

COMPASS Workshop Questions 3/5/2025

1. **Question:** Are Principal Investigators (PIs) with engineering backgrounds, not necessarily math, also encouraged to consider submitting COMPASS?

Answer: Yes. If your proposed concept is within scope of the COMPASS ARC opportunity that would be encouraged.

2. **Question:** Do abstract submissions need to contain preliminary results justifying feasibility of the proposed approach?

Answer: Justification of feasibility does not require preliminary results, as we expect much of this work would be completed during the period of performance.

Rather, we expect a first principles argument that the proposed concept has the potential to work. This could include, but is not limited to, observations, mathematical intuition, conjectures/hypotheses, and initial framing.

This can be integrated into the “substantial technical argument that their proposed mathematical framework and problem formulation has the potential to significantly advance current state of the art approaches or enable entirely new capabilities”.

Technical arguments must speak to the novelty and high-risk of the approach- why is this distinct from similar approaches and why hasn't this approach been tried before?

3. **Question:** You mentioned COMPASS is not focused on solution implementation. Can you clarify that further?

Answer: The focus of COMPASS is problem formulation and not solution implementation. We seek to formulate (describe and define) a Defense related problem in a paradigm-shifting way. All research activities should focus on developing the formulation in a comprehensive manner. We encourage novel formulations with limited to no existing methods to solve. Research activities to develop solutions should be captured in the roadmap for future work.

4. **Question:** What are you looking for in an abstract?

Answer: It is important that abstracts outline how the proposed work will directly address the three key COMPASS goals:

- Investigate a completely novel connection between a mathematical framework and a Defense science or technology application area
- Formulate a Defense related problem within this mathematical framework and justify that this new approach addresses significant gaps in current state of the art methods or enables entirely new capabilities

COMPASS Workshop Questions 3/5/2025

- Chart-out a roadmap clearly identifying the mathematical problems that must be solved to realize a tractable solution and application in the future.

For more specifics on the abstract requirements, please refer to DARPA-EA-25-02-03.

5. **Question:** What are you looking for when it comes to a “roadmap”?

Answer: The intent of the roadmap is to chart out the mathematical and computational breakthroughs that need to be achieved in the next several years towards a tractable solution and application. This roadmap can guide future research development to deliver a capability to national security. The abstract should illustrate when the roadmap will be developed.

6. **Question:** My proposal is ready but pending with my institution’s contracting office. However, contracting is prioritizing their work based on the 12 May 2025 deadline. What can I do?

Answer: Please let us know the progress of your proposal by emailing us at COMPASS@darpa.mil. We can discuss further about your situation.

7. **Question:** How important are rigorous guarantees to the responsiveness of a proposal? I understand that novel connections are encouraged, but is the end goal to show some novel connection feasibility or explicitly to obtain rigorous guarantees in a specific direction?

Answer: The emphasis is on discovering and formalizing novel mathematical connections. Although we encourage development of rigorous guarantees, it is not a requirement.

8. **Question:** Does the mathematical framework need to be fully developed, and then it is the proposers who then apply it to a new problem? Or is it the case that an existing framework can be proposed to be extended AND applied to a new DoD-relevant problem?

Answer: Either of these cases appears to be in scope given that the combination of mathematical framework and problem formulation is entirely novel. However, a complete determination cannot be made until an abstract is submitted and properly evaluated.

9. **Question:** Are financial and/or economic security applications in scope?

Answer: Yes, these appear to be in-scope, but the proposed problem formulation must be completely novel. Some examples of financial and economic security

COMPASS Workshop Questions 3/5/2025

applications that are relevant to national security include (but are not limited to) money laundering, financial intelligence, market manipulation, strategic resource management, supply chain security, geoeconomic competition, and economic resilience. However, a complete determination cannot be made until an abstract is submitted and properly evaluated.

10. **Question:** Would quantum probabilistic formulation and quantum computational framework be of interest to this program?

Answer: Yes, this appears to be in-scope, but the proposed problem formulation must be completely novel. For example, we are not interested in advancements in quantum computing algorithms to solve existing problems. However, a complete determination cannot be made until an abstract is submitted and properly evaluated.

11. **Question:** Consider new tensor mathematics that puts a closure on boundary conditions (e.g. empty tensors, or unknown tensor dimensions) thus solving type problems preventing computational verification. Is that in scope given your constraint not only for new methods but new problems?

Answer: If you can justify that this will be applicable to type problems relevant to Defense applications, then this appears to be in scope. However, a complete determination cannot be made until an abstract is submitted and properly evaluated.

12. **Question:** One of the slides identified “robust filtering” as a focus area for the proposal, and I was hoping you could provide some examples of defense applications that will be of interest to program managers.

Answer: Some known applications of state estimation and filtering in Defense include target tracking, navigation systems, sensor fusion, situational awareness, and autonomous systems. However, we encourage creative exploration of other areas where new filtering techniques could be applicable. As a reminder, our focus is on problem formulation, not algorithm development.

13. **Question:** It would also be useful to know if you have specific issues at DARPA that you are trying to address with rough paths. Is this information available somewhere?

Answer: No, we do not have specific issues that we are trying to address with rough paths. It is up to the proposer to articulate their motivation in their abstract submission.

COMPASS Workshop Questions 3/5/2025

14. **Question:** Are classified submissions allowable?

Answer: No, all submissions must be UNCLASSIFIED.

15. **Question:** Are there any rules or suggestions on the start date of the project? For example, would August 16, 2025 be acceptable?

Answer: Following the unilateral signature of the agreement, the work begins in 15 days. A better determination can be made following the abstract phase.

16. **Question:** What are the intellectual property terms at the end of the agreement?

Answer: Per page 5 of Exploration Announcement (EA) Master Solicitation for Advanced Research Concepts (ARC), DARPA-EA-25-02, dated November 27, 2024: "ARC agreements will allow the performer to retain ownership of the intellectual property created during performance under each ARC Opportunity. The Government will require all performers to provide limited license rights in any intellectual property developed or generated under these agreements."

17. **Question:** We received a few questions regarding eligibility for non-U.S citizens and or non-U.S. organizations. Such as, what opportunities are available for non-US citizens in this funding opportunity?

Answer: Per page 13 of DARPA-EA-25-02: "Non-U.S. organizations and/or individuals may participate to the extent that such participants comply with any necessary nondisclosure agreements, security regulations, export control laws, and other governing statutes applicable under the circumstances."

18. **Question:** Can the proposed budget include 1 month of summer salary for the PI (myself) and 11 months of support for a Postdoctoral (postdoc) who will be supervised by the PI to conduct the technical work? Can the postdoc support be pushed up to 12 months in addition to the PI support (13 months in total), or the 1-year FTE is a strict limitation?

Answer: Please refer to the ARC FAQ for this answer. Specifically, question and answer number 6.