



SUMMARY OF THE 2019 WHITE HOUSE SUMMIT OF THE JOINT COMMITTEE ON THE RESEARCH ENVIRONMENT (JCORE)

A Report by the
JOINT COMMITTEE ON THE RESEARCH ENVIRONMENT
of the
NATIONAL SCIENCE & TECHNOLOGY COUNCIL

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About the National Science and Technology Council

The National Science and Technology Council (NSTC) is the principal means by which the Executive Branch coordinates science and technology policy across the diverse entities that make up the Federal research and development enterprise. A primary objective of the NSTC is to ensure science and technology policy decisions and programs are consistent with the President's stated goals. The NSTC prepares research and development strategies that are coordinated across Federal agencies aimed at accomplishing multiple national goals. The work of the NSTC is organized under committees that oversee subcommittees and working groups focused on different aspects of science and technology. More information is available at <http://www.whitehouse.gov/ostp/nstc>.

About the Office of Science and Technology Policy

The Office of Science and Technology Policy (OSTP) was established by the National Science and Technology Policy, Organization, and Priorities Act of 1976 to provide the President and others within the Executive Office of the President with advice on the scientific, engineering, and technological aspects of the economy, national security, homeland security, health, foreign relations, the environment, and the technological recovery and use of resources, among other topics. OSTP leads interagency science and technology policy coordination efforts, assists the Office of Management and Budget with an annual review and analysis of Federal research and development in budgets, and serves as a source of scientific and technological analysis and judgment for the President with respect to major policies, plans, and programs of the Federal Government. More information is available at <http://www.whitehouse.gov/ostp>.

About the Joint Committee on the Research Environment

In May 2019, The National Science and Technology Council (NSTC) established a Joint Committee of the Committee on Science and the Committee on Science and Technology (S&T) Enterprise to address issues related to research environment safety, integrity, and productivity. Specifically, the Joint Committee will examine: administrative burdens on federally-funded research; rigor and integrity in research; safe, inclusive, and equitable research settings and; open research environments balanced with security.

About the Document

This document provides a summary of the 2019 White House Summit of the Joint Committee on the Research Environment (JCORE). This summary includes background information regarding JCORE structure and objectives. It also includes remarks that OSTP Director Kelvin Droegemeier provided at the Summit, outlining his vision for sustaining American leadership through collaboration across our Nation's multi-sector research environment. Finally, this document captures key takeaways from discussions during the Summit, but does not detail all aspects of the conversation.

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Background

“Unleashing American discovery and innovation means providing the environment that allows our scientists, engineers, inventors, and entrepreneurs to do what they do best – explore, discover and be creative.”

– Dr. Kelvin K. Droegemeier, Director, White House Office of Science and Technology Policy

America leads the world in science and technology, and the Trump Administration recognizes the critical importance played by research in keeping Americans safe, healthy, and economically prosperous. Continued global leadership requires that the environments in which research takes place in America are safe, inclusive, operate with maximum integrity, appropriately balance openness and international collaboration with security, and do not encumber researchers, agencies, or institutions with unnecessary administrative work.

The values that underpin the research enterprise—the freedom to explore new frontiers, the commitment to openness and transparency through the sharing of methods and results, the ability to debate difficult issues thoughtfully and with civility, the passion to work with and improve the lives and others, and operating with integrity—are American values.

Yet Americans must not take its research enterprise or its global leadership position for granted. U.S. policies and practices must evolve thoughtfully and appropriately to meet current and future challenges.

On November 5, 2019, the White House hosted the Joint Committee on the Research Enterprise Summit, to discuss progress made to date by the National Science and Technology Council Joint Committee on the Research Environment (JCORE).

Specific emphasis was given to the *integrative approach* JCORE is taking to develop policy recommendations and best practices aimed at improving the collective safety, integrity, productivity, and security of our nation’s multi-sector research environment. The Summit was organized into four thematic sessions which are summarized below:

- **Transparency:** Transparency and openness underpin the success of the U.S. research enterprise. Sharing of research data and methodology is critical to reproducibility and replicability. Transparency in the grant making process is necessary to ensure effective allocation of Federal funds and accountability to the American taxpayer. Openness around institutional processes for disclosure of harassment can lead to safer research environments.
- **Integrity:** The strength of the research enterprise depends on researchers adhering to foundational principles of ethical conduct, including integrity, honesty, transparency, openness, and mutual respect. The strength also rests on nations upholding principles of meritocracy and reciprocity. Failure to adhere to these principles imperils the research enterprise and the many benefits that flow from it.
- **Workload:** Administrative requirements for research include existing and potential data submission, collection, assessment, and reporting, including those intended to address security, harassment, and reproducibility concerns. These requirements must be balanced with their demonstrated value and an understanding of their impact on research.

