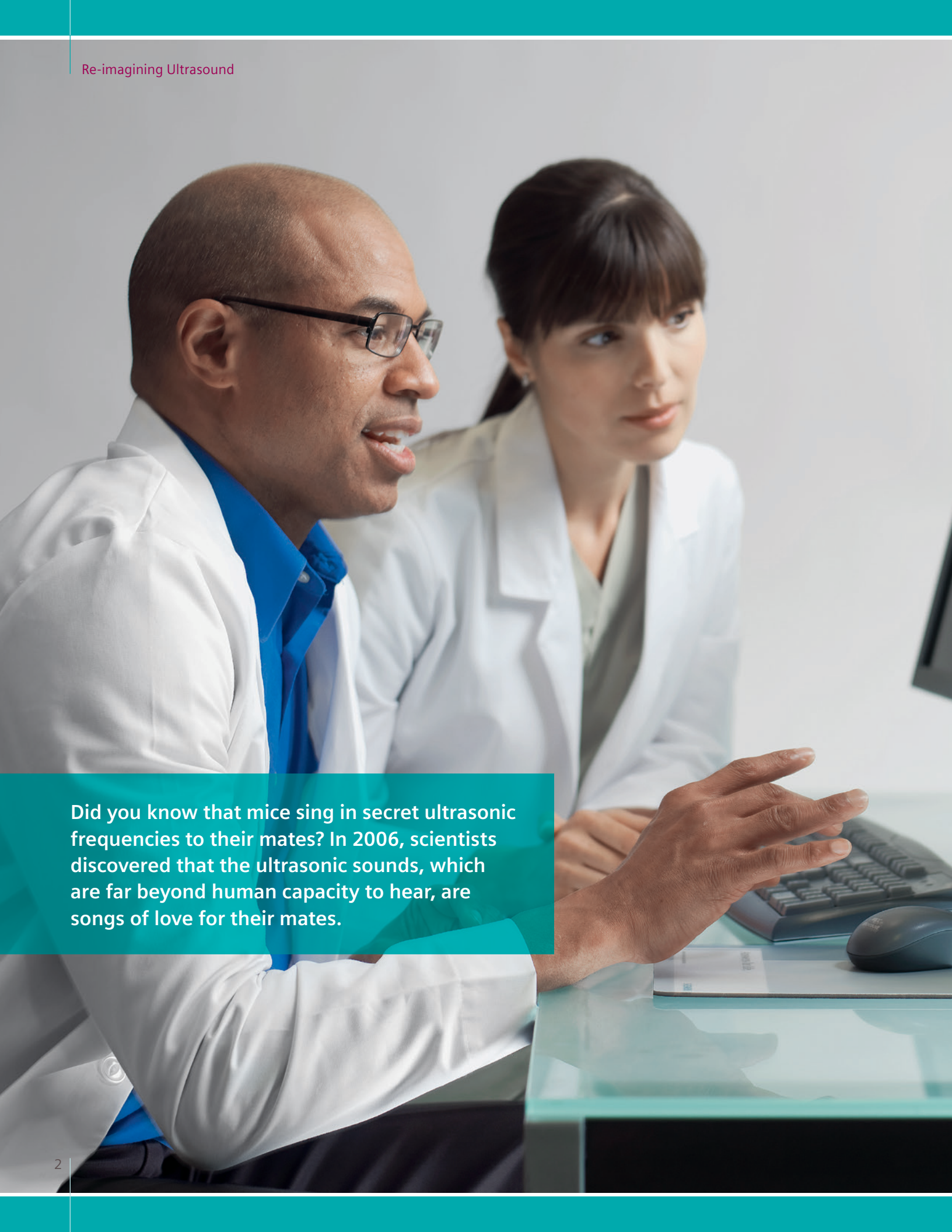




Siemens Healthineers Case Study

# Re-imagining Ultrasound

A photograph of two scientists, a man and a woman, both wearing white lab coats. The man, on the left, is wearing glasses and has a blue shirt under his lab coat. He is gesturing with his right hand while looking at a computer screen. The woman, on the right, is looking at the same screen. They are sitting at a desk with a keyboard and a mouse. The background is a plain, light-colored wall.

