HR001121S0017
Waveform Agile Radio-frequency Directed Energy (WARDEN)
Frequently Asked Questions (FAQs)
as of 04/12/2021

Additions as of 4/12/2021:

62Q: We are planning on submitting multiple proposals, once as a prime contractor and once as a subcontractor. Should we call out duplicate tasks in our proposals?

> 62A: Duplicate tasks should be identified in the proposals unless it creates a competition-sensitive conflict.

61Q: In the case of a full phased array solution for TA1, is the full phased array built in Phase 3 a deliverable?

> 61A: The formal WARDEN Deliverables are defined in the BAA Section I.E. "Deliverables," and specific to each TA in Tables 2, 3, and 4.

60Q: Are there examples of what DARPA is expecting from a DoD laboratory to "clearly demonstrate that the work is not otherwise available from the private sector and provide written documentation citing the specific statutory authority and contractual authority, if relevant, establishing their ability to propose to Government solicitations and compete with industry"?

> 60A: We do not have samples or guidance to provide. We do stress coordinating with your legal POC in order to determine what specific authorities should be cited for your own Government entity.

59Q: The BAA says that proposals must be submitted to DARPA on or before 2:00 PM Eastern on 4/16/21, and that proposals received after this deadline will not be reviewed. For classified proposals that must be mailed, can you please clarify if the submission deadline corresponds to the postmark time, or the time the submission is delivered by the U.S. Postal Service to DARPA?

> 59A: 2:00 PM Eastern Time on 16 April 2021 is the deadline for when proposals shall be received by DARPA/MTO, NOT the deadline for postmarking.

58Q: The prime contractor will provide the Primary Cost Volume rollup that includes the subcontractor's costs. It is the subcontractor's intent to provide a fully detailed 'Subcontractor only cost volumes' via the unclassified DARPA proposal submittal portal. Is this acceptable?

> 58A: Please see answer to 47A.

57Q: How are we expected to demonstrate the full Effective Radiated Power (ERP) with a fully populated phased array while still dissipating into a dummy load and without building a radiating aperture or radiating into free space?

> 57A: As noted on p. 10 of the BAA, the development of an EM radiating aperture is beyond the scope of the WARDEN program. The RF output of the WARDEN amplifier can be dissipated and measured in a dummy load unless the proposed technical approach requires radiation as the only way to demonstrate that the approach meets the minimum effective radiated power (ERP) as specified for single amplifiers in the classified addendum.

56Q: TA2 requires performers to measure enclosures specified by DARPA. Will DARPA send actual enclosures to measurement sites or will performers have to fabricate/acquire enclosures meeting the provided specifications?

> 56A: Per the BAA page 12, "To validate developmental models, the government team will define the parameters for a set of test enclosures of varying complexity." Performers will be responsible for fabricating or acquiring enclosures defined by the government team.

55Q: Please confirm the TA1 and TA3 Volume 1 submissions should be parsed into CLASSIFIED and UNCLASSIFIED pieces; the CLASSIFIED be marked Collateral SECRET, and both submitted IAW instructions, making sure the sum total pages of a classified and unclassified Volume I response is equal to or less than 20 pages.

> 55A: Confirmed, this is the correct interpretation of the instructions for Both Classified and Unclassified Submissions section.

54Q: What are the computer resources needed to run NEPTUNE and TESLA efficiently?

> 54A: NEPTUNE requires an NVidia GPU or a multi-core workstation, where approximately 1GPU = 150-core CPU equivalent. CUDA compute capability 3.5 or above is required, but 5.2 is recommended. A card with 11 GB memory is recommended, but 3-6 GB can do moderately sized problems.
>
> TESLA can be executed on a simple laptop or desktop PC, the typical run uses below 1 GB of memory. The code can be run on Windows or Linux and on single CPU cores or clusters.

53Q: May we request a copy of the NEPTUNE and TESLA Code User Manuals to help prepare our response to TA1?

> 53A: There are not currently user manuals available for the NEPTUNE or TESLA codes. However, detailed information about the TESLA family of codes are published in the literature.

