



# Defense Technology Monitor No. 74

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**Related Categories:** Cybersecurity and Cyberwarfare; Military Innovation; Science and Technology; China

## AIR FORCE CONSIDERS COOL GEAR...

Soldiers are in the unenviable position of having to work in environments with extremely high temperatures while wearing body armor designed to protect them from enemy fire but not necessarily to keep them cool. That could soon change, however. First Lt. Justin O'Brien of the U.S. Air Force has developed a prototype for body armor that aims to cool users and, importantly, do so without adding much additional weight. The concept uses the already-existent water pouch to pump water throughout the vest to quickly lower temperatures 10 degrees below the outside environment. O'Brien first promoted his design at the Air Force Material Command Spark Tank (the innovation design competition modeled after the popular show *Shark Tank*), where his team won second place with a \$2,500 cash prize.

Now, James Christensen of the Air Force Research Laboratory's 711th Human Performance Wing is helping shift the design to a commercial product that can be used in multiple military branches and even the private sector. "I hope that this device, using this cooling capacity, will drastically reduce the amount of heat casualty (and) heat stress that our Airmen are under every single day," O'Brien says. (*Military Spot*, January 14, 2022)

## ...WHILE THE PENTAGON REQUESTS NEW SHADES

Effective night vision goggles provide a major advantage in combat. Current versions have seen continued improvements, but can weigh up to two pounds and limit the head movement of soldiers with already cumbersome helmets. DARPA's Enhanced Night Vision in Eyeglass Form (ENVision) program, however, is aiming to create the most lightweight goggles yet. The Army previously showcased a new version of Enhanced Night Vision Goggle-Binoculars that can display the outlines of soldiers, stationary objections, and gunfire. The ability to couple this design with lighter gear would significantly improve the average soldier's battlefield experience. DARPA recently selected ten teams from industry labs and universities to work on this issue. Of course, if any of the teams are successful, the invention creates a subsequent problem for soldiers: that of losing the gear more easily. (*Task and Purpose*, January 14, 2022)

## DEEP FAKE VOICES?

The pervasiveness of artificial intelligence is seemingly never ending. AI has now advanced to the point of being able to mimic a person's voice, and use that voice to speak in multiple languages. For example, the Bert Show, a popular radio program in Atlanta, recently signed a deal with Veritone, Inc, the creator of the cutting-edge AI platform aiWARE, to create synthetic voice clones of host Bert Weiss without needing his physical input — only his consent. The show is able to use his synthetic voice based off text they provide, and generate content programmed to target people with different languages and dialects. In an ever-connected world that faces increasing problems with the spread of disinformation, this new software has the potential to be exploited by dictators to increase their reach and the spread of propaganda. (*Atlanta Journal-Constitution*, January 12, 2022)

## FEDEX PLANES WITH LASER PROTECTION?

Although not common, civilian planes have on occasion been targeted by shoulder launched rockets known as man-portable air defense systems (MANPADs). Back in 2019, delivery giant FedEx proposed a laser-based missile defense system be mounted on a portion of its fleet of aircraft to counter threats such as MANPADs. The Federal Aviation Administration recently acknowledged that it is finally reviewing the proposal, and checking it against safety regulations. FedEx, which has aided the U.S. government in anti-missile technology trials in the past, is declining to comment on whether it is still actively pursuing an application for the technology — or when it would be implemented if approved by the FAA. (Reuters, January 14, 2022)

## 6G TECHNOLOGY TALKS TO HYPERSONICS

The general public is only now beginning to understand the benefits of 5G technology, but Chinese engineers are already pushing the envelope with the development of 6G for military applications — specifically, to engage hypersonic weapons. Hypersonic weapons travel so quickly through the atmosphere that they develop a plasma shield that blocks communications, making it nearly impossible to relay any new targeting or flight control information while the hypersonic weapon is in motion. However, a research team from Tianjin, China published an article in the *Journal of National University of Defence Technology* claiming that 6G technology may be able to penetrate the electronic communication barrier surrounding a hypersonic weapon. The new 6G technology now under development operates in the terahertz range of radio wave frequencies, which can penetrate the 'black barrier' around hypersonics, although with limitations. For instance, the waves cannot travel far into the atmosphere. Additionally, they currently function more like a laser, needing a huge antenna and requiring line of sight to the hypersonic in question. (*South China Morning Post*, January 28, 2022)