11:07:29 >> Thank you. Good morning, everyone. It's wonderful to see people here. I want to submit a particular welcome to the panelists and the Stanford people here today. Rapid technologies, particularly artificial intelligence, have presented new legal challenges and new opportunities. Stanford Law School has taken several initiatives to better understand AI and the law. The Stanford AI law society and sales raises student awareness of issues with artificial intelligence learning. We also offered a course known as director.

11:09:21 >> Thank you, everyone. I welcome you to the first field hearing of the National Artificial Intelligence Advisory Committee, NAIAC. The Stanford Institute for Human Center Artificial Intelligence and the Stanford Law School. I hope you remember all the acronyms. We're going to quiz you. Together with Stanford Law School, we're thrilled to bring people in this room with academia, government and civil society to discuss some of the most pressing issues we face in advancing AI. This is exactly what we work here at Stanford -- what our work here at Stanford High focuses on. In 2019, High was founded with the mission to advance AI research, education, policy and practice to better the human condition. At HI we have three areas of focus. First AI's technology should be spotted with human intelligence and we aim to augment human capabilities and well-being and enhance human well-being instead of replacing humans. And we aim to design and apply AI with the consideration for its impact on people in society. Working in partnership with those who make an influence policy is central to our mission here at HI. Meaningful policy impact is a top priority for us as we work to responsibly guide the future of AI. Today's panel will get at the heart of these important issues. Some of them include building trustworthiness into AI, U.S. leadership in AI leadership and development, growing opportunity for the U.S. work force in the age of AI, ensuring U.S. government coordination on AI to lead and compete globally and expanding international collaboration. The NAIAC stands to be an invaluable resource for the U.S. government if leveraged to its fullest potential. AI is advancing at lightning this talent. The U.S. bill of rights just released from
the science of technology policy is a symbolic step in the right direction. However, it's only symbolic. We need to design policy to ensure AI is developed from a human center perspective. The U.S. needs to pick meaningful action today to set the foundation for sustained AI innovation in the future. In this vein, HI has tried to spur federal action to establish a resource, task force, which I'm a member of, which seeks to provide computer and data resources to researchers, educators and students.

Additionally we have researched the concept of a global multilateral institute in the form of a partnership in AI. These are just some of the contributions Stanford HI has set in government policy. The NAIAC will play a pivotal role in shaping the future of AI advancement in the U.S. Its role in advising the secretary of commerce and the president of the United States will ensure leadership at the highest levels of the U.S. government are appropriately informed to make critical decisions on regulating and policies related to AI.

We hope today's panel will be the first of many coming meetings and conversations on how to enforce U.S. leadership in AI. With that, please join me to welcome Laurie Locascio, Director of national standards and technology.

As the federal laboratory with a mission entirely focused on driving U.S. innovation and supporting economic security, NIST plays a central role in advancing critical and emerging technical areas, whether it's AI or computing or advanced communications. As we all know, AI technology is leading to a wide range of innovations which could benefit all aspects of our economy from health care to transportation and cybersecurity. And not a day goes by that we don't hear about extraordinary achievements related to AI as well as concerns. So this role is to help build trust in AI as we help build trust in other information technology. It’s important to advance design and development of rights-affirming technologies, technologies that operationalize our values of openness, protection of democracy and human rights. This work is critical in the AI space to ensure public trust of rapidly evolving technologies.

So cultivating trust by understanding and managing the risks of AI systems will help preserve civil rights and liberties and enhance safety while creating opportunities for innovation and realizing the full potential of this exciting technology. This committee will help the federal government to develop and implement trustworthy AI that reinforces our values and respects human rights. Your work will also complement NIST work and NIST engagement in the community for advancing and trusting AI and development of use of AI systems more broadly.

So in closing, let me thank you all again for your thoughtful service to this committee. It is very deeply appreciated, and with that I'd like to turn the floor over to the chair, Miriam Vogel and James Manyika. Thank you.

Can you hear me okay? Terrific. I would like to start off with sincere thanks
and gratitude to our esteemed members who have worked so hard and are here today in presence and virtually, and on behalf of both myself and our vice chair, James Manyika, who is with us virtually today, thank you to everyone supporting our committee. We are here today being hosted at the birthplace of so much of the AI work. We thank Dr. Fifa for this path to follow in this important work. We're so pleased to be in the law school where Dina Martinez has brought her expertise and background advancing human rights, which has to be a critical part of all of our work supporting and advancing AI.

We're so honored to be joined by Dr. Locascio which really is playing one of the central roles and ensuring our country can lead by AI, and it is being found a responsible and trustworthy AI. She has the honor of leading the NIST framework. Thank you for giving us this special space to launch our first public hearing as well as the work that everyone is doing behind the scenes to make sure we are successful in achieving our mission.

What is our mission? As many of you know, we were established by congressional mandate to advise the president and the White House on AI policy. No small task there. What have we been doing since our launch in May? We've been aligning and educating ourselves exactly the way we should be, rather than jumping in with recommendations and action items. We've been aligning what is already happening. We've been getting government briefings and non-government briefings, hearing what is on the way that we can support, what we can help bring to the finish line, where are gaps we can help fill in. We are all aligned, fortunately, on the mission that our country is known, for its trust in what we bring to other countries, to people's homes, to people's workplace, and we are, as a committee, actually grounded in our commitment to ensuring that we help support policies and action items that further establish, deeply embed our ability to have AI that is trustworthy and responsible.

We do this by dividing our efforts into five main areas of focus. I want to clarify today you won't be hearing about our work or interest in AI in law enforcement. That is not because it is not a high priority or concern for us, it most certainly is, so much so that a separate subcommittee is being formed to purely focus on that issue. In the meantime, we've divided up our work into five main areas, both to comply with our statutory obligations as well as our interest and vision as how responsible AI needs to be divided up. We're looking through the lens of research and development collaboration and support, international collaboration with our allies, our deep commitment to our work force, and our support for government to ensure that they have the policies and resources necessary to themselves use and support trustworthy AI. And all of these lines of effort are supported by our continued deep and shared mission to trustworthy AI.

You'll hear perspectives on this today. Our mission is to provide an annual report which you'll see in the spring with recommendations and thoughts about what we've been working on. But in the meantime, what we want to help support is the national AI conversation. We want to make sure that a broader cross-section of our country understands what AI is, how it can help them, and how we can make sure it's not hurting them, how we can make sure that AI is the inclusive tool that we all want it to be.

So as we dive into the conversations today, know that this is one piece of a
larger conversation we intend to host. These are initial thoughts as to where we would like to go as a committee, and we're bringing to you a really thoughtful, cultivated group of expert speakers that the chairs and different working group members have put together to share our insights and interests into how these different important issue areas can and should play out, concerns we need to be mindful of and priorities we need to focus on.

26 11:23:59 A little bit of housekeeping. You can find today's agenda on ai.gov/NAIAC. While the comment period to pose questions and comments closed recently, we also welcome those who are interested to share your comments and feedback today and going forward at the email NAIACNIST.gov. Please send your thoughts and feedback to us. You can find out more information about today's meeting at the federal interest notice which is published on ai.gov/NAIAC. In closing, I just want to thank everyone listening in for your support of this committee, and I want to thank all the members for the important work they're doing to make sure we're supporting our mandate and our country's interest in ensuring that communities benefit, are not harmed and thrive based on the technologies that we're supporting. Thank you, all.

27 11:25:37 [Indiscernible].

28 11:27:20 Just for awareness, two of our panelists have joined. One is having trouble accessing the video. Hopefully she will be able to join soon. I'm going to have some comments to kick it off, and then I'll give it to the leadership group, and one question is recommendations. Any questions before we kick off?

29 11:27:56 All right. So I know I saw Kadija Ferryman on, and I got an e-mail from Michele Gilman.

30 11:28:28 Thank you very much for attending. I'm very much looking forward to our conversation. What I'm going to do is I'm going to start off with a couple questions and then we'll turn to members of the working group to ask additional questions. We have an hour to be here together. Just for awareness, Renee Cummings is in Amsterdam and is having trouble accessing the link, so they're working with her. I hope she'll join us soon but I'm going to go ahead and kick off now. To introduce myself, I'm Victoria Espanel. I'm going to introduce our esteemed panel. Thank you very much for being with us today. We're very excited to have Renee Cummings who I think will be joining us. She is the first activist at the school of law and she is Underrepresented communities. I'm going to open the panel and ask each of you what you see as the greatest challenge in using artificial intelligence in an intelligent manner. I'll go in alphabetical order, but feel free to jump in when you want to. Kadija, I'll start with you.

31 11:30:58 >> Thank you very much. Thank you to the panel. I'm delighted to be here and contribute. My work focuses on looking at the ethical social and policy implications of digital health technologies, including artificial how they can make health care worse for some. So there are already examples of algorithmic health, and for me the priority is to come up with an integrated system of review and monitoring and surveillance of these tools. I have proposed a health equity review for AI tools that are used in health, and this is a multi-step process that includes capacity building and really education for AI tool developers around what health equities are in their domain of interest, a review of data...
that's used to train these AI tools, a review for health equity relevant biases and context, sort of social context that get imprinted in data, a review of model choices, AI calibration methods with an eye to health equity. For example, if there is a choice between more accuracy and higher error rates for an AI tool, how might that decision have different effects for different kinds of marginalized groups. And then finally the final step in this health equity process would be a review of these tools as they're implemented, as they're being used in systems to see if there are disparate impacts.

32 11:33:17 This kind of review, even though it was posed for tools the federal government would regulate, I think this kind of review and these steps from the capacity building from the biased views of tools in SITU would also be used in tools the government itself uses. We should also know the government itself is also a provider of health care through our veterans administration, so this kind of health equity review could be helpful there as well.

33 11:33:49 >> Thank you very much. Let me just pause. I want to welcome
34 11:34:42 >> Thank you. It's great to be here and I'm eager to hear your thoughts and questions. I developed a law clinic as a law professor, and I'm supervising students as they represent low-income Baltimoreans in a wide range of civil litigation matters. We're seeing at the clinic, really at the ground level, the ways that systems are adversely impacting people experiencing poverty. While all Americans are impacted by new and emerging data-centric technologies positively and negatively, as this committee is exploring, marginalized communities bear the brunt of its harms, and this is because these automated systems operate as gatekeepers, housing, health care as well as public interest or governmental assistance which is the focus of my remarks here today. I thought it would be helpful to tell you about two emblematic cases that my committee has worked on that has importance on fairness, responsibility and transparency in the technological systems that remediate relationships between the government and its citizens.

35 11:36:04 First let me tell you about Mrs. Smith, which is not her real name, but she was a disabled client of ours that got notice that the State would be cutting her home health care hours which were funded through the Medicaid program. Home health care is so important to help seniors remain safely in their homes. The reduction in hours didn't make any sense to us because her condition was deteriorating. She wasn't getting better. And it wasn't until we were at a legal hearing before an administrative law judge that we found due process. Without her lawyers, the hearing was meaningful. We couldn't calculate the algorithm. It was and continues to be a black box.

36 11:37:23 Let me tell you another case about Mr. Jones, again, not his real name. He was laid off from his job, as were millions during the pandemic, and he applied for benefits. After receiving them for several weeks, his benefits ceased for no reason. When he went to inquire, he was asked to prove his identity which meant uploading several documents. But he couldn't upload them because the system shut him out due to other people committing fraud. He could not reach a human being at the state agency to help him work through this issue. His struggles with this automated platform demonstrates another challenge which interface with the public. Too often they are created with a privileged user in mind. So the designers of my state's UI platform assumed that all claimants have a desktop or laptop,
that they have viable Internet access, that they’re literate, that they can read and understand complicated user manuals or watch video tutorials for many hours on YouTube.

But this is not the reality for non-English speakers, people who are not literate and people who are not digitally literate. Moreover, about a third of income people like our client Mr. Jones accessed computer-based services solely through a Smartphone. However, if you access it through a Smartphone, you don't get applicability or access to what's on the website. You need a desktop for that. So people are missing things posted to their accounts asking them to take a variety of steps to support their claims, and in turn their applications remain in indefinite limbo while they struggle to meet their basic needs.

These experiences that I've recounted, Mrs. Smith and Mr. Jones, are shared by millions and millions of Americans. They are not unique, unfortunately, in this respect. I have some suggestions of lessons to pull from these experiences that I'll share later in our session, but I do want to emphasize it's really important that when these automated systems are adopted and designed, government agencies need to recognize a range of human experiences with technology. We simply cannot assume that your level of tech literacy or your level of broadband access apply to all users of these tools, which have the potential to be so helpful, but right now are not being provided with the access and equity that's required.

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Thank you. We'll definitely be coming back to you for suggestions or recommendations. Professor Cummings?