- **Coordination:** Effective coordination across the research enterprise is essential to address critical challenges.

The summit brought together more than 100 people from industry, academia and the Federal government to inform the work of this joint committee across these key areas of work. Summit attendees had the opportunity to participate in four breakout sessions focusing on transparency, integrity, workload, and coordination.

Industry sectors represented at the summit included energy and manufacturing, healthcare, and legal services. During the breakouts, participants had the opportunity to provide candid feedback to questions shaped to inform policies, guidance, and best practices currently underway.

In addition to senior staff from the White House, Federal participants included senior officials from the National Institutes of Health, Department of State, National Security Agency, National Science Foundation, Department of Energy, Department of Agriculture, U.S. Patent and Trade Office, Department of Defense, and National Institute of Standards and Technology.

This document provides a summary of the 2019 White House Summit of the Joint Committee on the Research Environment (JCORE). This summary includes background information regarding JCORE structure and objectives. It also includes remarks that OSTP Director Kelvin Droegemeier provided at the Summit, outlining his vision for sustaining American leadership through collaboration across our Nation's multi-sector research environment. Finally, this document captures key takeaways from discussions during the Summit, but does not detail all aspects of the conversation. Outcomes from the Summit will help inform policy formulation and coordination processes underway through the NSTC and JCORE.

Key Takeaways

Transparency:

- The Federal Government should partner with research institutions to build a transparent and bidirectional system for communication regarding security concerns. This system should facilitate access to educational resources (such as FBI threat briefs), and should seek to promote sound and risk-informed deliberations and decisions within institutions.
- The Federal government should provide examples and case studies related to research security and inappropriate behaviors, as well as information regarding numbers of actual cases.
- Sharing of information is absolutely essential, and impediments to sharing across the research enterprise (including industry, academia, government agencies, and non-profits) need to be addressed while recognizing the importance of statutory privacy and other restrictions. This should include, where appropriate and consistent with applicable laws and regulations, mechanisms for sharing information related to ongoing or incomplete investigations.
- Transparency is needed with respect to processes for investigating claims related to security, harassment, and misconduct.
- Sharing data from institutional surveys related to harassment promotes transparency and contributes to positive shifts in culture and behavior.
- Success along the path from fundamental research to technology applications often requires free flow through multiple research groups and international borders.
- Science benefits from open access to research data, but there are storage and cost limitations associated with maintaining well-curated data sets and access. There are also open questions regarding roles and responsibilities with respect to maintaining and providing access to data.

Integrity:

- A culture of integrity must be modeled from the top of agencies and institutions.
- Research institutions need frameworks from the Federal Government to help assess economic and national security risk. A risk-based framework would help prioritize risk based upon threat, vulnerability, and potential consequences.
- Research institutions need information that will allow them to determine whether to approve or disprove proposed collaborations with foreign entities, and to advise research staff on what circumstances may affect eligibility for Federal R&D funding.
- Increasing use of government, academic, and industry collaborations has significant potential to increase reproducibility of data.
- As a major objective, the research enterprise should work to maximize reporting of harassment and other inappropriate behaviors. This requires addressing fears of retaliation that often prevent individuals from coming forward.
- Efforts to address harassment, research security threats, and research rigor and integrity should address the issue of confidentiality. Confidentiality must be protected wherever lawful and appropriate, but has been viewed by some as being an obstacle to effective action.
- Providing researchers with opportunities to work with multiple mentors can help address negative power dynamics in the research environment, and can help reduce perceived risks of reporting inappropriate behaviors.
- Security considerations should focus on values and specific behaviors. Clear and detailed communication about established risks can help alleviate concerns about profiling and promote inclusive research environments.

