BioAcoustic™ Imaging Technology

Taking ultrasound to new heights

ACUSON Sequoia

ultrasound system

Distribuido por:

LR diagnóstico

Tel. +34 854 53 63 74

satcliente@lrdiagnostico.com

www.lrdiagnostico.com

siemens-healthineers.com/ultrasound

SIEMENS Healthineers

Taking ultrasound to new heights

The return of an icon.
The original ACUSON Sequoia is arguably the most popular Ultrasound system we have ever created. In image quality, color sensitivity and advanced imaging modes, ACUSON Sequoia was – and still is – an industry benchmark. The new ACUSON Sequoia is a remarkable evolution of a product that was so right in so many ways.

What if you could image every patient, no matter the size or weight, at depths never seen before?


What if you could always get a fully focused B-mode image no matter the patient type?
What if you could get higher contrast longevity on the most difficult patients?
What if you could get real-time color flow every time without motion artifacts?
What if you could image and measure tissue stiffness deeper than ever before?

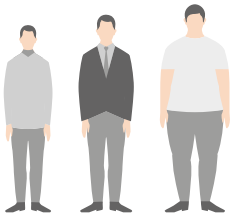
Tackling the challenge of unwanted variability in Ultrasound

Variability has hampered Ultrasound's potential to expand precision medicine. Today, health systems struggle with rising costs and varying quality. Diagnoses and treatments are designed with the typical patient in mind. Ultrasound is one of the most widely-used and readily-available imaging modalities. From screening and diagnosis to therapy planning and monitoring, ultrasound has the potential to expand precision medicine throughout the patient care continuum. To achieve this goal, ultrasound needs to address biological, technological and user variabilities.

The key bioacoustic variances that can affect or attenuate the Ultrasound signal vary significantly by patient type

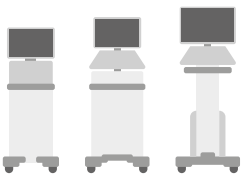
	Infant (0–2 y)	Child (3–10 y)	Adult (Male)	Adult (Female)	Adult (Large)	Adult (Elder)
Water (%)	90%	74%	60%	50%	42–50%	47–56%
Fat (%)	7–13%	13–19%	20–21%	33–35%	+ 35%	25–35%
Muscle mass (%)	NA	28–30%	34–42%	24-33%	...	23–31%
Lung/Air (Liters)	< 1	2–3	5–6	4–5	6–7	4–5
Bone density	< 1	> 1.2	> 3	> 2.4	> 2.7	> 2.5
Liver span (cm)	2.5	6–8	12–14	12–14	+ 15	12–14
Frequency (MHz)	14–9	10–6	6–3	6–3	4–1	6–1
BMI	5–10	10–15	20–25	23–25	+ 25	+ 25

Bioacoustic variability



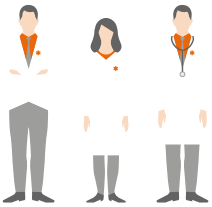
Patients have unique physiologies and anatomies that can attenuate or impact the ultrasound signal. These human bioacoustic characteristics, such as water percentage, muscle mass, bone density, etc., can vary significantly by gender, age, size, and weight. To address these intrinsic bioacoustic properties ultrasound must adapt to the individual patient, without compromising acoustic fidelity.

Technological variability



Ultrasound devices are complex products comprised of many technology components. The weakest link in this chain of components can limit Ultrasound's ability to generate accurate and reproducible measurements. Technological variability can lead to variations in measurements that can potentially lead to repeat scans.