Thank you very much, and of course, thank you for including me in this conversation. I would say when we're talking about trust, it goes back to the data, and data is something that we have to have a very intimate understanding of. If we are to trust the kinds of automated decision-making systems that are being deployed, it means we have to understand the data being used in these technological systems, and particularly artificial intelligence. One of the critical aspects about data we've been using in the U.S. would be historical data. And so much of that data, we have realized, carries the biases and consideration and systemic challenges that undermine the system. If we're designing and developing and deploying, we really have to think about the data. One of the things I continue to see, of course, with a data activist and data emphasis and someone teaching AI science, is we not only need to bring an adjusted approach to the ways we bring data, which is due diligence process into that sphere, but we've got to understand the history of trauma attached to so much of our data sets. And this is one of the reasons I continue to speak about bringing a trauma-informed approach to the ways in which we are doing data, the ways in which we are using data to build these data-centric systems or to build these algorithmic systems. And that memory is a history of trauma and pain and sometimes inclusion and disenfranchisement. If we are speaking about health care equity or health justice, we have got to bring an informed approach to the ways we are thinking about the data we are using. We have seen it in housing, we have seen it in public benefits, we have seen it in fine ads. If we want to build trustworthy systems, these systems have got to be mature and they have got to be responsible. And if we want to bring those levels or those
recquisite levels of responsibility and maturity and integrity to those systems, then we have
got to understand the history of pain and trauma and disempowerment attached to the
data.
41 11:43:55 We are seeing that data is powerful. It has the power to make the kind of
systems we need in the future. One of the things I would like to say as a collective, no
matter which industry we are in and which algorithms we are deploying, we are building
these algorithms that are fueled by data, because what we are building as a collective is not
just a product or a system or some sort of procedure. We are building a future. We are
building a future society that is supposed to be justice-oriented and equitable and diverse
and inclusive. So if there's one thing we've got to pay attention to, it's not the end result
when we have used the data to build the algorithm and now we've deployed the algorithm
and seen the challenges. We have got to find ways to think about debiasing the data sets.
We have to think about a way to stretch the science for a way to understand that in every
data set there is a memory, and in that memory, if we are to deconstruct it, then we have
to bring a trauma-informed approach, because those are the algorithms we continue to
deploy, that continue to replicate or reproduce the kind of disparities that really undermine
legacies. That's what we don't want to do.
42 11:45:27 What are we using data for? Decision accuracy. We want to make the most
accurate decisions. And for us to do that, we've got to bring data sets that are debiased
where we understand the kind of trauma attached to it.
43 11:45:44 >> Thank you. Thank you very much. It's clear we have some significant
challenges. As we look to building that future that is justice oriented and equitable and
diverse, are there things that you are seeing that give you hope? Are there specific
examples of government use of AI in a trustworthy manner that you would point to, or are
there trustworthy advantages of how this issue is approached? I would like to ask each of
you or any of you who would like to answer that, is there anything you would point to as a
good example, a promising development, something that can be used as a model?
44 11:46:24 >> Well, I think one promising very recent development is the AI Bill of Rights
that was just released, right? It uses the term algorithm illustration, and it's important to
think about bias in algorithms, it's important to think about bias in data, but the specific
term of discrimination that was used in that AI Bill of Rights, I think, is really important
because it points to our attention to the harms, right? And it points our attention to the
parallel of what we're seeing these tools, the kinds of effects these tools are having and
discrimination that happens in society, right? So it's not just that algorithms are these tools
made from a bias and can be used in a technological solution, right, that actually these
tools, just like our society, is discriminatory, right? So that means we have to sort of dig
deeper and think more deeply about the ways that we can intervene to prevent the kinds
of discrimination that we see. Again, to say this language of discrimination, I and how we
can intervene, I think this language we saw used by the government is a really big step
forward.
45 11:48:32 The other thing I would add is there has been recent discussions around HIPAA
privacies in the data space, and things that doesn't cover when we're talking about data,
big data, and particularly what is used to treat these algorithms. There is increasing recognition that HIPAA that we have may not be sufficient to self-guard ways in which they are being used in the algorithms and to prevent some of the discrimination we see happening.

46 11:49:23 >> Thank you.

47 11:49:23 >> All right, this is a hard question for me as a lawyer, because I get involved in things when they've gone bad, when they are not working, and as a result, I really firmly believe we cannot rely on litigation to sort of clean up and remedy tech systems after they've gone awry. So what gives me hope is an increasing recognition that we need prospective tools and laws and regulations and technological solutions in place before any harms occur to impacted populations. So there is an increasing amount of lawmakers and proposed lawmaking around data privacy, around algorithmic activity, to divide and head off harms before they happen.

48 11:50:36 Some tools that researchers are studying and proposing such as algorithmic systems as they're implemented. These growing measures about putting these in place is great, because litigation absolutely is not the answer, and I'm worried too often these systems are rolled out without adequate testing, without adequate thought, without this sort of equity assessment Kadija is talking about, and as a result, people become guinea pigs in these situations. By the time you call a lawyer, it's too late, the harm has already happened.

49 11:51:29 So I really think clear legal standards informed by state of the art, technological and policy research are the path forward.

50 11:51:40 >> Thank you.

51 11:51:48 >> I would say for me, of course, the Bill of Rights because it has brought a lot of questions around diversity and inclusion and the kind of preventative approaches we need to take even from a risk management perspective. I also think what the government has done really nicely is to really drill the point home of equity when it comes to algorithms. Because so much of American competitiveness and growth and development is now going to be attached to using new and emerging technology like artificial intelligence. So I think the question of equity is being handled very nicely. I think we can have more conversation around that. I think what we need to do to advance the conversations on AI and to advance the conversations around the Bill of Rights is to attach this to that. We want to minimize the action, minimize the risk. That's what we want to do is replace the promise and dismiss the peril. So much of the conversation is still among the technical activists who are speaking. But we have to find ways to pull communities into the conversation. So the Bill of Rights that has just been released is fantastic, but I think the issue is discussing the bill, discussing the constitution, because so much of the algorithm includes the constitution because it overcomes so many of our constitutional rights. We're thinking about autonomy, we're thinking about agency. Particularly when we're thinking about democracy, we want to ensure that due process and duty of care and due diligence, all of these great things are in there.

52 11:54:07 So I love the ways in which the government is bringing that understanding that
this technology is extremely transformative, this technology has the potential to really do something amazing for country, and we need to have it done in an equitable way, which means we need everyone involved in the design, the development and whatever level you need to get involved. So I just like that conversation. I'm very happy that the Bill of Rights has finally been launched but now we need to go much further to ensure that justice-oriented and trauma-informed approach to the way in which we are thinking about data. So the Bill of Rights just needs to get the conversation moving in different directions and not so situated among the data scientists and the AI ethicists.

53 11:55:22 >> I would turn to questions and ask you to just briefly introduce yourself before asking a question. We have no scripted order. Who would like to go first? Thank you.

54 11:55:36 >> Hello, Janet Haven. Thank you so much, professors, it's a pleasure to see you all here. I have many questions but I will just pick one, and I want to pick up on a couple of themes that came through all of your comments. Focusing on the AI Bill of Rights, the AI Bill of Rights talks about community rights in a way I think is new and really interesting. It states that the magnitude of the impacts of data-driven automated systems may be most visible at the community level. And the blueprint asserts that communities from neighborhoods to social networks to indigenous groups have the right to protection and redress in the same way that individuals do. So I wondered if you could talk about, each of you, about how in your area of expertise you see that connection between communication protections and trustworthiness of AI. Thank you.

55 11:56:49 >> Yes, I can direct that. In my work, much of it looks at surveillance of technical policing. Something I'm looking at is we have been designing a digital force index that gives you a digital force score that shows you how much data technology is being deployed against you in a particular community. That's one of the ways through public interest technology to engage communities in those conversations about protection. So algorithmic policing is a great way to look at protection of communities, because what we see would be many layers of discrimination and what we call polyvictimization. And that's just adding to that level of victimization. So I think surveillance, algorithm policing, geo policing and so many of the new approaches to criminal justice and law enforcement that are being deployed on communities is a critical way to understand community rights when it comes to the deployment of these algorithmic systems.

56 11:58:22 >> So when we think about AI and algorithms in health, those tools have been sort of one of the goals of using and designing algorithms for health is to get to a kind of personalized and precision medicine that's powered by big health data and protective tools like artificial intelligence. Although that has promise of delivering health care that's more effective because it's tailored to the individual, the other part of that is sort of, well, there is the individual and do we lose the community, right? So when we think about public health, traditionally public health has focused on populations and not just a health of individuals. So that's one thing to keep in mind, right, what kind of future to reference Dr. Cummings ideas of health, some of them are built on a future of medicine that's focused on individuals, and we have to think where does that leave the health of populations that we know is still currently important. And when we think about the pitfalls, those mistakes are
being made in popular groups. So we know that populations do matter even though we're moving toward this future of individualized, personalized medicine. I think it's important as we're using these tools in health, we still keep populations and communities in mind because we see that is still the scale at which we're seeing some of the real harms of algorithmic tools being black patients versus white patients. But what we see with these tools is we see other kinds of communities that are affected by these tools that we may not previously think of as a community. For example, a group of researchers at MIT found that an algorithmic tool that was used in mortality in an intensive care unit found that these tools were making mistakes more often for people who had public health insurance versus those with private insurance, right? So what we're seeing is that sometimes with these tools, there are kind of these new communities that are being affected that are sort of being formed by these tools, so we can think about a community as people who are receiving public insurance versus private insurance. The other things these tools do is they do create, through these predictive technologies, they create new categories of people because of this ability to gather different kinds of information. So we can also see new communities potentially being formed that are being affected by these tools.

So this is why I think this focus on community that we see in the AI Bill of Rights is so important, because there is an opportunity of communities that we think of, racialized communities, geographic communities that we think of when we think about community groups, right, kind of the more traditional community groups. But I think it also leaves room for these new kinds of communities that are in some ways being instantiated by these tools and gives them a platform to demand their rights as a community of individuals who have a particular genetic risk and live in a particular geographic location, right? Like that could be a community that an algorithmic tool can discriminate against, and that can be a community that through this kind of mechanism can have a basis for advocating for their rights.

Thank you.

I think the AI Bill of Rights is an important and accurate one, because at the end of the day, all is important and informational. Algorithms make decisions about all of us based on inferences drawn from group data, right, from people who supposedly shared demographic characteristics with us as individuals. So there is no way to escape the group and community-based framing of algorithmic impacts. From my perspective representing people of poverty, I see time and again the way that the same technology impacts people differently based on their own identities and positions in society, so low-income people engage with the government more than their middle class and wealthier counterparts. They come into contact more with law enforcement. They come into contact more with the child welfare or family policing systems. As I've already talked about, they are providing data to the government as a condition of receiving public benefits. So there is this community of people about whom the government has a lot of data, and given how much data sharing there is among and between government agencies, as well as with the private sector, we know we have a community that faces different sorts of privacy intrusions and higher levels of surveillance than other groups in society, and that's part of the reason why
marginalized populations are facing a discreet set of harms from data-centric technologies.

60 12:05:00 >> Thank you, David?

61 12:05:06 >> Thank you so much to all through of you. This is David Dankst from University of California. Some issues are letting people know what's being done, what systems are used. But a significant challenge, in many government purposes, we can't fully disclose what's going on, we can't disclose the algorithm or the data for security, private or other reasons. I wonder if you have thoughts or proposals about ways to build trust in these systems, particularly among communities where trust in government action is in short supply, shall we say. We think about health care, the judicial system, law enforcement. Many of these communities already have a lack of trust in government action. It's now being exacerbated by the use of AI. How can we perhaps start to remedy that, build more trustworthy systems when we can't necessarily disclose the details that people might want to see? I would be very interested in hearing your suggestions. Thank you.

62 12:06:21 >> So I would say that trust begins with honesty, and honesty is a great way to start. So people need to know what these algorithmic systems can do and what they cannot do. And, of course, people also need to know when an algorithmic decision system is actually making a decision about them as well. I think the challenge at the moment is we've not had those conversations, the future of illiteracy conversation, or just the understanding that AI is the language we are using as we continue to step more and more into the future. And we need to have some sort of literacy. Because if we're not communicating and we're not understanding each other, then we're not going to have that trust. And you're right. When we think about smart cities or deployment because of that relationship between the city and its enforcement. Trust begins with the kind of conversations that need to be happening. Now we're designing, developing and deploying, and then when we get a crisis, we take it back to the community for stakeholder engagement, for that understanding. But we've got to go, I guess, top down, down up at the same time.

63 12:07:48 That's the only way I see it. Consent is fine, but even before the consent, we need to understand what are the dynamics at play and what sort of power do I have in the process?

64 12:08:04 >> So I'm so happy that you brought up this point about disclosure. Because disclosure and transparency can sometimes be offered as a way to get to trust or as a remedy or a fix. But disclosure and transparency do not guarantee trust. There have been studies in the U.K., for example, of different kinds of audit regimes that show when governments are more transparent, the public can be less trusting, right, because it can instill a sense of, you're showing us all of this, but what are you trying to hide, actually, right? When we think about trust, in fact, even if BE think about trust in terms of interpersonal trust, you don't trust someone because they tell you everything. It's actually somewhat the opposite, because you trust them because you have an expectation that even though you're not going to know everything that they are going to act in a trustworthy manner. The trust is formed when you are secure that when you don't know what
someone is going to be doing that their actions will not harm you or benefit you or something like that, right? So, actually, transparency is not a guarantee of trust. It's actually when you don't know what's happening and you have certain expectations around those actions.

65 12:09:28 So I would say to the government example of is there no -- because we can't have disclosure, would that be a big barrier to trust? I would say absolutely not, because it's about the expectations that one will act in one's favor will not harm them even if you don’t know every single action that that institution is taking.

66 12:09:53 To illustrate a concrete example of this, it's not from the government, but there was a recent case of Google that partnered with a set of health care institutions across the country, Ascension Health, and they partnered with them to access millions of health records, right? Google as a company did not break any laws through this arrangement, but when the public found out about it, they felt like this was some kind of breach of trust, right? In this case I think we can understand it in the sense of the expectations. There wasn't a clear sense of expectations communicated to the public, so the public didn't expect that a large company that has access to data about individuals in other spheres could also get access to very sensitive health information. That wasn't something that the health care institution sort of communicated -- set that expectation or communicated to the public that this is something, this is the kind of activity that could happen. So I think that a key way to facilitate trust would be to set up those expectations, set upsets of boundaries of limits around how data can be used, around how algorithms can be developed, around the type of entities government institutions will enter into relationships with, what those relationships will look like without having to disclose every single action or every single step that the agencies will take or even in the case of kind of thinking about algorithmic transparency, there have been calls to say we should make every single algorithm transparent so we can understand it. If you set limitations and limits around what an algorithm can and cannot do, the kind of data an algorithm should be able to access, then you don't need to have a completely transparent algorithm and understand the steps of it.

67 12:12:02 So I think setting boundaries and limitations is key to gaining trust with limited disclosure.

68 12:12:11 >> Thank you.

69 12:12:12 >> Hi. I would definitely agree with much of that. When I think about my clients and their needs, you could post the source code to an algorithm on the Internet and it wouldn't do them a bit of good. That would be quite transparent. But transparency on its own is not adequate. What I would like to see is, you know, the technology that works for the people, for the folks that engage with it and doesn't serve as a barrier to accessing governmental services and support. One way we can better ensure that these systems actually work and deliver on their purposes in an equitable way is to engage stakeholders more early in the adoption and design process to get their feedback, to run tests on different platforms and to make sure it's accessible to the people who have to engage with that. You know, this idea of public participation, it's not new, it's not radical. It's a legal
requirement when it comes to any planning that impacts the environment. It's a legal
requirement in a lot of anti-poverty programs. Land use usually has public participation
requirements. And while they can be challenging to implement meaningfully to instigate
trust, we do have lessons from other areas of American life that can help guide us into
bringing stakeholders to the table in a really meaningful way.