- When developing or implementing disclosure policies, agencies and institutions should consider incorporating a grace period to help promote self-reporting.

Workload:

- Establishing common forms and systems for compliance can decrease administrative workload.
- Standard adoption of digital persistent identifiers may substantially reduce administrative burdens associated with Federal R&D grant processes. For example, it could enable pre-population of forms that could be made mostly identical across funding agencies, while allowing for agency-specific process elements where necessary.
- Federal grant application processes should limit initial review to establishing the merit of the proposed research. Compliance requirements can be reviewed “just in time” by agency staff after favorable merit review.

Coordination:

- OSTP should leverage NSTC processes to ensure synchronized policies across JCORE focus areas and decrease unwarranted variability.
- Wherever appropriate, Federal policies should allow flexibility in how research institutions comply with requirements.
- The Federal Government should leverage the work of professional societies to help inform development of common solutions for core areas (i.e., conflict of interest, universal disclosure, etc.).
- A challenge competition could be used to develop tools for harmonizing disclosures and other compliance requirements.
- Where appropriate, the NSTC should work to inform Congress of Legislative impediments to coordinated and effective policies and requirements.

JOINT COMMITTEE ON THE RESEARCH ENVIRONMENT (JCORE)

Helping Researchers Achieve Full Potential: In May 2019, The National Science and Technology Council (NSTC) established a Joint Committee of the Committee on Science and the Committee on Science and Technology (S&T) Enterprise to address issues related to research environment safety, integrity, and productivity. Specifically, the Joint Committee will examine:

- Administrative burdens on federally-funded research,
- Rigor and integrity in research,
- Safe, inclusive, and equitable research settings,
- Open research environments balanced with security.

These cross cutting issues align efforts across both NSTC Committees and bring together the leadership of the two Committees in elevating research environment challenges, engaging the scientific community, and convening interagency problem solving.

A Whole of Government Approach: NSTC Committees are led by the Office of Science and Technology Policy and Federal agency chairs. The Committee on Science (CoS) is co-chaired by OSTP Director Dr. Kelvin Droegemeier, National Institutes of Health Director Dr. Francis Collins, and National Science Foundation Director Dr. France Córdova. The Committee on S&T Enterprise (CSTE) is co-chaired by Dr. Droegemeier, Dr. Córdova, National Institute of Standards and Technology Director Dr. Walt Copan, and Department of Energy Undersecretary for Science, Paul Dabbar.

In addition to the above agencies, additional critical departments and agencies that are both members of the CoS and CSTE and are listed below:

- James Bridenstine, Administrator, National Aeronautics and Space Administration
- Mary Miller, Principal Deputy, Director of Defense Research and Engineering for Research and Technology, Department of Defense.
- Dr. Deborah Frincke, Director of Research, National Security Agency
- Andre Iancu, Director, United States Patent and Trademark Office
- Dr. Scott Hutchins, Deputy Undersecretary of Agriculture Research, Education, and Economics Mission

About the National Science and Technology Council: The NSTC was established by Executive Order on November 23, 1993. This Cabinet-level Council is the principal means within the Executive Branch to coordinate science and technology policy across the diverse entities that make up the Federal research and development enterprise. The Office of Science and Technology Policy Director serves as the chair of the Council and provides leadership across the NSTC and interagency.

Opening Remarks by Dr. Kelvin Droegemeier, Director of the Office of Science Technology Policy

As prepared for delivery:

Good morning everyone, and thank you so much for coming today. I'm excited to see you all here to join forces in looking at some interesting challenges we face in science and technology. We have enormous opportunities to lead the way, as we already are doing in science and technology, across the world. I know of no better way to address these incredibly important challenges than to bring together brilliant minds from all sectors that represent our research and development enterprise—the private sector, Federal departments and agencies, academia, and non-profits. And that's exactly what we've done here today — we also have people joining us from various congressional offices and other components of the White House. I am grateful to all of you that carved out time from your busy schedules to join us. Thank you!

