Missile Defense Agency

Advanced Capability Concepts

Solicitation No. HQ0860-25-S-C001

Missile Defense Agency

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A. **Federal Agency Name:** Missile Defense Agency (MDA)

B. **Program Name:** Advanced Capability (AC)

C. **Solicitation Name:** MDA Advanced Capability Concepts

D. **Solicitation No.:** HQ0860-25-S-C001

E. **Solicitation Period:** May 9, 2025 – May 8, 2030

F. **Solicitation Process:** Responses SHOULD be submitted to this solicitation and are accepted any time throughout the solicitation period. Details for submission are provided below.

G. **North American Industry Classification System (NAICS) Code:** 541715 - Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)

H. **Agency Contact:** All communication regarding this solicitation should be Unclassified and sent to MDA-ACC-WP@mail.mil. If higher than Unclassified communication is necessary, send an unclassified request to MDA-ACC-WP@mail.mil for further instructions.

SECTION II. PURPOSE

The Missile Defense Agency (MDA) Advanced Capability Concepts solicitation provides industry an ongoing opportunity to present the Government with new, unique and innovative ideas. White papers will be accepted any time during the five (5) year period of this solicitation. Offerors are invited to learn more about MDA at https://www.mda.mil.

SECTION III. USE AND AVAILABILITY

This solicitation is issued under MDA's Multiple Authority Announcement, HQ0860-25-S-0001.

This solicitation for white paper seeks innovative concepts, technological innovations, prototype demonstrations, and scientific breakthroughs that will significantly enhance the robustness and effectiveness of all Missile Defense System elements.

SECTION IV. AUTHORITIES

This is a *Two-Step* process which provides for the competitive selection of white papers. This solicitation details the process for Step-One. Step-Two will vary based on selection of the white paper (all or part) and the award type proposed (FAR or non-FAR based).

- Step-One: Submission, evaluation and selection of white papers. White papers are either non-selected or selected to proceed to Step-Two.

- Step-Two: Offerors selected to proceed to Step-Two will receive a detailed request for information and/or documentation needed to proceed with negotiation towards an award.

The following authorities provide guidelines for the submission of white papers under this solicitation:

- *Federal Acquisition Regulation (FAR) 6.102(d)(2) – Other Competitive Procedures*
- *FAR 35.016 – Broad agency announcement*
- *Defense Federal Acquisition Regulation Supplement (DFARS) 235.016 – Broad agency announcement*
- *DFARS 235.006-71 – Competition*
- *10 U.S.C. §4021: Research projects: transactions other than contracts and grants*
- *10 U.S.C. §4022: Authority of the Department of Defense (DoD) to carry out certain prototype projects*
- *10 U.S.C. §4023: Procurement for Experimental Purposes*

Offerors proposing under FAR/DFARS Part 35 broad agency announcement (BAA) authority are reminded BAAs are utilized by the agency to fulfill the requirements for scientific study and experimentation directed toward advancing the state-of-the-art or increasing knowledge and understanding rather than focusing on a specific system or hardware solution. Offerors are responsible for ensuring their submission aligns with one or more of the authorities listed above.

SECTION V. DESCRIPTION

A. Overview

Refer to the MDA Multiple Authority Announcement, HQ0860-25-S-0001.

B. Topic Areas

White papers may be submitted under any of the following topic areas from the MDA Multiple Authority Announcement, HQ0860-25-S-0001. The topic areas should be viewed as suggestive, rather than limiting.

1. Kinetic and Hypersonic Defense: Rapid development, demonstration and transition of cost efficient kinetic defense solutions against ballistic and hypersonic missile threats. This considers potential Missile Defense System concepts and technologies with a spectrum of capabilities and seeks technologies applicable to current interceptor concepts or completely new interceptor concepts. Multiple attributes should be considered in this area, such as: ability to intercept threats including ballistic, maneuvering, hypersonic, and cruise missiles; ability to intercept threats with ranges from short-range ballistic missiles (SRBMs), medium-range ballistic missiles (MRBSs), and intermediate-range ballistic missiles (IRBMs); maximization of intercept range; ability to intercept at endo-atmospheric or exo-atmospheric altitudes; ability to field an initial

demonstration capability in 2-5 years; ability to disrupt the threat by rapidly developing a low cost interceptor.