70 12:13:49 At the same time, you know, while technology can be fantastic, it can crunch
data at very high speed rates and be quite efficient, there are some things that computers
aren't good at. You know, they aren't good at assessing credibility or exercising judgment. I
think we also have to recognize we still need human beings involved in these systems. So
for some of my clients, there simply has to be a human being and an agency that they can
engage in and interact with because they don't have access to the Internet. For all my
clients, we still need to make sure there is some level of human review of the decisions that
automated decision-making systems are rendering.

71 12:14:38 So I think for citizens to know that there are still human beings overlooking,
designing and monitoring these systems would go a long way to building trust. It's very
frustrating to engage with a platform, find it's not working and be shut off from
government services. As efficient and high speed as computers can be, they simply cannot
solve all problems. So we still need those humans in the loop.

72 12:15:17 >> We have ten minutes left in our panel, so I'm going to ask Nadrina and then
go to Dan.

73 12:15:41 >> Thank you. I appreciate the questions you're asking today. The focus on one
that Professor Cummings spoke deeply about in terms of how data has memory and it's
really critical for us to pay attention to the bias in data. I would like your perspective in
terms of creation of new data sets which are compliant and which can be used for
assessments and independent auditing. So think about a global data trust, if you will, which
is very comment specific, and we are collecting data specifically for assessments and
auditing. I appreciate your perspective. I think debiassing is one aspect, but the other
aspect is creation off new kinds of data sets which can be used for these informed
assessments. I would love to hear your thoughts on that.

74 12:16:43 >> Thank you for that question, and of course it's an excellent suggestion.
Because, again, we've been building much of our algorithmic systems on historical data,
and what we've been doing is using new technology to replicate old biases and past hurts
and trauma. If it is we can invest in gathering or collecting that kind of new data globally,
that would definitely be a fantastic step in the right direction. How long would that take is
the challenge? Who would have access to that is also the challenge. But we know at the
moment the easiest data to access would be that historical data. So we definitely need a
combination of the technical tools to debias, but we also need a combination of the kind of
thinking and consciousness that comes with an understanding of those histories of trauma
that are connected to the data set or understanding the kinds of ways our communities
have been used historically as experiments to get data, and understanding that those are
the difficulties that we continue to see replicating.

75 12:17:58 So while we are waiting for that global data set to be created, which is fantastic
if it could be done and the kinds of resources could be invested in doing that. We know the default or the fallback is always that historical data, and therein lies the challenge. That is why it is so critical, particularly in criminal justice and more so in health care as well, and in finance and education and public benefits, just everywhere, to understand what we are building with these algorithmic systems. For me it's about access, it's about opportunity, and it's about being able, as an American, as someone living in this country to build your own legacy, one of prosperity, resilience, sustainability. You've got to be able to do that without an algorithm undermining that opportunity or without an algorithm closing a particular day before you even put your hand on the door to open the door.

For me it's about legacies and if we can do that to bring it into that space, that is fantastic. In the meantime, we know we are working with that historical data and we need a new kind of consciousness and a new and intimate understanding of the data sets we have been using.

>> Thank you. Dan?

Thank you so much. A number of you spoke very powerfully about the role of context and the importance, for instance, Professor Ferryman, you put it out to the review. You also spoke to the Bill of Rights and law is a potential solution here. I guess I'm curious to ask you about next steps. One of the striking things to an ordinary reader of the blueprint for the AI Bill of Rights is that it's meant as a guidance document. And there is this tension, particularly when we're talking about taking context into account, in terms of the way much of the anti-discrimination law has moved. That's a significant intention from what we have been learning from the machine learning community. So much of the law has taken an approach to blindness, the opportunity that prohibits certain lenders from collecting information about race and ethnicity. And what we've been learning continuously from some of the AI searches is it's incredibly difficult to have fairness without awareness in the kind of context several of you have spoken about.

I would love to hear just what your thoughts are on the next steps of how to take something like the non-discrimination principle and the Bill of Rights and wrestle with that tension of where existing law is.

Great. Thank you for that question. Yes, I think just to echo what Professor Cummings said earlier, the great thing about the Bill of Rights is that it starts a conversation, so it's the Bill of Rights but it isn't enforceable, right? In terms of sort of thinking about next steps, some of the concepts that are in the Bill of Rights as Janet haven mentioned, this emphasis on community rights, thinking about algorithmic rights is considered, used R using the bias discrimination versus bias, I think all of these things are important things that document does, but it is kind of beginning and starting the conversation, sort of setting the framework. So in terms of next steps, when thinking about regulation, so there are a number of things, right? There is the GDPR. In Europe we don't have in the U.S. a similar kind of comprehensive privacy law, so perhaps now with the AI Bill of Rights and raising these issues of thinking about algorithmic rights as a civil rights issue, perhaps that can start conversation around and building a more national privacy legislation. In the field I specialize in looking at federal regulation of AI, we see that the FDA,
who is in charge of regulating AI Software as a medical device, they recently issued some updated guidance related to that was sort of catalyzed by differences and some of the pitfalls of these algorithms as it was being used in health care.

81 12:23:12 The FDA, as of 2019, has issued a number of updates to its policy guidance and it's a great example of an organization saying, Hey, this is really hard. We're not sure how to regulate it, we're not sure how to identify all the potential issues, so we are going to issue some guidelines, we're going to get some public feedback and then we're going to update our guidelines again, right, and sort of be on this process of developing policy guidance that is responsive but also as Professor Gilman was saying, also proactive. For example, one of the things the FDA is doing is lately having an attention to health equity as part of its guidance in this area, as well as thinking about how to bring in community, how to bring in patients and patient advocates into this process of developing policy for this area.

82 12:24:13 And then just to that question of the tension between kind of in the law, being blind, having blindness toward certain groups and then machine learning and AI and its ability to find all these different categories and data, I think that's exactly it, right? What we're seeing from AI is that even when you don't include race as a variable in your model, for example, because of all the things that Professor Cummings was talking about, because we can think about data as artifacts of the present, right, that they are stamped with history and current conditions that even if you leave out something like race in your model, race is going to come through in your model, right? Your model could be race blind or not have race in there but still could discriminate based on race. So I think that the machine learning -- what we're seeing in the machine learning community as they are trying to get to fairness, as they are trying to design more equitable, more justice-oriented algorithms, they're seeing some of these initial solutions, like removing race, like removing gender, are not comprehensive. Because these categories and the social processes of discrimination that are -- that we see in these categories are there even when those particular variables are not.

83 12:25:41 >> Thank you so much. I just received a notice that our time has unfortunately come to an end. I think we could continue this conversation for much longer. That's actually kind of the point I want to end on. I want to thank you so much for joining us here virtually at Stanford AI institute quite literally around the world, so thank you so much for that. This has been extremely entrusting and insightful. I would like to extend the invitation if there are follow-up points and comments to send to the building of trustworthiness institute, we would be delighted. But this intervention this morning has been extremely valuable.

84 12:26:31 So thank you so much to all of you. Thank you.
85 12:26:34 >> And thank you to members of my working group.
86 12:26:36 >> Thank you for the privilege of your time. Take care. Bye bye.
87 12:26:39 >> Thank you, all. Bye bye.
88 12:26:41 >> Thank you, all.
89 12:27:01 >> We will now be taking a 10-minute break.
Welcome back, everyone. We are now going to continue with Panel 2, advancing U.S. leadership in AI research and development. We're glad to have people here to talk about advancing U.S. leadership in AI. We will start with Catherine Aiken.

The mission of the leadership working group is really to ensure leadership in AI development and provide a long-term vision for the U.S. government with a focus on co-innovation and that's co-habitable with other scientific fields. The purpose is to provide information to the president and the U.S. government when AI matters in competitiveness and leadership of AI, including the scope and scale of U.S. investments and AI research and development in a national context as well, and also looking at matters related to the state of science around AI, including progress toward artificial general intelligence.

So the information we are gathering through these and ongoing briefings and hearings come from really understanding how U.S. investments in AI are currently characterized and all the way to understanding how might the U.S. government ensure that AIRND is much more accessible to a broad cross-section of society.

This open panel being held today is just another step towards gathering information across the cross-section of diverse stakeholders in the AI/RND ecosystem. At this point I would like to hand the mic over to my co-chair, Ashley Lawrence, to introduce the statistics of this panel.

For the purpose of setting the tone, I wanted to return to a quote I like from the recent report on AI, and it talks about the aim of the U.S. government to increase prosperity, safety, security and quality of life for the American people for decades to come. And so actually I'd like to return to that statement just to remind us what we're optimizing for. As we heard earlier, against the background of this mission, the pace of AI and all of its subfields and research is moving at lightning speed. Even those of us very familiar with the technology are starting to work harder just to keep up with the Frontiers. Understanding those frontiers is understanding those. Percy is an assistant professor here in computer science and statistics and a director for research and foundation models. So understanding the frontiers. Understanding how we measure Congress. How do we think about this as they become generally adequate across a wide range of tasks, and to provide a perspective on measurements and assessment. We have Catherine Aiken joining us today who is the director of data science at the center for security and emerging technology at Georgetown University. Of course with the theme we just heard, we really need to understand the socioeconomic impacts of research and how we come across disciplines not only to understand how to mitigate risk, which is also very important, but how we combat the impact to help us with the mission. We also have Deirdre Mulligan today, professor of school of MFGS, and co-director of algorithmic fairness and Opacity group at University of Berkeley.

So Percy, why don't we start with you.

Sure. Thank you, Ashley, and I'm very happy to be here. I want to make three points. The first is Ashley's comments about capabilities. I think it's hard to kind of
overstate the pace of progress. It's utterly insane and it's disrupting all sectors of society. Just in the last two years, we had a number of breakthroughs to stable diffusion that can generate images, and story up outcry among artists that can generate fluent text or code. We're moving into an AI world where general content is becoming the Norm and it's increasing it indistinguishable from other forms. There are these huge machine learning models trained on tons and tons of raw data, and they learned the structure of the world and can be adapted to a wide range of downstream tasks. This is really kind of a paradigm shift we're seeing in AI.

While there are a lot of positives that can come out, increasing the productivity, enabling new science and so on, there is certainly a lot of negative potential, negative impacts such as disinformation and misuse. So this is kind of the world that we are living in, and I think one of the things that is important to remember is how kind of fast -- I can't stress this enough, how fast the progress is.

The second point I want to make is that the situation is a gap between academia and industry. Research and development of AI has really become industrialized over the last few years. These foundation models have increased in size by three orders of magnitude in the last two years. They cost millions of dollars to train, and they're moving kind of into this area where we think kind of high-energy particle accelerators. And this premise is naturally dominated by industry which is well resourced, and it's commercially very lucrative. So all the incentives are kind of aligned towards leveraging these models for different commercial applications.

As a result, a gulf between academia and industry is widening. This is a problem. Academia is where many of the fundamental advances in the science of AI came from, and furthermore, academia is also, while uniquely poised, to discover and shape the development of AI for the public good since it's not developed on commercial incentives. I think one thing that's really important that's missing is the necessary infrastructure so that academia while resources and organizations can kind of participate to efforts like the national AI research resource could help here. But I think we need many more efforts to enable kind of a broader set of people to be able to work with and develop and inspect these models.

The third I want to point out is concerns of transparency and open science. As I mentioned, these models are dominated by well-resourced tech companies, and they're often very opaque. Both are at the scientific level that it's fair to say no one really understands what is happening in these models. But also at the sort of user level where these models are being deployed in the world, and there is sort of lack of transparency and accountability to what goes into this data and what biases and harm could result.

I think a kind of closed ecosystem is not a great place to be, because it's kind of accountability becomes lost, and I think science suffers from not having the kind of full transparency to be able to work as a community to advance for the public good.

So I'm sure we'll get more into this discussion later, but I just want to end there recapping these capabilities are crazy as researchers are constantly surprised by the progress which happens basically every three months. It's very hard to predict the future
here, which makes planning difficult.

Second is the resource gap, and I think we really need to kind of invest in national infrastructure to close these gaps. We need kind of a collaborator for AI in a sense.

And third, transparency. We are slipping into a regime where things are becoming more closed off, and I think we need to fight to keep things open so that we can maintain trust.

>> Thank you, Percy. I appreciate you sharing your statement with us. Now I would like to go to Catherine Aiken for her statement.

>> Thank you, members of the committee, for holding this hearing and inviting me to speak on this topic. In my role day to day it consists of analyzing the trove of information we have at our fingertips. To know how we are doing in AI or any other field or technology, we measure things to determine where we stand and what resources should be allocated. But measurement also matters, because what we count comes to define the things that matter to us. Reliance on accepted measures can skew or limit our understanding of those very same things. For example, when assessing progress in AI we mention papers published and citations, benchmarks for certain tasks, investment in AI companies. These are useful but they have come to define AI projects when they are just steps in the path. What we really care about when we say progress in AI is our ability to accelerate AI research and its place in national security to create value for people and to benefit society. Measuring AI advancements in the broader sense requires expanding what we measure, to convert research into economic, social and security benefits.

To achieve this, I think we need to better understand the current AI landscape and measure both research progress and what happens after research publication. So to better understand the current AI/RND landscape, we can focus on two things. One is standardization and what constitutes AI across agencies, research teams, companies. The lack of a standard here limits our ability to track our investments and our use cases. The other is making information accessible so we can assess our investments. We lack comprehensive data here. Government agencies should provide information on grants awarded via an AI/RND dashboard, and more universities should share information on what is being shared. Gaps limit our ability to map the AI/RND landscape and how our assessments align with our stated goals. This is a critical step. We need to walk before we can run and we need to measure statistics before we can analyze our ability in AI.

We simply need to focus on TWRO things. First, bolstering measures in analysis, and second, identifying analysis after research. We produce impactful research and we are home to AI companies that track the most investments. We are reassuring estimates based on certain measures but we need to invest in the data, infrastructure and AI capabilities needed to monitor these trends and make the information available in Realtime. The publications and funding accounts, we can look at a host of issues. We can see how they are used in activity in Gethub. We can measure implementation of best practices as the number of frameworks used and evaluations undertaken. We can measure work force trends as a number of AI certifications, degree programs, skills development pathways and AI job postings and career trajectories. We can measure the kinds of bodies
that decide how, if and when AI is being used. We can measure how the public is responding and adapting to AI that's currently in use.

