



Dotterel Reinvents Audio Capture with AMD Kria™ SOM

Dotterel Technologies' Konos Microphone Slices Audio into 80 Channels to Focus Audio Capture and Cancel Out Ambient Noise

PARTNER



INDUSTRY

Broadcast; Pro A/V

CHALLENGES

Capturing audio can be a challenge, particularly in noisy or windy environments. Dotterel Technologies wanted to build a feature-rich, noise-cancelling microphone that fit into a traditional mic.

SOLUTION

With 80 inputs in a small-form-factor shotgun microphone, Konos from Dotterel provides high fidelity audio capture at long distances. Audio processing in the microphone is powered by the AMD Kria™ SOM.

RESULTS

The availability of programmable logic and signal processing capabilities provided by the Kria SOM enables greater software design complexity and has allowed Dotterel to make more features available in the hardware.

AMD TECHNOLOGY AT A GLANCE

Kria™ SoM

Dotterel Technologies has introduced Konos, a breakthrough microphone featuring 80 separate mic inputs that produce cones of sound, allowing users to capture clear, crisp sound in otherwise uncontrolled environments. The product uses a combination of both hardware and software so users can change the size of the cones to adjust their audio capture.

"The cones of sound make it globally unique in the market," said Shaun Edlin, the company's CEO. "You can change audio capture patterns to match the environment. This has never been done before."

The microphone also features multiple outputs that lets users capture exactly what they want and simultaneously cancel out all other ambient noise.

CHALLENGE

Capturing audio can be a challenge, particularly in noisy or windy environments.

In the entertainment industry, a lot of dialogue is captured outdoors in noisy urban areas or in open fields with planes flying overhead, and very little of it can be used in production. Typically, the crew shoots the outdoor scene, then goes into a recording studio to redo all the lines. It's very time-consuming and expensive. Television news crews also have to deal with the elements, though they don't

have the luxury of re-recording their interviews in a quiet studio.

In the public-safety sector, there are many platforms that have amazing visual sensing, such as drones, robots, and security cameras, but they can't effectively hear. "We are focused on giving 'ears' to these platforms," Edlin said. "Our technology opens communications—particularly in standoffs—and can enable public safety teams to diffuse situations. Cameras have blind spots. Audio doesn't."

Edlin said the two biggest design challenges in building the Konos microphone were size and speed. The company wanted to make the microphone fit into the footprint of existing mic systems while offering much higher levels of performance than what was available on the market. This would require a lot more data processing.

SOLUTION

With 80 inputs in its small-form-factor shotgun microphone, Konos provides high fidelity audio capture at long distances. The cones of sound make it globally unique in the market. Users can change audio capture patterns to match the environment, and even simultaneously cancel out all other ambient noise. This makes the microphone ideal for capturing audio in urban areas, on a movie set, or in areas where there is a lot of wind.

Dotterel Technologies built its original microphone technology on the AMD Zynq™ UltraScale+™ MPSoC adaptive SoC device, and when it came time to building Konos, the company decided to migrate to the AMD Kria™ SOM.

“AMD chip sets have always been attractive to us because of their processing speed, energy efficiency, and small size” Edlin said. “We’ve found that the Kria family offers a good balance of cost, availability, and features.”

Edlin said existing IP catalogues, debugging tools, and third-party tools played a large part in the company’s decision to go with AMD. “As a dynamic, early-stage business, time-to-market is very important to us. The availability of AMD development boards and kits helped us get to market faster.”

Another key factor was the flexibility of the Kria SOM. “The flexibility to adjust to constantly changing conditions and environments is the reality of sound capture,” Edlin said. “To capture audio in unique, real-world environments, you need a chipset that provides that flexibility.”

Edlin also added that the company was well-supported by AMD throughout the design process, including several visits and hands-on training.

RESULT

The availability of processor cores, DSP slices, and programmable logic resources provided by the Kria SOM enables greater software design complexity and has allowed Dotterel to make more features available in the hardware. Ultimately, the company’s goal is to continuously deliver more software capabilities and features while reducing the footprint of the system: getting the device smaller and lighter.

AI will also play an increasingly important role in Dotterel’s product roadmap. Being able to automatically detect and remove background noise from the audio signal is a big focus area.

“The AMD advantage all comes down to speed,” Edlin said. “We are summing a large number of mics and making them output some incredible sound in very different ways, and that’s what AMD chips are allowing us to do. Dotterel is really on the forefront of digital audio capture, and we are really happy to have AMD on this journey with us.”

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About [AMD Kria SOM](#)

About [AMD Zynq UltraScale+ MPSoC](#)

About [Dotterel Technologies](#)

About [Konos](#)

About Dotterel Technologies

Founded in Auckland, New Zealand, Dotterel’s unique noise reduction and microphone array technology make it possible to capture clear sound even in the noisiest of environments. The company’s products are used in locations previously considered too noisy, unsafe, or expensive to set up and record in. They are designed with drones, robots and vehicles in mind, and more recently, the film and entertainment industry. Recognised as a leader in its field, Dotterel continues to innovate and push the boundaries of sound capture in high noise environments. For more information, visit Dotterel online at <https://www.dotterel.com>.

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