

U.S. ARMY RESEARCH LABORATORY (ARL), Sensors and Electronic Devices Directorate (SEDD) Advanced RF Technologies

The U.S. Army Research Laboratory (ARL) Electronics and RF Division (E&RF) is announcing an applied research (6.2) opportunity open to all academic, industrial and other government researchers to develop, fabricate and demonstrate a Next Generation Radar's (NGR) modular building blocks. The Division will, via the U.S. Army Contracting Command discussed below, let Cooperative Research Agreements (CRA) that focus on four (4) underpinning research areas, also detailed below, to develop, fabricate and demonstrate these modules. The CRAs let under this action will investigate new approaches to meet these modular expectations for Army's NGR. The research being executed under this action will tap into external high risk, high payoff approaches that will enhance our in-house multimode scalable investigation for Air Defense and Counter Rocket And Mortar (C-RAM) applications. The NGR is a joint Communications Electronics Research Development Engineering Center (CERDEC), Aviation Missile Research Development Engineering Center (AMRDECO) and ARL program with Fires Center of Excellence and Program Management Office (PMO) interest.

Army (and other DoD) Force Protection Radars include handheld, vehicle mounted and airborne configurations to support the following missions: Forward Operation Base (FOB) Protection that includes Dismount Detection, Air Defense, C-RAM. Size, Weight, Power and Cost (SWaP-C) continue to drive technology challenges for significant twenty first century advancements over our adversaries. The main thrust of this action is to address RF devices, components and architectures that are frequency agile across a spectrum along with supporting signal processing techniques that are adaptive to both the congested and contested environment while addressing the variety of potential threats.

Specific BAA Research focus areas:

1.2.6.b) Signal processing approaches for handling the adaptive and frequency-agility requirements, while enhancing target detection and tracking capabilities. Power efficient processing along with an open architecture implementation plan.

1.2.6.d) Advanced linearization studies – the multiple band and large instantaneous bandwidth requirements will also necessitate higher linearity front end components both integrated and extrinsic.

1.2.7) Complex vector modulation for developing spectrally pure intermediate frequency stages. Enhanced wideband receiver sensitivity for dynamic transmitter allocation enabling simultaneous transmit and receive requirements.

1.2.9) Highly integrated front end technology that exploits a wide range of power levels at high power added efficiencies. Reconfigurable requirements are needed between a power amplifier mode and a high dynamic range low noise amplifier. Strategies for heat removal will also be considered for amplifier performance enhancements.

The U.S. Army Contracting Command - Aberdeen Proving Ground, Research Triangle Park Division, on behalf of the U.S. Army Research Laboratory, is soliciting proposals for the NGR program under Topics 1.2.6, 1.2.7 and 1.2.9 "Electronic Materials and Devices" of the ARL Core Broad Agency Announcement (BAA) for Basic and Applied Scientific Research for Fiscal Years 2012 through 2017 at W911NF-12-R-0011-03.

Innovative proposals are sought to develop the essential building blocks necessary to constitute the NGR. Specifically proposals should directly relate to one or more of the four underpinning research areas detailed above.

Synergistic, multidisciplinary collaborative teams composed of experimental, theoretical, and computational researchers are strongly encouraged. Guided by theory, each proposing organization should focus collectively on satisfying one or more of the four underpinning research areas detailed above. Preference will be given to those approaches that are, or will lead to, modular, integrated, scalable, and ultimately deployable solutions. Each team must develop methods and metrics that are then experimentally demonstrated.

While the BAA and Topic remain open for proposal submission until, 31 March 2017, in order to be eligible for an award for this effort, NGR, Whitepapers and Proposals must be received in accordance with the due dates and instructions provided in this special notice. The total funding available for this effort is \$5.1M and it is anticipated that one to four CRAs will be awarded, pursuant to 10 USC 2358, Research and Development Projects, each agreement with a period of performance not to exceed reasonable time to complete and/or subject to funding constraints. ARL will participate in the research and jointly use its in-house technical expertise to collaborate with contractors and execute the research program with awarded contractors. Whitepapers and Proposals must explicitly indicate how each team will interact and collaborate with ARL through means such as personnel exchanges, technology transition opportunities, educational seminars, planning workshops, and cooperative research arrangements. All software developed under this action will be joint property of the contractor and the Government and either party may use the software, including source code, for future endeavors. .

