AMD's tech to power new supercomputer for Department of Energy

May 8 2019, by Nicole Cobler, Austin American-Statesman

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Advanced Micro Devices announced Tuesday that its technology will

help power a new supercomputer at Tennessee-based Oak Ridge National Laboratory in 2021.

The Frontier supercomputer is part of a contract the U.S. Department of Energy awarded to Cray Inc, a supercomputer manufacturer headquartered in Seattle. The total contract award is valued at more than $600 million for the system and technology development, according to a news release.

The supercomputer—dubbed Frontier—will be used to simulate, model and advance scientists' understanding of weather, sub-atomic structures, genomics, physics and more, according to the news release. Oak Ridge National Laboratory is the U.S. Department of Energy's largest science and energy laboratory.

AMD, which is headquartered in California but has a large presence in Austin, is known for gaming-focused processors. A spokesman for the company said significant design work for the supercomputer will be done in Austin.

"We are all about high performance computing at AMD," Lisa Su, CEO and president of AMD, said in a panel at Oak Ridge National Laboratory ahead of the announcement. "It really required new thinking. It's not just about putting components together. It's about thinking from the ground up when you're trying to design the world's most powerful computer."

The Frontier supercomputer will feature exclusive technology from AMD, including a customized Epyc central processor and Radeon Instinct graphics processor. It will also be based on Cray's new Shasta architecture and Slingshot interconnect.

The contract award includes technology development funding, a center for excellence, several early-delivery systems, the main Frontier system

and multi-year systems support, according to a news release.

"Frontier represents the state-of-the-art in high-performance computing," Jeff Nichols, associate laboratory director for computing and computational sciences at Oak Ridge, said in a written statement. "We are delighted to work with AMD to integrate the CPU and GPU technologies that enable this extremely capable accelerated node architecture."

The supercomputer is expected to be the world's most powerful computer with a performance of greater than 1.5 exaflops, according to the companies. The network bandwidth of the computer is 24 million times greater than the top home internet connection, the equivalent of being able to download 100,000 high-definition movies in one second.

U.S. Secretary of Energy Rick Perry said that Frontier's performance will help the country lead the world in science.

"Frontier will accelerate innovation in (artificial intelligence) by giving American researchers world-class data and computing resources to ensure the next great inventions are made in the United States," Perry said in a written statement.

Although it's not the first time AMD technology has been used to build a supercomputer, Frontier will be the most powerful supercomputer to feature AMD's technology, an AMD spokesman said.

Most of AMD's senior management team is based in Austin and the company employs about 1,500 people in Central Texas.