

Clarius Takes Ultrasounds Further



From the magical to the unimaginable, ultrasound technology gives critical insight in to what's going on in the depths of our bodies. Despite a century of innovation, the multi-billion-dollar ultrasound industry is still dominated by large, cart-based systems. Clarius Mobile Health CEO Laurent Pelissier saw the opportunity and had an idea. What if instead of bringing the patient to the machine, you bring the machine to the patient—and for a fraction of the cost?

Imaging technology that fits in a pocket and works with a smart phone is just the kind of tech to shake up the \$6 billion ultrasound industry. But only if it's executed to perfection.

That's when Clarius reached out to Avnet.

FROM SMALL LAB TO GLOBAL REACH

Avnet Technical Manager Mehdi Tamehi first met Laurent in his small Vancouver lab.

"He told me, 'Hey, what's the latest and greatest I can use for this new ultrasound? What can I use to help squeeze everything in the cart-based model down to a smartphone size?'" Mehdi remembers.

In the design and prototyping process, Clarius found the small form factor made the already-challenging field of medical device development even more complicated.

"In the very beginning, we were having a lot of issues with the product heating up too quickly, for example. We did a lot of back and forth with the technical team at Avnet about how to manage the power properly," said Daniel Rahardja, Clarius engineer. "Avnet definitely gave us a lot of invaluable support not just from a bill of material point of view, but technical expertise about products."

Once they began ruggedizing the scanner with a waterproof metal enclosure, the designers ran into even more challenges. That's where the support of an end-to-end distributor really came in handy.

"We cut that normally lengthy question and answer cycle to hours, basically," Daniel said. He felt that having answers quickly helped speed their time to market. "You definitely get the job done faster and then get through the product development cycle faster when you have Avnet's expertise to assist you."

XILINX'S TECH HELPED PUT CLARIUS AHEAD



Clarius Mobile Health's IoT-connected, portable ultrasound machine leveraged Xilinx's Zynq programmable SOC solution to meet the device's power, size and performance requirements. During the design phase, Avnet connected Clarius to Xilinx's technology—some of which wasn't even on the shelves yet. As the creator of commercially viable FPGA, Xilinx knew they could deliver what the design team required.

AT A GLANCE

Clarius needed

- An embedded microprocessor for its OS
- FPGA to run algorithms

Xilinx delivered

- An SoC with analytics, hardware acceleration capabilities
- Easy CPU, DSP, ASSP and mixed signal functionality
- Zynq platform: dual core microprocessor with FPGA fabric

"With the Zynq solution, power is down, speed is up and [we get] less thermal management. It's a win-win."

Daniel Rahardja
Hardware Engineer
Clarius Mobile Health



BLEEDING EDGE TECHNOLOGY PUT CLARIUS AHEAD

Once designs were close to nailed down, the team needed the right parts at the right price with the right supply chain to support a small form factor.

"In building this kind of technology, what helps is direct factory contacts. To have that exposure and knowledge, to talk to the guy who actually designed the chip, that all helps our design move much more quickly," said Kwun-Keat Chan, director of hardware development at Clarius.

Avnet introduced Clarius to Xilinx's Zynq All Programmable SoC and the development team behind its design. Clarius was able to leverage this component to enable key analytics and hardware acceleration.

Kwun-Keat noted the relationship Avnet had with Xilinx helped them get exposure to technology that wasn't even open to the general public yet.

"To make this product viable, feasible and sellable, the price of the component and especially the Xilinx system was critical," he said. "Leveraging our relationship with Avnet and having their help conveying our needs to Xilinx definitely helped."

After the Xilinx solution was in place, Clarius also needed wireless connectivity to transfer the image to any iOS or Android enabled device. The combination of the Zynq SoC and the TI WiLink8 wireless module platform helped Clarius immensely during research and development.

INNOVATION, FUTURE-PROOFED

Avnet Account Manager Kuldip (Cub) Parmar noted that Clarius was not only willing to try new products, but had major trust in the Avnet team's expertise. It was this blend that got the idea into the marketplace.

"We looked deep beyond customer roadmaps because if we didn't give Clarius these resources, they could be designing a product that isn't as superior in the market as it is today," Cub said. "It's not just doing what's required today, it's doing what's required tomorrow and years from now."

Clarius Wireless Ultrasound Scanners are now available across the world, being used everywhere from Canadian ski resorts for on-the-go diagnoses to Haitian villages for Zika studies with newborns.

But the ultimate goal of the scanners is clear.

"Where every medical practitioner has their own stethoscope now, in the future we want every medical practitioner to have their own handheld ultrasound," Daniel said. "That's the dream: a product that's like your visual stethoscope."

Cub is continually impressed with what Clarius has been able to achieve, and he is proud to help them revolutionize the medical field.

"When you are with people like these guys, it's a really humbling experience," he said.

ABOUT CLARIUS

Founded by ultrasound innovators, Clarius Mobile Health aims to make ultrasound available to all clinicians. Our affordable hand-held ultrasound scanners offer clinicians the freedom to use ultrasound anywhere they need it. Clarius Scanners are regulatory cleared for sale in more than 20 countries worldwide. For more information, visit: www.clarius.me.



ABOUT AVNET

From idea to design and from prototype to production, Avnet supports customers at each stage of a product's lifecycle. A comprehensive portfolio of design and supply chain services makes Avnet the go-to guide for innovators who set the pace for technological change. For nearly a century, Avnet has helped its customers and suppliers around the world realize the transformative possibilities of technology.

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