2. Command and Control Battle Management: The Missile Defense System shall incorporate innovative and disruptive technologies to enhance missile defense effectiveness against evolving threats, including large-scale, diverse attacks. This includes improving threat tracking, discrimination, speed of delivery, communication resilience, and adaptability for faster, more informed decision-making in time-critical scenarios. The Missile Defense System shall prioritize advancements in artificial intelligence (AI), quantum computing, autonomous systems, directed energy, hypersonic defense, resilient networking, and cybersecurity to enable a more proactive and adaptable defense posture.

3. Integrated Non-Kinetic and Electronic Warfare: Develop and integrate scalable, multi-domain non-kinetic and electronic warfare (INK&EW) capabilities to achieve decisive effects, enhance decision-making tempo, minimize collateral damage, and ensure operational advantage in contested environments.

4. Disruptive Technologies: The Missile Defense System shall incorporate mature, disruptive technologies to rapidly field advanced capabilities. This effort prioritizes innovations ready for immediate application or near-term transition, focusing on areas such as AI, directed energy, hypersonic defense, resilient networking, and cybersecurity. This could include novel concepts in the areas of satellite ground Telemetry, Tracking and Commanding (TT&C) capabilities, effectors, high-performance sensor algorithms, space-based tracking phenomenologies and discrimination, space-based off-board sensing concepts for weapons guidance and AI/machine learning (ML) for space/ground applications. These technologies shall enhance the defense system's effectiveness against rapidly evolving threats through enhanced situational awareness, rapid decision-making, and effective response options.

This could also include rapid demonstration and prototype development of disruptive technologies to accelerate the deployment and maintenance of a next-generation defense shield over the United States. This effort, encompassing new system-level capabilities, component concepts, upgrades to existing systems, and novel concepts of operation (CONOPS) across the entire kill chain, will focus on enhancing the Missile Defense System ability to deter and defend against any foreign aerial attack, guaranteeing a secure second-strike capability.

5. Space-based Sensors, Interceptors and Effectors: Incorporate disruptive technologies to maintain space domain awareness superiority and enable effective operations in contested environments. This includes, but is not limited to, developing and integrating resilient satellite constellations, advanced sensor modalities, on-orbit servicing and manufacturing, AI for space situational awareness, and counter-space capabilities. These advancements shall ensure persistent sensing, resilient communication, and freedom of action within the space domain.

Space-based interceptors (SBI) and effectors includes, but is not limited to, interceptor or effector concepts/capabilities, advanced light-weight space propulsion technology for high acceleration performance, small satellite and associated technologies, seeker technologies, sensor technologies that can handle high-closing speeds, on-board processing algorithms and hardware,

low latency communications, target discrimination, advanced light-weight TT&C capabilities, SBI fire control and battle management architectures.

6. Digital Revolution: Develop and integrate advanced analytics, including AI/ML, statistical methods, and computational intelligence, to enhance all aspects of missile defense, from threat characterization and target recognition to resource allocation and consequence management. This includes capabilities for rapid data processing, multi-modal analysis, and secure interfacing with classified and unclassified systems. Efforts shall enhance missile defense effectiveness by leveraging AI/ML, disruptive technologies, and interoperable, adaptable architectures. This could also include improved threat detection and tracking accuracy, accelerated decision-making, ensuring communication resilience, and enabling proactive defense through AI-informed insights and flexible response options to counter evolving, large-scale threats in complex environments.

7. Radiation Effects, Heavy Ion, Proton and Pulsed Neutron Single Event Effects on Electronic Devices and Systems: New single event effects (SEE) test methodologies, techniques, technologies, or alternate particle sources such as using LASERs, modeling, X-ray, protons, developing test boards with multiple Devices Under Test (DUTs), automated test software to improve testing speeds, etc.

8. International Missile Defense System Cooperation: Efforts that involve working directly with a foreign company, entity or university as either a partner or major subcontractor. All efforts related to this topic will be subject to U.S. Export Control laws and may be subject to additional requirements and/or regulations.

SECTION VI. GENERAL INFORMATION

A. Communication

All Unclassified communication regarding this solicitation should be submitted via email to MDA-ACC-WP@mail.mil. If higher than Unclassified communication is necessary, send an Unclassified email to the address listed above for further guidance.