<u>Additions as of 4/2/2021:</u>

52Q: We anticipate most of our submittal will be unclassified, with the classified portion submitted as a classified annex according to the instructions outlined in the 'Classified Submissions' section of the BAA. Please confirm we can submit these two portions separately; unclassified via the DARPA BAA Website and classified via courier (hand-carried) or USPS Express Mail.

> 52A: Confirming classified and unclassified sections of a technical proposal may be submitted separately. Proposers should follow BAA Section IV.B.3.d. "Both Classified and Unclassified Submissions" carefully for instructions on submission. As a reminder, the page limit for technical proposals includes the combined total of classified and unclassified pages. WARDEN BAA Amendment 03 clarifies this as well.

51Q: The BAA states that the SOW belongs in Section II, which has a 20-page limit for all 12 subsections, including the Technical Approach. The BAA also lists extensive and detailed requirements for the SOW. These include a prohibition against including proprietary information, whereas other sections of the Technical Volume (e.g., Technical Approach) will likely include

proprietary information. Would the Government consider excluding the SOW from the 20-page limit? That would facilitate inclusion of a non-proprietary SOW in a standalone Appendix, outside the 20-page limit. If not, then please clarify this BAA requirement, as it seems to imply unlimited pages for the SOW: "The page length for the SOW will be dependent on the amount of the effort."

51A: No. Per the BAA, the SOW must fit within the proposal page limit guidance.

50Q: We request that the proposal due date be extended.

50A: At this time, there is no intention to extend BAA deadlines.

49Q: When industry partners with Government entities we understand that if industry is prime, we have to get a detailed cost proposal from the Government entity. My question is about execution of the project and how that entity is funded. Does DARPA intend to use an interagency agreement or other vehicle? Can you confirm that Industry includes the cost of the entity's effort in their cost proposal, but no funds would be awarded then pass through the industry prime to the gov't entity teammate?

49A: It is the proposer's responsibility to propose to the Government all aspects of their proposed approach (technical, management, and cost). The proposal from the prime contractor must include all of the information required by the BAA no matter what types of organizations are on their team (to include, for example, cost proposals from ALL team members). DARPA has no intentions regarding how a Government entity or an FFRDC would be funded for any particular team – the proposer should propose what they want in this regard for the Government to assess.

48Q: On page 33 of the BAA, the solicitation states "At time of proposal submission, any item that exceeds $2,000 must be supported with basis-of-estimate (BOE) documentation". Please clarify whether the $2,000 threshold refers to the cost of one (1) unit of an item, or if it refers to the total cost of the entire quantity of that item.

48A: Per the language cited, the threshold refers to "any" item and thus refers to the unit price of an item.

47Q: A team consisting of two companies and a government organization are considering applying to the DARPA WARDEN call. The companies are unwilling to share financial information with each other but are willing to provide it to the government partner. Is it acceptable for the team to submit a combined/integrated technical proposal but separate individual cost proposals for each industry partner that the government team member collates and attaches to the technical proposal?

47A: The prime contractor is responsible for submitting a fully compliant proposal in response to the BAA. All subcontractors/team members must provide the prime contractor with a fully compliant subcontract proposal. As noted in the BAA, proprietary information such as rates and factors can be redacted from the version provided to the prime contractor (only proprietary info such as rates and factors – all other elements of cost must be included – such as labor categories, labor hours per category, loaded cost for each category, materials, equipment, ODCs, travel, etc.). Also, as noted in the BAA regarding any subcontract proposal that is submitted with proprietary information redacted, the subcontractor is required to immediately provide the unredacted version of their proposal to the Government upon request (meaning it must exist and be ready to be

provided to the Government by the proposal due date/time). Please see Section G. Subcontracts on page 33 of the BAA.

46Q: In preparing proposals for the WARDEN BAA, is it appropriate/allowed to have certain pages in landscape orientation? Or should all pages be in portrait orientation only?

46A: The use of landscape formatting is not prohibited by the BAA. However, proposers are strongly encouraged to keep the amount of landscape pages in their submissions to a minimum.

45Q: How can we obtain a copy of Attachment 4: "WARDEN Controlled Unclassified Information (CUI) Guide."

45A: This document is available at the following link: https://beta.sam.gov/opp/6afce01f7bb542889e3c2e2497112d66/view, in the "Attachments/Links" section down the page.

