



The [Defense Business Accelerator, or DBX, Microelectronics Challenge](#) aims to revolutionize how the Department of Defense (DoD) drives the development of dual-use technology, which can be used for both civilian and military applications. (Learn more about the challenge following the story.)

DBX Awardee Story: **Gigantor Technology Tackles Big Challenges**

It's clear there's immense enthusiasm for Artificial Intelligence (AI). But there's also growing concern about the technology's actual performance in the real-world. And until problems with latency and energy consumption are solved, many of the advanced use cases aren't possible.

The only route to achieving AI's full capabilities is better hardware. The technology's rapid pace of progress is quickly overpowering the current generation of semiconductors. That's especially true for the growing fleet of applications that require ultra fast processing speeds. Self-driving cars, factory robots, high-resolution field cameras; none of these ground-breaking capabilities are possible at-scale without advancement in hardware.

[Gigantor Technology](#) is tackling this challenge. Launched in August 2020, the company has six patents related to technology that helps developers improve the AI systems supporting portable devices. This isn't mobile phones, but rather actual field units like virtual reality headsets. And Gigantor's tools thrive where most existing hardware struggles.

For example, the Department of Defense (DoD) can't fully use the high-resolution camera and sensors that it has. The cameras may be able to do 60 frames per second, but the existing hardware can only process 30 frames a second at most. The erratic processing speeds make them unreliable for high-impact use cases. And the existing hardware requires a lot of power. The DoD needed access to chips that would eliminate latency, reduce energy consumption and, ultimately, improve the performance of the underlying AI models.

So it turned to Gigantor. But while the DoD was an early adopter, the potential use cases span both the commercial and federal markets. Innovations like autonomous vehicles, surgical robots, Coast Guard drones that look for lost people at sea or the many other advanced applications aren't possible at scale without the instant processing speeds that Gigantor will enable.

“Existing hardware is just not strong enough, and doesn’t provide the consistent performance needed, to be able to support these applications without latency or interruptions,” said Vice President and Chief Marketing Officer Jessica Jones. “And buyers are increasingly eager to pivot away from graphic processing units (GPUs), which aren’t really doing what they need them to do.”

However, manufacturing advanced hardware is expensive. And while the federal government has been ramping up assistance in recent years, it can be difficult for small businesses like Gigantor to benefit.

That’s where the DBX Award became a critical lifeline. Created by the DoD and managed by the U.S. Partnership for Assured Electronics (USPAE), investments are directed towards transformative technology that can be used by both commercial and government customers. And with its \$2 million award, Gigantor is charging forward with production of its powerful new hardware.

“Government funds are extremely important for small businesses like us. The DBX Award pushed us forward financially. The amount of runway we have now gives us financial security to execute on our ambitious growth plans. And it also helped us create a ton of new jobs in our area,” said Jones.

Going direct to developer

In the past, developers would send their models to Gigantor. The company would then convert it to the right file format so the system can run on field programmable gate arrays (FPGAs) or application-specific integrated circuits (ASICs), two of the most popular off-the-shelf circuits. While it helped ensure superior performance, the process could take nearly two years. But now, Gigantor is starting production of a game-changing technology that will give developers instant access to more capable hardware.

While much of the attention today is on the development of GPUs, exemplified by Nvidia’s market dominance, both FPGAs and ASICs are significantly better for situations that demand more immediate processing speeds. For example, self-driving cars need to be able to react immediately. In many cases, it takes too long for the feeds from the cameras on the vehicle to be sent to a larger data center for processing. Instead, that computation needs to happen wherever the car is. This is what the industry calls edge computing.

Today, developers can largely go buy Nvidia’s chips off-the-shelf and use them immediately. And soon, Gigantor customers will be able to do the same. The company is developing a reconfigurable ASIC for computer vision. With this innovation, developers no longer have to send their models to Gigantor to convert. Instead, they can go to their local electronics store, buy their own Gigantor hardware, and immediately start running their models on more powerful and performative hardware.

They'll even be able to instantly reconfigure and redeploy their models as needed – a capability that's not possible with ASIC chips today. And customers like the DoD that work with top secret information will no longer have to give their models to a third-party to get the outcomes they want.

Preparing for scale

Gigantor is now preparing to mass-produce the new hardware. But while the federal government has significantly increased support for US-based next-generation chip manufacturing, much of the funding has gone to the industry's largest companies. And it's often years before there's a return on that investment – if there's any at all.

The current system isn't designed to meet the needs of companies like Gigantor that can move quickly to scale advanced technology but require the funding to do so.

"They find a little company like us who's willing to come in and prove our worth. Small businesses are just going to be able to innovate faster, because they can move without processes," said Jones. "But you still need involvement from the larger companies to make sure it's all done properly for the government."

That's what makes the DBX Award so powerful. In a very short period, Gigantor had access to the funds. Not only is that speeding up production, it's helping drive demand.

"We were able to onboard additional engineers so that we could move forward with this critical chip project," Jones said. "And most importantly, it's helped us gain customers. We were able to go to events and meet both commercial and military customers that are interested in our systems."

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What is the DBX Microelectronics Challenge?

The challenge was created by the DoD Manufacturing Capability Expansion and Investment Prioritization (MCEIP) office and is administered by the U.S. Partnership for Assured Electronics (USPAE). It provides monetary awards intended to help accelerate the commercialization of vital, next-generation capabilities that also have defense applications. With the additional funding from a DBX Award, companies can get the resources needed to overcome critical manufacturing or technology development hurdles to reach full-scale production more quickly.

With the DBX Award, DoD and USPAE are helping companies build a sustainable business to ensure the supply of essential hardware for both commercial and defense needs.

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