Dialogue with any Government representative related to this solicitation shall not constitute a commitment by the Government. Any dialogue that takes place will not be taken into consideration during evaluation of responses to this solicitation. Only Contracting and Agreements Officers are legally authorized to make commitments on behalf of the Government.

B. Eligible Offerors

All qualified offerors who meet the requirements of this solicitation are eligible to submit a white paper. Eligible organizations include, but are not limited to:

- Private industry (large and small businesses)
- Commercial and/or non-traditional defense contractors (defined at 10 U.S.C § 3014)
- Domestic accredited colleges, universities or institutions of higher learning registered by the U.S. Department of Education; and
- Non-profit organizations

Government entities (including Government and/or National laboratories, military educational institutions, etc.) interested in responding to this solicitation should email MDA-ACC-WP@mail.mil for further information.

Federally Funded Research Development Centers (FFRDCs) are not prohibited from responding to this solicitation. However, white paper submissions from FFRDCs must include: 1) Determination by the FFRDC's sponsoring agency that the effort being proposed falls within the purpose, mission, and general scope or special competency of the FFRDC; 2) Determination that the work proposed would not place the FFRDC in direct competition with domestic private industry; and 3) A plan to transition the proposed effort to industry.

C. System for Award Management (SAM)

Offerors must be registered in the System for Award Management (SAM) https://www.SAM.gov at time of response to this solicitation and prior to any award. This includes completion of all required representations and certifications.

D. Security Requirements

White papers and awards under this solicitation can be submitted and performed at the Unclassified (U), Controlled Unclassified Information (CUI), Secret (S), Top Secret (TS) and Special Access Program (SAP) level. Any offeror planning to propose a higher than Unclassified approach will need to contact MDA (via MDA-ACC-WP@mail.mil) for instructions on how to submit a response.

E. Export Control

The technical areas in this solicitation may contain export controlled technologies that are subject to U.S. Export Control laws, including the Arms Export Control Act (22 USC Chapter 39), the International Traffic in Arms Regulation (ITAR) 22 CFR § 120-130 and/or the Export Administration Regulation (EAR) 15 CFR § 730-774). Offerors are advised the proposed performance of any foreign nationals (FNs) may be restricted due to the nature of the technical data. All offerors must disclose any proposed use of FNs, their country(ies) of origin, the type of visa or work permit possessed, and the tasks intended for accomplishment by the FN. Only MDA approved FNs may perform on any efforts proposed under this solicitation. It is encouraged for the proposed Program Manager (PM) and/or Principle Investigator (PI) to be a U.S. person, as defined by 22 CFR § 120.62.

F. Safeguarding Covered Defense Information and Cyber Incident Reporting

Protection of Covered Defense Information (CDI), to include Controlled Unclassified Information (CUI) and Controlled Technical Information (CTI) is of paramount importance to MDA and can directly impact the ability of MDA to successfully conduct its mission. Any awards resulting from this solicitation may include certain regulations related to protection of CDI that resides on awardee information systems and requirements for rapid reporting of any cyber incident involving CDI. CDI, CUI and CTI are defined in DFARS Subpart 204.7301.

Awardee information systems may be subject to the security requirements in National Institute of Standards and Technology (NIST) Special Publication (SP) 800-171, "Protecting Controlled Unclassified Information in Nonfederal Information Systems and Organizations" (available at https://csrc.nist.gov/publications/sp800) in effect at the time of this solicitation. Offerors selected for an award will be required to have at least a Basic NIST SP 800-171 DoD Assessment that is current (not more than three (3) years old) posted to the Supplier Performance Risk System (SPRS) at https://www.sprs.csd.disa.mil/.

G. Organizational Conflicts of Interest

It is MDA policy to ensure all appropriate measures are taken to resolve Organizational Conflicts of Interest (OCIs) and unfair competitive advantages to prevent the existence of conflicting roles that might bias an offeror's judgement and deprive MDA of objective advice or assistance, and to prevent offerors from gaining an unfair competitive advantage. All offerors are responsible for identifying and analyzing any potential or actual OCIs that exist as a result of responding to this solicitation.

