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TACTICAL AIR AND LAND FORCES

ON

SMALL UAS AND COUNTER-SMALL UAS:

GAPS, REQUIREMENTS, AND

PROJECTED CAPABILITIES

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Introduction

Chairman Wittman, Ranking Member Norcross, and Members of the Subcommittee, thank you for the opportunity to speak to the Committee about the Defense Innovation Unit's (DIU's) efforts to help the Department of Defense (DoD) develop and scale small unmanned aircraft systems (sUAS) and counter-sUAS (C-sUAS) capabilities and to integrate these systems across the Joint Force. Thank you also for your focus on this critical set of issues, and on the role that commercially derived technology must play, alongside bespoke defense-specific development, in meeting both its opportunities and its challenges. There are few areas where the character of war is changing more rapidly, or where we must change more to build and sustain the global leadership position our national security requires.

We are focused on this challenge, and we are actively working together across the Department to get after it. DIU's role on the team is to collaborate with both our DoD and commercial technology (tech) sector partners to ensure that the United States is in a position to take full advantage of the very best commercially derived hardware and software to meet the strategic imperative. DIU, utilizing the authorities and resources that Congress has provided, does this in two ways. First, as the national mission force for innovation, DIU helps deliver capability to meet the most critical operational capability gaps with the focus, speed, and scale needed for strategic effect. And second, as a Principal Staff Assistant to the Secretary and the Department's "principal liaison" to the commercial tech sector,[1] DIU serves as a vanguard, catalyst, and leader for DoD's broader efforts to institutionalize and scale commercial technology integration, as well as to help put the commercial tech sector in a position to meet our needs both today and in the future.

[1] 10 U.S.C. § 4127.

The sUAS and C-sUAS Threat Environment

Massed, affordable, and attritable platforms with a short lifespan are changing the character of war, and transforming the way our forces must fight. Incidents in the homeland, and conflicts in the Middle East—such as in the Red Sea and Gaza—and in Ukraine serve as daily reminders of the effect of this technology on the nature and needs of modern war.

The current global UAS capability threat is broadly characterized by a wide variety of kinetic and non-kinetic uncrewed systems capabilities. Kinetic capabilities include, but are not limited to, short-range, remote piloted, kamikaze drones commonly known as First Person View (FPV), reusable bomber drones, one-way attack (OWA), and long-range one-way attack (LROWA) platforms. Non-kinetic platform capabilities include, but are not limited to, short-range intelligence, surveillance, and reconnaissance (ISR), long-range ISR, electronic warfare, signals intelligence, communications relay, and drones with other critical warfighting missions.

China dominates the commercial sUAS industrial base and supply chain that underpins much of this rapidly evolving industry. For every drone made in the United States, China makes more than a hundred. This is largely due to Chinese-headquartered companies control of the consumer drone market, with a 70% market share worldwide and a 90% market share here in the United States.[2] Supply chain components and platform options from outside China are often three to five times more expensive than comparable options made in China, and generally available in extremely limited quantities. This poses a threat to the near-term development and delivery of domestic sUAS platforms, as has been evident from China-related supply chain disruptions to U.S. drone manufacturers that supply our military.

[2] Black, Thomas. "The US Can't Let China Dominate the Small-Drone Market." Bloomberg. 1 April 2024. https://www.bloomberg.com/opinion/articles/2024-04-01/the-us-can-t-let-china-dominate-the-small-drone-market; The Chinese Drone Market Report 2019-2024. Drone Industry Insights. https://droneii.com/product/chinese-drone-market-report.

While in Ukraine this past December, I had the opportunity to see the eye-watering pace of change in these technologies, in everything from sUAS and C-sUAS systems, to the tactics, techniques, and procedures employed in remote units spread throughout the city. The resulting demand is supported by the incredibly dynamic evolving ecosystem of hardware and software providers who are rising—and competing—to meet the challenge of Ukraine's wartime need, including in workshops across Kyiv filled with software developers and 3D printers. DIU is embedded with the Security Assistance Group, Ukraine, to help capture the lessons for both offense and defense from the successes and failures of that environment, and then help apply them to our own critical needs in the Indo-Pacific, Middle East, the homeland, and elsewhere.