As I will talk about here in a moment, this meeting is a little different from those you may have been attending recently in that we are going to actually start talking about some recommendations going forward. I want to begin by thanking a number of people who made this possible by working hard, not just since JCORE was created, but also behind the scenes somewhat quietly the over the past many months to convene the community to discuss several important issues. Thank you to the National Academy of Sciences and its President, Marcia McNutt. Additionally, we have in attendance representatives from the Association of American Universities, the Association of Public and Land Grant Universities, and the Association of American Medical Colleges. They have been convening conversations on many of the topics we're going to talk about today. Additionally, we have many attendees representing the National Security and law enforcement community. We have all been working together on a lot of these interesting challenges. However, what is different about the Joint Committee on the Research Environment (JCORE) is that we bring together multiple workstreams that affect not just the national aspects of research security, but that also focus on research integrity, reproducibility, and research administrative workloads.

American Research Enterprise

I want to set the table for the conversation we will have today by saying we live in an amazing time. As a researcher performing research for the past 35 years, I can tell you this is an absolutely unparalleled time in the history of mankind. Our knowledge about the natural world is extraordinary. Whether it is medical science, engineering, environmental science, or my own field of meteorology, where we understand storms and tornadoes far better than we did 30 years ago—when I would chase storms and come home listening to *Dust in the Wind* on the radio because the skies cleared up, and we had no idea why we just drove 400 miles to see clear skies—that was not a fun evening, let me tell you... But today, we have freshman going out on their first storm chase, seeing four tornadoes in an afternoon! So we really have increased our knowledge.

We live in a time of unprecedented understanding. We also live in a time where the facilities we have offer supercomputing capabilities beyond imagination and world class satellites and telescopes. We have access to publications like Pub Med Central, where literally millions of publications are at our fingertips. We're using artificial intelligence to amalgamate all that information instead of going into the library to read the latest journal article. And now we can gather information from hundreds or thousands of articles, put them all together, to give us a sense of what the research gaps are and help us move forward very efficiently in research.

We also have, of course, sequenced the human genome. We can actually do that in a matter of a couple of weeks. We are witnessing tremendous advances in health care, immunotherapeutics, understanding how the human body works, and personalized medicine.

And finally, the communication capabilities we have allow us to collaborate across vast distances and multiple time zones to access to each other virtually, and also share information instantaneously. It's truly unprecedented. It's extraordinary—there's no better place on the planet than right here in America to do what we're doing—to conduct research. We have some of the top research universities in the entire world. Our Department of Energy national laboratories and our Federal laboratories are extraordinary resources. And look at American private industry—trillion dollar companies launching satellites, creating cures, producing incredible innovations. Our non-profit sector funds huge amounts of research in critical areas like human health and sustainability. When you put it all together, we have an unbelievable enterprise in an unbelievable location right here in America.

American Research Values

And so, one of the things I'd really like to talk about is how we got to where we are today. We are fortunate that a gentleman by the name of Vannevar Bush, who was President Roosevelt's de-facto science advisor in 1944, was asked by the President to think about how the activities were leading to the Allied victory in World War II could be translated into benefits for civil society. Vannevar Bush, who later founded a company you might have heard of – called Raytheon – did many amazing things, including writing a treatise called "Science, the Endless Frontier". It is a brief and beautifully succinct document. I will not go into the details, but it provides the blueprint for what got us from post-WWII to today. What that led to was four pillars of our research enterprise: America's for-profit private companies, the government sector, non-profits, and academia that collectively invest about 600 billion dollars annually across the board from basic research, discovery research, all the way to applied research and development (R&D). We have this incredible enterprise that really has come into place in the past 70 years and now leads the world. There's no question that no other country has anything like our system. Our Federal and national laboratories are absolutely unparalleled.

But the thing that sets us apart is that in America, we have incredible freedoms. The values that we have as Americans allow us to create in an unfettered way—to take an idea and chase it down. The capabilities that we have, free and open inquiry, reciprocity with other countries, people coming to America and using our laboratories working with us hand-in-hand, are incredibly important. And these are very important values that we share. Our free-market economy takes research results and translates them into benefits for society where private companies can innovate and create jobs, increase our safety, and improve our economic wellbeing and health. So this is a very special place, America. And these are our American values. This is a very important point because I am going to talk about two sets of values.

