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Army's Integrated Visual Augmentation System (IVAS): Background and Issues for Congress

The U.S. Army is developing the Integrated Visual Augmentation System (IVAS) as part of an effort to improve the combat effectiveness and training of soldiers. IVAS includes a “ruggedized” (i.e., strengthened) extended reality (XR) heads-up display (HUD) originally based on Microsoft’s commercially available HoloLens as well as a wearable computer and battery pack, a squad radio, Squad Immersive Virtual Trainer (SiVT), and other enabling capabilities. (SiVT is to provide squad-level training in an XR synthetic training environment.) According to Army documents, IVAS “integrates next generation 24/7 situational awareness tools and high resolution digital sensors to deliver a single platform that improves Soldier sensing, decision making, target acquisition, and target engagement.” The Army identifies IVAS as a component of the service’s Soldier Lethality and Synthetic Training Environment modernization priority.

As Congress evaluates IVAS and IVAS-related authorizations and appropriations, it may consider the system’s technological maturity as well as its implications for military personnel, force structure, and cybersecurity.

Background

In November 2018, the Army awarded an Other Transaction Agreement (OTA)—worth up to \$22 billion over 10 years—to Microsoft for the development of IVAS. (For information about such agreements, see CRS In Focus IF12856, *Defense Primer: Other Transactions (OTs)*, by David H. Carpenter and Alexandra G. Neenan). The service has since procured several increments of the system. In 2022, it procured 5,000 IVAS 1.0 systems, which reportedly provided “baseline capabilities, which include navigation and rapid target acquisition with weapons sight camera linkage.” In 2023, the service procured 5,000 IVAS 1.1 systems, which reportedly added an “improved low-light sensor to aid maneuver and positive target identification.” These early versions of the system reportedly caused users to suffer “‘mission-affecting physical impairments,’ including headaches, eyestrain, and nausea.” These symptoms are similar to those experienced by some users of commercially available XR headsets.

The prototype of the current increment, IVAS 1.2, redesigns the HUD and reduces its field of view from 70-degrees to 60-degrees. The Army requested \$255 million to procure 3,162 IVAS 1.2 HUDs in FY2025 as one of multiple programs in a line item for “Night Vision Devices.” It additionally requested \$58.6 million in research, development, test, and evaluation funding for the HUD and \$18.9 million in such funding for SiVT. On April

10, 2025, the Army reportedly approved a “contract novation” (i.e., a legal action in which one party replaces another party in a contract) that effectively transferred Microsoft’s contract for IVAS to Anduril. Anduril had previously announced that it was partnering with Microsoft to integrate its Lattice open software platform into IVAS. Anduril describes Lattice as “[using] technologies like sensor fusion, computer vision ... and machine learning and artificial intelligence to detect, track, and classify every object of interest in an operator’s vicinity.”

According to the FY2024 Annual Report for the Office of the Director, Operation Test and Evaluation, the Army was to conduct an operational assessment of IVAS 1.2 in the third quarter of FY2025 to inform future production and fielding decisions.

IVAS Next/ Soldier Borne Mission Command (SBMC)

The Army hosted its first “Industry Day” for the IVAS 1.2 follow-on effort, then-called IVAS Next, in December 2023. This event was intended to “inform interested companies of the IVAS Next requirements and acquisition path,” according to an official government notice. In January 2025, the Army issued a request for information (RFI)—including vendor proposals for “technical approach, key features and expected performance, projected benefits, and technology readiness level”—for IVAS Next. This RFI was followed by a second, virtual “Industry Day” in February 2025. In March 2025, the Army released documents announcing that IVAS Next was to be renamed the Soldier Borne Mission Command (SBMC) and stating that the service “anticipates a full and open competition for SBMC.” The Army has awarded contracts to Anduril (worth \$159 million) and start-up firm Rivet (worth \$195 million) for SBMC, which the service describes as a “new effort to develop a fused digital awareness system optimized to emerging modular sensor technologies.” The contracts are to reportedly “cover an 18-month rapid prototyping sprint.”