111 12:51:40 Measuring AI progress in this broader sense will require being open to qualitative data collection to methods that analyze human behavior, gathering information from a wide range of stakeholders on a continual basis. But to really lead an AI/RND, we must identify progress as a dedicated commitment to stated goals and assess our performance at each step. From the research needed to push the boundaries in research to the structures that ensure people are safe and accounted for when AI is deployed, then we will be measuring the kind of progress that finishes our leadership in AI.

112 12:52:24 Thank you, and with that, I look forward to further discussion and questions.

113 12:52:29 >> Thank you, Catherine. Deirdre, over to you.

114 12:52:33 >> Thank you so much for having me first. We're at a critical juncture, right? U.S. leadership and artificial intelligence clearly requires not only support for technical AI research and development but deep attention to the social, political and ethical futures we're designing and the broader range of research necessary to guide them. While measuring technical advances may offer a measured hand of effectiveness of the USAID partner portfolio, I believe we all realize it's a less meaningful measure. The more meaningful measure of the effective of our USAID portfolio would assess whether technical instruments are advancing. As pointed out, Democratic values and institutions, human rights. Today the quantification, prediction and automation spread by AI and other technical developments pose, I would suggest, as many challenges as opportunities to society. We need to resist the idea that tech alone can solve our social ills, can bring about a just society or even a host to which AI contributes. Tech itself is great but it's insufficient to cement U.S. leadership or to lead the U.S. that aligns with our social commitments. And with other countries it requires coupling and interdisciplinary fields. It introduces challenges that arise as we introduce ways of not just work but knowledge making decisions and acting through and with AI. The value of qualitative design research, I think, is understood in a narrow way in relation to product and service design, I think engineers agree that having someone with a stronger science skill set to interact with users, gather feedback, for example, significantly improves downstream development efforts. However, that's where the collaborations often end, the quote, unquote, implications for design. What I would suggest is the research collaborations we require today to understand how best to monitor human work flows and understand not just what they do, but how we respond to them, how they change behaviors, how they change institutions, how they change outcomes over time, and yes, to regulate our laws to ensure that we have deep and long-lasting commitment to remain vital and protected.

115 12:56:30 So social science research that is purely critical of technology, I think, also plays a role here, right? The stuff that makes no recommendations for redesign. It might perhaps call for regulatory intervention or even refusal of some applications of AI in our current environment. Those, too, contribute to our AI competitiveness, albeit in different ways. That research alerts us to blind spots, to just alternative futures and perhaps extends to those who deserve to tackle.
We need research funding that builds and supports researchers, research design experts, technical researchers and individuals who study organizations in particular domains. We need to center domain-specific context. When we think about trust, we think about values, those are contextually specific. They don't cross domains. And we need to move away from an environment where we're centering the tools exclusively to thinking about how those tools are in service of the goals we hope to achieve in different contexts. These are not just technical fixes and they represent our systems of government and economic situations.

We need public goods, social values and addressing systemic risks. The AI Bill of Rights, which has been mentioned this morning, sets out within domains and become somewhat retractible when they cross them. They create venues and tools to support the exchange of information and to create a shared understanding of what it is we're actually trying to achieve. They are essential to interdisciplinary work, and we need more efforts to build them and to create this infrastructure. And they're also essential to the sort of public participation that many on the first panel were talking about as essential.

Finally, those boundary objects, that infrastructuring needs real sustained interdisciplinary community, and that requires investments that support workshops, these investments that have to bring together balanced cohorts, not six engineers and one social scientist. We need more integrated, Disciplinary collaboration.

Thank you so much.

Deirdre, Percy, Catherine, really appreciate the insightful comments.

We're going to move into questions and discussions, and we actually do have a few prepared, so we'll sort of move through a couple prepared questions and then invite some more open-ended discussion. With that, Jack, I'll throw it to you.

Thanks very much, Ashley. So this question is kind of a chance for each of you to list out SHOMG list items, things you would like to be funded more than are currently funded and invested in and sort of enlighten us with what you've given in each of our statements. As we think about U.S. government AI/RND funding, all the things related to assessment experimentation or enabling infrastructure, what is currently underfunded in your view and what could be funded that would be helpful and specifically for brevity I'll just down the line, so Percy, why don't you start, then Catherine and Deirdre.

Sure. Maybe I'll pick one thing to focus on which is the computer infrastructure that is needed for investigating AI research. So as I mentioned, there is a gap between academia and industry, and I think that gap could be largely mitigated or closed by having the proper infrastructure. I think unthing is things that are scaled up in the industry, but one thing that's happening with these foundation models is that the scale really does matter. Things that happen in smaller scales are different than things that happen at larger scales. This kind of notion of emergence. It's sort of inescapable that one has to be at a certain type of scale to be, you know, relevant for these studies. And I think being able to work with these models to scale helps address these concerns more deeply. For example, we know that AI foundation models are biased and toxic, and I think a lot of the efforts that address it are kind of -- which if you don't have the resources operate kind
of more at the superficial level, but I think if we think about long-term safety concerns and investing in how we can transform this technology into political scientists on some of these issues, but I think this is sort of -- we're just kind of scraping by in some sense. There is not really a formal way of doing things, and I can see the progress if we had investment in this area that type of research would flourish.

124 13:05:21 >> Thank you very much.

125 13:05:22 >> I think, as you already alluded, I gave you quite a list already. On the experimentation and assessment side, I think what I'll focus on particularly is assessment. Algorithmic insight is getting play and I think there is tooling that can help us make our way out of whether it's bias or safety if we just had another tool kit. I think one of the things we have not been investing in enough is tools are only as good as the people who use them. I would suggest that there has been a real overemphasis on tools and an underemphasis on investment and development of experts through who can kind of bridge. I spent extra time with the digital folks, and they have a real interesting effort to integrate doctors and people who do data science and people who do ethnographic work, and I think that sort of training is very important now.

126 13:06:53 I would also say, I think on the trustworthiness, there's been a focus on threat modeling, we think about penetration testing. If we think about design, we think about design approaches. I think we need to broaden the tool kit as well as the expertise that we think can help us figure out what things -- how to deliver trustworthy systems. Part of that, and I think this was touched on by the prior panel, is broadening the unit of analysis, right, in measurement. I think that, yes, we want to interrogate the algorithms but I think we need to be thinking about measuring trust at a different scale, thinking about the trust and sociotechnical systems, the way AI shifts the requirements for trust and think about the tools for measurement and the infrastructure to do that work I think is really essential.

127 13:07:58 >> Thank you very much.

128 13:08:03 >> Thank you. Now I'm not going to get those brevity points I was hoping to get. I kind of have a list here in no certain priority order. I think one would be more funding for -- there has been funding and this is an open discussion and what we're working towards, but more funding and prioritization towards open analysis of developments in science and technology and specifically in AI. I think one thing I want to highlight here is funding and supporting work that makes more data available, right? Data availability is a point of contention for analysts who actually do work to understand what trends are happening, where developments are happening and where progress is happening. So funding and supporting research and projects and teams that make more information more accessible I think is one gap.

129 13:09:04 A second one, and this is primarily what my researcher had on, is funding more work that tries to improve our metrics for understanding the translation of research into real world use. We could probably talk at length about how RND is translated to real world use but I think mapping of this process would be useful.

130 13:09:44 Third I think is more relevant to this discussion, how we prioritize and assess what we say we want to do. We have been moving -- a lot of people have mentioned the
Bill of Rights. We have an executive order about trust in AI that lays out principles. So we have a trust in what we want to be doing here. I think we can prioritize and invest more on how we’re moving toward these stated goals. That’s another research area and also kind of a thing I think should be more highly prioritized.

Two additional short ones that were added as others I just kind of want to emphasize is, to Deirdre’s point, the funding of people. I think we need to prioritize work that is both interdisciplinary but also kind of investing in the range of occupations, those who are actually operating, interacting, using the tools that Deirdre mentioned and turning research into, you know, understanding how AI is actually being used and where we may need to modify.

And last but not least is funding the research to understand the human reaction and kind of how human behaviors might shift, how human structures and processes and dynamics are going to change as AI becomes more and more prevalent.

A lengthy list, but I think that kind of sums it up.

Thank you. We'll now go to virtual questions.

Thank you, Ashley, and thank you all for your statements and really good responses.

So recent discussions around societal impacts of AI have centered on mitigating risks and preventing negative outcomes. I don't want to downplay these real concerns, but AI also has hugely positive potential for society. For example, integrate use cases and test beds to help drive use-inspired research and domains of societal interest such as privacy and human trafficking. From your perspective, what actions -- if you have specific ideas, that would be great -- could the U.S. government take to create positions that foster more research in AI to maximize its upside potential? Catherine, do you want to go first just to reverse the order?

Sure. I will keep it brief because I think I made a lot of points in my statement, but I think a lot of it is investing and measuring the kind of impacts we want, how we're demonstrating that we are using AI or where we might need to modify our use or refine our designs or put parameters around or constrain our use so that we are actually achieving the goals we say we want to achieve, so that we are prioritizing AI use for positive outcomes, you know, as defined given the situation we're kind of thinking about. I'll just leave it at that and let other panelists jump in, too.

Thank you, Catherine.

Yeah, I think this is a great question. Just to frame things, I think the societal impact of AI is sort of the 2x2 diagram where you have intent and you have impact. If you think about good intent and good impact, that's where the class of beneficial applications using AI for improving science or helping with climate change and so on. Then there is the category of misuse, so bad intention and bad outcomes where you're using it deliberately to spread information or fraud. Then I think there is a category where you have not bad intentions but you have bad outcomes where biases, people are just not aware of various biases that creep in to the systems or they're being deployed in a way that's not really suitable for deployment, like deployment models for children where we're
confident they won't create harmful content and so on. Maybe this is a framework for thinking of priorities for maybe funding, so there is definitely a set of categories of applications where funding, for example, to advance a good societal thing and there is also risk mitigation that needs to happen, things like understanding the negative effects as well as the kind of—so the accidents that could happen, and one of the things, I think, to underscore points made earlier is what constitutes positive versus negative. This is a function of people in society, and I think there is also a gap in between what is currently measured on the technical side of benchmarks and what happens in the real world. That is due to the fact that in the real world these systems are very contextual, and benchmarks lack that context. So I think we need to bridge that gap and connecting what indicators on maybe kind of in vitro settings actually translate into kind of in vitro impacts in the world.

140 13:16:29 >> Thank you, Percy. Deirdre?

141 13:16:31 >> Yes. Hi. So I view technology the way I view law. It's a tool to advance the values we care about, to mitigate harms. I do take to heart the sense that much of the discussion about AI has focused on mitigating risks and preventing negative outcomes, but I would suggest that part of that is we have not coupled AI developments with visions of the good life, right? And I think interdisciplinary research can help us get out of this bind that I think we both feel. I started my career partnering with technologists, right? I like to work with theoretical computer scientists and electrical engineers and systems designers because I view a partnership with technologists as another way in which we can solidify as something we care about. I view it as a tool for economic development, a tool for rights protection, a tool for economic justice. The question is how do we create a research environment in which we're thinking about the good life as we're doing the design of the technology? And I think we can do that, and I think, your suggestion, while I wouldn't go with use case inspired research, I think context-grounded research. I appreciate Janet said context and community were the things she saw in the AI Bill Of Rights, not this idea we're going to protect each individual. We have investments in this and thinking how our social and political commitments guide the decisions we make I think is the real challenge that can help us get out of that bind.

142 13:18:41 So I would say, yes, we need things that center in particular ways, but instead of use, I would center in context and community.

143 13:18:49 >> Thank you. And thank you all for your responses. Ashley?

144 13:18:54 >> All right. Thanks, and I'll throw it over to Janet for the last planned question.

145 13:19:00 >> Sure. Thank you. Thank you, all, for your comments.

146 13:19:05 A common thread throughout these comments has been the need for interdisciplinary research. And so each of you has touched on this a bit, but I'd like to hear more about what actions you see can be taken to really foster interdisciplinary teams and interdisciplinary research at large. I would expand that, going back to my earlier question about community, to think about how different kinds of expertise beyond academic is included in a broader interdisciplinary sociotechnical research environment for the future. Thanks.
Maybe I can start. I think -- so I want to expand on this a little bit. I think that interdisciplinary or multi-disciplinary usually means technologists and human social scientists coming together. When you talk about the ground in situated settings, the industry should have it where they can be there for part of the picture, because a lot of impact on AI is through these kind of huge vehicles. You know, the big tech companies, and I think it's important to be grounded to understand what exactly is happening, to the extent one can from the outside. And I think that -- there's maybe three things here, really, the kind of social human technologist in academia working together with industry where kind of the actual harms, benefits are taking place, I think, is the right way to kind of complete the circle, otherwise there is still this kind of gap. So maybe there are at least two gaps here that are kind of worth addressing.

In terms of how to foster that, if we're reflecting on the kind of experiences we've had at the center of research and foundation models in our last year, I think it is difficult because there's different cultures, different incentives, the structures of what a computer scientist does is different than ethics. It's just very different, but it takes time and conversation to sort of get on the same page. I think programs such as fellowships and -- I think centering around people, I think, is in the sense of funding fellowships for people who are at the intersection and providing them with a means of pursuing and being embedded in an environment that we have established is hopeful because then they are not kind of beholden to a more conventional kind of category.

I think creating these categories almost as a first class citizen, I think, would shape some of these. We look at these as between two walls but if we move to a thing as opposed to the boundary, I think things might start changing.

I can jump in quickly echoing what Percy said. On one hand, I think it is a framing challenge. That comes from government and it comes from other actors in this space and the broader research community, but I think kind of framing AI -- I think to date it is framed as a rightly technical field, and therefore there isn't space necessarily for other fields, a lot of which Deirdre has kind of mentioned. Their role in advancing AI research is not clear or seen as periphery or secondary to the actual technical progress. So I think some of it is just framing AI research as kind of these broader questions that require, you know -- fuzzy might not be the right word for this group, but complex concepts that entire literatures are built around in other disciplines, so needing to make sure we're tapping all those research communities when we're thinking about these issues I think is something there is a lot of work to be done understanding that AI research requires all these different perspectives.

