Special Notice

Multi X Office (MXO) Spark Tank

DARPA-SN-26-73

June 3, 2026

Defense Advanced Research Projects Agency
Multi X Office
675 North Randolph Street
Arlington, VA 22203-2114

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Defense Advanced Research Projects Agency (DARPA)

Posting Date: June 3, 2026
Event Date: November 2-4, 2026
Registration Opens: August 10, 2026
Registration Deadline: October 18, 2026, at 11:59 p.m. Eastern Time (ET)
Registration Website: https://cvent.me/8oLRbr
Technical POC: Dr. Jonathan Hoffman, Deputy Director, MXO
E-mail: MXO-SparkTank@darpa.mil

DESCRIPTION:
The Defense Advanced Research Projects Agency (DARPA) will host the Multi X Office (MXO) Spark Tank event for prospective proposers and future MXO collaborators on November 2-4, 2026, in Chicago, Illinois. **Advance registration is required. Registration will open on August 10, 2026. There will be no on-site registration. This event will be hosted in-person only.** The event will include overview presentations by DARPA personnel, including MXO Program Managers, and an opportunity for 1:1 engagement with MXO Program Managers and MXO Leadership via sidebar meetings. After the event, presented materials may be posted to https://www.darpa.mil/about/offices/mxo.

The goals of MXO Spark Tank are to:

(1) familiarize participants with MXO's mission, interest areas, and ongoing efforts;

(2) facilitate discussions with potential proposers;

(3) increase the efficiency in proposal preparation and evaluation; and

(4) broaden DARPA's reach with small businesses, educational institutions, and other non-traditional performers to break down barriers of entry for performers new to DARPA and the national security space.

This meeting will be held at the Unclassified level. All attendees are required to present government-issued photo identification upon entry to the event. The MXO Spark Tank event is open only to prospective MXO proposers and is closed to the general public and members of the media. **Federally Funded Research and Development Centers (FFRDC), University Affiliated Research Centers (UARCs), and Government Entities are discouraged from attending this event.**

MXO MISSION AND THRUST AREAS:

DARPA's Multi-X Office (MXO) launched in May 2026 as the next generation of the former Microsystems Technology Office (MTO) with a mission to disrupt across scale and function to dominate militarily and economically. Building on the many technological successes of its predecessor office, MXO expands its scope to better address the increasingly complex challenges shaping U.S. national security and to uphold the Department of War's technological edge.

Strategically, MXO aims to disrupt the development and use of technology by applying physical sciences broadly and in unconventional ways to deliver innovative capabilities. Technologically, this development

requires multi-scale and multi-disciplinary innovations. Operationally, the MXO technology enables multi-function and multi-domain applications.

MXO explores materials at the atomic, molecular, and cellular scales to develop novel components, tools, and processes with the potential to reshape the battlespace and economies of the future. MXO plans to transition these advances into operational impact for the future and existing battlespace by propagating emerging technology to displace current capabilities. MXO proposes to further leverage commercial technologies and deliver asymmetric advantages for the existing battlespace.

As MXO evolves to address future technology challenges in this unprecedented era of advancement, the office is establishing an over-the-horizon strategy that focuses on three heretofore nascent thrusts, each focused on addressing key challenges towards MXO's mission.

MXO's three thrusts are:

- **Thrust 1 - Materials and components to expand foundations:**
  Materials, devices, and their integration serve as the foundation of the modern battlespace, but this complementary metal-oxide-semiconductor (CMOS) -centric foundation is increasingly vulnerable to disruption and exploitation. MXO seeks to establish new technological beyond-CMOS foundations that enable systems to be resilient, secure, and resistant to adversarial attacks. The goal is to harness American ingenuity to develop and scale next-generation materials and component technologies that deliver system-level assurance. MXO is interested in ideas that invent and enable the scalable production of foundational hardware capable of underpinning enduring military and economic advantage.

- **Thrust 2 - Tools and processes for indigenous development:**
  Indigenous processes, tools, and material supply chains are essential to ensure national and economic security. Our adversaries are increasingly targeting these systems through unconventional and indirect means. MXO aims to strengthen industrial resilience by advancing new tools, processes, and capabilities that support domestic development, create entirely new and indigenous supply chains, and/or reduce reliance on vulnerable supply chains. The office is interested in ideas that help establish new technology sectors, affirm industrial sovereignty, and enable the United States to design, build, and scale critical technologies at home.