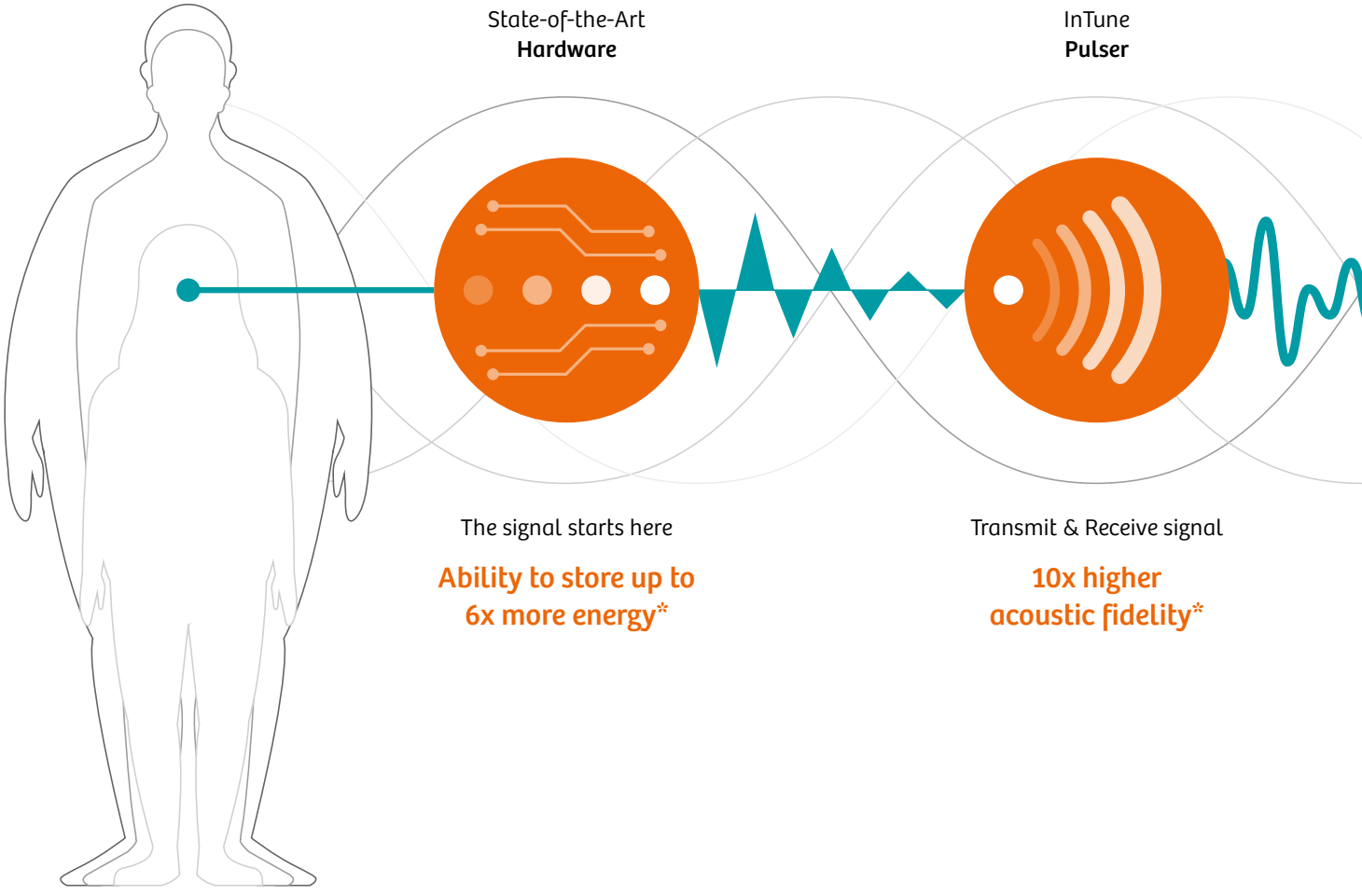
User-specific variability



While other imaging modalities acquire images linearly, ultrasound requires dexterity and a unique skill set to capture diagnostically relevant images. Studies have demonstrated that significant intra- and inter-observer variability can pose a challenge to the standardization of care delivery.

Enter BioAcoustic™ imaging technology

It all starts with the way we generate, track, transmit and receive ultrasound signals. With the new ACUSON Sequoia, each individual component is assembled to accurately track the ultrasound signal throughout the signal path. From the power supplies to our receivers and graphics processing unit; to the compact-pinless transducer connectors to the transducer lens, we aimed to preserve the signal acoustic fidelity. This is all driven by the goal of accurately representing human biology. Siemens Healthineers calls this BioAcoustic imaging technology.

