BY JARED KELLER SECURITY JUL 8, 2024 6:00 AM

AI-Powered Super Soldiers Are More Than Just a Pipe Dream

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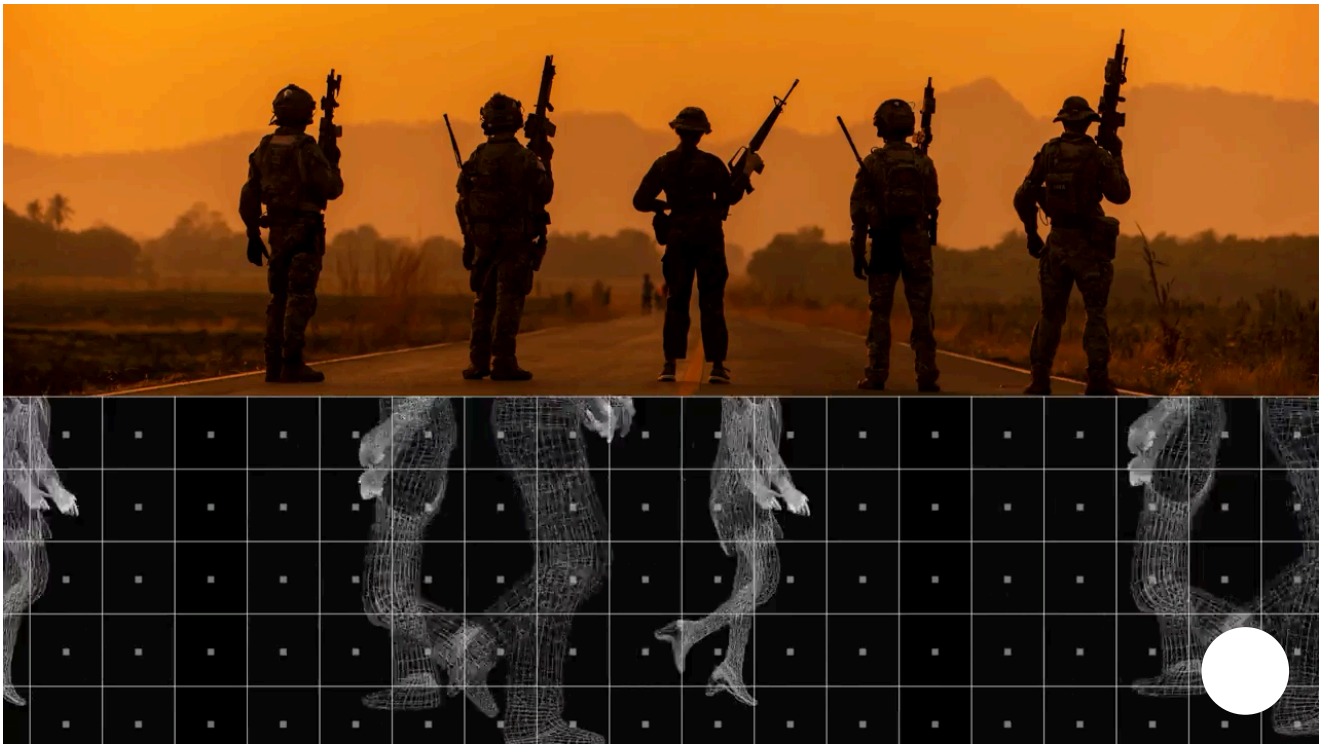

PHOTO-ILLUSTRATION: ANJALI NAIR; GETTY IMAGES

This article from Wired Magazine covers the Special SOCOM Team Mykel was on. Here's an Executive Summary, excerpts on Hawke's Language Device info (Front loaded up top), the full PDF article following here & the link to the original below.

Hawke worked for Special Operations Command for 6 years on a unique Joint SOF Team of Operators, PhD Engineers & Acquisition pros, deploying with Troops to find gaps and make gadgets, including his language device.

Mykel Hawke successfully created the VITA vocal & visual translation capability concept, developed from ideation & execution to operations in the field & combat, hardware & software, no internet, like a human. This has never been done before & it's the best translation capability in it's class.