Did you know that mice sing in secret ultrasonic frequencies to their mates? In 2006, scientists discovered that the ultrasonic sounds, which are far beyond human capacity to hear, are songs of love for their mates.



## The ultimate tool in flexible imaging

Ultrasound imaging, also known as sonography or echography, uses high frequency sound waves to generate real-time images of tissues and organs inside the body.

As a non-invasive and painless imaging solution, ultrasound can provide quick imaging helping rapid patient assessment. It also has the broadest application across a wide range of clinical areas including obstetrics, gynecology, radiology, urology, emergency medicine, pediatrics, neurology, and internal medicine.

Ultrasound can be used to examine the thyroid, abdomen (e.g., kidneys and liver), smaller organs, the breast, testicles, and musculoskeletal structures. Ultrasound is also used to diagnose heart issues and examine blood vessels.

Today, imaging devices with specialized software and transducers are increasingly needed for specific applications. One of the major benefits of ultrasound devices is its portability and versatility. For example, ambulances are often equipped with high-performance ultrasound units, and portable units are used in retirement homes. Cardiovascular scanning systems provide detailed images of the heart in real-time during surgery. Modern gynecology and pregnancy care are almost unimaginable without ultrasound as part of preventive care.



## Siemens systems in action

Siemens Healthineers involvement in ultrasound stretches back to the 1930s when Reimar Pohlmann began his experiments on medical use of ultrasound on patients. From 1939 on, he worked on ultrasound technology for Siemens. In 1947, the first therapeutic ultrasound machine was created, thanks in large part to the work of Pohlmann.

More recently, Siemens Healthineers has spent the last several years focusing on research and development in the ultrasound marketplace. Rather than rush to market with new ultrasound equipment, it has taken the time needed to focus on developing a product range that addresses the common challenges and complaints voiced by those in the sonographer and radiology communities. Siemens' new family of ultrasound machines – the ACUSON S Family™ Evolution with Touch Control (HELX with Touch Control) – provides an advanced ultrasound solution that is applicable in multiple clinical settings, from a community clinic to a university research centre. A third-party usability study was carried out in spring 2016 with 170 sonographers. The study showed a 95 per cent average task completion rate and an overall average ease-of-use rating of 4.5 out of 5.

The HELX with Touch Control comes with three configurations, providing an 'à la carte' system that can be customized to specific requirements. The ACUSON S1000™, HELX with Touch Control is a base model providing affordability, while offering a premium platform. The ACUSON S2000™, HELX with Touch Control model benefits from additional features geared towards general imaging, women's health, and shared services. The final configuration is the ACUSON S3000™, HELX with Touch Control featuring advanced technology, particularly relevant for interventional radiology.

One healthcare centre that is familiar with the HELX with Touch Control is the Canada Diagnostic Centre (BC) Limited. The centre has been using Siemens ultrasound machines since 2007. Back then, Shelley

James, General Manager, said that the Siemens machines had superior imaging quality compared to the four machines tested from other manufacturers. This time around when selecting the ACUSON S2000, HELX with Touch Control system in May 2016, Shelley said that it was clear radiologists and sonographers were blown away with the usability of the machine, leaving no doubt but to continue the relationship with Siemens.

To further explore users' experiences with the HELX with Touch Control, we sat down with a sonographer who has been using an ACUSON S2000, HELX with Touch Control since the centre purchased it to get her take on the new ultrasound machine.

Diana Korlaet has specialized in ultrasound since 1991 and is a specialist in musculoskeletal, abdominal/pelvic, vascular, cardiac and breast imaging. Diana has worked as a sonographer in two of BC's leading teaching hospitals: St. Paul's and University of British Columbia Hospital, where she continues to work today in addition to her role as a technologist at Canada Diagnostic Centre in Vancouver.

Canada Diagnostic Centre is a private, state-of-the-art clinic offering MRI, CT and Ultrasound scanning services that originated in Calgary in 1994 and opened in Vancouver in 2000. "I'm so happy to be using the ACUSON S2000; it ticks all the boxes for me and is impressive on so many levels," Diana said.

She went on to comment that the quality of images that are produced and the ergonomic design are the two main features that make the ACUSON S2000 HELX with Touch Control so attractive. "Having worked in this industry for over 25 years, I've used many different ultrasound machines and the Siemens is by far the best in terms of the production of images and usability. It takes considerably less time and work to achieve good image quality and the technology in the machine stands head and shoulders above others."