Additions as of 3/26/2021:

44Q: The HR001121S0017 solicitation states in section II on pg. 32 to provide a "Summary Cost Breakdown" by phase and performer fiscal year. We have a start date of October 1, 2021. What is the performer fiscal year? Is it the lead institution fiscal year?

44A: It is the fiscal year applicable to each team member (prime and subs) based on your accounting system. It will not necessarily be the same for each team member. Please seek guidance from your finance/accounting department, or similar.

43Q: Looking for advice on whether you have a preferred method for us to officially partner with a contractor or University. Should we (as a Government Agency) also use an ACA, or should we just do a CRADA with them. We plan to partner both as a sub and/or as a prime on at least three different proposals (some with private industry, and one with universities).

43A: This is a decision that must be made by each proposer following any applicable requirements stipulated in the solicitation. As a reminder, each prime contractor's proposal submission must include all required information/documentation stipulated in the solicitation – to include subcontract proposals for any type of organization/entity serving in this role.

42Q: In Section IV.B.9 Small Business Subcontracting Plan on page 43, it states that small business concerns are required to submit the Plan. It should read "large business concerns" instead of small business concerns. Can you confirm?

42A: Confirmed. This error will be corrected via amendment to the BAA to read:

"Pursuant to Section 8(d) of the Small Business Act (15 U.S.C. § 637(d)) and FAR 19.702(a)(1), each proposer who is a large business concern and seeking a procurement contract that has subcontracting possibilities is required to submit a subcontracting plan with their proposal. The plan format is outlined in FAR 19.704. As of the date of publication of this BAA, per FAR 19.702, the threshold for submission of a small business subcontracting plan is $700,000 (total contract amount including options)."

41Q: In Section III. Eligibility Information, A.1.b) & c), Government Entities and Authority on pages 23-24, it states that written documentation of eligibility is required. In what form would DARPA like that documentation (e.g. on Agency letterhead) and who can sign it (e.g. Contracting Officer, or higher)?

41A: For Government organizations, the solicitation prescribes no required format other than in writing (meaning proposer format is acceptable). Typically, this is taken care of via a letter on official letterhead (as part of the proposal submission) from an authorized individual within the Government organization providing the required information.

40Q: In section VI.B.4 Representations and Certifications it states that all proposers are required to submit the supplementary DARPA-specific Reps & Certs at the time of proposal submission. Does DARPA want this as a separate attachment, or included as part of Vol. II?

40A: As part of the Vol II or with the cover letter (as an attachment) is acceptable.

39Q: In Section IV.B.1.b.Section II, Note 4 on page 36, it states use of the DARPA Excel pricing template is strongly encouraged. In the Proposers' Day slide deck (Contracts) it says use the Single Template, not the Multiple Template. The Single template has base and option years, and two tasks. While the Multiple template has phases that match more closely the tasking breakout of the TAs. Would it be acceptable to use the Multiple template for a single TA, hiding unused TA worksheets within the workbook?

39A: Please use the Single TA Template as instructed in the solicitation. Proposers may submit feedback to the email address noted in the BAA so that our development team can look for trends and make future improvements to the spreadsheet/s.

38Q: I. Fundamental Research on page 35- "Written justification required per Section II.B., "Fundamental Research," pertaining to prime and/or subcontracted effort being considered Contracted Fundamental Research. Proposers should see also Attachment 4: "WARDEN Controlled Unclassified Information (CUI) Guide." Section II.B does not specifically refer to a "written justification" or who provides that justification. The CUI guide does not address fundamental research by name. Can you clarify if the instructions in the BAA (pages 22-23) to "indicate" if scope is fundamental or not (and why) is sufficient?

38A: Per page 35, proposers must provide written justification within their Volume II proposal if they believe their research should be considered Contracted Fundamental Research. Section II.B. provides the NSDD definition of fundamental research as "'Fundamental research' means basic and applied research in science and engineering, the results of which ordinarily are published and shared broadly within the scientific community, as distinguished from proprietary research and from industrial development, design, production, and product utilization, the results of which ordinarily are restricted for proprietary or national security reasons."

37Q: Is it permitted for proposals to TA1 and TA3 to be completely unclassified, or must these proposals explicitly reference the classified requirements and thus become classified?