Another framing note, it isn't just researchers. Another panelist pointed out stakeholders in participation in these discussions, so not just AI research, but it's a technical challenge and not just a research challenge. I think a few more practical outside of the framing and how we talk about these things are being a bit more intentional about the research teams that we are supporting and that we're funding, potentially putting, you know, maybe not requirements but, you know, encouraging more interdisciplinary teams or asking for articulation of how different perspectives are going to be included into the
research design implementation.
152 13:25:27 Similarly amplifying or encouraging work or rewarding work that has more interdisciplinary outputs. Where their work is being put in different venues and maybe not just a specific conference or something.
153 13:25:47 Last but not least, I think there are opportunities to develop standards, or more forcefully how they are doing with academic research. Thank you.
154 13:26:08 >> I think I've said quite a bit about this already. I really do appreciate Catherine's framing suggestions, but who is in and out? When we think about AI or we think about data science, who is the core and who is at the periphery? I think shifting that frame, and I think part of it goes to Ron's suggestion that all methods are necessary to advance the sort of work we want to see, the meaningful use of AI, not just the technical development of bigger, larger, faster models. I think that framing may sound really simple but I think it really matters who views themselves as having a seat at the table. But that seat at the table isn't meaningful if you don't have the resources to come and enjoy a good meal. I would say that's more true for the health and social sciences, and it's certainly true for the public that also needs to be represented.
155 13:27:26 I think as we're looking to look at meaningful public participation, we need to analyze different sorts of models, whether they're simulations or forecasting or expertise actually provided their own experts to we have expectation are also really important components of this process. So I think I've taken more than my share of air time.
156 13:28:09 >> Thank you, all. We've got just a few minutes for just some open questions from the working group folks who haven't spoken yet.
157 13:28:31 >> Just I want to talk about what Janet and Jack were asking and the answers. You mentioned the need for something like how they are acting at the center, and interdisciplinary research and what it took to build these models. You also touched on what these models learn from, but I didn't see a question about funding for clean data. Do you see that as a need that we should be looking for in our R&D society?
158 13:29:35 >> Yeah, I should have mentioned that. AI systems are powered by computers and data. It's a thing that's on my mind these days, but I think data is extremely important. In AI foundation models, there's been a lot of work that has gone by with existing data sources, but I think if we think about -- data sources are very problematic. They have copyright, all sorts of privacy issues, so one could imagine -- let's compute these stories together. If we take a step back and think what would it be like to build this type of powerful, useful technology for the benefit of society, having this interdisciplinary team from the beginning, thinking through data and how you train the models. I'm trying to paint a vision of what that would look like, and I think that would be very productive as opposed to more the opportunistic, we have the web, let's train a model and get it out there and sort of then say, okay, here are the problems it has and let's try to patch it up. Maybe one thing we can aspire to is more of a deeper start to involving stakeholders in the beginning, having the resources to do things kind of responsibly and ethically from the data side to kind of building applications and doing things more carefully, which is actually more expensive than -- even more expensive than what happens today because there is
extra, you know, constraints, but those are important constraints because they ultimately will determine the ultimate outcome. So I think maybe that's the way to synthesize what I said together. of things. It's important to think about analysis in our recovering conversations, developing techniques for other than components? Not that components aren't important, but I think NIST has a certain area of deployment and there is a particular use in the ad space that to the extent we're talking about learning models, right, or even -- we have a model but then we know we'll have to do some customization, localization, validation locally, figuring out what is required so we can do some, like, baseline testing and assessment. What are the tools, what are the validation tech inebriation, what are the timelines of measurement and then what has to happen? Like, where is that handoff and what has to happen locally. Dr. Ferryman mentioned earlier the rules and the FDA has new rules about division support Software and a lot of these conversations about who is responsible for what are stymied into the visibility of what tools are doing, what data they've been delivered on, et cetera, but also a lack of clarity of what assessment can happen at a global level, what assessment can happen at a local level and what are some of the tools we need there?

159 13:34:23 >> Catherine, we'll give you the last word and we'll wrap it up after that.

160 13:34:27 >> Sorry, and I will be brief this time. I want to double down on what's been said and I want to highlight two things. I think data, as we discussed, is very important for technical progress in AI as Percy alluded to. I think it is also important that data is available to those trying to research progress in AI, too, to make sure we're actually understanding what is happening. But I think there is also a third resource we haven't talked about yet that actually some research we've been doing at CSET would suggest that is important and that is people in talent, people who know what to do to compute the data, so skills development, investing in talent pipelines, providing educational tools and user support is something that has been a part of this discussion, too, and not just throwing more compute and more data but actually making sure people are equipped and have the appropriate skills development resources to be able to make use of that. Thank you.

161 13:35:37 >> Thanks, Catherine. We're going to have to wrap it up there, but I want to give the last word to my co-chair.

162 13:35:47 >> I want to thank the speakers for sharing your insight and really taking the time to answer the questions. So on behalf of the AR and RND working group, thank you, thank you, thank you. We have a number of additional briefings and we will continue to solicit input from the AI research ecosystem. I also want to thank our working group for really thinking and leaning into this and really addressing the mandate of our charter.

163 13:36:18 For those of you who are streaming, thank you for listening and participating, and we continue to be interested and solicit your feedback on the things we're doing with respect to the working group.

164 13:36:30 And with that, we will close. Thank you.

165 13:36:33 >> Thank you.

166 13:36:39 >> Thank you, Working Group 2, committee chairs and our panelists. We will now take a break for lunch and we will reconvene at 12:45. Thank you.
One of the assurances is to make sure artificial intelligence is done to the best of its ability and to the best of our ability as all the leaders guiding its use play a role in inclusive and equitable economic opportunity and social progress. And, of course, for the vast majority of us, having a job, earning a living and hopefully having a quality job is important to our own personal opportunity and pursuit of equity. There is a range of issues artificial intelligence touches when we talk about jobs and the economy, to what kind of jobs will be available and many things in between.

Today we will hear from and engage in the dialogue of three leaders and experts. I do want to note, I would be remiss if I didn't note, that today our conversation is with extraordinary experts, but of course the true expert of the role of artificial intelligence on jobs and working are the workers themselves. This committee is very much committed to ensuring that the voice of workers and the voice of prospective workers are part of our work. And in the new year, we will be hosting a public conversation with a range of workers that will allow us the opportunity to address many of the issues that we all face as workers.

I would like to start with Dr. Karen Levy who is an associate professor in the department of information sciences at Cornell University. Each of our panelists will begin with some brief remarks, and then my fellow working group members will ask a few questions. Karen?

Okay, hello. Thank you so much, Trooper. I'm Karen Levy. As Trooper mentioned, I am at the department of information science in Cornell University law school and my leadership is on the intensive technologies up to and including AI, and much of that work has focused on technology in the workplace with particular focus on the long-haul trucking industry. That's where I've done most of my work, but also on retail and food service work. I'm honored to have the opportunity to be part of this panel today with Daniel and Randi.

I would like to use my time to make two primary points, first how AI can shift burdens from workers. And not only how AI can add a number of jobs to the economy, but also how things like job quality and worker dignity are also really key outcomes that can be affected by workplace technologies and should be central to the conversation.

Let me start with a topic of risks and burdens. I think the reason for adoption of many workplace technologies, including AI, is that they make work more efficient in some way. They help delegate waste or otherwise sort of streamline the work process in efficient management. But one thing that I think is really important to recognize is that the use of AI in the workplace actually often doesn't eliminate inefficiencies. Instead what happens is they shift the burden to workers, so let me give you just a couple examples of this.
Times" by Jodi Kanter about productivity modeling. Much of the thrust of the reporting is about the additional costs borne by workers whose productivity is being monitored in new ways. Productivity monitoring typically, and perhaps unsurprisingly, counts things that are easy to count, such as the number of e-mails you've sent, the productivity issues you've logged, or they're looking at a particular window on your computer. But it's often not able to capture other forms of work that might matter more, like brainstorming by writing something on a piece of paper or whiteboard or deep interaction with your colleagues or customers. So they are often tasked with making themselves more legible to the tracking and this often looks like busy work, something like jiggling a mouse so it's registered by your monitoring Software, or doing something quick like responding to a bunch of e-mail rather than deep or less quantifiable engagement.

Productivity tracking, especially when it includes wearable technology as it often does, it can impact other workers to overwork and privacy loss due to the intrusive nature of this monitoring. We're seeing this built more into workplace tools or office software where workers might talk among themselves about workplace reforms. These are not new, they've been ramping up for a very long time, but pandemic has I think accelerated and turned up the volume on this, because when work flow is not under one roof, we've seen that workers might not be working as hard as they could and control themselves remotely using the software. Now we often see work times adjusted by algorithms and this is a shift in traffic or sales data to generate schedules for workers and that can include shifts that are scheduled with very short notice, irregular or fluctuating hours per week, very granular shifts that are sliced and diced into small chunks where more is expected, and this is by the firm who are trying to predict the risk of over or understaffing. There's a good deal of research on how these systems can make it very difficult for workers to make a steady income or work a second job or make classes or cover child care steadily. In fact, these harms even cross generations and affect the outcomes of shift workers who work in these conditions.

So, again, this shift in customer demand is not eliminated, it just gets hidden, because it's being shifted to the workers who internalize it and must bear it even though they're the most powerful players in the ecosystem.

There's more I could say about that, but in the interest of time, I want to raise a second issue, and this is how the committee should be thinking about AI in the workplace. Specifically along the lines of what I've been talking about, it's not easy to look at what can be handled quantitatively and there is a lot of discussion about AI work. What is the higher interface and what degree that interface may facilitate bias? And the other is what could result from workplace automation and robotics. I don't want to be misunderstood. I think these are both extremely important areas of focus but they're also sort of amenable to analysis or forecasting, so they've captured relatively more attention in the conversation. It's more difficult to quantify outcomes that are related to the quality and dignity of work, what it's like to actually have a job. Which is strongly implicated by systems like the algorithm I discussed, motion detection, constraints on workers freedoms to find other jobs. With truck driving, this has been extremely prominent, so AI hasn't necessarily
improved their jobs, but it's often made their jobs worse because they find themselves in rigidity over computer work and their bodies. I think it can be challenging to address these qualities of life harms, but I really strongly urge the committee to prioritize attention to shifting when we think about AI in the work force we’re thing about these things as well. Thank you very much and I appreciate the opportunity to speak with you all.

180 14:57:56 >> Wonderful, thank you. Brent? Trenches, but it's with drivers. How can you see more worker equality and fairness and well-being and development, all these things workers claim to strive for rather than what I see in your comments about a hollowing out of organizations, people wanting to leave places where they're being surveilled or tailormed to the nth degree and you get paid for your thoughts as well. It's like, Okay, we'll do that. What's your stance? I know there is a broad question and it's intended to be for any thoughts you have at this point about AI in terms of being in support of the worker, particularly in the trucking industry but maybe more generally.

181 14:58:57 >> Yeah, thank you so much for that question. It's not a softball question. But I do have some thoughts about it. I wholeheartedly agree that we need to better operationalize things like thought and qualitative work as something that can be measured by AI, that's not where I intended to go with it. But I agree that the existence of these technologies doesn't preclude a positive worker experience, and actually, in the trucker study where I ultimately come down on these technologies is that they can play a role in a positive work experience, right? There are lots of different ways to implement technologies. And I did talk to some companies that were really quite thoughtful about how they deployed technologies. They often did it with meaningful worker consent, and by consent I don't mean someone signed a form because they had to to keep their job, I mean the workers were involved from the outside in designing and thinking about not only the technology but what the practices around the technology would be, like had that data but were quite thoughtful and deliberate in not always collecting that data. Oftentimes in consultation with the workers. Ultimately, though, we tend to deploy systems, technological systems, and this is certainly the case in trucking, as kind of band-aids for other problems that are harder to solve. In trucking these are economic problems, they're problems related to the political economy in the industry and the wage structure in the industry, and rather than dealing with those problems, right, to stop incentivizing overwork by truck drivers, we tend to put this band-aid on it for technology. Part of it is with the worker, and part of it is the amount of volume in the workplace, and sometimes that just means paying people for the work they do. It's hard to utilize that in the trucking space without also acknowledging that truckers are severely overworked.

182 15:01:05 >> For the record, I didn't introduce myself. I'm Fred Oswald at Rice University and I'm an organizational psychologist. Thank you again for joining us here at the session.

183 15:01:17 >> Nice to meet you.

184 15:01:26 >> Panelists are still free to jump in. You mentioned the qualitative data and measurements, and I just wondered if you could speak to everyone in the workplace as sort of under pressure to measure, to quantify, get the metrics out. Do you have any thoughts on how to bring in the qualitative into this highly quantitatively driven
environment to balance the scales in consideration?

185 15:01:54 >> Yeah, that's a really good question. I mean, maybe one starting place is to think about ways in which focus on quantitative metrics can actually sometimes backfire. This is not precisely answering your question but I think it's an important thing to bring up. Ethan Bernstein has done some work on how measuring workers is a productive paradox and it leads them to include more, like being under the eye of managers often kind of -- people freeze up or people are affected by the expectation to perform in ways that aren't always all that productive for the types of innovation we actually want workers to be focused on. So that's one thing. It's just recognizing how even just measuring can have a negative effect in the workplace.

186 15:03:05 The other thing, I think, is thinking about ways to reallocate some of these risks and pressures that are not easily measurable back to the farm. I talked about things like having a hard time making sure you have available child care because you don't get your shifts well in advance. Those are things we can address via policy, right, even though they are not readily quantifiable. Just looking at the balance sheet of the farm, we know this can happen. And there are some states that have passed regulation about scheduling to try to prevent some of those issues. There are also some classic labor moves we can make, things like thinking about work reclassification, removing forced arbitration from contracts, both things I think have been advocated for a very long time but also take on a little bit more importance in the context of this framework of management.