All offerors, regardless of award type, are subject to the OCI rules, procedures and responsibilities described in FAR Subpart 9.5 "Organizational and Consultant Conflicts of Interest" and DFARS Subpart 209.5 "Organizational and Consultant Conflicts of Interest". These regulations prescribe responsibilities, general rules and procedures for identifying, evaluating and resolving OCIs. All offerors, regardless of award type, are also subject to the rules in FAR 3.101-1 "Standards of Conduct – General" and the cases implementing it (See Health Net Fed. Svcs., B-401652.3 and others), which address unfair competitive advantages that can result from contractors hiring or associating with former Government employees.

H. Rights in Intellectual Property to include Technical Data and Computer Software

All offerors, to the maximum extent practicable, should be prepared to appropriately define the rights of the Government regarding Intellectual Property, including but not limited to rights in technical data and/or computer software to be delivered to the Government under any proposed effort. This includes both commercial and non-commercial items. If no restrictions to the Government's use of Intellectual Property including technical data and/or computer software delivered under the effort are intended, the offeror should so state. Government rights in Intellectual Property may be further negotiated prior to award, which could include priced options.

I. Use of Non-Government Personnel

The Government may use selected FFRDC, University Affiliated Research Center (UARC), non-Government contracted support, and other non-Governmental personnel to assist in the evaluation and administrative handling of responses. These persons are bound by appropriate non-disclosure agreements and organizational conflict of interest statements to protect proprietary information. Non-Government advisors are limited to reviewing responses and providing technical advice to the Government and are prohibited from making recommendations

for selection. A response submitted to this solicitation constitutes the offeror's acknowledgment and consent to the use of non-Government personnel.

J. Ineligibility

White papers may be considered ineligible if the requirements of this solicitation are not met.

SECTION VII. SOLICITATION INFORMATION

A. Response Date

White papers may be submitted any time during the open period of this solicitation **(May 9, 2025 through May 8, 2030).** This solicitation will remain open until May 8, 2030 unless superseded, extended, canceled or replaced. Offerors are responsible for monitoring https://www.SAM.gov for any updates or amendments to this solicitation.

B. Industry Engagement

No industry engagement events are planned for this solicitation.

C. Anticipated Selections

Multiple selections are anticipated under this solicitation. MDA reserves the right to select all, some, or none of the responses submitted to this solicitation. MDA also reserves the right to select all, some or none of a particular white paper response.

D. Award Type

MDA anticipates using a mix of FAR and non-FAR award types to include, but not limited to:

- *FAR-based Procurement Contract* (See Attachment 1 for additional details on FAR-based Procurement Contracts)
- *Other Transaction (OT) Agreement or OT-like Agreement* (See Attachment 2 for additional details on OT Agreements)

As part of the Step-One white paper submission, offerors should recommend an award type (FAR-based Procurement Contract or OT Agreement) to be considered for the effort. Should the white paper submission be selected for Step-Two, the Government and offeror will further negotiate the best award type for the effort. Other award types may be considered and some award types may be prioritized as mandated by law or policy.

E. Period of Performance

The period of performance should be commensurate with the proposed technical approach. MDA is interested in the rapid development of cutting-edge, disruptive technologies to revolutionize missile defense capabilities. This includes the acceleration of development and deployment of critical technologies and emphasis on agility, iterative development and a focus

on delivering tangible results within compressed timelines. Offerors may consider a phased approach and/or use of option periods for subsequent performance. Inclusion of options in any resulting award is at the discretion of the Government.

F. Funding Availability

Due to the varying scientific and technical approaches anticipated, there is not a defined budget or funding level associated with this solicitation. Offerors are welcome to propose a cost-sharing type arrangement. Funding may become available throughout the open period of this solicitation to pursue promising innovative concepts of interest. Offerors should be aware that funding availability might change with little or no notice.

G. Within-Scope Modifications

Offerors are advised that due to the inherent uncertainty of research and development and science and technology efforts, awards resulting from this solicitation may be modified during performance to make within scope changes, to include but not limited to, modifications which increase the overall ceiling, funding amounts and/or period of performance. Modifications will be governed by the applicable authority.

H. Responses

Offerors shall refer to "Attachment 3 - White Paper Requirements" for white paper submission requirements.

MDA will protect all white papers and proprietary information from unauthorized disclosure and will only disclose the contents for the purpose of evaluation. Offerors are responsible for marking proprietary information with the proper disclosures, along with any required security markings. All white papers submitted in response to this solicitation will be considered expired, and properly disposed of, six (6) months following the closing date of this solicitation.