Hawke worked on a Special Operations Command Special Team from 2020-2026. The team was comprised of active duty SOF Operators from all for Branches of service with PhD Engineers of all varieties and Acquisition Professionals, Military, Government and Contractors working together from Ideation, Execution into Operations, more rapidly & effectively than others. They deployed with Special Forces to find gaps and make gadgets.

This article speaks about that Team from the Iron Man Suit to HEO or the Hyper Enabled Operator project where they made multiple capabilities that transitioned to the force and the language tech project Mykel created.

Here are some excerpts on his VITA effort front loaded but you can read the full article and see the other innovations Hawke was part of creating.

Here are VITA Excerpts with the full article below these:

Then there's the "visual environment translation" system that's designed to convert foreign language inputs into clear English in real time. Known over-archingly as the Versatile Intelligent Translation Assistant (VITA), the system encompasses both visual environment translation effort and voice-to-voice translation capabilities and is "the most mature" of the JATF's experimental technology areas, according to SOCOM. VITA is essentially "a voice-to-voice translation engine that functions offline on GPU-enabled devices," Gregory says, small enough to be carried in the field on a laptop-tethered smartphone or wearable device and "engage in effective conversations where it was previously impossible."

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VITA provides US special operations forces with “a high-quality translation capability that is not reliant on the cloud or local interpreters, thus significantly reducing risk and logistical costs while increasing operational range and effectiveness for USSOF and our partners,” Gregory says.

“The JATF is currently working with industry partners to reduce the size of the hardware and transition it into a SOF Program Executive Office for eventual fielding.” (And that language translation may not be restricted to a mobile device for long: According to SOCOM’s fiscal year 2025 budget request published in March, the command is still plowing ahead with head-mounted sensors and an augmented-reality HUD to present these functions right before operators’ eyes.)

Although VITA has shown operational promise, it’s unclear if other HEO products will prove intuitive enough to actually augment operators in the field rather than burden them with some complicated newfangled system.

But even if the HEO effort ends up only fielding, say, the VITA language translation tool, it will still represent a major boost in capabilities for US special operators deployed abroad. The day is slowly turning into night, but American commandos own the night and, with the help of the HEO, will do so well into the next conflict.

See FULL ARTICLE BELOW or check the original link here:
https://www.wired.com/story/us-military-hyper-enabled-operator/