187 15:04:01 >> We're going to take one more for Karen before we go to Daniel or Randi. Thank you for joining us, Karen. You mentioned you deal a lot with the low wage work force, truck drivers, retail, et cetera. One of the thrusts of this committee, as you know, is to really evangelize trustworthiness. It's in our lives today. It's not going anywhere, and I think it's important as a nation we recognize that. I just wonder from your vantage point as you have an opportunity to speak with folks, how would you characterize the awareness and readiness of AI as it relates to that work force specific to their preparedness to engage with AI, work with AI, use AI as an augmentation tool, et cetera? Any thoughts there?

188 15:05:08 >> Yeah, thank you for that. That's a really good question. I think two things about that. The first is that I think among the folks I've spoken to in the context of my research, there is a very understandable conflation event between technologies we might think of as AI and technologies that are not AI but are collecting data. I'm not sure that's a particularly meaningful -- I don't think that's a particularly meaningful difference for workers, because they're all being used, and whether it's AI or predictive algorithm, they're all being used in the service of the same goals, in the service of worker control or managerial efficiency. So I think maybe the upshot of that for the committee is in thinking about that, we should be thinking about that capacious. It's not particularly material when thinking about policy in this context.

189 15:06:05 The other thought, of course, has escaped my head. What was the other thought I wanted to say in response to what you said? Oh, I remember. The other question about trust and readiness, I would say -- and this perhaps goes without saying, maybe, that when these technologies are introduced, the way in which they are introduced, the who is
introducing them, the degree to which people feel that something is being thrust upon them so that it makes them feel as though they are not experts, so that it devalues their expertise, that matters a lot. In trucking this comes out very strongly, right? In trucking the people who have been the most vocal and the most likely to leave the industry are folks who have been driving safely for many decades and are now told, guess what, we no longer trust you. Actually, in my conversation with truckers, by far the most common technology they used was this technology treats me like a child or this technology treats me like a criminal. And the idea they should be teaching the technology is that they are not being trusted or that the manager or the government doesn't trust them to be safe, doesn't trust them to understand their body or their limitations, doesn't trust them to go under the speed limit, things like that. So I think that kind of trust is really central to what the workers in my research have understood these technologies.

190 15:07:30 >> Thank you so much, Dr. Levy. I really appreciate it.
191 15:07:34 So we will now turn to Randi Weingarten, president of the American Federation of Teachers.
192 15:07:45 >> I just lost my testimony which I have on my little iPhone over here. Can you hear me?
193 15:07:55 >> Yes, we can.
194 15:07:57 >> Good, fantastic. Could they just get a little bit lower over there? I am testifying to you at night from Ukraine where I am in a humanitarian and solidarity mission right now, so it's at night instead of morning, but I'm really honored to be here on behalf of my own members, 1.7 billion of them across the country, including 120,000 from the California Federation of Teachers, and they represent public and private education from Head Start to the University of California. I'm also speaking on behalf of Liz Schuler, who is the president of -- as you all know, president of the AFLCIO, and the AFL represents 57 unions and nearly 13 million members in every sector of the economy.
195 15:08:59 I say all that because like Karen talked about truck drivers, you see AI playing itself out in different places in different occupations, and I will talk about a few of them from the vantage point of a lot of these different employees, and I will try to do this pretty quickly.
196 15:09:22 Now, democracy and freedom, which is part of the reason why I am in Ukraine, are specific ideals that are built on a social infrastructure that we say, and I say this also as a civics teacher, that the people collectively and constructively conduct their world and hopefully shape their world and how we live in it. They play a vital role on this feature. That's why I'm speaking on behalf of many different hats because it's really key we get this right with artificial intelligence. We never got it right with any of the other industrial ages, but it's really important to learn all of those lessons and get it right this time.
197 15:10:11 Now, there is an optimistic, futuristic mission about artificial intelligence, and a lot of you know this as well as I do. But too often these emerging technologies have been imposed on people and workers without their knowledge, consent or input. Workers and labor unions have to be built into an innovation ecosystem to help craft the policies that drive this research. And I would argue that -- and this is in some ways an answer, you know,
to the very important question you raised with Karen which is it's not just saying in regulation, oh, please, please, please consult with workers. We have to actually find a way to create collective bargaining so that we safeguard the interest of workers.

198 15:11:06 Now, obviously, AI advances offer tremendous promise. They transform research and information and communications and public health and public policy business. They provide potential benefits to consumers, to communities and societies. But if workers don't have a voice in all of this, it gets done to people, not with people, and it's essentially simply a replacement strategy. After all, since we are the ones who are most affected and most people work in America and there is going to be a huge displacement without that, we need to have some power in the formation of it and in the implementation, the distribution, et cetera, et cetera, et cetera, to make workplaces safer, more productive and more Ubiquitous. I'll just give you an example from the productivity algorithms that monitor Amazon for a second. These productivity algorithms ratchet up the pick rate of Amazon workers, so workers end up having to skip bathroom breaks and relieve themselves in bottles. This productivity software is associated with other workplaces that are five times higher than the average level. It can lead to managers pressing them to work off the clock or skip breaks in violation of wage and hour laws. They are denied their employment status and governed by secret AI tools which determine how drivers are offered, how they're rated, how they're paid, how they're disciplined. As Karen just said, drivers have complained in so many different ways. But office workers also have their keystrokes, their mouse clicks, their e-mail monitored to hit activity targets of disparate workers.

199 15:13:18 I'm giving you these examples because these examples are real right now. Virtual learning in my space, virtual learning during the pandemic demonstrated that technology is not a Panacea for education. You actually have to have in-person real life educators engaging to create that environment. But teachers using this predates the pandemic. They are starting to understand and realize that they actually need to be informed by teachers and by what teachers need and what kids need. And I think that that's a good model to build on.

200 15:14:03 A few years ago, they were basically reducing everything to an algorithm, and you saw how that did not work in terms of evaluation, testing or any of these other things, and that has been discarded for the moment. I want to raise something about children. Children are really vulnerable as well. Education software companies collect data from school systems often without the consent of families or teachers. The rapid uptake of social media platforms by children and teenagers have compromised their privacy, has put them at risk of real world dangers and has contributed to this with young children. We just did a petition to META which said stop these abusive Instagram accounts that are really hurting children. This is the type of regulation that California just did, that EU just did, that what we need to do. We all know Clickbait processes have led to online hate, extremism and the political health distribution that is straining democracy both in the United States and abroad. Russian propaganda is just one of those example.

201 15:15:39 I can go through many examples. I just want to end with workers need to
have a voice of how technology is developed and brought into our lives. Frankly, it means that workers have to have as much of a voice as the engineers do. We have to build worker-assisted technologies in this process, and we've never actually done this, so it's going to be hard to do.

202 15:16:09 So one of the questions are going to be, who decides? Do workers and individuals shape and craft this individualization to harness these tools or basically is it the market? Since Americans, taxpayers, have actually helped to create this technology when I would argue that we have to have and workers have to have a say in it. This is a hard job for you because you have to address the statutory mandate to confront the negative and the potentially negative equitable and social impacts of widespread AI adaptation to our economy. We've never done that before. As I said, in terms of what EU has done in terms of transparency and accountability, it has to involve workers. Committees should seriously consider whether the adaptation of AI isn't just appropriate. We should also look at, or you should look at, whether the risks and downside to workers exceed the purported benefits. We know left to its own devices without any kind of leveraging, without any kind of transparency, what we're going to see is more of what we see right now, and basically workers are not going to have a voice or children or end users in what this technology is, and there's going to be a lot of harm from it. Thank you very much for hearing me out.

203 15:17:41 >> Thank you very much. We'll take a few questions.

204 15:17:51 >> Thank you, Randi. You touched on a few things. We also heard from previous panels regarding understanding the impacts on different stakeholders, especially the end users, or people who are going to be affected. In our case it's going to be the workers. You really emphasized the fact that they need to have a voice in the process in building and developing. One of the questions that I have for you is through bringing workers to the table, what would be the roles of AI literacy for them to be able to fully understand what is happening in the process?

205 15:18:38 >> So I think that is a really great question. I should have said literacy as well as transparency and voice. Because without literacy, it's hard for a worker in fear as opposed to knowledge becomes the dominant theme. So AI literacy is very important trying to -- and not -- and frankly having the time tools and trust to actually move the dynamics in any workplace. Amazon workers would be able to tell Jeff Bezos what they can and can't do, and they could probably figure it out, just like the drivers Karen was talking about. In my space educators could actually tell you what data is usable, what data informs instruction, what is just about overseeing us. Look at what workers did, look at what educators did at the start of this pandemic. Many educators and many kids did not have sufficient either software or hardware to deal with a pandemic that basically closed and schools had to figure it out for themselves. Can you imagine if you had a baseline literacy so that workers were fluent in goals, in technology, and then they could help actually inform and help have better decisions, I think, that are more economically beneficial as well and probably lead to reduced costs.

206 15:20:52 >> Hello, President Weingarten, thanks for joining us. I wonder if you could go into a little bit -- you mentioned teachers and other federal employees at the American
Federation of Teachers, those who have had years of training to approach their work and discretion. Could you talk to us a little bit about what assistive technology would look like either for a teacher or nurse versus a descaling technology that removes their discretion?

207 15:21:33 >> Well, I think that, unfortunately, we have more examples of a descaling technology. It's essentially like Bossware. It regulates you and basically you put these people who are supposed to have some degree of autonomy and make decisions and you're putting them essentially on assembly line, on an AI assembly line. So what an assisted technology would look like is where the technology is actually helping you do your work as opposed to regulating your work and regulating every step of what you're doing. And so, for example, take the nurse who used the technology and inadvertently gave the patient the wrong pills because that's what the technology told the nurse to do even though the nurse believed -- and this is unfortunately a real story that ended up becoming a murder case where she was accused of murder, criminally accused of murder. So the technology malfunctioned, but no one knew it, but it was a regulatory device.

208 15:23:04 So there has to be a way, yes, of quality assurance, but there has to be a way where the technology is actually helping the worker as opposed to regulating the worker.

209 15:23:15 >> Thank you.

210 15:23:23 >> Reggie Townsend here. I just have a general question. I'm sure you're qualified to speak about our school systems and raising people who are illiterate, digitally illiterate and AI illiterate. I wonder if you have given thoughts to methods to optimize our school systems such that we can begin to train our students to inherit this digital economy that we're all discussing.

211 15:23:59 >> That is a really great question. The question I have -- so I have one answer, but this is what is so confounding to me, and I think instructive to all of us. Why is it that the people who leave tech companies do not let their kids have devices until they're older? Why do they regulate the devices their kids have? So there's two imperatives here. First -- and I see it from my generation. I'm soon to be 65 years old. I am not a tech native. Every time that I have to learn -- and teachers of my generation, we go through the same thing. Our kids grow up with it and are innately able to use it. We must educate them on it. The question becomes, what's the reliance on tech as opposed to the reliance on relationships and critical thinking skills? And how do you create that balance? And that's a really hard -- and what we learned from the pandemic is that kids are in their devices like this. They don't look at you anymore. It's part of what we have to guard against. So becoming a tech native is probably something kids are going to grow up with and we have to create guardrails but not be afraid of it. At the same time we have to find ways to ensure that kids actually build relationships with human beings as opposed to being addicted to their devices.

212 15:26:14 Before I end, I'm sorry, I'll give you one other example. I love robotics. I love what robotics does. I would love us to have more and more robotics courses for kids in school who want it as an extracurricular activity, but it's a capstone project. It's one way we can educate efficiency and context in terms of technology.

213 15:27:02 >> One final question. One of our mandates is to provide insight to the
president. If you had one utilization to put into our brains, what would that be?

214 15:27:16 >> I can submit my testimony to you in its fullness. It was probably about 15 minutes long which is why I did not read all of it. But I would say three things. Number one, don't just say that workers should have a voice in this. There has to be, like the EU did, like California just did to some extent, there has to be some way of ensuring that voice is real and meaningful, and that's why I think about it in terms of collective bargaining. But there has to be a real and meaningful voice.

215 15:27:56 Number 2, there really has to be a look at costs and benefits, particularly when it comes to youngsters and privacy and things like that.

216 15:28:08 And last is transparency really matters as does accountability.

217 15:28:15 >> Thank you, and especially thank you for joining us from Ukraine. Safe travels.

218 15:28:22 >> Thank you.

219 15:28:24 >> We will now turn to Daniel Chasen, who is vice president of Workplace Policy for the Workplace Policy Association. Daniel.

220 15:28:37 >> Thank you and good morning. I appreciate the opportunity to speak before the committee today from overcast Washington, D.C. By way of introduction, the HR policy association represents police officers globally. Across country we employ 10 million people in the U.S. or more than 9% of the private sector work force. They consider the development and use of AI in the development, our economy is in an extremely tight labor market where jobs exceed people looking for work and it remains at record highs. This means it's critical that new technology is linked with the company's talent strategy. So in addition to increasing efficiency and productivity to AI, they are looking for ways to elevate employee voice, enhance management responsiveness, encourage employee engagement, drive a popular culture, particularly in higher working environments, investing in employee career growth, enhance the employee and candidate experience while ensuring that the human element of HR is not lost, and closing the skills gap by closing the opportunity gap, exposing the talent pool and getting the right talent into the right roles.

221 15:30:05 I don't intend to defend or critique any particular technology or technology use case. It's my understanding the company is looking for information involving the use of the work force. I'll talk about how they are mitigating the use of AI in the work environment. And finally, I'll talk about an approach that would maximize the approach in an environment while helping employers minimize risk.

222 15:30:37 New technology due to the pandemic, as we're all aware, has intensified the need for new skills in the work force. Between 2017 and 2020 alone, one of the skills in finance had become obsolete. So address these challenges, they are leveraging learning opportunities and facilitating skills which can improve pipelines. Machine learning can learn sequences for employees and help enable these steps. AI training can be integrated seamlessly into an employee's work flow, providing integration and access of expertise to ensure workers are going to succeed amid changes in the way the work is done.

223 15:31:32 AI can also help facilitate workplace culture, auto mating flexible scheduling and assisting in disabilities in the workplace. They can also work with efficiencies in the
workplace and enabling those with certain backgrounds. While the skills gap is a continuing challenge for employers and job seekers, there are a significant number of employees who are often overlooked by recruiters. A recent panel by the OECD discussed current applications of technology to expand the talent pool, including programmatic job advertising, including the inclusivity of jobs, and schedule addressing the common black hole applicant experience and speeding up the connection of talent with jobs.