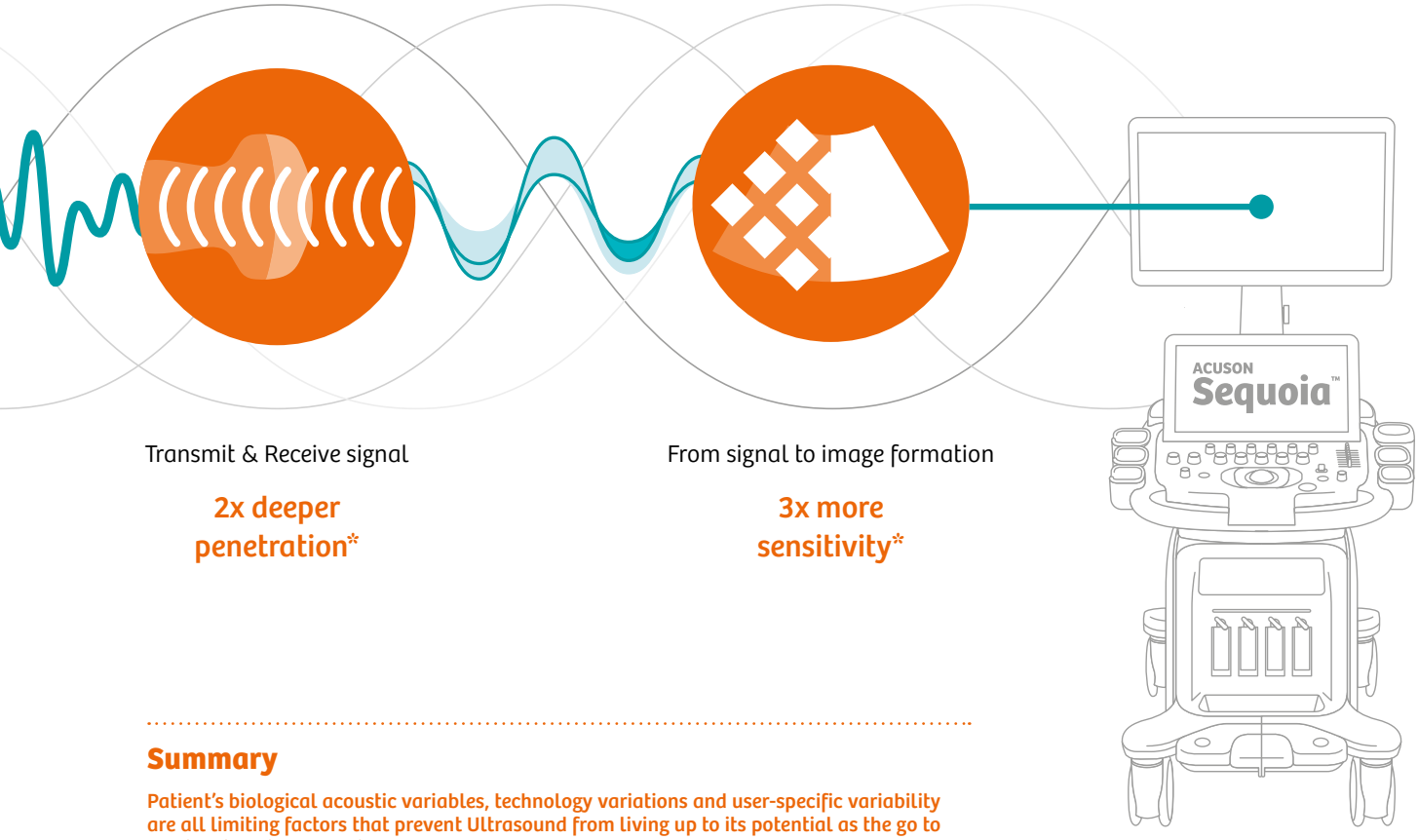


** compared to ACUSON S3000 ultrasound system*

As the signal travels through the patient's body, we know that it is acoustically attenuated. BioAcoustic imaging technology is able to, in real-time, compensate for loss of energy and adapt the signal to each patient's bioacoustic characteristics. When we measured the performance of the new ACUSON Sequoia against that of conventional ultrasound devices we were able to store 6x more energy and a remarkable 10x higher acoustic fidelity applying these technologies.

InTune
Transducers

InFocus
Image



Transmit & Receive signal

2x deeper penetration*

From signal to image formation

3x more sensitivity*

Summary

Patient's biological acoustic variables, technology variations and user-specific variability are all limiting factors that prevent Ultrasound from living up to its potential as the go to medical imaging modality.

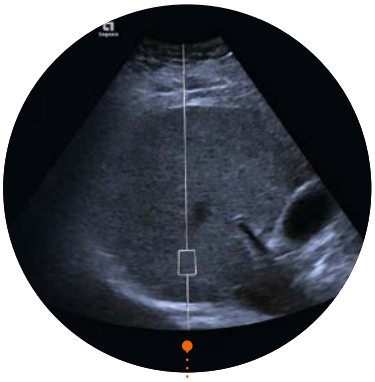
Driven by our commitment to improve quality outcomes and lower unwarranted variability, a new Ultrasound solution emerges – The ACUSON Sequoia with BioAcoustic technology.

Address patient's unique bioacoustic characteristics

Taking imaging to higher grounds.
The first immediate benefit of the new ACUSON Sequoia is a remarkably fast, fully focused B-mode image without degradation of near-field or far-field resolution. Additionally, we developed unique and patented technologies that allow ACUSON Sequoia to virtually eliminate color flash artifacts and penetrate deeper than conventional ultrasound systems.