37A: No. As per Part II Section III.E.2 of HR001121S0017: "Proposals to TA1 and TA3 of WARDEN are expected to be classified at a minimum of COLLATERAL SECRET."

36Q: For TA1, if a performer is using a phased array approach, is a fully populated array required to be manufactured to demonstrate the ERP in the specification, or can a sub-array be manufactured and demonstrated and shown to be scalable to the required ERP?

36A: From BAA HR001121S0017-Amendment-01, p. 10: "If multiple amplifiers are proposed, the system, in aggregate, must be capable of producing the same minimum effective radiated power (ERP) as specified for single amplifiers in the classified addendum." A fully populated array that demonstrates the full ERP in the specification is required.

35Q: Will simulation tools for TA1 be made available during the proposal phase?

35A: No, simulation tools will only be made available upon program kickoff.

34Q: Within a TA, there are multiple components described. In our proposal, is it acceptable to provide some key elements/solution towards the program goals, or would our proposal need to have a solution that includes all aspects in the TA?

34A: HR001121S0017: PROPOSERS DAY CONTRACTING, slide 6: "Propose to the program (goals, objectives, metrics, schedule, deliverables) the BAA has defined (per TA), not to the program you desire." Proposals should address all goals and metrics for a TA as detailed in the BAA.

<u>Additions as of 3/19/2021:</u>

33Q: Is foreign participation allowed in WARDEN?

33A: This answer is included on slide 5 of the HR001121S0017: PROPOSERS DAY CONTRACTING slides posted at **https://www.darpa.mil/attachments/WARDEN%20Proposers%20Day_Contracting.pdf**

32Q: Can a researcher participate in two proposals within a single technical area?

32A: This answer is included on slide 6 of the HR001121S0017: PROPOSERS DAY CONTRACTING slides posted at **https://www.darpa.mil/attachments/WARDEN%20Proposers%20Day_Contracting.pdf**

31Q: We have established a team and are planning to submit a proposal. We have been approached by other parties hoping to get us to team with them, and we wish to support collaboration with these parties without engaging as part of their team. Is it permissible for us to submit a proposal, and at the same time write letters of support for these potential collaborators to include in their proposals?

31A: Proposals should include only the information/documentation specifically required in the BAA. As described in the question, "Letters of Support" would not appear to respond to any requirement in the BAA.

30Q: In lieu of a single proposal with multiple subcontracts, would it be acceptable for us to submit multiple individual proposals, one from each party, with explicit cross-references on how we will achieve the synergy and collaborative approach to addressing the technical challenge? Would this approach be considered during review in the spirit of a plan to collaborate, even though it is not a single proposal?

30A: No.

29Q: Will reviewers only consider "recent modeling approaches" that currently exist in existing prediction tools in the DE community, and does this exclude any new development of modeling tools, or enhancement of existing ones, that currently are not used by the DE community?

29A: No. All relevant modeling approaches will be considered regardless of their current status in the DE community.

Additions as of 3/12/2021:

28Q: Can a government entity be an awardee or sub-awardee on WARDEN? If yes, are there any special requirements to enable collaboration with academic or industrial partners?

28A: Government entities such as Government/National laboratories, military educational institutions, etc. may be an awardee or sub-awardee, subject to applicable direct competition limitations. Government Entities must clearly demonstrate that the work is not otherwise available from the private sector and provide written documentation citing the specific statutory authority and contractual authority, if relevant, establishing their ability to propose to Government solicitations and compete with industry. Refer to Part II, Section III.A.1 of the WARDEN BAA for full eligibility requirements.

27Q: Where can I find a copy of the WARDEN Proposers' Day slides?

27A: The slides can be downloaded from https://www.darpa.mil/work-with-us/opportunities (keywords WARDEN and HR001121S0017).

26Q: For TA1 or TA3, does the 20 page limit on Section II of Volume I, Technical and Management Proposal apply separately to the classified and unclassified sections?

26A: No. The 20 page limit applies to the combined classified and unclassified sections.

25Q: Can you confirm that proposals submitted for grants should be submitted through grants.gov and not the DARPA BAA website?