224 15:32:39 Despite these developing opportunities, bias denying workers of autonomy, dignity and saying set it and forget sets up an economy that deteriorates rather than taking things seriously. It necessitates an ongoing fairness on privacy and safety. Reputation damage alone would undermine a company's efforts to assemble a competitive work force. It may cause employees a 10% charge or higher. With a loss of trust, companies would face significant challenges, deploying even relatively benign uses of AI. As was noted by the White House's recent publication for the Bill of Rights, several of which the HR policy has led or participated in. These include the economic forums for human resources tool kit, the work of the data and trust Alliance and policy associations who own AI principles which companies are free to adopt which focuses on bias and accountability. Many employees have adopted classes of their own. I'll tell you about the testament we submitted to the committee which includes a sample base.

225 15:34:20 Finally I would like to include some policy issues for the committee to take into account. It should be noted that AI is not an monolithic concept and one size fits all may put workers at risk. Different uses of artificial intelligence both in scope and what is at risk, that is, safety, autonomy or fairness. A one size fits all oversight may expose workers to risk, even while providing protections in cases for which the oversight was named. Companies build these considerations into their technology oversight processes to imply as innovation accelerates. Any issues of trust without these characteristics will prove both insufficient and unviable. Second, the government must look at policies and bias practices. And third, guidelines on the use of artificial intelligence in the employment complex must not require third parties. They don't yet existly from the standards of technology, the organization of standards and technology.

226 15:35:54 With that I'll end my remarks. As Karen and Randi were speaking, I believe there is a lot here that we agree on, and in that sphere, we believe that all stakeholders, including those represented here today, must work together to ensure the risk inherent with artificial intelligence are minimized while opportunities are maximized. I appreciate the chance to offer our view and enhance anything we can provide to the important work of the committee.

227 15:36:31 >> Thank you very much.

228 15:36:36 >> Hi, Christina Montgomery here from IBM. We had a lot of conversation for the need of focus on interdisciplinary skills, the sociotechnological lens. I know you spoke about technology in the workplace, but can you share some examples, if you have any specifically, that are focused on this -- bringing this -- which may even be whole new professions, right, in terms of this interdisciplinary approach to AIs, that it's fully understood.
Right. This is an extraordinarily important area given the economic situation that we're in, given the challenges we have going forward with new technologies. IBM itself is a leader in focusing on not just proxies for what would be considered qualifications but the qualifications and skills themselves. Other companies are also stepping into the space. Extensor has a few programs, so I would refer to those and there are others in a statement as well.

As you were speaking earlier about the opportunities we think are inherent in opening up pathways or the realization of promotion opportunities or non-standard pathing for workers and taking advantage of new skills and developing new opportunities, what are examples you're seeing of empowering workers to be able to chart that pathway, right? Right now in many cases the worker doesn't really have their hands on the steering wheel with that. Where are you seeing cases where we're putting the steering wheel in the hands of the worker to drive the path they want to drive?

Look, machine learning can take employee data and provide them with recommendations and suggestions that they are free to choose. And when coupled with a program that connects employees with managers, that's a very powerful combination. IBM reported 80% increase in meaningful conversations with managers on career growth after implementing such technologies. And the other angle is in the scheduling. Not many workers can step aside for a few weeks and months and learn a new skill. Or even longer in some cases. These technologies enable a seamless integration with the work flow, and so they're learning literally on the job as technology is changing the workplace.

One final question. I'm sure you take a lot of incoming from your members and the pressures they're facing. This is a rapidly moving space and the issues we're talking about, worker satisfaction, safety, productivity and dignity on the job kind of get to the gut of life. In terms of how we think about both from a policy point of view and a society point of view how to make this work as it should, can you just talk about when the members and leaders you deal with will to ingest principles and other social dynamics and Norms into their day-to-day leadership and work environment? Are there some things we should just keep in mind on the practicalities of that?

Look, artificial intelligence should not replace human judgment, I think is the bottom line. It should, on the other hand, augment what humans decide to achieve in the workplace. The development of principles is a live fire process. It's important that as companies design, implement and use these technologies they keep these principles in the forefront and above the use of technology and don't let it get away from them.

Wonderful, we'd like to thank you very much. Thank you, Dr. Levy, Dr. Weingarten and Dr. Chasen. Thank you very much.

Thank you. Now we will be taking a break from 1:45 to 1:55, and we will be preparing for Panel 4.

Welcome back, everybody. We're going to start with Panel 4, ensuring U.S. government coordination on AI to lead and compete globally, led by Neal. I want to thank the team here at Stanford in hosting us and creating this opportunity so we can hear from
various voices on all aspects of artificial intelligence. Let me just quickly talk about the purpose of Working Group 4. Our group is focused on the task of readiness, how to focus on the organization of getting ourselves more organized with the U.S. government, how to coordinate activities among civilian agencies, but more specifically is facing a competitor who has gone all in and scaled the research of artificial intelligence so they can be the global leader for AI. They are transparent about their goals. So what I wanted to provide today was a panel to describe the global conquests. I'm happy to announce William Hurd, managing director of Allen & Company. He is a former United States representative in the 23rd district, and he was one of the leaders in providing bipartisan legislations in AI. He is joining us today virtually.

Second is Brian Drake, now the federal chief technology officer at Accrete AI. And Tara Murphy Dougherty is CEO of Govini. And lastly, Andrei Iancu, former under secretary of commerce for intellectual property of the U.S. and former director of the U.S. patent and trademark office.

You saw firsthand the challenges and opportunities associated with AI. Can you please talk about some challenges and opportunities you saw then and what you see today?

Sure. The first challenge is something you all have already surpassed. I held the first hearing on AI in Congress a number of years ago. Now the fact that we have this organization that almost every agency in the federal government is thinking through this issue is a good sign. But one of the concerns and one of the challenges you had within the federal government is making sure that legislators understood the impact this is going to have. You all talked about this, but you have to get it to a granular level where most of the people sitting on this panel and the people you're having these conversations with have a really good understanding of the tool, how it can be used and the impact it can have. You need legislators who are making decisions on budgets or making decisions on funding some of these initiatives, it has to get to a point like with driving. We know the value of a car, but I don't have to understand the combustion engine. So that's where we have to get smart folks that are participating in this panel have to educate our elected officials on. When I look at additional concerns that I have and it's only getting more granular is the issue of alignment. Now that I've been in the private sector and getting the chance to meet with all these up and coming AI companies and participating with others, we know the more capable that our algorithms get, the less inclined they are to focus and fulfill the intentions of humans. How we manage that and how we ensure that all users and practitioners understand this alignment problem and are taking steps to address it, that's a concern. What was it, a couple Weeks ago Nvidia announced having GPUs that are going to be able to have a trillion different elements, will be able to manage a system that has a trillion different elements. That increases our surface area of attack. So the ability for adversarial AI to take advantage of our training models, to be able to put a sticker on a stop sign, to make a driverless car blow through it, the ability to add strange noises to voice-activated commands to get people to do or get systems to do certain things, it was a concern early on but with the power of these systems, it's becoming a real legitimate
concern, and how do you measure that against an adversary like the one we've been
talking about today? This has always been an issue, the ability in how do we balance the
risk of these systems to various stakeholders? When you have potentially a trillion different
inputs, that's a trillion different mistakes that can be made. And our individuals that are
being impacted by these systems being involved in understanding and tweaking and
training many of these systems. And that has always existed, and making sure that we're
focused on these regardless of where you are in the AI stack is something that's going to be
important, and how do we ensure that the public sector and the private sector are working
together for these things.

243 16:02:37 >> Thank you, sir. Brian, you have covered in the AI submission. Can you tell
us how this is helping?

244 16:02:57 >> Thank you. I'm happy to address this topic. I will address that question
with two points. The first is that our adversaries know the collective planet is AI. Vladimir
Putin said it is whoever can achieve it and they will control the destiny of the planet. We
also saw in China that they've put out two plans for artificial intelligence, in 2030 and 2045.
In the next 15 years it's critical for them to assert that dominance. They know intellectual
property isn't quite where it needs to be, and they see the United States and our allies as a
means to an end.

245 16:03:49 That's my second point, is that it's not a small effort on behalf of our
adversaries to get at our intellectual property, it is a full spectrum attack. They are looking
at every single element of their national instruments of power and control and how they
can exert that on our most sensitive technologies, our most vulnerable technologies, and
our people who are exploring those technologies. So the prior panels that I listened to, I
think these are all making elegant points, and they're excellent. Efficacy is important, data
efficiency is important. It's all meaningless if we allow China to take a dominant position,
because they will undermine our very fundamental Democratic principles. We have a
couple pieces of evidence pointing to that.

246 16:04:46 First is we see their intelligence agencies acting in ways that causes
247 16:05:34 >> And manufacturing techniques all before they were filed with the
international patent office of the U.S. trade and patent office. By doing that, it was
estimated that pre-patented information is hard to evaluate, but it's somewhere between
225 and $600 billion in property theft just from 2019 in one study. So consider that's what
we know about. What do we not know about? Now consider in 2019 that China surpassed
the United States in patent filings internationally and grew that lead by 27% in 2020 at the
height of Covid. How is that possible? Your entire work force is home. Nobody is in the
laboratory. How is it possible that they gained that kind of advantage in there was any
money in any way, shape or form involved in that particular entity, we did not contract with
an entity. That means we're denying ourselves access to changing technologies because we
cannot assume the risk that our adversaries know something about it that we don't. And if
we were to take it and put it in their platforms, we know we will use the technology. We do
not know that their adversary will.

248 16:07:25 More evidence to point, from 2015 to 2021, China made 2,000 government
Chinese funds pulling in nearly a trillion dollars. That's aimed at high tech, artificial intelligence and chip sets. A trillion dollars just in venture capital money. Some of that is staying domestically, some of it is going abroad, and in the United States puts it at 128 billion.

249 16:08:06 Third of international control we need to worry about is civil litigation. They 121 military operations. Those are programs that already have artificial intelligence put into them. If we know anything about the Russian way of war fighting, these techniques include schools, housing complexes. You need to look no further than Ukraine to see that doctrine of war fighting employed. Now see that they are going to operate that. They probably seek competitive advantage in making sure they can automate those systems and kill more people faster. That should make all of us take pause. That means we don't want to be party to allowing the Russians to take the intellectual property that can further that goal.

250 16:09:06 The center for emerging technologies, we had a speaker today also looking at artificial intelligence and military integration. We see advanced underwater ventures which accounts for 8% of their procurements and electronic warfare. As we start to think about the future, we need to think about three major movements I would encourage the committee to consider. We need to have programs which impose costs on adversaries, that means they have to be enabled in cyber domains and legal domains. We need to be exposing, blaming and shaming their attempts to undermine our AI programs. We need to make a big deal of it and display it to them, and then we need to integrate artificial intelligence to commercial ventures.

251 16:10:11 We need to extract capital money coming from adversaries. There is a program called the digital marketplace, great program. We should be monitoring that program and mirroring it in other places. We need to be augmenting some laws arguing that if they have sent us their best talent to learn about data science, computer science, that they don't go home. We create incentives that they stay here. By doing that, we're undercutting their major advantage. China needs us. We do not need China. And if that is the case, then we should not be taking their best and brightest and sending them back to China, especially after we've educated them. It also means we need to lean into partnerships with allies, and I'm not just talking about the Five Eyes or NATO. We need south Africa and Asia. We need to be thinking about East Europe. They don't have friends, we have friends.

252 16:11:16 Third piece and then I'll turn it back over. We need to think about data ahead of artificial intelligence. Artificial intelligence is important but it doesn't matter unless we have the data. And data is a strategic advantage in this cyber environment. That means that we need to question how data was collected, why it was collected, where it was collected and whether it was ethically collected. That's where I think this begins and ends.

253 16:11:42 >> Thank you, Brian. Andrew, thank you for calling in. You saw firsthand the importance of intellectual property. You just heard what Brian was talking about, the Chinese attempts to steal our intellectual property. Can you explain why AI -- why IP remains so important and for us as a country to remain a leader in innovation, especially in AI?
Thank you very much. Thank you for the invitation to be with you. Thank you for conducting these hearings on such important topics. Apologies I couldn't be with you in person, but very happy to at least be able to participate remotely.

Excellent comments from Brian, and obviously we need to protect against the theft of our intellectual property, no question about that, and he addressed that very well. And there is a variety of measures that the administration can and should do through trade agreements and otherwise to protect our intellectual property from theft.

But I don't want to belabor that point because I think the points have already been made by Brian. I want to focus on the second critically important component here, which is in addition to protecting against theft from other players, we need to double down and increase our own innovation output. And in order for us to compete and actually increase innovation in the United States, we need robust intellectual property laws. Why is that? This is because the United States depends on investment from our private sector. In a free market economy like ours, the private sector cannot be commanded how to direct its resources. This is unlike centralized economies, they can issue five-year plans and ten-year plans and things like that. Here we depend on the free will of our private sector. And the private sector, therefore, needs incentives and protections in order to make appropriate investments in these very risky new technologies.

So the private sector needs incentives to invest and innovate, that's number one. So by definition, innovation in general, and in particular disruptive innovation such as the artificial intelligence, is risky. You don't know if it's going to work. In fact, the reason it's an innovation is because nobody has done it before, so most of the time innovative technologies fail. So you need to be obviously incentivized to take the risk and make the appropriate investment of both financial resources but also time and talent. And the patent system and other intellectual patent laws provide that investment. As Abraham Lincoln said, the patent system adds the fuel of greed to the fire of genius.

So in addition to this incentive system, we need, once the innovations are created, robust protections provided by the rule of law once those investments and innovations are made. People need to know if they succeed, if they've overcome all the various risks that their creations will be protected and they will not be appropriated once they're on the market. And once again, intellectual property laws, if they are robust enough and if they are meaningfully enforceable, then they provide that level of comfort that your technology and investment, domestically at least, will be protected under the rule of law.

So our IP laws need to be designed with those twin goals in mind, incentivizing innovation in the first place, and then protecting the resulting successful innovation that comes out. Unfortunately, as it stands, our IP system, in particular our patent system in the United States at this moment in time, and particularly for these emerging technologies like artificial intelligence that are based a lot on computational sciences and data management are lacking. And in some meaningful respects, they are in limbo.

