CCC's Response to the [Request for Information on the CHIPS and Science Act Section 10343. Research Ethics](#)

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Ethical, Social, Safety, and Security Considerations

Question 1: Describe ethical, social, safety, and/or security risks from current or emerging research activities that you believe might be of concern to the community, profession, or organization with which you are connected.

- Many research risks are well-known and easy to identify, however the heterogeneity of, and interactions between new technologies could present unique vulnerabilities not typically discussed. Addressing these lesser-known risks requires NSF to support a more comprehensive dialogue about the diverse security implications of research outputs, including national security concerns and data-sharing policies.

Question 2: Which products, technologies, and/or other outcomes from research do you think could cause significant harm to the public in the foreseeable future?

- Heterogeneous computer systems
- Systems-level risks

- Unfettered growth in power-consumption
- Insufficient attention paid to interdisciplinarity approaches
- Overreliance on autonomy and its negative effects on creativity

Question 3: Describe one or more approaches for identifying ethical, social, safety, and/or security risks from research activities and balancing such risks against potential benefits.

- Current practices tend to focus on the risks of research failure rather than the potential societal harms that could result even from successful research outcomes. NSF should encourage researchers to include risk assessments that address possible societal impacts of both successful and unsuccessful research, alongside traditional scientific and technical evaluations. As many researchers will not have experience in such assessments, NSF should also support training and education in this area. This ensures that the broader consequences of research—both beneficial and harmful—are considered from the outset.

Question 4: Describe one or more strategies for encouraging research teams to incorporate ethical, social, safety, and/or security considerations into the design of their research approach. Also, how might the strategy vary depending on research type (for example, basic vs. applied) or setting (for example, academia or industry)?

- Ensure substantive collaboration with researchers and stakeholders from diverse disciplinary backgrounds and perspectives
- Focus on risks of research failing, rather than risks of societal harms
- Establish processes to distinguish between projects that have societal risks and those that do not

NSF's Approach to Ethical, Social, Safety, and Security Considerations

Question 5: How might NSF work with stakeholders to promote best practices for governance of research in emerging technologies at every stage of research?

- We suggest, rather than expecting the NSF to work with stakeholders to promote best practices at each stage of research, NSF should help promote collaboration between researchers and interested stakeholders. Facilitating these collaborations early on in the proposal process will allow best practices to be integrated into research naturally, and will not require the NSF to act as a referee receiving guidance from stakeholders that they then must relay to researchers. Stakeholders could also be involved during the proposal review process, to promote collaborative and innovative thinking.

Question 6: How could ethical, social, safety, and/or security considerations be incorporated into the instructions for proposers or into NSF's merit review process? Also, what challenges could arise if the merit review process is modified to include such considerations?

- Reporting requirements sometimes focus more on procedural compliance than substantive engagement. To address this, any process aimed at integrating ethical, social, safety, and security considerations should prioritize meaningful evaluation over box-checking. An effective system would encourage thoughtful reflection on potential risks and benefits without adding undue administrative load on researchers. We suggest implementing a risk assessment rubric into the proposal process that allows researchers to "self-diagnose" the level of risk their research poses to society. This rubric could be composed of 5 risk levels, from posing little to no risk to having significant potential to impact society, and also list qualities of each of these risk levels and examples of research projects that fall into each category. Researchers can be expected to write a paragraph or two, justifying which risk tier they select to describe their proposed research. Proposal review panelists can ask questions based on the proposer's self-assessment of research risk, promoting open-discussion during the review process.

- A key challenge NSF faces is ensuring that merit review panels include domain-specific experts capable of evaluating the ethical, social, and security dimensions of proposals. For proposals which are multidisciplinary, NSF should ensure review panels include at least one reviewer with knowledge of each single involved discipline, and, if possible, reviewers with multidisciplinary knowledge relevant to a given proposal. NSF will likely have to draw from the research community to find reviewers for these multidisciplinary panels, and these reviewers may not have much experience reviewing research proposals. NSF should enhance training for these reviewers, enabling them to assess interdisciplinary proposals more effectively and recognize potential societal harms.

- Drawing inspiration from conferences such as NeurIPS, where ethical shortcomings in submissions have led to paper rejections, NSF could mandate that proposals include comprehensive ethics statements. While initial implementations at conferences have sometimes devolved into perfunctory box-checking, NSF can work to create a system that emphasizes substantive engagement. This might include feedback loops where ethics statements are reviewed and improved upon based on panelist input. The [Computing Research Association's whitepaper](#) on guidelines for conference submission and review policies outlines best practices that promote ethical and responsible research.

Question 7: What other measures could NSF consider as it seeks to identify and mitigate ethical, social, safety, and/or security risks from research projects or other activities that the agency supports?

- NSF should consider convening roundtables and other collaborative gatherings to facilitate ongoing dialogue about ethical, social, and security risks in research. These discussions could help develop community-driven guidelines and solutions, enhancing the collective understanding of potential risks and mitigation strategies.
- The public is being exposed to an unprecedented range of new technologies, many inspired by the revolutions in artificial intelligence and machine learning. Some novel applications may stretch the limits of our current understanding of the safe, ethical uses

of these technologies. NSF-supported researchers should be encouraged to explore the boundaries of such uses, lest our knowledge fall behind the proprietary activities of commercial interests, or the nefarious goals of our adversaries. This may require NSF to fund projects further on the edge: research that is deemed ethically complex or risky under today's standards. NSF should also take note of the broader implications of choosing NOT to fund certain research areas when those same areas might be subject to exploitation by others who are less constrained by a sense of ethics.