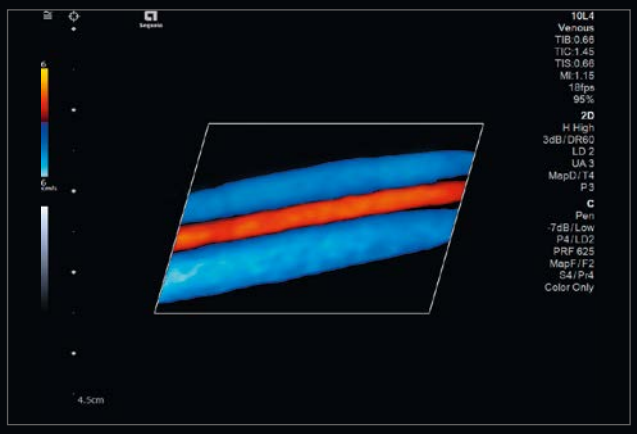
According to the WHO, a total of 1.9 billion adults were overweight worldwide in 2016 – 650 million of these were considered obese. Ultrasound needs to be able to image at greater depths without sacrificing real-time imaging performance.

With ACUSON Sequoia and our BioAcoustic imaging technology, we are able to obtain diagnostically relevant images at depths never before thought possible.



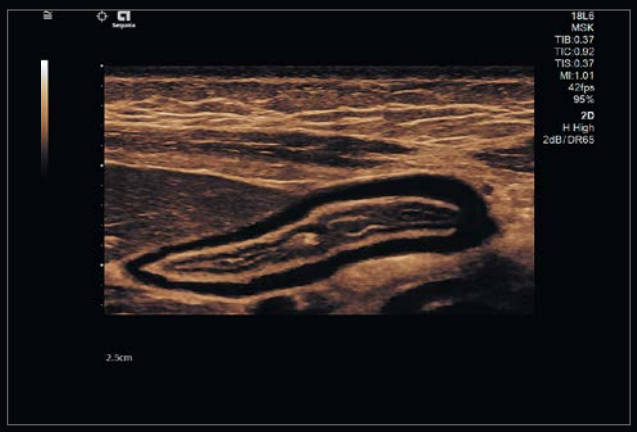
DAX is a unique and patented imaging transducer designed to leverage the power of BioAcoustic technology and penetrate deep in the abdomen, up to 40 cm. DAX was designed to work in all advanced modes including shear wave elastography, contrast enhanced ultrasound, and fusion.

A sagittal midline image of Liver/IVC utilizing single-crystal technology with InFocus Coherent Imaging technology for uniform focus and exquisite high resolution.

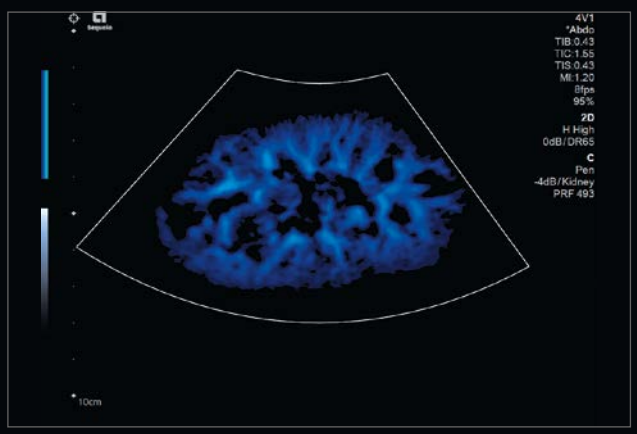


Complete fill of peripheral peroneal vessels in the calf utilizing the “color only” Doppler mode. The system can be customized to unique flow states and offers built-in anatomy-specific settings.

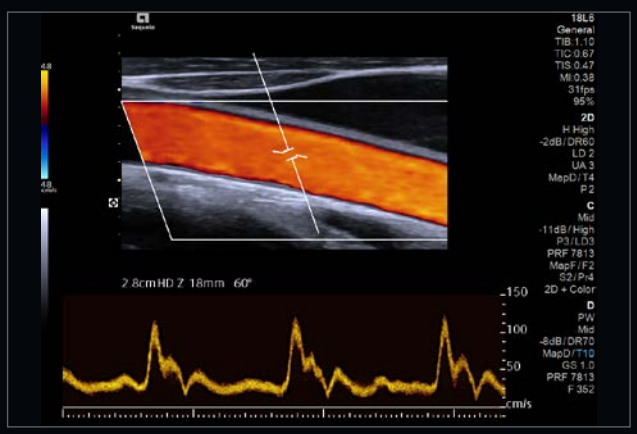
A sagittal image of a retroverted uterus using the 9EC4 transducer showing exquisite detail and contrast resolution throughout the field of view.