On offense, we must take advantage of the pace of commercial tech progress to put our forces—on the ground, in the air, and at sea—in a position to defeat our adversaries, and to overcome our adversaries' rapidly evolving C-UAS capabilities as we do so. On defense, we must meet the exponentially growing challenge from ever more capable and numerous drone attacks. We must also end the unsustainable pattern of shooting down increasingly sophisticated, lethal drones—that in many cases cost just a few hundred dollars and are therefore accessible to a much broader range of bad actors—with exquisite multimillion dollar weapons that are difficult to produce and to replace once expended.[3] We must do this *now*, and we must do this at *scale*.

To help calibrate the scale and nature of this challenge, Ukraine has in the last few years grown its UAS use from a few thousand platforms a month, mostly small ISR drones, to more than 150,000 a month, with most of them kinetic. In 2024, Ukraine produced roughly two

[3] "A Review of Select Department of Defense Acquisition Programs." United States Senate Committee on Appropriations. 15 May 2024. https://www.appropriations.senate.gov/hearings/a-review-of-select-department-of-defense-acquisition-programs

million UAS platforms in total[4], and is on track to produce nearly 3 million in 2025.[5] Meanwhile, DoD's Replicator-1 initiative—with sustained senior leadership focus, cross-Departmental collaboration, DIU's help, and support from Congress—made enormous strides to field multiple thousands of unmanned systems across multiple domains by this summer. This represented a Herculean effort to put a few thousand drones in place within 24 months from the initiative's launch in August 2024. In 2025, DoD plans to buy about 4,000 drones. In Ukraine, more than 4,000 drones are produced and consumed per *day*. As challenging, the rate at which the UAS threat—including for sUAS—continues to evolve still far outpaces the rate at which the Department is moving to meet it. Commercially derived and custom-built sUAS are operating at higher speeds, in swarms, and are increasingly resilient to disrupted and denied communications through constant updates. Many of their capabilities are driven by relentless consumer demand for ever more capable civilian drones. The DoD therefore must be able to update its own UAS and C-UAS capabilities within weeks or even days, or risk those capabilities being obsolete before even being produced, much less deployed.

This is a pace of change the commercial tech sector, fueled by constant and competitive updates, might find daunting. For the traditional approach to defense procurement, testing, and fielding it is simply unattainable. This is why the DoD, with support from Congress, must reinforce the progress made over the last few years to dramatically accelerate the advance of its UAS and C-UAS capabilities, and their integration into the way we fight. And we simply cannot do this without accelerating our ability to harness the power of our commercial technology sector and transforming the way we work with them to do so. This is a central focus for DIU,

[4] Bondar, Kateryna. "Ukraine's Future Vision and Current Capabilities for Waging AI-Enabled Autonomous Warfare." 6 March 2025. Center for Strategic & International Studies. https://www.csis.org/analysis/ukraines-future-vision-and-current-capabilities-waging-ai-enabled-autonomous-warfare

[5] Korshak, Stefan. "Ukraine Drone Production Tops 2.5 Million a Year, Aircraft Numbers on Track to Grow." Kyiv Post. 10 February 2025. https://www.kyivpost.com/post/46892.

leveraging its "dual fluency" talent and its streamlined acquisition authorities to deliver commercial UAS and C-sUAS capabilities "with an emphasis on speed, flexibility, and execution," consistent with recent Administration guidance.[6]

Accelerating on Offense: sUAS

On offense, DIU is working to address sUAS challenges by working with combatant commands, Services, the Joint Staff, and others in the Office of the Secretary of Defense (OSD) to field the most critical capabilities for the warfighter. We are also working to expand and strengthen the defense innovation and industrial base focused on this space. DIU is doing this primarily through a focus on 1) delivering concrete integrated warfighter unmanned systems solutions, designed to drive to real impact, now; 2) accelerating delivery of the enabling technologies needed to ensure those systems' success, including automatic target recognition, resilient command and control, and—as it develops—collaborative autonomy; 3) concentrating efforts to expand the universe of vetted suppliers of both completed systems and their components, and finally; 4) launching a new effort to help the industry scale more rapidly by leveraging cutting edge advanced manufacturing.

