

# Call for FY 2015 DoD Frontier Concept Proposals

## Introduction

**Purpose:** The Department of Defense (DoD) High Performance Computing Modernization Program (HPCMP) invites concept proposals for frontier projects. The objective of a frontier project is to enable the exploration of science and technology outcomes that would not be achievable using typically-available HPCMP resources. Principal investigators (PIs) of selected concept proposals will be asked to submit a full proposal, which must pursue outcomes aligned with DoD mission priorities and must be supported by multi-year investments in multi-disciplinary teams leveraging exceptional amounts of high performance computing (HPC) computational resources (e.g. 100s of millions of CPU-hours per year). Selected projects will start on 1 October 2014.

**Justification:** Frontier projects may involve either multiple computational technology areas (CTAs) or be a substantively deep project in one CTA. New and evolving areas are also encouraged. In recognition of problem complexity, frontier projects may have a two to five year duration, and are encouraged to have a strong collaborative nature among academic, industry and government partners. Improved batch turnaround time is not sufficient justification for a frontier project.

**Eligibility:** All frontier projects must be sponsored by a DoD government scientist/engineer and must use HPC resources to enhance mission capability. Principal investigators for frontier projects may be scientists or engineers from government, industry or academia.

**Awards:** Frontier projects may have a two to five year duration. Exceptional amounts of HPC computational resources will be provided with no decrement to the traditional annual HPC resource allocations provided to each Service/Agency. Support is also available from HPCMP assets such as the DoD Supercomputing Resource Centers (DSRCs), User Productivity Enhancement, Technology Transfer and Training (PETTT), and the Data Analysis and Assessment Center (DAAC). Leveraging a frontier award with funding from other sources is encouraged. The HPCMP is willing to entertain a request for up to \$100K per year for unique scientific-domain-specific support to ensure the success of the frontier project; however, no funding will be provided to (1) Government staff or (2) industry/academic staff already supporting Government staff on the proposed topic (or related topics).

**Project Review:** Frontier projects are reviewed quarterly by the HPCMP Associate Director for Resource Management against proposed milestones. Projects will have frequent interaction with DSRC and PETTT support personnel.

**Submission:** All concept proposal submissions must be at an unclassified level. Do not include any controlled or sensitive information. Concept proposals must be submitted by e-mail to the appropriate Service/Agency High Performance Computing Advisory Panel (HPCAP) Principal, and are due by **25 April 2014**. The HPCAP Principal points of contact are as follows:

- Air Force: Submit proposals to the AFRL Research Collaborating and Computing Office, AFRL/RC, via e-mail ([Daniel.Goddard.3@us.af.mil](mailto:Daniel.Goddard.3@us.af.mil) and [Michael.Ausserer@us.af.mil](mailto:Michael.Ausserer@us.af.mil)). All

proposals received will be reviewed and ranked. If selected, the proposal will be submitted to the HPC Modernization Program Office (HPCMPO) via the appropriate HPCAP principal.

- Army S&T: Submit proposals via email to Ms. Valerie Carney ([Valerie.I.Carney.civ@mail.mil](mailto:Valerie.I.Carney.civ@mail.mil)), Mr. Robert Sheroke ([Robert.M.Sheroke.civ@mail.mil](mailto:Robert.M.Sheroke.civ@mail.mil)), and Mr. Eldred Lopez ([Eldred.I.Lopez.ctr@mail.mil](mailto:Eldred.I.Lopez.ctr@mail.mil)). Proposers should contact their local organizations for any additional requirements prior to sending submissions. All proposals will be reviewed and submitted to the Army HPCAP Principal (Ms. Nancy Harned, Executive Director, Strategic Planning and Program Planning, DASA(R&T)) for consideration and submission to the HPCMPO.
- Army T&E: Submit proposals via email to Mr. Kenneth Raab ([Kenneth.A.Raab.civ@mail.mil](mailto:Kenneth.A.Raab.civ@mail.mil)).
- Navy S&T and T&E: Submit proposals via email to Ms. Kathy Hollyer ([kathy.hollyer.ctr@navy.mil](mailto:kathy.hollyer.ctr@navy.mil)). All proposals received will be reviewed and ranked. If selected, the proposal will be submitted to the HPCMPO via the Navy HPCAP principal.
- DTRA: Submit proposals via email to Ms. Jackie Bell ([Jacqueline.Bell@dtra.mil](mailto:Jacqueline.Bell@dtra.mil)).
- Other agencies: Submit proposals to the HPCMP office via email ([frontier@hpc.mil](mailto:frontier@hpc.mil)).