Cross-sectional image of the peristaltic bowel wall with the 18L6 transducer. With a 50 mm transducer face, and industry-leading crystal count the depicted contrast resolution in this moving structure is exceptional.



The ACUSON Sequoia offers three times the sensitivity of conventional ultrasound systems*. Using the color Doppler energy mode, the renal perfusion is displayed in exquisite detail.



Advanced Imaging of the CCA demonstrates the power of the platform to reduce color flash artifacts and automatically adjusts the PW Doppler upon freeze.

Summary

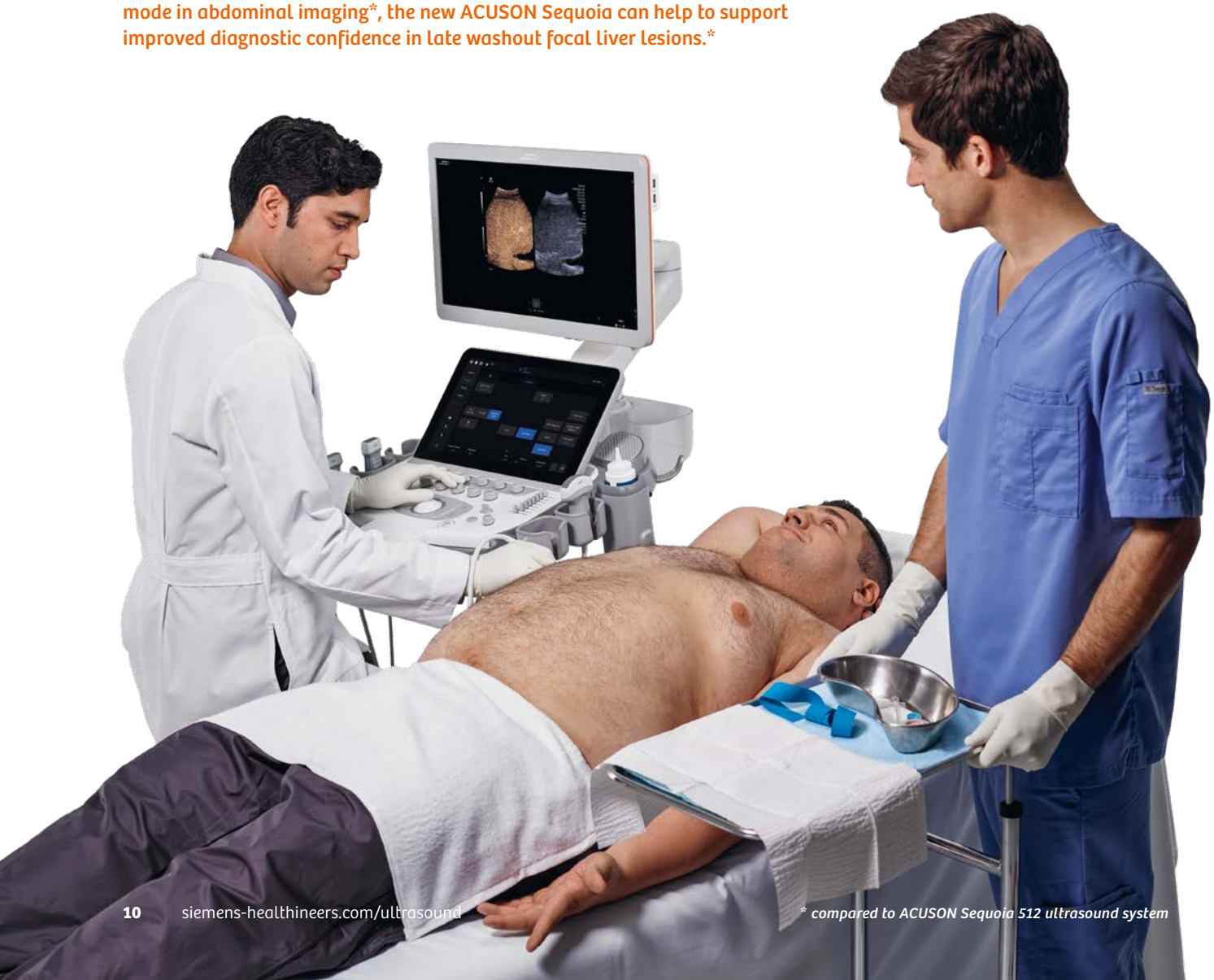
The ACUSON Sequoia’s unique BioAcoustic technology enables high-resolution InFocus imaging throughout the entire field of view, from the near field to the far field, in real-time so there is no need to adjust the focal point of the scan, resulting in faster scan time without compromising frame rates and resolution.