One is the values of our nation, which are extremely important, and where reciprocity is an important word. It means those who come to America from other countries to do research, and who are given the freedom to visit American facilities and move about freely to perform their work, reciprocate when those from America visit their own countries to perform research. But as you think about our R&D enterprise, there exists another set of values – and those are the values that we, as researchers, sign on to when we participate in the research. This includes values of *integrity* and *honesty* and *openness*, values of *mutual respect*, *transparency*, and *accountability* to taxpayers in how we spend their dollars. This is the code of ethics that we as researchers live by.

There is another aspect of the research enterprise, and that is integrity. How do we operate with integrity? When we talk about things like integrity, we need to think about it two ways. Individual researchers operate with integrity when they know and follow the rules of the road. The integrity and the behavior of nation-states is fundamentally different, however. Our American values are extremely important in that they align with the values of research. And the beauty of it is, the American values we hold dear, and the research values, are basically intertwined. Operating with integrity, openness, and honesty—that's exactly what we do. Unfortunately, some other nations do not share America's values, nor do the values of those nations align with the values of individual researchers. Two sets of values: those of researchers and those of nation-states.

So we have an interesting challenge. We can have all the funding in the world, all the intellectual horsepower, and all the high tech facilities. But if our research environments—where research actually takes place—do not reflect and promote American values, research values, then we have a problem.

I believe we will see a day—and that is why we are all here today—where our research environments reflect our American values and our research values. This will be a time where our research settings are free of all forms of harassment and where people of all colors and races participate without bias. When we bring together all these fundamental values, then people say “that's where I want to go, that's where I want to be, because that is where I am respected and my ideas are valued”. The American research environment is one where we debate vigorously, but with civility, and we can tear each other's ideas apart and then walk out and go have a pizza together, because we have advanced the cause of science. *We are not there.* We have some challenges that have brought us here to talk today, and that have given rise for the need of the Joint Committee on the Research Environment, or JCORE, which sits within the National Science and Technology Council (NSTC).

You might say “what is a research environment?” It is basically anywhere research in a formal way takes place. The research environment does not just pertain to the lab, it extends to marine biologists on a boat, or international research projects in Antarctica, or at a telescope. The values that we hold dear and hold true in research have to operate in the types of remote areas where R&D may take place as well—if it is an outpost, some telescope in a remote place—the research values still have to apply there.

So how are we going to get there? The top line for me is that I wake up every day thinking “how do we make sure America continues to lead the world in science and technology?” One of the ways we do that is by providing guidance to Federal agencies and working with the Office of Management and Budget (OMB). OSTP puts out a memo with OMB each year on the R&D budget priorities for agencies, which also outlines crosscutting priorities. This year, one of our crosscutting priorities is focused on the research environment. We have to have environments that reflect our American values and reflect our research values. The top line goal here is to make sure we lead the world in science and technology, a goal which is underpinned by our research environment. We face some challenges in the research environment. We decided to tackle this in a way that really addresses the multiplicity of challenges in an integrated manner.

We created within the NSTC a new joint committee. Borrowing a page out of the congressional playbook, instead of creating a seventh NSTC committee, we decided to bring together the Committee on the Science and Technology Enterprise, and the Committee on Science, which include all the key stakeholders. We also added other stakeholders like the national security community, law enforcement, the State Department, and other which have equities to create JCORE.

Joint Committee on the Research Environment

JCORE has a focus on four key areas. The first one is **research integrity**, which is fundamentally focused on people playing by the rules. It does not matter where you are from. If you sign up to do research, you do not plagiarize, you do not falsify, you do not fabricate, you do not fail to disclose, you do not fail to do what is required of you in the research community. And if you do, then you are fundamentally violating the central values of research. The values we live by are the ones I mentioned. Research integrity is extremely important, robust reproducibility is critical.

The next area of focus is **research security**. We must make sure that we appropriately balance the openness that is so important in making our research enterprise the world leader with the recognition that we face new challenges and threats today to our research enterprise. We have to find ways to maintain the degree of openness that is vital to research success while being vigilant and putting in place appropriate mechanisms to guard our intellectual property, our ideas, and proposals.

The third area of focus is **safe and inclusive research environments**. I mentioned this before. Safety includes laboratory safety, physical safety. It also includes diversity in the broadest sense and ensuring our research environments are free from harassment of any kind. Such harassment is inconsistent with the research values we hold dear. Again, values and integrity are fundamental to the entire research enterprise.