- **Thrust 3 - New modalities to achieve mission effects:**
  Sensing, orienting, computing, and communicating underpin effective operations in the modern battlespace. Achieving these effects does not need to solely rely on a single mode of operation or necessarily be limited to traditional electronic-only approaches. MXO seeks to expand the range of technological modalities available to deliver mission effects in ways that are more resilient to current and emerging vulnerabilities. This includes, but is not limited to, more performant devices that leverage new underlying physics, hybrid approaches that exploit the strengths of electronics and non-electronics to produce effects that are greater that the sum of its parts, and entirely new approaches to achieve mission effects that breakthrough existing paradigms' constraints. The office is interested in ideas that expand beyond a single modality-based approach to enable reliable, uninterrupted mission effects in future conflicts.

REGISTRATION INFORMATION:
The MXO Spark Tank will be held in Chicago, Illinois, on November 2-4, 2026, at the Chicago Marriott Downtown Magnificent Mile, located at 540 North Michigan Avenue, (Driveway Entrance on 541 North Rush Street), Chicago, Illinois, USA, 60611. The registration fee is $450.00 for all attendees (standard and U.S. Military or U.S. Government Personnel). Attendance is open to individuals who are U.S. Citizens, U.S. Permanent Residents, and Foreign Nationals. Registration is limited by the venue capacity (maximum of 500 participants); early registration is strongly recommended.

Registration will open on August 10, 2026. There will be no on-site registration. Advance registration is required.

Please register at https://cvent.me/8oLRbr **no later than October 18, 2026, at 11:59 p.m. ET.** Late registrations may be admitted from a waitlist after all pre-registered attendees are admitted, if room capacity allows. Note that late registration processing requires significant coordination and may not be completed in time to attend the MXO Spark Tank event.

All meeting registrants who are not U.S. Citizens must complete and submit one of the following:

- All U.S. Permanent Residents and Foreign Nationals not representing a foreign government must submit a DARPA Form 60 "U.S. Permanent Resident and Foreign National Visit Request", which can be submitted via the following link: https://dtsn.darpa.mil/eform60/.
- Foreign government personnel who are representing a foreign government in an official capacity must submit an official Foreign Visit Request (FVR) via their respective Embassy based in Washington, DC.

Failure to complete and submit the required forms prior to the registration deadline may result in the cancellation of existing registration. Please contact SIDInternationalSecurity@darpa.mil for any further questions about the security process.

CAPABILITY SUMMARY:
All attendees are required to submit a Capability Summary at the time of registration, by the registration deadline specified in this announcement. The Capability Summary (500-word text-only limit, no graphics/images) must follow the format provided within the registration site. This summary shall be stated in the attendee's own words and be a concise description of the core competencies of the entity (e.g., small business, research group, department, business unit, company, etc.) he or she represents. The summary should include a research area(s) that is relevant to the interest(s) of the MXO Program Manager(s) with which a sidebar request(s) is made. If applicable, describe accomplishments or ongoing work in this area within the previous five (5) years. **The Capability Summary should NOT propose new research topics, new project scoping, or solicitations of any kind for research funds from DARPA.** The Capability Summaries will be used to inform current and future MXO Program Managers of available competencies for market research purposes. Capability Summaries will not be distributed outside of DARPA.

MXO Spark Tank attendees are advised that DARPA will not acknowledge receipt of the information received or provide feedback to respondents with respect to any information submitted under this Special Notice.

No classified, ITAR-controlled, or proprietary information shall be included in submitted materials or presented or discussed at the MXO Spark Tank event.

SIDEBAR MEETINGS:
Registered attendees will have the option to participate in a fifteen (15)-minute sidebar meeting with (a) MXO Program Managers for technical discussion, and/or (b) MXO Leadership to learn about DARPA MXO Program Manager position opportunities. Attendees can request either one of the options or both options. For option (a), attendees may request a sidebar meeting (via the registration website) with up to three (3) of the MXO Program Managers listed below. For option (b), attendees who are interested in a discussion related to the DARPA MXO Program Manager position may request a meeting (via the registration website) with MXO Leadership.

The Capability Summary submission will assist in the coordination of the sidebar meetings; these meetings will be coordinated until capacity is met for each MXO person. Prior to the event, attendees selected for sidebar meetings will be notified of their meeting time and on-site instructions. **Sidebar meetings are not guaranteed; attendees may not receive a requested meeting due to scheduling capacities. No additional sidebar meetings will be scheduled on-site during the MXO Spark Tank event.**

To allow for the widest breadth of attendance within the in-person sidebar meetings, no more than two (2) representatives per organization unit (*e.g.*, subsidiary, segment, sector, etc.), and eight (8) people per overall organization (*e.g.*, parent company), may participate in the event. The determination of what constitutes an organization will be made by the DARPA MXO Office Director. Registrants are strongly encouraged to coordinate attendance internally within their organizations prior to registering and requesting to participate in the sidebar meeting(s).