** compared to ACUSON S3000 ultrasound system*

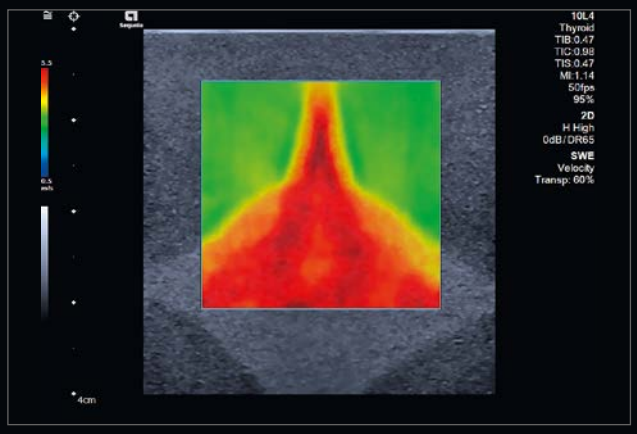
Personalize when it matters

Introducing a new standard in elastography and contrast imaging.
Ultrasound imaging is expected to deliver definitive and timely answers to important clinical questions. These answers must be provided in the most accurate and reproducible way. The new ACUSON Sequoia addresses these challenges with a comprehensive suite of advanced applications to deliver personalized ultrasound.

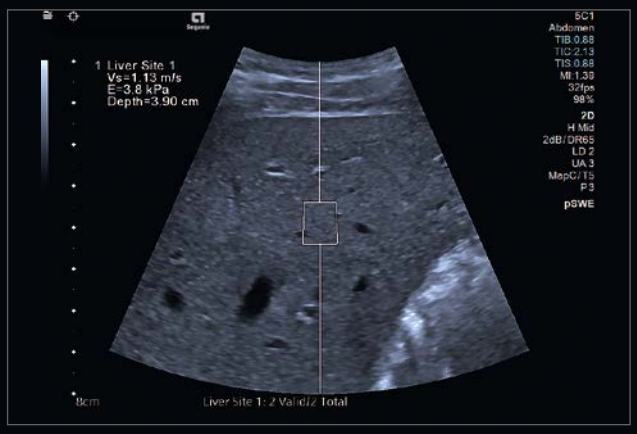
BioAcoustic technology enables a significantly longer view time of contrast agents.* When combined with the up to two times higher sensitivity in contrast mode in abdominal imaging*, the new ACUSON Sequoia can help to support improved diagnostic confidence in late washout focal liver lesions.*



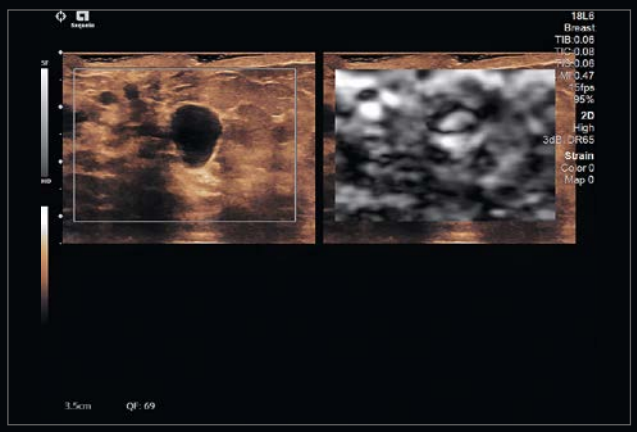
** compared to ACUSON Sequoia 512 ultrasound system*



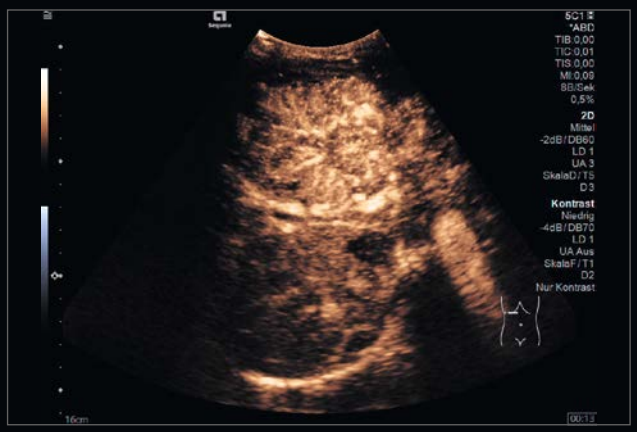
A shear wave image of a star phantom. ACUSON Sequoia has six times the energy capacity of conventional systems*. Note the exquisite uniform image resolution and border delineation.