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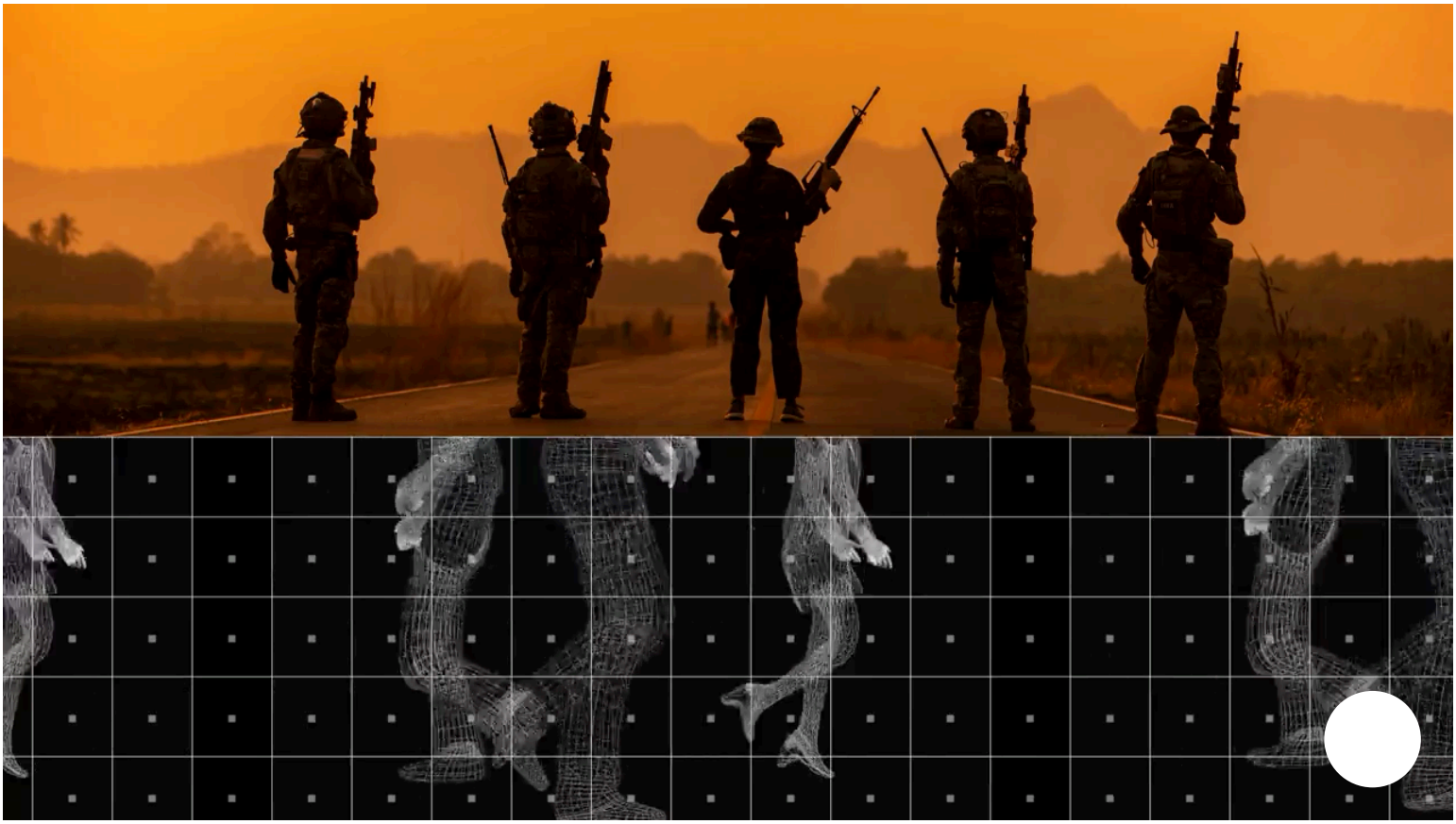

PHOTO-ILLUSTRATION: ANJALI NAIR; GETTY IMAGES

SAVE

The day is slowly turning into night, and the American special operators are growing concerned. They are deployed to a densely populated urban center in a politically volatile region, and local activity has grown increasingly frenetic in recent days, the roads and markets overflowing with more than the normal bustle of city life. Intelligence suggests the threat level in the city is high, but the specifics are vague, and the team needs to maintain a low profile—a firefight could bring known hostile elements down upon them. To assess potential threats, the Americans decide to take a more cautious approach. Eschewing conspicuous tactical gear in favor of blending in with potential crowds, an operator steps out into the neighborhood's main thoroughfare to see what he can see.

With a click of a button, the operator sees ... everything. A complex suite of sensors affixed to his head-up display start vacuuming up information from the world around him. Body language, heart rates, facial expressions, and even ambient snatches of conversation in local dialects are rapidly collected and routed through his backpack supercomputers for processing with the help of an onboard artificial intelligence engine. The information is instantly analyzed, streamlined, and regurgitated back into the head-up display. The assessment from the operators' tactical AI sidekick comes back clear: There are a series of seasonal events coming into town, and most passersby are excited and exuberant, presenting a minimal threat to the team. Crisis averted—for now.

This is one of many potential scenarios repeatedly presented by Defense Department officials in recent years when discussing the future of US special operations forces, those elite troops tasked with facing the world's most complex threats head-on as the "tip of the spear" of the US military. Both defense officials and science-fiction scribes may have envisioned a future of warfare shaped by brain implants and performing enhancing drugs, or a suit of powered armor straight out of *Starship Troopers*, but according to US Special Operations Command, the next generation of armed conflict will be fought (and, hopefully, won) with a relatively simple concept: the "hyper enabled operator."