The actual amount of an award will be contingent on availability of funds, the specific topic, and the scope of the proposed work. There is no guarantee that any of the proposals invited for submission and evaluated will be selected for funding. On the other hand, more than one proposal may be selected for funding.

The application process to be considered for an award for this effort, consists of a Whitepaper stage and a Proposal stage. The purpose of requesting a Whitepaper is to minimize the effort associated with the production of a detailed proposal for those Offerors that have little chance of being selected for funding. The Government's decision to invite a Proposal submission will be based upon the evaluation results of the timely Whitepaper submission. Only the most highly rated Whitepapers will receive an invitation from the Government to submit a Proposal. An Offeror that does NOT receive an invitation from the Government to submit a Proposal is NOT eligible to submit a Proposal for this effort and will not receive any feedback on their Whitepaper submission. An Offeror invited to submit a Proposal may receive feedback on their Whitepaper prior to their Proposal submission. An Offeror that does NOT submit a timely Whitepaper, is NOT eligible to submit a Proposal for consideration for this effort.

All Whitepapers must be submitted electronically and must be emailed directly to the Technical Point of Contact (TPOC), Mr. John Clark, john.t.clark8.civ@mail.mil. A Whitepaper sent by any other means (*e.g.*, hand-carried, postal service mail, commercial carrier, or fax) will not be

considered. Include the BAA number W911NF-12-R-0011-03 and NGR in the email subject line. Whitepapers must be received at the Government email noted directly above no later than Friday, 4 September 2015 at 11:59 PM (EDT). Offerors shall account for potential delays in file transfer from the originator's computer server to the Government website/computer server and are encouraged to submit their response early to avoid potential file transfer delays due to high demand or problems encountered in the course of submission. For this special notice, Whitepapers are limited to ten (10) pages which include any references, plus a cover page and a one-page addendum for biographical sketches for each of the key personnel. The cost portion of the white paper shall contain a brief cost estimate for all of the component parts of the Whitepaper; including research hours, indirect costs, material costs, travel, etc. Whitepaper evaluations are expected to be complete by late September 2015, and once complete all offerors will be informed via email whether or not they will be invited to submit a full proposal based on their Whitepaper submission.

Full proposal submissions must be submitted in accordance with the preparation and submissions instructions under BAA W911NF-12-R-0011-03, except as noted below. As a reminder, an Offeror is not eligible to submit a proposal under the BAA for this effort unless their Whitepaper submission is timely, is highly rated, and the Offeror is INVITED to submit a proposal. Proposals shall be submitted electronically through the www.grants.gov portal. A proposal sent by any other means (*e.g.*, hand-carried, postal service mail, commercial carrier, fax or email) will not be considered. INVITED Proposals must be received no later than Friday, 30 October 2015 at 11:59 PM (EST) to be considered for this effort. The proposal content information is as specified under BAA W911NF12-R-0011-03, except the technical proposal (project description) portion of the full proposal must not exceed forty (40) pages. If the technical proposal exceeds 40 pages, only the first 40 pages will be reviewed and evaluated. As described in the BAA W911NF-12-R-0011-03, the proposal must also include a budget for each year of support requested. Proposals will be evaluated using the criteria listed in the BAA. Proposal evaluation is expected to be complete and any award selections made by late November 2015. An Offeror whose proposal is selected for award will be contacted by a Contracting Officer/Grant Specialist.

Clarifying questions regarding the intent or scope of this special notice may be submitted online at www.arl.army.mil/AdvancedRFTechnologies. Answers are expected to be posted online at www.arl.army.mil/AdvancedRFTechnologies within seven calendar days of receipt. All clarifying questions must be submitted to the website above before 21 August 2014 at 11:59 PM (EDT). Any clarifying questions submitted outside of the website (*e.g.*, submitted to an email address or by phone) will not be addressed. If any entity has technical difficulty submitting questions, please contact the TPOC listed above for assistance.