ACUSON Sequoia shear wave technology increases the benchmark for shear wave accuracy when compared to conventional ultrasound* to provide tissue quantification, with increased precision.

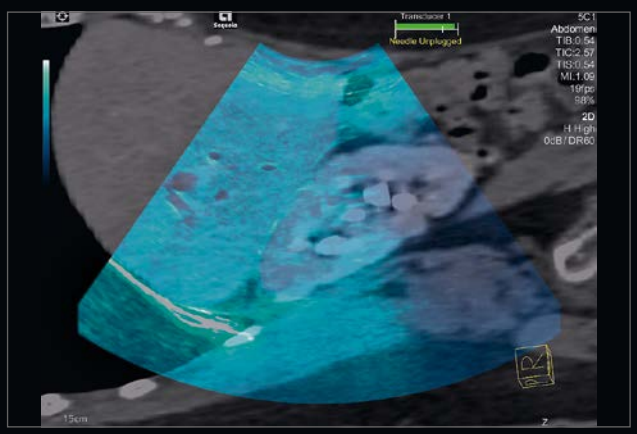


Virtual Touch strain elastography provides a simple and qualitative measure of lesion stiffness relative to the surrounding tissues.



The ACUSON Sequoia can detect contrast agent at diagnostic levels for up to 2x longer than before**.

Contrast imaging using a peak hold is designed to enhance the fill pattern of low-flow lesions.



The ACUSON Sequoia powers an acquisition rate equivalent to 40 mins of 4K streaming video per second. This enables fast integration of even the most data intensive applications.

Summary

BioAcoustic technology of the ACUSON Sequoia is the backbone of its advanced imaging applications. With Virtual Touch elastography solutions, unparalleled contrast imaging performance, real-time fusion imaging and biopsy guidance, clinicians can now confidently assess, plan and monitor therapy and treatment outcomes. Experience personalized ultrasound imaging.

** compared to ACUSON S3000 ultrasound system*
*** compared to ACUSON Sequoia 512 ultrasound system*

Easy to learn, easy to love

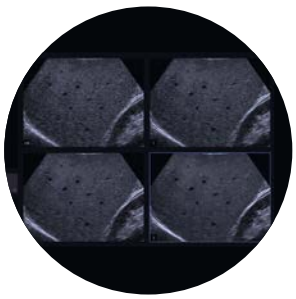
System designed by users for users.
Ultrasound imaging is an art form. However, the variability inherent in the ultrasound scanning process can pose a challenge for the interpreting physicians. In an effort to eliminate variability, we hosted 170 workshops with 365 ultrasound users worldwide to create an ultrasound system designed by the user for the user.

1-Click registration

With 1-Click registration, ACUSON Sequoia leverages machine learning to automatically select the correct transducer and exam type for your patient, contributing to a seamless workflow.

Gesture detecting transducers

With our unique multi-touch sensors, you can now easily double tap anywhere on your transducer to activate it and start scanning without losing touch with your patient.



UltraArt real-time quad-display

Our exclusive UltraArt feature brings you ultrasound the way you want it. Real-time quad display to select your imaging preferences at the touch of a button.

Summary

By leveraging automation, machine learning and by listening to the Ultrasound community, we refined every detail to get rid of complexity. If something does not need to be there, it won't be there.

With the new ACUSON Sequoia, you don't have to change the way you work to fit the product, the product will fit you.

OLED display
Experience vivid color against true black and with higher shades of grey. There are no visual distractions, no other noise, only what matters is displayed.

Largest touch display
A 15.6” touch display gives you more space to define your own intuitive workflow.

Intuitive control panel
An intuitive design based on user feedback places the most used and important keys right at your finger tips.

Multiple cable hooks
Experience a hassle-free environment with multiple cable hooks and storage space.

Central locking
A central locking mechanism eliminates the need to lock each wheel individually, enhancing maneuverability.

Floating control panel
Designed to fit every room and workflow, the control panel can swivel and rotate 90° left or right for a seamless workflow.

Integrated gel warmer
An integrated gel warmer and optional large one-liter gel holder to support patient comfort.

ECG leads and pencil port
Shared-service cardiac functionaly.