First, DIU is working to help put concrete sUAS capabilities in place where warfighters need them most. In just one of many examples, DIU recently partnered with the Office of the Under Secretary of Defense for Acquisition and Sustainment (A&S) to deliver ground-launched, affordable, long-range one-way attack platforms through the Artemis project. Artemis leveraged DIU relationships and contracting to deliver concrete prototypes from four innovative sUAS suppliers in just four months, including two that are partnered with Ukrainian firms to reflect the latest battlefield experience. Congressional support has also facilitated a transformative

[6] "Modernizing Defense Acquisitions and Spurring Innovation in the Defense Industrial Base." 9 April 2025. https://www.whitehouse.gov/presidential-actions/2025/04/modernizing-defense-acquisitions-and-spurring-innovation-in-the-defense-industrial-base/ and "Ensuring Commercial, Cost-Effective Solutions In Federal Contracts." 16 April 2025. https://www.whitehouse.gov/presidential-actions/2025/04/ensuring-commercial-cost-effective-solutions-in-federal-contracts/

partnership between DIU and the Services. For example, we partnered with the Army on Company-Level sUAS.[7] We applied $15M in fiscal year 2024 through our agile funding line to enable the Army to prototype and deploy this capability, in response to an Army Futures Command directed requirement, based on lessons learned from Ukraine and the Middle East. We helped the Army go from idea to initial fielding in just six months, compared to an average of two to five years for Middle Tier Acquisition. We are now working with our Army partners to ensure funding accelerates in fiscal year 2025, while the Army simultaneously builds in funding for scale in future fiscal years. Together, we are bridging the valley of death and delivering warfighter impact—and a successful reference case for private sector investment.

Second, DIU is also working to extend critical enabling capabilities that support the successful operation of unmanned systems and further advance their capabilities. Critical examples include integrating common autonomy and artificial intelligence (AI) architectures, which facilitate greater platform and collaborative autonomy, with simultaneous advancement in related command and control solutions. DIU has partnered with the Office of the Under Secretary for Research and Engineering (R&E)'s Test Resource Management Center (TRMC) to rapidly scale Autonomous Collaborative Teaming (ACT) and Opportunistic, Resilient, and Innovative Expeditionary Network Typology (ORIENT), projects, which are critical to realizing the potential of autonomous systems. As critical to the success of these platforms is our ongoing work leveraging the best commercially derived AI in partnership with the National Geospatial-Intelligence Agency's Project Maven to deliver the needed levels of automatic target

[7] Company sUAS is a Directed Requirement approved in June 2023 to enable Army maneuver companies (3-4 platoons consisting of up to 200 soldiers total) to conduct multiple tasks with rapidly reconfigurable, attritable, modular payload capabilities to execute reconnaissance, surveillance, and target acquisition missions. Courtesy Asset, "The U.S. Army Selects Vendors for the Company Level Small Uncrewed Aircraft System Directed Requirement for Brigade Combat Teams," U.S. Army, September 11, 2024. https://www.army.mil/article/279603/the_u_s_army_selects_vendors_for_the_company_level_small_uncrewed_aircraft_system_directed_requirement_for_brigade_combat_teams; U.S. Department of Defense, "Military Units: Army." https://www.defense.gov/Multimedia/Experience/Military-Units/Army/#army.

recognition. By leveraging best in breed commercial software solutions and then by working with partners in the Chief Digital and Artificial Intelligence Office (CDAO) and elsewhere to shape the Department's approaches to data, application programming interfaces (APIs), and ongoing software updates, DIU is helping to ensure that the government is in a position to stay at the cutting edge of these critical software solutions, and do so both sustainably and affordably.