Potential Issues for Congress

Congress may consider a number of issues as it continues to evaluate DOD investments in IVAS and IVAS-related programs such as SBMC. Some of these issues may include, but not necessarily be limited to, the following: user acceptance, cost and technical risk, personnel, and cybersecurity and information security.

User Acceptance

A 2022 Department of Defense Inspector General audit of IVAS concluded that the Army had not previously “[defined] suitable user acceptance measurements for testing and evaluation” and that it could “result in wasting up to \$21.88 billion in taxpayer funds to field a system that Soldiers many not want to use, or use as intended” on the battlefield. Congress may seek additional information about the results of subsequent user acceptance assessments and/or require such assessments for future IVAS and IVAS-related programs such as SBMC. Congress might also seek additional information on the disposition of the IVAS systems that reportedly caused users to suffer physical impairments.

Figure 1. Soldier Wearing IVAS



Source: DOD, Director, Operational Test and Evaluation, FY2024 Annual Report, “Integrated Visual Augmentation System (IVAS).”

Cost and Technical Risk

With an estimated cost of \$22 billion, IVAS requires significant up-front development costs. Once fielded, however, IVAS may reduce training costs by removing the need to centralize personnel, use live ammunition, or operate platforms. Conversely, IVAS may have higher sustainment costs than less technologically sophisticated systems. To assess these issues, Congress could direct the Comptroller General, the head of the Government Accountability Office, to conduct an independent analysis of the potential benefits (e.g., increased soldier lethality) and drawbacks (e.g., physical impairments, cognitive overload) of IVAS. This analysis may determine whether there are less costly, alternative means of achieving any identified benefits. Congress may also seek to obtain information about the projected lifecycle costs—including maintenance requirements—for IVAS and IVAS-related programs.

Personnel

IVAS and other XR programs may have a number of implications for military personnel and force structure. If the U.S. military is able to achieve efficiencies in training or warfighting, for example, it may be able to shift personnel away from training units or reduce overall manpower requirements—with a smaller number of troops

retained at higher levels of readiness. Conversely, IVAS may produce greater demand for IT maintenance and cybersecurity personnel. This demand could offset reductions occurring elsewhere in the force or increase overall manpower requirements. The Army Transformation Initiative, announced by Army leaders on May 1, 2025, could result in significant personnel and force structure cuts, potentially leading to changed requirements for IVAS.

Cybersecurity and Information Security

Some analysts have raised concerns about the potential cybersecurity and information security vulnerabilities of XR systems, noting the possibility of an “inception attack” that could allow an adversary to steal data or manipulate social interactions. In the case of military XR systems such as IVAS, these vulnerabilities could grant an adversary access to high-value-target databases for training, weapons maintenance, image classification, mapping, and other functions; or information about the location of U.S. forces.

If an adversary were to gain control of IVAS, the adversary could distort the common operational picture used to coordinate military actions or cause the system to misidentify people and platforms—potentially resulting in fratricide or unintended civilian casualties. The adversary could also gain command and control of U.S. uncrewed systems. (One potential use case of IVAS is to fly microdrones for intelligence, surveillance, and reconnaissance missions.) Congress may request briefings on the findings of DOD’s security tests of IVAS, or withhold funds if the system is found to have significant vulnerabilities.

Related CRS Products

CRS In Focus IFI2010, *Military Applications of Extended Reality*, by Kelley M. Saylor.

CRS In Focus IFI0159, *Cybersecurity*, by Eric A. Fischer and Catherine A. Theohary.

Other Resources

Department of Defense Inspector General, “(U) Audit of the Army’s Integrated Visual Augmentation System,” April 20, 2022, <https://media.defense.gov/2022/Apr/22/2002981953/-1/-1/1/DODIG-2022-085.PDF>.

Department of Defense, Office of the Director, Operational Test and Evaluation, *FY2024 Annual Report, “Integrated Visual Augmentation System (IVAS),”* January 2025, <https://www.dote.osd.mil/Portals/97/pub/reports/FY2024/other/2024Annual-Report.pdf?ver=AkqD4yIxlhmNndurzRkvqQ%3d%3d>.

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