More Brains, Less Brawn

First introduced to the public in 2019 in an essay by officials from SOCOM's Joint Acquisition Task Force (JATF) for Small Wars Journal, the hyper-enabled operator (HEO) concept is the successor program to the Tactical Assault Light Operator Suit

(TALOS) effort that, initiated in 2013, sought to outfit US special operations forces with a so-called "Iron Man" suit. Inspired by the 2012 death of a Navy SEAL during a hostage rescue operation in Afghanistan, TALOS was intended to improve operators' survivability in combat by making them virtually resistant to small-arms fire through additional layers of sophisticated armor, the latest installment of the Pentagon's decades-long effort to build a powered exoskeleton for infantry troops. While the TALOS effort was declared dead in 2019 due to challenges integrating its disparate systems into one cohesive unit, the lessons learned from the program gave rise to the HEO as a natural successor.

The core objective of the HEO concept is straightforward: to give warfighters "cognitive overmatch" on the battlefield, or "the ability to dominate the situation by making informed decisions faster than the opponent," as SOCOM officials put it. Rather than bestowing US special operations forces with physical advantages through next-generation body armor and exotic weaponry, the future operator will head into battle with technologies designed to boost their situational awareness and relevant decisionmaking to superior levels compared to the adversary. Former fighter pilot and Air Force colonel John Boyd proposed the "OODA loop" (observe, orient, decide, act) as the core military decisionmaking model of the 21st century; the HEO concept seeks to use technology to "tighten" that loop so far that operators are quite literally making smarter and faster decisions than the enemy.

"The goal of HEO," as SOCOM officials put it in 2019, "is to get the right information to the right person at the right time."

To achieve this goal, the HEO concept calls for swapping the powered armor at the heart of the TALOS effort for sophisticated communications equipment and a robust sensor suite built on advanced computing architecture, allowing the operator to vacuum up relevant data and distill it into actionable information through a simple interface like a head-up display—and do so "at the edge," in places where traditional communications networks may not be available. If

TALOS was envisioned as an “Iron Man" suit, as I previously observed, then HEO is essentially Jarvis, Tony Stark’s built-in AI assistant that’s constantly feeding him information through his helmet’s head-up display.

“[JATF] is targeting technologies to deliver cognitive overmatch to SOF operators working at the edge in austere and contested environments in coordination with and working through partners and allies,” SOCOM spokesperson James O. Gregory tells WIRED, invoking a general description of the program from the command’s website. “Such technologies will enable tactical teams of SOF operators to intuitively use information made available by next-generation sensors, networks, computing, and communication systems to rapidly build situation awareness. It will also help make timely, well-informed decisions, and take actions inside an adversary's ability to react.”

Enter the Gray Zone

So what does the HEO actually look like today, five years after its introduction into the US military’s tactical lexicon? Given the sensitive (and somewhat notional) nature of the effort, details remain scarce, and SOCOM officials have remained relatively tight-lipped about its progress. But according to SOCOM’s Gregory, the scenario and concept the HEO seeks to address has “evolved” from what officials previously described to reporters at the program’s inception. Indeed, rather than augmenting warfighters deployed to active combat zones, SOCOM officials envision something more like a casually dressed operator vacuuming up information on a busy urban avenue through a Google Glass-like eyepiece and sizing up the situation—in other words, more James Bond than Tony Stark.

“The operational environment for the JATF’s current efforts is in the competition phase of warfare, in permissive or semi-permissive locations,” Gregory says. (A permissive environment is generally defined as an operational environment

where US forces have the backing of a host country's security apparatus, according to the US Army, while a "semi-permissive" environment is potentially hostile and local support is often not reliable.) No longer just another tool for a kinetic assault, the HEO will help elite troops operating in the "gray zone" between peace and conflict.

A SOCOM broad agency announcement—a general request for research and development proposals from the defense industry—published in 2020 and updated as recently as November 2023 details the JATF's push for advanced technologies designed to boost situational awareness. Those technologies include: intelligence, surveillance, and reconnaissance capabilities "without substantial manning or networking resources" (the aforementioned "at the edge"); sophisticated sensors capable of "iris, facial, anatomical measures, gestures, gait, heartbeat, electromagnetic signals, deoxyribonucleic acid [DNA], and microbiome recognition"; low-visibility communications systems; and "data visualizations" that "permit [operators] to receive and intuitively understand networked information from communication, computing, and sensor systems," among others. In short, the HEO envisions systems that enable the constant, real-time collection and distillation of data into actionable intel that could potentially mean the difference between life and death in an uncertain situation.