Third, DIU is working to catalyze the needed defense industrial base. While the biggest thing we can do to accelerate the industrial base's development is simply provide the significant and consistent demand signal that does not exist today, DIU is also helping drive needed change through the Blue UAS initiative. Blue UAS, launched in 2020, provides a rapid pathway to adoption in the DoD. The initiative consists of two lines of effort that curate a roster of NDAA and policy compliant commercial UAS (the Blue UAS Cleared List) and interoperable, NDAA-compliant UAS components, subcomponents, modules, and software (the Blue UAS Framework) to meet the diverse needs of DoD users and statutory requirements for supply chain security and adversarial capital. In Fall 2024, DIU launched a full competitive refresh of the Blue UAS List to incorporate technological advancements, operational needs, and lower cost, and to expand the industrial base. This effort yielded, among other things, the inclusion of a U.S. FPV drone manufacturer with an American supply chain that is cybersecure and adverse capital compliant and whose cost and scale metrics are approaching the aggressive numbers seen in Ukraine. This is just one of many examples in a field of players that we must catalyze to grow exponentially in number, variety, and capability.

To meet the need for dramatically greater scale and to address legitimate tech sector concerns, DIU is now overhauling Blue UAS from the ground up. Blue UAS was originally designed to vet UAS suppliers during a time when the number of companies in the space was

between one and two dozen. Today, we need to provide a simple, transparent, and continuous path to certification of NDAA compliance to the growing hundreds of drone companies in the United States and among our allies and partners, while continuing to identify the very "best in breed" for an elevated level of support that helps connect them with the most critical needs across the Department. DIU will be working closely with our industry partners in the coming weeks to launch this revitalized, two-tiered model for Blue UAS, and will continue to refine it as the industry and the warfighter's needs continue to evolve. At the same time, DIU will continue to work with the rest of the Department and with Congress to move toward the dramatically greater and more consistent demand at scale that the industry needs for true viability, and that the Department needs to meet the strategic imperative.

Finally, DIU is also working to ensure that our partners in the commercial tech sector are prepared to meet the resulting increase in demand. The sUAS industrial base—like others in the commercially derived defense tech ecosystem—will face challenges to ramping production from today's levels to the massive scale we require. This is one of the reasons DIU has announced the Blue Manufacturing Initiative, focused on pairing the very best hardware and software manufacturers in defense technology with the very best advanced manufacturing providers—who are located right here in the United States—to help both strategically critical industries to scale.

Securing our Defense: C-sUAS

While DIU is working hard to extend DoD's capabilities on offense, we are also working with combatant commands, Services, the Joint Staff, and our teammates in OSD to counter current and future UAS threats from our adversaries. DoD's efforts in this area are led by the Joint Counter-small Unmanned Aerial Systems Office (JCO) and by A&S. DIU's primary role on the team is to leverage our unique competitive advantages in the commercial and dual-use

technology sectors, together with the authorities and resources provided by Congress, to put real capability into the field immediately. DIU is also driving Replicator 2, a whole-of-department and interagency effort to improve C-sUAS protection for critical assets, largely centered on the homeland but including some U.S. installations outside the continental United States. Across all efforts, DIU is focused on leveraging commercially derived technology to accelerate our warfighters' ability to sense, decide, and act. This is necessary to defeat sUAS with the speed and efficacy necessary to defend against the most demanding threats, across the full range of conditions - from combat environments overseas to population centers here at home.

First, we need to adopt lower cost sensing capabilities to augment our more exquisite point defense systems. This will enable our warfighters to see the threat as soon as it emerges, even in the most complex operating environments, with the scale, range, and fidelity required to do so. Technology exists now for lower cost sensing in radar technology, acoustics, and newer passive radio frequency/5G/4G/LTE signals monitoring, as well as for accessing the vast pools of data that exist through public and commercial sources, which can together provide early warnings of one-way attack UAS.

Second, our layered defenses against ever more complex, capable, and numerous drone threats must be enabled by AI-driven decision support, harnessing the vast amounts of data described above, to reduce operator burden and to allow our forces to decide quickly enough to bring the right weapon to bear on the right threat, on a near-instantaneous basis. This area of technology includes AI and machine learning (AI/ML) capabilities, as well as supporting data and communications technologies, where the commercial tech sector clearly leads.