**Evaluation:** Each Service/Agency may down-select concept proposals prior to submission to the HPCMP. Each Service may submit no more than four concept proposals, and each Agency may submit no more than two concept proposals to the HPCMP. **Concept proposals are due to the HPCMP by 5 May 2014.** The HPCMP will perform an initial review of each forwarded concept proposal and request full proposals from a down-selected set of PIs. **Full proposals must be received by the HPCAP Principals by 13 June 2014 and forwarded to HPCMP (in final form) by 30 June 2014.** A technical review panel convened by the HPCMP will evaluate full proposals against the following criteria:

1. Technical/scientific merit of the proposed project: Based on the project's goals, solution approach, and technical quality, does the project represent a potential significant contribution to the scientific and engineering community?
2. Relevance and timeliness for the proposed project
3. Clearly-defined final outcomes and value: How well does the proposed project define tangible outcomes with intermediate and/or final milestones?
4. Potential for significant progress: Based on the team's track record, staff's qualifications, staff's size, and software readiness, does the project have the potential to complete the proposed work? Is the proposed computational approach, software applicability and software scalability (existing and/or proposed) sufficiently sound to achieve the desired outcomes?
5. Requirements for HPC computational time and resources

A DoD representative will review proposals for mission relevance. All evaluations will be used to formulate a proposed set of awards for consideration by the frontier project selection authority. It is anticipated that awards will be announced on 31 July 2014.

**Questions:** Contact Stephen Scherr, HPCMP Associate Director for Resource Management, [frontier@hpc.mil](mailto:frontier@hpc.mil), 703-812-4414.

## Concept Proposal Contents

*Frontier concept proposals are limited to 5 pages (single-spaced, standard 12-point font, one-inch margins) and must be a single Word or PDF document. The cover page and any curricula vitae do not count against the 5-page limit.*

**Cover Page:** (Length: 1 page maximum)

- *Title:* Provide the title of the project.
- *Requirements Project Number:* Provide the project number(s) (as reflected in the HPCMP requirements database) representing the project requirements the frontier proposal will address. *A proposal cannot be considered unless its resource requirements are reflected in the HPCMP's requirements database. Please contact Cathy McDonald at [require@hpc.mil](mailto:require@hpc.mil) for further details.*
- *CTA:* List the primary and associated computational technology areas (CTA) that best fit this project (see <http://www.hpc.mil/index.php/technology-areas/computational-tech-areas>), or identify other areas that apply.
- *Government Sponsor:* Provide the Government sponsor's name and contact information.
- *Frontier Project Principal Investigator:* Provide the frontier project's principal investigator's name and contact information. Only one person should be listed here, and that person will be the lead for interactions with the HPCMP during the project.
- *Sponsoring Service/Agency and Organization:* Provide the Service/Agency and organization sponsoring the frontier project.
- *External Partners:* Provide a list of organizations or personnel planned to participate in the project.
- *HPCMP Assets:* Provide a list of HPCMP intellectual assets and capabilities that will be leveraged to accomplish the project.
- *Funding requested:* Provide an estimate of the annual funding required.
- *Technical Goals and DoD Impact:* Summarize the technical objectives of the project and the projected DoD impact.
- *Duration:* Specify the expected duration of the project.
- *Computational Resource:* Provide an annualized estimate of the computational resources (core-hours and other special requirements) for the project.
- *Major Applications Software:* List major applications software that will be used.

**Frontier Project Concept Proposal:** (Length: 5 pages maximum, excluding curricula vitae.)

Include the following topics in the concept proposal narrative:

- *Technical Approach:* Describe the problem and solution approach the project is intended to address. This should include the specific trends that will be addressed and projected benefits to the DoD and/or the HPC community. The final technical outcome must be clearly defined.
- *Technical and Computational Challenges Addressed:* Computational Technology Area (CTA) trends and challenges that are of critical interest to the HPCMP have been identified and are included in a separate document (each trend and challenge has an identifier

associated with it that begins with TC-). Responses should explain how the project would address one or more of these trends and challenges and how the project would positively impact one or more mission-critical areas. Projects focused on alternate (newly evolving) areas will also be considered.

- *Technical and Computational Challenges Anticipated:* Summarize any anticipated technical and computational challenges that the project is intended to overcome.
- *Curricula Vitae (optional for concept proposals):* Include curricula vitae (at most 2 pages each) for key personnel, listing relevant publications. Curricula vitae do not count toward the 5-page proposal limit.

## Schedule

Activity	Due Date
Issue call for concept proposals to HPC community	3 April 2014
Concept proposals due to HPCAP Principals	25 April 2014
Concept proposal endorsement and priority due to HPCMP	5 May 2014
Call for full proposals sent to potential frontier principal investigators	13 May 2014
Full proposals submitted to HPCAP Principals	13 June 2014
Full proposals submitted to HPCMP	30 June 2014
Proposal evaluations	21 July 2014
New FY 2015 frontier projects announced	31 July 2014