MXO PROGRAM MANAGER INTERESTS:

1. Dr. Travis Autry is focused on creating next-generation capabilities for sensing, communications, and photonics. His interests include (1) new methods for quantum sensor manufacturing that enable scaled integration, (2) sensing and photonics that leverage quantum enhancement, (3) scalable classical and quantum platform-platform networking of sensors with integrated photonics, (4) new sensors or sensing modalities that enable enhanced battlefield awareness, (5) photonic circuits enabling high peak power optical arbitrary waveform generation in the visible spectrum.

   Excluded topics include evolutionary advancements of the above topics and warm microscale vapor cell technologies.

2. Dr. Jason Chou is focused on fundamentally rethinking the computing stack through the tight co-design of unconventional hardware and novel algorithms. Driven by the physical limits of traditional chip manufacturing, his research interests center on exploiting new physics at the intersection of thermodynamics, probabilistic bits, and non-linear photonics to address specific, well-defined technological problems where conventional CPU-GPU platforms currently underperform. He is specifically seeking approaches that map complex algorithms directly onto physical substrates while dynamically accounting for device non-idealities.

   Topics of limited interest include incremental digital scaling, purely materials-discovery proposals, and hardware concepts with no clear path to application-level outperformance.

3. Dr. Justin Cohen seeks to revolutionize optics with microsystems that do more than miniaturize free-space and fiber-optic systems, but rather provide unique functionality and performance attributes. Example microsystem topics of strong interest include:

   - Integrated quantum photonics and nonlinear optics for sensing, especially exploiting non-classical states of light
   - Ultra-low-noise microsystems leveraging chip-scale optics for sensing and communications
   - Microsystems that create and exploit strong light-matter interactions and extreme optical nonlinearity
   - Multiphysical microsystems exploiting couplings between optics, acoustics, radio frequency/microwave, etc.
   - Photonic integration platforms supporting multiple types of quantum resources for sensing and computing

   Such systems require innovations in a combination of domains from materials, devices, circuits, integration and packaging, and applications that can effectively utilize the novel underlying capabilities. Concepts that focus solely on a single layer of this framework, such as isolated demonstrations of individual photonic devices, and application demonstrations that primarily leverage existing photonic platforms, are of limited interest. As an application domain, signal processing and classical computing are also of limited interest.

4. Dr. Jeffrey Daulton is interested in paradigm-disrupting technologies that use approaches underpinned by physics, chemistry, AI/ML, and advanced processing to break the typical trade space in design of advanced microelectronics and materials. Specific topics of interest include (1) resilient optical and RF sensors; (2) advanced semiconductor heterostructures, especially those relying on nonequilibrium transport; and (3) decoupled control of engineered material properties.

   Excluded topics include (1) evolutionary/engineering improvements, and (2) devices based on 2D materials.

5. Dr. John M. Hoffman is focused on reimagining the intersection of molecular engineering, computer science, and microsystems. Topics of interest include: (1) integrating single molecules and microsystems for sensing, actuation, and computation applications; (2) microsystems-based approaches to controlling and measuring molecular dynamics across time and length scales; (3) molecule-driven approaches to additive, subtractive, and hybrid materials synthesis; (4) synthetic biological and molecular systems that overcome important scientific computing challenges; and (5) the intersection of molecular engineering and bottom-up manufacturing to enable 3D fabrication at scale.

6. Dr. Whitney Mason, Office Director, is focused on recruiting technical experts with in-depth knowledge across materials, components, tools, or processes and with multi-discipline mindset to establish DARPA programs in effects, energy, quantum, organics, materials, new compute, robotics, and photonics.

7. Dr. Julian McMorrow has varied technical interests, spanning microsystem manufacture and energy generation/storage in supply-constrained environments; untethered robotics; large-scale assembly of

nanomaterials; and radiation-hardened electronics technologies as key mission enablers. Materials-driven solutions that leverage emergent behavior or assembly techniques are of particular interest.

8. Dr. David Meyer seeks to leverage emerging materials and manufacturing methods to enable broad-impact, leap-ahead capabilities for national security. He is interested in a range of topics including (1) electronic, optoelectronic, and acoustic applications of ultrawide bandgap materials and devices; (2) multi-material expansion of nanoscale additive manufacturing; and (3) technologies that enable energy delivery and storage via light.