25A: Yes. Grant proposals should be submitted through the grants.gov website. Refer to Part II, Section IV.C.2.a of the WARDEN BAA for submission information.

24Q: What is the estimated time of arrival for receipt of the WARDEN SCG and Classified Addendum after submission of credential?

24A: Proposers are encouraged to submit requests immediately and should allow at least ten (10) business days for processing plus time for delivery. The WARDEN SCG and Classified Addendum will be sent out as soon as possible after receipt and processing of a complete request package. The timeline for processing requests is delayed when incomplete request packages are submitted.

23Q: Do you have an anticipated award amount by TA?

23A: No. Multiple Phase 1 awards are expected in each Technical Area, but the actual number of TA awards and award amounts will be based on proposal responses and available funding.

22Q: Was the metric at the end of TA2 Phase 1 better than 50% agreement? How would that be evaluated? Would the proposers need to supply experimental results demonstrating model agreement?

22A: In Phase 1, models can be verified by comparison with other simulations and/or experimental results, although comparison with experimental measurements is preferred. In Phases 2 and 3, models must be validated with experimental measurements. In all cases, performers will carry out the experimental measurements (with verification and validation from the government team).

21Q: For TA2 is there a specific type or shape of enclosure that DARPA has in mind for the purpose of preparing the proposals or are the performers allowed to select representative models for such enclosures that could be relevant to the goals of the program?

21A: For the purposes of preparing the proposal, performers may select representative models for such enclosures that are relevant to the goals of the program

20Q: Can FFRDCs be a prime for the contract?

20A: Yes, FFRDCs can be a prime. However, they are subject to applicable direct competition limitations, and are required to demonstrate eligibility in the form of a letter from their FFRDC sponsor. Refer to Part II, Section III.A.1 of the WARDEN BAA for full eligibility requirements.

19Q: For TA2 I know it's hard to specify sizes/frequencies and stay unclassified, but different methods are applicable for different electrical sizes. Can you provide ballpark estimates of electrical size? 10s wavelengths? 100s?

19A: Enclosure sizes will range from on the order of a free-space wavelength to hundreds of wavelengths. The BAA will be amended to include this information.

18Q: If one were interested in creating the hardware for a wideband modulator to drive the HPM amplifier, would that fall under TA1 or TA3? I interpret as part of TA1, but I'm not sure.

18A: A wideband driver for the HPM amplifier would appropriately fall under TA1.

17Q: Is fundamental research (TA2) supposed to be performed by universities only? In other words, is TA2 open to for-profit team members as well?

17A: TA2 is open to all qualified teams.

16Q: The main challenge in understanding the role of coupling efficiency in HPM lethality is the coupling of the external fields all the way to the vulnerable electronics. TA 2 has, as a metric, a distribution of fields in the system enclosures (not stated what variables are required for the distribution). TA 3 has as a metric a means of predicting failure. There is a gap in system failure simulation in the layout of the BAA. In fact, proposing a solution to that problem seems to be forbidden?

16A: The WARDEN program is designed to include university participation. This necessitated that TA2 goals and metrics be restricted to unclassified, fundamental research – no linkages to military applications. TA3 is intended to address effects on electronics up to the sub-system level. In combination, TA2 and TA3 address the system failure chain

from initial coupling into the enclosure to effects on electronic components and sub-systems.

15Q: Are there circumstances under which a University could participate in TA1 or TA3? For example, as part of an STTR?

15A: Universities may participate as subs to a TA1 or TA3 prime contractor. There are no plans for WARDEN STTRs.

14Q: Where exactly does TA2 end and TA3 begin? Does TA2 include coupling to PCBs and cables (i.e. models providing induced currents and voltages)? Does TA3 include coupling at all (i.e. waveforms to maximize coupling)?

14A: TA2 is focused on how electromagnetic radiation gets into an enclosure. TA3 addresses how the fields couple to cables, PCBs etc. and how they interact with electronics. The focus of TA3 is to develop waveform techniques that facilitate strong coupling and maximally disruptive effects.

13Q: For TA2, can you provide more information on the current state of the art phenomenological theories used? e.g. are there codes or references for these?