Lastly, **administrative workload** is the fourth area of focus that also crosscuts all the areas we already discussed. Research workload is a critical area. The Federal Demonstration Partnership has done surveys for the last twenty some years that show faculty at our universities spend about 42-44% of their time, on average, on administrative activities when they are funded by federal research grants and contracts. I do not know what the right number is, but 44% strikes me as quite large. One of the important concepts we are considering is balancing and proactively considering burden as we move forward with the other three work streams around integrity, security, and safe, inclusive research environments.

It is important these four areas are integrated as policy solutions, guidance, and best practices are developed. This *integrative* approach is unique. Instead of having breakout sessions in this summit on each of the four topic areas, we have created integrated breakout sessions with crosscutting themes that span across the four research challenge areas. We cannot address one issue area while completely overlooking the others, because they all interrelate—they are all mutually-reinforcing.

I wrote a letter to the research community that came out September 16th. The letter was from me as a researcher to other researchers, explaining the concept of JCORE, what we are doing, and welcoming broad involvement. In fact, we need your involvement. We have communicated broadly, and we will be conducting additional regional meetings to listen to faculty and have further discussions. It is important to have the community understand what we are doing—because you are on the front lines. Again, it is those researchers on the front lines that are unsure what the rules of the road are, and my response is to get your input, listen, and have a dialogue. And it is equally important to get input from the community.

Future of Research

So where are we today in all of this? Well the first thing, as I mentioned, is that several fantastic meetings have occurred over roughly the past two years, convened by the Federal Bureau of Investigation, the National Academies, by various societies, and by Congress in the form of hearings. A lot of this has focused on research security, which is the top-line issue. But, as I mentioned, other challenges exist,

and that is where JCORE comes into play—looking even more broadly at the research environment while keeping sight of research security as well. In the last six months, the JCORE subcommittees have all met at least ten times, and we have been driving this agenda aggressively. Now is a natural time to pause and bring everybody together from all the different sectors—what we are doing today—to have a conversation about where we are, and also share our initial thoughts with regard to actions going forward.

As I said, the subcommittees have met roughly ten times—we’re engaging all sectors—and the interest internationally is extremely strong. We’ve had conversations with science ministers from a variety of countries: Australia, Canada, the U.K., and Germany. They’re all quite interested in what the U.S. is doing with JCORE. Like the U.S., they are thinking in terms of research security, but then we say, “you know what JCORE is doing, it’s looking more broadly at the research environment.” And they are really intrigued and they say they would like to work with us. So we have begun to have joint conversations. What is wonderful here is that nations which share our values, country-to-country, and researchers who also share our values, want to figure this out together. It is becoming a wonderfully international engagement, which I think is really important because it shows that *values matter*. We can promote our American values and show a great leadership role in the research environment by leading in this manner.

As I said earlier, this meeting is different for two principal reasons. First, we’re not just talking about research security. We are talking about all four of the JCORE themes and we’re doing it in an integrated manner. We will be sharing with you some of our initial thoughts that we have on policy going forward. Now what’s interesting is that some of the issues do have policy structures to them and policy aspects—recommendations for Federal agencies. That’s certainly part of it. However, another thing is best practices for research organizations and universities. But there’s another piece that we don’t want to overlook, and that’s culture—things like sexual harassment. We need to address the issue of environment and culture change. And this is the where institutional leadership is extremely important. So this is really important; it’s not all policy, it’s not all practice, there are a lot of cultural dimensions to bear in mind as well.

At the end of the day, the research environment must reflect and promote the values of America and the values of research. JCORE is about making that happen. We also have a unique opportunity here to message the importance of these values to current researchers and to future generations. We don’t do that nearly enough and we need to. Yes, we have challenges, but in fact these are opportunities in my view. Opportunities to make America’s research environment a beacon for other activities, organizations, and yes, even nations. I have no doubt we will succeed!

So with that, I invite my colleagues up to join me for a panel discussion. We have Deb Frinke from the National Security Agency, Marcia Bernicat from the Department of State, and Larry Tabak from the National Institutes of Health. We will start with a Q&A session, and then will dive a little bit more deeply into some of these topics before we move to the breakout discussions.