## Precision, quality, and ease-of-use

Diana mostly uses her ACUSON S2000 for musculoskeletal and vascular ultrasound exams, with the occasional general and small part scanning.

"I would class myself as a 'power user', always tweaking and taking the time needed to get the best image possible or explore secondary menus. Yet with the Siemens HELX with Touch Control, I'm getting all this but with a significant reduction in effort. It's clear to me that a lot of fine tuning comes as standard as part of the machine. If I want to experiment or deviate from the presets, options are often a mere keystroke away."

The Canada Diagnostics Centre examines many professional athletes with lean and muscular physiques. Ultrasound exams in these incidences require very high frequency transducers. When scanning deeper tendons, which is a common requirement in the centre, good penetration while maintaining optimal detail is needed. "Siemens has a nice array of linear transducers to handle any situation I've yet encountered. Physically plugging and unplugging transducers is exceptionally easy with ports at a comfortable height."

Diana also commented on the image quality of the high definition L18 probe for musculoskeletal exams. "I've never encountered such detail of subcutaneous tissue, tendon, retinaculi and nerves."

For Intima media thickness exams, Diana said the Siemens ACUSON HELX Evolution with Touch Control provides crisp, artifact free delineation of not only the deep carotid wall but superficial wall as well – a traditionally difficult area to see due to artifacts.



## Comfortable examinations for patients

Image quality and ease of use, while key for the sonographer, are not the only outcomes Diana and her colleagues look for. “The ease of operating the HELX with Touch Control means I get to spend more time with patients, allaying their anxiety, which leads to a more relaxed scanning environment.”

The importance of reaching a timely diagnostic conclusion and starting treatment is paramount. Therefore, it is integral to have an ultrasound machine that provides quality images, is easy to operate, ergonomically designed, and provides a comfortable environment for the patient – as well as a speedy, yet accurate exam.

“When I compare the HELX with Touch Control to other ultrasounds I have used, there really is no comparison,” said Diana. “Some of the older technology I’ve used is terrible in terms of ergonomics, not to mention the concern that subtle diagnoses may be missed due to poor image quality.

“Overall, the HELX with Touch Control has superior image quality and Doppler sensitivity to match. The keyboard is laid out intuitively – a clear sign that the HELX with Touch Control had sonographers involved in its design, not just engineers. The protocol software is great and is easy to edit or change on the fly.

“In a nutshell, an experienced technologist can have the HELX with Touch Control running in no time, producing high quality images. It’s simply easy to learn and easy to run. Every morning I walk into the scanning room, I am thankful to Canada Diagnostics Centre for making the decision to buy Siemens ultrasounds.”







## Looking to the future

When thinking about future developments and uses for ultrasound, and possible challenges to the healthcare system and the role ultrasound may play, Shelley James, General Manager of Canada Diagnostics Center, said: "Ultrasound has a very real ability to serve as a surrogate for other imaging techniques. For example, ultrasound is the perfect alternative for many types of musculoskeletal MRIs. Some patients suffer from claustrophobia, meaning MRIs are difficult for them. Other patients need dynamic studies rather than static ones. While ultrasound will not replace other imaging techniques, it sure presents a solid alternative, and with increasingly more powerful and accurate technology, I see the use of ultrasound growing rapidly."

From military beginnings back in the 1920s and 1930s as a navigation tool for the military, ultrasound has come a long way, and its important role in healthcare diagnostics is firmly cemented. The future, too, looks positive, with increased use and application of ultrasound to help diagnose more diseases and injuries, leading to quicker and better treatments for patients.







The products/features and/or service offerings (here mentioned) are not commercially available in all countries and/or for all modalities. If the services are not marketed in countries due to regulatory or other reasons, the service offering cannot be guaranteed. Please contact your local Siemens organization for further details.

The statements by Siemens customers described herein are based on results that were achieved in the customer's unique setting. Since there is no "typical" hospital and many variables exist (e.g., hospital size, case mix, level of IT adoption) there can be no guarantee that other customers will achieve the same results.

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Printed in Canada | 01.2017

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