And finally, we need to be in a position to act – to put UAS threats down with defeat systems matched to the target and to the environment in which we must operate. While

commercially derived technology can help with the full range of kinetic and non-kinetic solutions, likely the greatest incremental opportunity is in the rapid generation of solutions for low-collateral defeat, which are critical in situations where friendly forces and/or civilians are in close proximity to the threat – including in the homeland. A wide array of small and non-traditional companies is evolving to meet this need, alongside more established players, and DIU is engaged actively with both groups.

In addition to multiple C-UAS efforts with the Navy, U.S. Central Command (USCENTCOM), and US Special Operations Command (USSOCOM) to meet the very real immediate threat in the Red Sea and elsewhere, DIU is working with multiple combatant commands and Services to develop and field capability on the ground. For example, we are supporting USCENTCOM priorities to assist the Army with elevated sensing for C-UAS and rapid evaluation of a close-in defeat kinetic intercept capability. The Marine Corps leveraged DIU's Installation C-UAS production OTA to provide an acquisition bridge from 2022 to 2025 to support C-UAS fielding ahead of their recent installation C-UAS program of record award. This $642 million Indefinite Delivery Indefinite Quantity (IDIQ) contract began as a DIU program, in partnership with USSOCOM. We are utilizing both prototype and production other transaction agreements (OTAs) to deliver a combination of C-sUAS sensing, electronic countermeasures, and a low-collateral effect interceptor to a U.S. Southern Command (USSOUTHCOM) location for operational assessment in May 2025. And finally, given the criticality of this threat in the homeland, DIU has strengthened our relationship with U.S. Northern Command (USNORTHCOM), including through a DIU embed. DIU is supporting GEN Guillot and his team by developing a range of options to defend military sites and installations, including through fly-away kits and permanent site defense. We are doing this by both leveraging the

broader Replicator 2 initiative and through direct support to USNORTHCOM, including in the upcoming Falcon Peak C-UAS experiment.

As we are for sUAS, we are also working to build the defense industrial base for C-sUAS capabilities. The Blue UAS Framework and Blue Manufacturing initiatives described above are explicitly shaped to help accelerate C-sUAS development and scaling, in addition to their focus on offensive systems.

Across the Department, we are engaged in a broad range of activities to accelerate our ability to sense, decide, and act in countering the rapidly evolving threat from sUAS. This is a good start, and is already delivering concrete capability that is desperately needed. But it is only a beginning, and we are still very far as a Department from meeting the challenges from sUAS today, much less the challenge they will present tomorrow. DIU is focused on doing everything possible to bring the commercial tech sector's capabilities to bear in meeting this imperative.

Conclusion

The rapidly transforming arena of sUAS and C-sUAS presents enormous challenges and opportunities that require us to bring the very best American innovation to bear. We are already taking action at DoD, and DIU is at the heart of these efforts with our partners across the Department. But we need to be doing much, much more.

To address the rapidly advancing threats and reestablish deterrence, the Department and its commercial partners need to take our critical unmanned systems efforts on both offense and defense to a completely different level. We must put capability in place *now*, we must dramatically improve our capacity and speed to update those capabilities as the environment evolves, and we must build the muscle as a Department to do so again and again and at greater

and greater scale. And to do so, we need your continued support in Congress to ensure sufficient authorities and resources are in place, now and in the years to come, to help develop solutions and scale up production capacity to meet our growing needs. This is not an incremental change vs. today—it is a step function, and we need your help in meeting it.

We as a Department will also need your help in changing our collective culture surrounding risk. Together, we must be willing to take the right kinds of risks today — process risk, financial risk, and reputational risk, all of the kinds that the tech sector takes every day — to avoid taking unacceptable risk — risk to mission, risk to force, and strategic risk for our nation — due to our inability to meet the threat because we move too slow.

We, at DIU, will continue to get after this at the speed the threat demands - and we look forward to working with our teammates across the Department, within our allies and partners, in Congress, and across the rapidly evolving tech sector to do so.