This solicitation does not commit the Government to pay for the preparation of white papers. The cost of preparing a response to this solicitation is not considered an allowable direct charge to any resulting award. The Government intends to evaluate white papers and make recommendations for Step-Two without discussions; however, the Government reserves the right to contact offerors if deemed necessary.

SECTION VIII. EVALUATION & SELECTION

A. Evaluation Criteria

White papers will be evaluated against: 1) Technical Achievement, 2) Research Capabilities and 3) Program Management, as described below. Technical Achievement is equally as important as Research Capabilities and Program Management combined. Research Capabilities and Program Management are of the same importance. The sub-criteria within each criteria are equally important.

1. Technical Achievement: focuses on the explanation and justification of the overall scientific and technical merit of the white paper and benefits and innovation to the Missile Defense System.

Scientific and Technical Merit:

a. Identification of project objectives
b. Explanation of the underlying science and applicability to the project objectives
c. Predicted results based on the underlying science
d. Identification of known "high-risk" areas in the proposed domain, the mitigation, and the benefit that the anticipate results provide (benefit/risk analysis)

Benefits and Innovation:

a. Alignment to MDA and/or DoD priorities
b. Application of the proposed technology to the Missile Defense System
c. Identification of cost savings/avoidance
d. Explanation of the innovation, "game changing" and/or disruptive nature of the technology
e. Explanation of how the effort will expand the current state-of-the-art along with identification of a transition strategy

2. Research Capabilities: focuses on the explanation and justification of the proposer's qualifications, capabilities, and experience of the proposed PI, PM, Team Leader (TL), or other key personnel who are critical to achievement of the proposed objectives. Research capabilities also include the available facilities, any dependency on Government information or equipment and the ability to operate at the necessary security level, all of which are integral factors for achieving the proposed objective.

Key Personnel:

a. Description of PI/PM/TL's education and experience in the field of the proposed research and development
b. Description of the key supporting personnel's education and experience in the field of the proposed research and development
c. Description of the offeror's team skill set depth, breadth and record of accomplishment relative to the research and development facets proposed

Facilities/Assets/Security:

a. Description of the overall facility and its capabilities to physically host, safeguard, and execute the tasks described
b. As applicable for projects with Government furnished information, equipment or property dependencies; description of the approach for identifying, managing, safeguarding, and executing tasks involving Government assets
c. As applicable for CUI and/or classified work; description of the approach for managing, safeguarding, and executing the security aspects: consider personnel, facilities, and information systems

3. Program Management: focuses on the explanation and justification of the planned programmatic structure and anticipated cost structure necessary for the controlled execution of the proposed tasks.

a. Task outline and task description details
b. Project schedule details and task flow logic
c. Identification of deliverables/products/expected outcomes and alignment to the proposed objectives
d. Thoroughness and realism of the Rough Order of Magnitude (ROM) cost

B. Selection Criteria

Selection of white papers for Step-Two will be based on technical merit, importance to agency programs and funding availability. The Government reserves the right to select all, some or none of a particular white paper response. The requirements for Step-Two are dependent on selection of the white paper (all or part) and the recommended award type (FAR or non-FAR based).

C. Notices

The MDA Advanced Capability Contracting Office will notify offerors if their white paper was selected or not selected for Step-Two. Notifications will state whether the entire white paper or a portion of the white paper is being pursued. If offerors are selected for Step-Two, the MDA Advanced Capability Contracting Office will contact the offeror with further instructions. Any communication from the MDA Advanced Capability Contracting Office does not constitute assurance of an award.

MDA may make selections any time during the open period of this solicitation. White papers not selected due to funding availability may be considered eligible, if funding becomes available, any time throughout the solicitation period and for up to six (6) months following the closing date of the solicitation.

SECTION IX. FEEDBACK

The opportunity to receive feedback on white paper submissions may be stated in non-select notices. The level of detail for such feedback may vary based on content of the white paper submission.

SECTION X. ATTACHMENTS

1. FAR-based Procurement Contract Requirements
    a. OCI Analysis and Disclosure Form
2. OT Agreement Requirements
3. White Paper Requirements
    a. ROM Tables (Excel)
    b. Quad Chart Template (Power Point)