HOLOPLOT Delivers Next-Generation Audio Experiences with Adaptive SoCs from AMD

Unique Audio Technology Allows Arenas, Theaters, Theme Parks, Museums, and More to Create Unique and Immersive Audio Experiences for Individual Audience Members

PARTNER

HOLOPLOT

INDUSTRY

AV/Broadcast

CHALLENGES

HOLOPLOT was developing a new category of loudspeaker that would allow high-quality sound reproduction on an unprecedented scale and with unique immersive capabilities. To achieve this, it needed a compact, embedded solution that could handle its demanding processing needs.

SOLUTION

The company chose SOM devices based on AMD Spartan™ FPGAs and AMD Zynq and Zynq UltraScale+™ adaptive SoCs to provide the integrated resources it needed for its X1 and X2 Matrix Array professional audio modules.

RESULTS

AMD has helped HOLOPLOT to be successful in creating unique audio experiences for a variety of applications, ranging from live concerts to themed entertainment, houses of worship, and corporate events.

AMD TECHNOLOGY AT A GLANCE

AMD Zynq and Zynq UltraScale+ adaptive SoCs and Spartan 6™ FPGAs.

HOLOPLOT is a science-based company that delivers immersive audio experiences to a variety of applications, ranging from live concerts to themed entertainment, houses of worship and corporate events.

The company combines its innovative X1 Matrix Array professional sound platform with advanced proprietary algorithms and integrated software applications to enable two core HOLOPLOT technologies: 3D Audio-Beamforming and Wave Field Synthesis. These technologies can precisely steer sound on both horizontal and vertical axes, providing groundbreaking audio control for precise audio design and a superior listening experience for audiences.

HOLOPLOT technology delivers high fidelity audio to all audience members, no matter where they are seated. Most recently, a HOLOPLOT X1 system delivered crystal clear audio to an audience of 18,600 at a recently opened and iconic Las Vegas venue.

HOLOPLOT can focus audio content on small groups of people—even down to individual audience members. A HOLOPLOT sound system can precisely deliver differing audio content to different positions in the audience, allowing listeners to embark on a journey across unique and changing sound experiences. What users hear will depend on where they are standing or sitting in the audience.

CHALLENGE

When designing its flagship X1 Matrix Array, HOLOPLOT was looking for a compact, low-power, single-chip solution to compute a high number of Infinite Impulse Response (IIR) and Finite Impulse Response (FIR) filters in real-time, comparing DSP-, CPU-, and FPGA-based solutions.

"The reason we ultimately chose the AMD Zynq™ 7045 adaptive SoC was due to its cost effectiveness, the integration of the Arm® cores with the FPGA fabric on a single die, and the available development support from AMD," said Michael Hlatky, head of engineering at HOLOPLOT.

SOLUTION

HOLOPLOT initially chose not to develop its own SOM solution for the X1 due to time constraints. Instead, the company purchased a SOM based on the AMD Zynq 7045 SoC. Direct contact to AMD was then established through the distributor, Avnet.

"Initially, when designing the X1, we assumed the Zynq 7025/35 would be adequate for our DSP requirements," Hlatky said. "During the development process, we learned that we had underestimated certain aspects and decided to move to a Zynq 7045. What helped us tremendously, here, was that the solution we purchased had the Zynq 7045 implemented on a SOM with the

same pin-out as the Zynq 7035. It was also useful that the software was easily portable."

For its next-generation product series, the X2 Matrix Array, HOLOPLOT decided to develop its own SOM device based on the Zynq UltraScale+™ ZU1 through ZU5 adaptive SoCs.

"We estimated the required operations for our DSP needs, and compared IC costs, and that's why we chose to go with AMD for our second-generation product," Hlatky said, adding that product support was also a critical factor in the vendor decision.

RESULT

"We've had several queries around software library support, and how to port our code base from the Zynq 7045 SoC to the Zynq UltraScale+ adaptive SoC. The support has been stellar," Hlatky said.

"AMD has helped us to be successful by offering us a broad range of ICs, including Spartan 6, Zynq 7000, and Zynq UltraScale+ devices. Through its continued support, AMD has helped us to bring outstanding audio products to market," he concluded.

WANT TO LEARN MORE?

About AMD Zynq Adaptive SoCs

About HOLOPLOT

About HOLOPLOT

Since its founding in 2011, Berlin-based HOLOPLOT has been at the forefront of audio innovation, using 3D Audio Beamforming and Wave Field Synthesis technology to develop groundbreaking audio systems. The multi-award-winning company has received global recognition for its patented technology, and with its unique 3D sound capabilities that deliver immersive audio experiences in museums, concert halls, places of worship, and other venues. For more information: https://holoplot.com.

About AMD

For more than 50 years, AMD has driven innovation in high-performance computing, graphics, and visualization technologies. Billions of people, leading Fortune 500 businesses, and cutting-edge scientific research institutions around the world rely on AMD technology daily to improve how they live, work, and play. AMD employees are focused on building leadership, high-performance, and adaptive products that push the boundaries of what is possible. For more information about how AMD is enabling today and inspiring tomorrow, visit the AMD (NASDAQ: AMD) website, blog, LinkedIn, and Twitter pages.