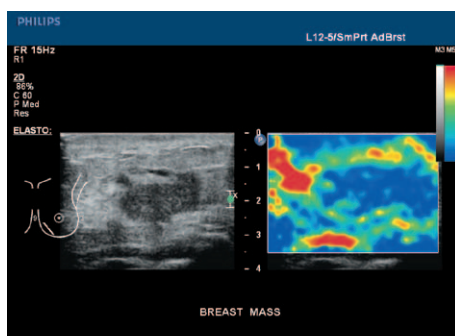
Philips elastography solution generates an elastogram from internal patient movement, and then provides distance and area measurements, size comparison to validate the size and location of the lesion on the elastogram, and anechoic imaging that enhances the cystic structures on the elastogram.

## Breast

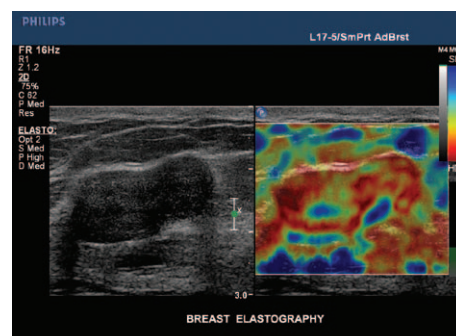
The iU22 xMATRIX offers strain-based breast elastography on the L12-5 transducer and the L17-5 transducer.



Note the distinct differences in tissue stiffness relative to the other areas of this image. Dark blue depicts the stiffest areas in this image.



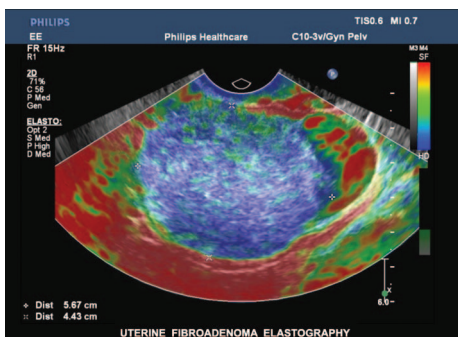
Color elastography map showing the gradations of stiffness relative to the surrounding tissues in this mass with suspicious characteristics.



The elastogram can quickly and easily be compared to 2D images to measure and assess lesion size and shape.

## Gynecology

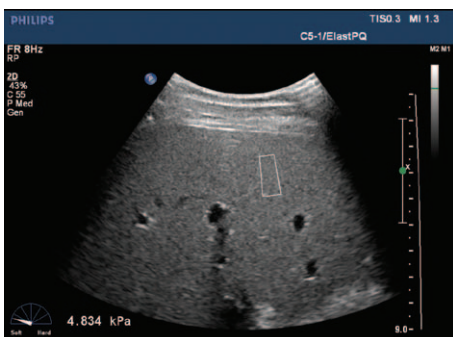
The iU22 xMATRIX offers strain-based GYN elastography on the C10-3v transducer.



Elastography allows clinicians to visualize the relative stiffness of tissues, which might be helpful in more clearly defining structures, such as ovaries and fibroids.

## Liver

The iU22 xMATRIX offers shear wave elastography on the C5-1 transducer as a noninvasive diagnostic tool for staging and surveillance.



Shear wave point quantification utilizes the C5-1 transducer to conduct a virtual biopsy. At the touch of a button, clinicians can acquire absolute liver stiffness data using a unique series of ultrasound pulses.



\* Tan SM, et al. Improving B mode ultrasound evaluation of breast lesions with real-time ultrasound elastography – A clinical approach. The Breast (2007), doi:10.1016/j.breast.2007.10.015.

Hui Zhi, MD, Bing Ou, MD, Bao-Ming Luo, MD, Xia Feng, MD, Yan-Ling Wen, MD, Hai-Yun Yang, MD. Comparison of Ultrasound Elastography, Mammography, and Sonography in the Diagnosis of Solid Breast Lesions. J Ultrasound Med 2007; 26:807–815.

# Support that enhances productivity

What if Philips could provide advanced service features that promote uptime and improve business efficiencies?

Philips has invested heavily in comprehensive support services to keep your ultrasound systems up and running without getting in your way, so you can deliver uninterrupted quality care. A remote connection with Philips allows for many advanced service features,\* including enhanced clinical and technical support allowing for fast resolutions to both workflow questions and technical issues.

## Remote services

**Remote desktop:** Allows Philips service engineers to gain a live view of your system's console. This enables remote operation, real-time clinical troubleshooting, and issue resolution.

**iSSL technology:** An industry standard security and encryption protocol that 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:** System users can place a technical or clinical support request directly to Philips from the ultrasound system to help reduce workflow interruption.

**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.

**Proactive support:** Philips can continually monitor key system parameters, detecting anomalies before they impact performance. Corrective action can be taken quickly, often with no impact to patient schedules.



## Service rated #1 by customers

Philips Healthcare ultrasound is #1 in overall manufacturer performance based on customer rankings in the 2011 IMV ServiceTrak All Systems survey. Part of the annual IMV ServiceTrak surveys, the report reflects the responses of over 1,800 imaging professionals measuring satisfaction with manufacturer, system, and service performance.

## Innovative financing solutions

Philips Medical Capital delivers financial solutions to help you place a new system in your facility or practice. Our financial experts understand your unique financial needs and provide flexible solutions that optimize asset utilization, reduce costs, and increase financial flexibility.

**Philips SmartPath** assures you easy access to solutions and innovations for the full life of your ultrasound system, so you can boost your clinical and operational potential and achieve your organizational goals.



Optimize

Optimize your system's performance both now and in the future with regular and ongoing updates, including functionality improvements and remote technical support.



Enhance

Enhance your equipment with regular technology upgrades, and take advantage of the newest features and capabilities.



Transform

Transform your investment at the end of your system's life by transitioning seamlessly to a next-generation solution or refurbished option.

\* Not all services available in all geographies and require service contract coverage.

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