13A: For example, see the reference J. Tatum, "High-power microwave directed energy weapons: A model and simulation toolbox," DSIAC Journal 1(2), 2014, available online at https://www.dsiac.org/resources/articles/high-power-microwave-directed-energy-weapons-a-model-and-simulation-toolbox/

12Q: Are you planning to host PM sidebar sessions in the immediate future for proposers?

12A: No. After the Proposers' Day, unclassified questions should be addressed to the WARDEN solicitation mailbox (HR001121S0017@darpa.mil). Answers will be provided through the WARDEN FAQ, available online at https://www.darpa.mil/work-with-us/opportunities. Classified questions should be addressed to the WARDEN solicitation classified mailbox (HR001121S0017@darpa.smil.mil) on SIPR or the alternatives provided in 1A below.

11Q: TA2 (RANGER) seems to focus on prediction of coupling to enclosures. Is there any interest in rapid calculation of coupling to the electronics themselves (e.g. printed circuit board traces, IC packages, cables, etc.), or is the intent that these calculations be embedded in a response to TA3?

11Q: TA2 is focused on the prediction of coupling into enclosures. The rapid calculation of coupling to the electronics themselves (including induced voltages and currents on cables, PCB traces, etc.) is the subject of TA3 and will be classified.

10Q: For TA2, what is the current Model agreement [%] (with simulated or measured data)?

10A: This is largely dependent on the specific model and target enclosure. Model predictions of EM coupling efficiency and the spatial distribution of fields within the enclosures will be compared with performer-measured data and validated by the government team.

9Q: If a performer on TA2 can support classified work, is there interest in evaluating techniques on classified cases?

9A: No. The work of TA2 performers will be unclassified, fundamental research.

8Q: Will there be PI meetings that work across the technical areas? If so, will they be classified? If this is true, how will TA-2 performers contribute?

8A: The PI meeting structure will be determined post award. TA1 and TA3 performer meetings are expected to be classified. Performing teams in all technical areas will be invited to attend the TA2 reviews. TA2 performers will be encouraged to share their results with TA1 and TA3 performers as appropriate.

7Q: Will there be a forum on the WARDEN site to facilitate teaming, or may we use the chat function at the conclusion of the presentation to include technical capabilities/TA interest and contact information?

7A: No. Groups are encouraged to contact each other offline. A roster of those proposers who are interested in sharing their contact information for the purposes of teaming is being maintained. If you would like your name, organization, and email address to be included in this list, please send this information in an email to the WARDEN solicitation email address (HR001121S0017@darpa.mil) with the subject line "OPT-IN" no later than 5:00pm EST on 19 March 2021. No later than 15 March 2021, the current version of the list will be sent to all Proposers' Day registrants and individuals who have opted in. The final version will be sent out no later than 20 March 2021.

6Q: For TA2, are the fields on and/or within a target anticipated to be in the regime of linear physics over large portions?

6A: Both linear and nonlinear regimes are anticipated within the target enclosures.

5Q: Will these specifications for the enclosures include the material of the enclosures and their size relative to the frequency content of the incident pulses? Will the enclosures potentially include nonlinear electronics?

5A: Yes, this information will be provided. The enclosures will not include electronics.

4Q: For Technical Area 2, the BAA states that "The government will provide specifications to TA2 performers for enclosures and configurations." When will these specifications be provided, and how to access them?

4A: As noted in Part II, Section I.F of the BAA, the specifications will be provided at program kickoff.

3Q: Can you provide an approximate electrical size of the enclosures?

3A: Enclosure sizes will range from on the order of a free-space wavelength to hundreds of wavelengths. The BAA will be amended to include this information.

2Q: Can you define metrics of interest? How broadband? How high power?

2A: Amplifier metrics are classified. Please refer to the WARDEN classified addendum.

1Q: I have a classified question. How do I securely communicate with the WARDEN team?

1A: There are several options for communications at the collateral SECRET level:

- SIPR email to HR001121S0017@darpa.smil.mil

- For other high-side email options, email the low-side solicitation address, HR001121S0017@darpa.mil to initiate coordination
- Secure fax (email the low-side solicitation address, HR001121S0017@darpa.mil to initiate coordination)
- Overnight mail to the DARPA address as listed in the BAA Part II, Section IV.B.3.e.