Edge Case

Envisioning a suite of aspirational capabilities is one thing; actually building them is another thing entirely. In terms of developing new products, Gregory says that the HEO effort has remained focused on three major experimental technology areas for the last several years: sensing and edge computing, architecture and analysis, and language translation.

"Sensing and edge computing" generally refers to the collection and processing of data from a variety of sources, but it also refers to the specialized computing power that operators need not only to function "at the edge," but to actually run

the AI-enabled software that will form the foundation of the HEO.

“Emerging technologies and solutions in artificial intelligence/machine learning require specialized ‘compute’ hardware, as traditional CPU-based devices are insufficient,” Gregory says. “We aim to feature a manpack device with a graphics processing unit, neural processing engine, and/or tensor processing unit capabilities. This will provide the necessary platform to leverage advanced technologies like language translation and other solutions at the edge, even when disconnected from the cloud.”

That computing power forms the basis for the “architecture and analysis” element focused on the rapid assessment and presentation of data to operators in the field. Gregory tells WIRED that, to support this element, the command has developed “a flexible [system] architecture that fuses data from various sources and media types” into an easily digestible format for operators to assess and act upon.

As for language translation, that’s self-explanatory. SOCOM believes that “prior to any hostilities ever occurring, clear communication can greatly enhance development of our long-term relationships,” Gregory says. “Voice-to-voice translation enables operators to communicate more effectively than relying on often scarce interpreters in the field. Even though many SOF personnel are multilingual, they are frequently deployed to regions with different languages or dialects.”

In line with these experimental technology areas, SOCOM has reportedly concentrated on six immediate lines of product development, per C4ISRNet: the “operator-worn kit” that includes both sensors and onboard computer processing power; application development resources; a unique, mission-agnostic system architecture; the “human-machine interface” that’s generally envisioned as a digital head-up display; a product called “information realization” that likely involves the clear presentation of data; and beyond-line-of-sight (BLoS) communications designed to keep troops in contact with their commanders (and

each other) in satellite-denied environments.

According to Gregory, the command has gradually rolled out a handful of fresh capabilities from the HEO effort in recent years. In 2021, SOCOM announced that two products—a BLoS communications system and an unspecified "integrated situational awareness tool"—were transitioning into official programs of record, as Janes reported at the time. Gregory confirmed to WIRED that the BLoS system consists of "a steerable gimble antenna system that enhances the functionality" of the command's SOF deployable nodes, a family of advanced satellite communications systems. The spokesperson also confirmed that the situational awareness tool, known as SEEKER, is an app that "enables advisers to build advanced situational awareness, thereby allowing them to select actions with an eye toward the broader situation rather than just the immediately apparent problem." It's unclear if the latter is related to the "automate the analyst" effort the command kicked off in 2020 to provide operators with an autonomous AI assistant.

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Field Work

To US military planners, the HEO concept is promising: According to one Army assessment, the successful adoption of the system could potentially increase operator survivability far beyond that provided by the additional body armor of the TALOS program. But like other potentially revolutionary technology ventures, there's certainly the possibility that HEO could end up a science fiction dream that collapses under the weight of its own technical complexity. And there's no guarantee that operators will embrace the new technology seamlessly in the first place: Although VITA has shown operational promise, it's unclear if other HEO products will prove intuitive enough to actually augment operators in the field rather than burden them with some complicated newfangled system. As Heinlein put it so aptly in *Starship Troopers*: "If you load a mud foot down with a lot of gadgets that he has to watch, somebody a lot more simply equipped—say with a stone ax—will sneak up and bash his head in while he is trying to read a vernier."

Perhaps, like TALOS, the promise of a tactical AI assistant like Tony Stark's Jarvis sidekick may prove simply too ambitious for military engineers to realize in a fully formed product. But even if the HEO effort ends up only fielding, say, the VITA language translation tool, it will still represent a major boost in capabilities for US special operators deployed abroad. The day is slowly turning into night, but American commandos own the night and, with the help of the HEO, will do so well into the next conflict.