Four active ports
Compact micro-pinless connectors for four active ports.

Powerful and portable
Lighter, thinner and more robust than any previous platforms in this category, the ACUSON Sequoia is incredibly powerful yet remarkably portable.

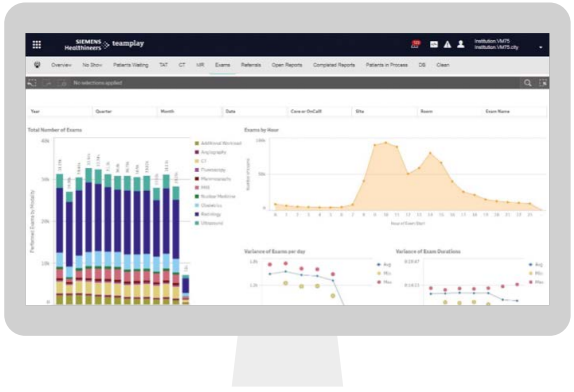
Reduce variable uptime with real-time support

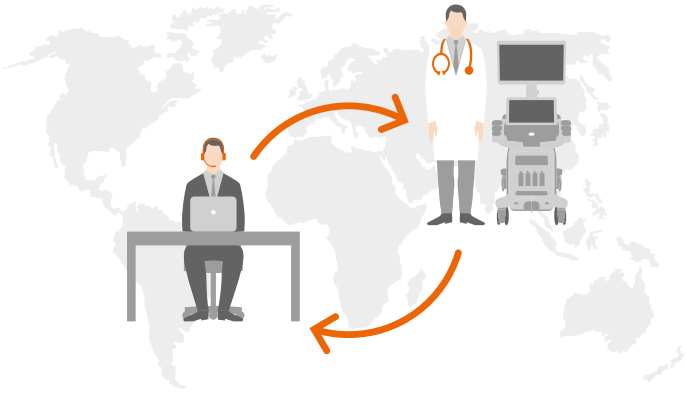
Intelligently designed for real-time service support.
At Siemens Healthineers, we enable you to achieve better outcomes at lower costs by ensuring your needs are our own, especially when it comes to system reliability and uptime. Stay connected with confidence to deliver optimal support with a robust set of remote platforms and services. Because real-time ultrasound requires real-time support, we have developed unique solutions to help you maximize system performance and eliminate downtime.

Smart Remote Services (SRS), enables system and transducer remote diagnostics, software updates and technical/applications support (enhanced by eSieLink™ remote assistance technology). As a result, our new Customer Services portfolio can be scaled to meet your specific performance, education and budget requirements. Your Siemens Healthineers team is committed and well connected to help you deliver exceptional patient care.

teamplay:
Real-time data for real-time Ultrasound
With its built-in multi-vendor and multi-modality support, teamplay grants instant access to fleet statistics. More crucially, it empowers healthcare professionals to identify variances and improvement potential on all levels of execution.

eSieLink:
Real-time remote assistance for real-time Ultrasound
Eliminate workflow disruptions with secure remote desktop sharing. With eSieLink you can communicate in real-time with technical experts from Siemens Healthineers to resolve issues right away and to receive any additional training support.





Designed for Growth

Traditionally, ultrasound machines are comprised of multiple parts which are assembled to form a single unibody of components. As technology evolves rapidly each year, a single body of components makes it virtually impossible to keep your ultrasound device on par with the latest advancements.

The new ACUSON Sequoia was designed in a modular way to ensure your ultrasound system can grow as technology evolves. New technology components can be seamlessly integrated to offer the latest clinical and operational applications and keep your ultrasound machine at the current level of technology.

Built for the future, rest assured that your ACUSON Sequoia can grow as your needs expand.

Welcome to a new era of ultrasound.

The products/features mentioned in this document may not be commercially available in all countries. Due to regulatory reasons their future availability cannot be guaranteed. Please contact your local Siemens Healthineers organization for further details.

Standalone clinical images may have been cropped to better visualize pathology.

Siemens Healthineers Headquarters
Siemens Healthcare GmbH
Henkestr. 127
91052 Erlangen, Germany
Phone: +49-9131-84-0
siemens.com/healthineers

Distributed by
Siemens Medical Solutions USA, Inc.
Ultrasound
685 East Middlefield Road
Mountain View, CA 94043, USA
Phone: +1-888-826-9702
siemens.com/ultrasound

Published by Siemens Medical Solutions USA, Inc. · Order No. A91US-577-1C-4A01 · Printed in Germany · CIT12709 08183. · ©Siemens Medical Solutions USA, Inc., 2018