   Additional areas of interest include (1) new algorithms and processes for 3D microsystem design and fabrication, (2) novel piezoelectric, flexoelectric, or similar transduction systems where high performance is achieved through organics, superlattices, disorder, or macrostructure; and (3) laser gain medium and device architectures that offer a high degree of frequency tunability, mode shaping, and non-mechanical beam steering.

   Excluded topics of limited interest include (1) conventional piezoelectric or flexoelectric materials based on inorganic nanometer-sized periodic cell lattices, (2) evolutionary device development where performance metric is not improved by 10x or more, and (3) simple geometric scaling of existent technologies to application-relevant sizes or volumes.

9. Mr. Daniel Ridge seeks to combine high-performance computing (HPC), vulnerability assessment, media forensics, and analyses of the design and lifecycle of embedded systems into novel approaches to outstanding problems in cyber security.

   Mr. Ridge is not interested in techniques that use AI/HPC to scale traditional vulnerability and lifecycle analyses without also proposing the expansion of these techniques to new non-obvious classes of vulnerabilities, media, or embedded devices.

10. Dr. Thomas Schratwieser's work focuses on the use of advanced physics, chemistry, and materials science to simplify logistics and increase the reliability and efficacy of military systems in less-than-ideal conditions. He is interested in methods for all-weather high-data-rate optical communications, as well as methods for passive, GPS-free navigation.

    Additional topics of interest include (1) natively radiation-hardened compute and memory, (2) uses for exquisitely synchronized moving platforms, and (3) accurate, high-bandwidth accelerometry.

    Excluded topics include new atomic clocks and new magnetometers.

11. Dr. Shauna Sweet seeks to develop, execute, and transition programs related to emergent risks and advanced analytic methods. Her research interests include high-assurance complex systems design and development, psychometric modeling and measurement theory, generative AI, and modeling and simulation.

12. Dr. Huanan Zhang is passionate about tackling complex technical challenges at the intersection of materials and manufacturing. He is focused on (1) advanced material synthesis technologies, (2) new material interface design, (3) breakthrough chemical processing technologies, and (4) organic platforms for high performance devices and systems. He believes in the power of interdisciplinary collaboration, leveraging expertise from various scientific and engineering fields to generate high-impact solutions for mission-critical applications.

TEAMING:

To assist those wanting to establish collaborative teaming efforts and business relationships, potential proposers may indicate on the registration website that they authorize their contact information to be shared among meeting participants. For organizations new to DARPA, this may be of use in connecting with potential partners. Team formation, communications, and networking are the sole responsibility of the participants.

CONTACT:

- Registration Website: https://cvent.me/8oLRbr
- Administrative Questions: MXO-SparkTank@darpa.mil
- Technical Questions: MXO-SparkTank@darpa.mil
- Security Process: SIDInternationalSecurity@darpa.mil

Please refer to the MXO Spark Tank Special Notice number (DARPA-SN-26-73) in all correspondence.

STAY CONNECTED:
Subscribe to DARPA MXO's newsletter for timely updates on research opportunities, upcoming events, ways to work with us, and more.

DARPACONNECT:
Entities who have not worked with DARPA before are encouraged to learn more about DARPAConnect, an initiative established to facilitate collaboration between DARPA and potential performers. The DARPAConnect team offers customized support, resources, and guidance on how to prepare your ideas for high-impact conversations with DARPA program managers. Please visit DARPAConnect.us to access a digital hub of online resources, including a curriculum for self-paced learning, personalized support, and in-person and virtual events. In addition to the self-paced online materials, the DARPAConnect team is able to schedule one-on-one conversations to discuss your specific ideas, questions, and paths to DARPA. You can use the contact form at DARPAConnect.us or email the DARPAConnect team directly at darpaconnect@darpa.mil to request assistance.

DISCLAIMERS:
This Special Notice is issued solely for information and program planning purposes and does not constitute a formal solicitation for proposals or proposal abstracts; any so sent will be disregarded. In accordance with FAR 15.201(e), responses to this Special Notice are not offers and cannot be accepted by the Government to form a binding contract. Attendance is strictly voluntary and is not required to propose to subsequent Announcements (if any) or Solicitations (if any) on this topic. DARPA will not provide reimbursement for costs incurred in responding to this Special Notice. Respondents are advised that DARPA is under no obligation to acknowledge receipt of any information received or provide feedback to respondents with respect to any information submitted under this Special Notice.

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