For example, it is not even clear whether a lot of these AI-based, machine-learning based technologies are even eligible for a patent in the first place. Indeed the law
has been so murky in the past decade as a result of certain Supreme Court decisions that all the judges sitting on the Court of Appeals for the Second Circuit have called for a revision of that law, and stakeholders across the spectrum have done the same.

261 16:18:08 So at a minimum, we need to clarify this fundamental principle, our patents, our innovations in this area of technology, AI, machine-learning-based technologies eligible for patent in the first place. Second, there is no meaningful protection for data. And I know Brian mentioned that up as well, and this is obviously critically important to machine-learning technologies, and right now the patent system doesn't cover data protection. The other IP laws don't really cover them -- doesn't cover it, either. So what we're left with, what companies are left with is secrecy, which means they're guarding their data sets carefully and there are specific limitations that are being brought on as a result of this.

262 16:19:23 So these and some other areas need to be addressed in order to clarify the patent system and make it more robust in order to incentivize and protect innovation in this area.

263 16:19:42 The second point that I want to make is with respect to increasing innovation, we need more inventors in the United States. By definition, we are a smaller country than our main competitor in this area, than China, and we're not going to compete, obviously, on the size of our population. At a minimum, though, we need to have more of our people involved in our innovation system. We did studies in the U.S. patent office, and with respect to the participation of women, for example, in the patent system, and what we saw with respect to patents filed in 2016, only 12% of inventors named on those patents in the United States were women. We repeated a study in 2019, and by 2019 the number was up closer to 13%. Certainly a move in the right direction, but, nevertheless, way far from where we need to be. The participation of racial minorities is even lower than that. And, likewise, innovation in the United States is highly concentrated geographically and also economically.

264 16:21:21 So as a result of all of those things, innovation in the U.S. is highly concentrated, and if we are to compete internationally on AI and all the other technologies of the future, with an inherently smaller number of people than what China has, we have to find ways to engage a higher percentage of our population in this incredibly important system.

265 16:21:57 So let me stop there, and just to correct, though, my quote from Abraham Lincoln, he said, The patent system adds a fuel of interest to genius. I very much agree with that.

266 16:22:18 >> We heard so far about the goals and aims of our main rival. We also heard the importance of IP and how we can incentivize and promote IP for our investment and also protect against possible theft. We have been tracking for years now technologies, so I want to know how is our federal government doing in terms of these investments? Because given the size, the budget is really hard to track each individual department and agency, not to mention how we're doing. I go to Tara for a quick overview.

267 16:23:08 >> I think today I am going to express my optimism. Thank you for letting me speak today. I'm very honored to be a part of this conversation and I agree with my fellow
panelists it's incredibly important. It's also clear based on the conversation that has taken place today that the opportunities and the risks of artificial intelligence for U.S. leadership and global competitiveness loom larger than ever, it seems. Over the past several months, we've watched this play out on the battlefield. The war in Ukraine has demonstrated that AI-driven technologies such as autonomous or semi-autonomous drones are already making their presence felt. In fact, we've seen not just their presence but their evolution in warfighting concepts just in the past six months.

Going forward, AI-enabled autonomous systems will collaborate with humans in the United States in responsible and ethical ways. In order to help those humans make faster and better, more relevant, decisions. AI will also operate alongside manned platforms to perform new types of human machine combat teaming.

Additionally, artificial intelligence will increasingly play a role until how enterprises across the federal government conduct their business. As leaders come to rely more and more on data driven AI. Sophisticated AI will do much to combat competition and military competition around the globe, which I think is the thesis of this panel.

So to help inform the public discourse on this topic, and to share with you, committee members, and those of you who are present, what the data indicates is happening with respect to U.S. government coordination in AI-related efforts were investments in artificial intelligence and related fields given it created a Taxonomy. I'll talk through some of those trends and observations, what the data shows is happening today. I also brought a copy and left some in the back for distribution so you can see some of the taxonomy and its results. It's a little bit much to just take in by listening if you're like me, so if you'd like to have a copy, it's on the bench in the back.

This artificial intelligence taxonomy uses techniques to parse it and then analyze it, and in this particular taxonomy, we are looking at federal contracts, both far contracts as well as non-far contracts such as OTAs as well as grants that are dedicated to AI investment over a five-year time period of fiscal year 2017 to fiscal year 2021. Specifically the taxonomy groups artificial intelligence into six major categories, and then each of those categories is further subdivided into subtitles. One of them is To Scale, division science, which we put division science and AI models together to fuel decision aids, computer division, machine learning, autonomy and natural language processing. I'll focus on three overall trends that accurately capture the current state of play and frankly highlight the path the U.S. federal government is currently on in this area.

First, overall, yearly federal spending across all agencies on AI and autonomy has trended sharply upward. The rate of growth, the compound annual growth rate from fiscal year 2017 to fiscal year 2021 on the totality of areas I just described as covered in this taxonomy grew by nearly 50%. That is tremendous. Often we take this data that we are looking at, particularly with respect to government investments, and what we find is we find disconnects, disconnects between national strategies and what's actually happening. Disconnects between bullish projections and budget plans and then the dollars that actually go out the door. In this case the headline is, and I argue it's very good news, is the
strategy, the intent, the plans are actually backed up by where the data says the investments are actually going.

Overall positive indication that the United States is serious about AI. It's serious about the role that artificial intelligence plays in leadership and competitiveness. And today we saw that the Biden administration released his national security strategy publicly based on its reaffirmation of the role of artificial intelligence in America's global competitiveness and the reaffirmation of ongoing investments in this field in order to harness and scale -- those are their words, and I think important, particularly the latter -- critical technologies of the 21st century for American leadership, and privacy is a further indication that we are unlikely to waiver from this investment path that we're on.

Second observation is that within the, spanning ally SF six of those SURJS -- they saw positive growth over that five-year time period. In some cases U.S. spending trends can be obfuscated or misleading because of the launch of one or two major programs. You could have a defense program of a billion dollars and it makes -- if you don't look the details, it's actually brought through the military and then the global distribution of those vaccines, it tells one story. When you take those Covid dollars out, the outlook tells a very different story. And so I use that as a good example of what could be happening what we sometimes see happen in these assessments, and in this case of these AI investments and the overall AI portfolio, there is no one single mover, and that's incredibly important.

Data at scale in combination with dramatic growth in a couple other example areas I'll GI you. One predictive, adaptive artificial intelligence, and the second indicator is driving progress in a range of areas, important to U.S. federal priorities and American strategy.

Finally, while the department of defense was the largest driver of U.S. government spending on AI and autonomy, as I think you all would expect, I particularly was surprised and expressed at how much the rest of the U.S. government is investing in this technology area as well.

Other federal agencies had increasing spending levels over the time period. This covers another point that is often covered by federal leaders that we often see in strategy documents but has a whole the government approach for American competitiveness. I would argue this is an absolutely necessary part of the approach if we are to prevail to maintain privacy.

Over that five-year time period, we saw more than $40 million of AI efforts be contracted through other transaction authorities or OTAs. You might think that sounds like a lot, but it.

Compare that to $75 billion of AI spending that went through grants and $4 billion of contracts over the time period. It really shows there is this diversity of participation, not just D.O.D. in that space. These analytical findings would indicate that the United States is reinforcing its strategy when it's hosting AI. I would point out there is one gap. There is a negligible amount of federal investments when you look at most of these federal investments in AI. This issue is well known and it's being addressed through a
variety of efforts. The department of defense is looking this up significantly. There are national efforts such as the PPBE commission that are addressing, how do we bridge this valley of death and into the federal procurement ecosystem.

281 16:34:39 I think it's probably another panel to have a discussion of what performed. That discussion of AI leaders isn't happening today, and I would argue that's an important gap to solve for, not just because of the representation but I believe it will be the ultimate performance of the U.S.

282 16:35:10 >> Thank you, Tara. I want to open it up to the committee members. Keith?

The ecosystem, the infrastructure they need to catch their share of economic benefits. Maintaining leadership and competitiveness in the field of AI requires coordination if not integration with our allies around the world, including verses on principles. I would like to strike that balance on competing, and particularly if you have any thoughts on pre-competing spaces where it might actually work together to collaborate. Anyone can answer.

283 16:36:44 >> I'm a year out of government so I still have some hangups about things I wasn't able to forget, and that was participating with our allies more. One of the things I was really hopeful for for the CEO is they have this thing called partnership for defense initiative, which is great because it brings together a lot of folks to tackle those questions. How can we compete and cooperate at the same time? Cooperation is a good thing. Cooperation is better, especially when we're talking in the military context. The thing that disappointed me most about that particular group is we had participation all across the planet except for Africa. And for me, that's a tremendous strategic mistake. Because when we look at our adversaries, particularly China, their strategy is directed toward that continent. They are seeking to digitize the content, whether it's exploring natural resources there, or P bringing national parts. The African people are losing their land to a foreign invader. So in our efforts to find allies and a fight for freedom and democracy, that's who we should be talking to, but we're not talking to them. I think it comes from a misplaced belief that there is no technical innovation occurring on continent. I think there is a lot of innovation occurring on the continent, and we should be doing things like that, thinking of what our adversaries are doing and how we can cut that advantage. That's just one example.

284 16:38:43 Keith, in my last decade in the CIA, if we can share intelligence with many of our allies, we should be able to do things like share data on areas of mutual concern. The other thing we need to do is re-engage in some of these international institutions that are a standard sitting body. One thing that would be great for y'all in knowing what those government majors in. The other issue we have to get beyond is the privacy issue between America and Europe. There were a lot of elements that were GDPR a JALS he not. I was one of the people that was involved in fighting the Europeans on JDPR. So we had to bridge this gap on what privacy means. You all will be doing work in these working groups. Recommendations are important and if we allow workers 12 to 15 years ahead of if us, STORLS. Ly we're never going the. We need to cut down in areas where we can and it starts with privacy.
Can I jump in?

Yes, Andrei, go ahead.

Thank you. I very much agree with the points Representative Hurd just made, and I do think we need to cooperate. I want to add the intellectual property point here. Without robust property protections, our private companies won't be willing to collaborate. You can't force them, really. So in order to have an ecosystem where companies feel comfortable sharing their data, sharing their technologies, they need to know that they can rely on the rule of law such that technology will be corrected, and if that's point number 1, we are falling behind in those bodies, in chairmanship of those bodies and there will be solutions that will be adopted by those bodies into their resulting standards.

Intellectual property laws are even more critical there. If we don't have a robust system of intellectual property system, we will be less incentivized to disclose the standard setting to the standard setting bodies. Most of the time they don't succeed, so it's lost, anyway. But if they TFRMENT. Ly they need to recouple their creations and submissions to the economic bodies are protected byly project laws. I'm sorry I just hard on them with layer upon layer of robustly protection.

I just want to point out the leading candidate of the head of IT is the first step in the right direction of these bodies. Dan, over to you.

Stanford, I want to thank the panelists for sharing their important perspectives. You noted the need to democratize the innovation. Brian, you know that data needs to be ahead of where AI is going. I heard you talk about the need for new forms of public/private partnerships, and Tara Dougherty, you talked about the critical role of foreign investment in the space.

So why don't you get your perspectives on one proposal mentioned a few times today, which is a proposal for an AI research resource. Get your perspectives on how you see that playing in to the other set of policy lovers that you've mentioned here. Increasingly intervention is centered around a few large players who have access to the scale of data and compute to be able to think about the cutting edge of AI innovation. Particularly with this scale a lot of innovation is out of reach for a lot of individuals. So I wanted to just open it up and ask you whether you had a perspective on the NAIR and how that fits into the other set of interventions that you mentioned. Thank you.

I'm happy to make the first comment to kick it off. I'm familiar with what you're speaking of, but I'm by no means steeped in the details of it. So I'll just share one point that strikes me based on the time I spend talking to not just the defense community but the population and that there is a gap that needs to be addressed. Layer on top of that classified spaces, you know, the ability to share information with program managers and working on classified programs, anything that creates that barrier once you get it into the national security space, and then it becomes even more challenging.

So certainly in those instances the government in the past has played an effective role to provide investment to put in place the infrastructure to allow that innovation to happen. But I don't think it can come just from the government at this point.
in time. There has been a dramatic increase over the past few years in terms of venture
capital, not just investment but interest in American competitiveness. The saying is people
used to say if you want to scare off an investor put sale to government in your business
plan. Now you can raise capital around that thesis solely focused on the federal
marketplace. So leveraging outside private investment into some of this system in a way
that plays an active role in spurring that innovation is absolutely necessary for these dual
use types of technologies, and I think it's a good example of what the future model needs
to look like between the public sector and the private sector in the United States.

294 16:47:32 >> Dan, I'll just add on to that, and again, I'm not steeped in the details on
NAIR, but one of the things, do we get an accepted group of AI researchers that should be
able to gain access to data and learnings and information from research that's already
been done and funded by the federal government? I could even go a step further on
activities the federal government is paying for, should that go to a community that's been
blessed and has the right credentials and clearing credentials. I think that's another way of
achieving this than through just pure research dollars making sure that information is
available to everyone.

295 16:48:24 >> Thank you, sir. Reggie?

296 16:48:26 Good afternoon and thanks again to all the panelists. I want to set this up in a
way that will work with your perspective. I think our working group wants to provide
recommendations that is ultimately digestible and explainable to a broader American
public, right? I consider myself a part of that broader public. I'm not a D.C. guy. I don't
speak D.C. very well, so pardon me. I think both hope and fear are great catalysts for
inspiration, right? So we got -- Brian hit us with we have to compete really hard against
China. With Tara I enjoyed the strategy of we're putting money behind it and the trajectory
looks relatively decent. Help the normal American public folks, not us in the room, right?
Help interpret why we ought to care about the conversation that's taking place right here.
And the reason I asked the question that way is I personally believe that part of our
competitive advantage is, in fact, the collection of voices, the collection of experiences that
we have that is 180 degrees different from those who might exist in a totalitarian
environment. Help us care so that we can interpret that in the form of recommendation
and hopefully share that with the American public.

297 16:50:14 >> I'll start with the negative side and Tara can put some sunshine on it. So for
me it's pretty simple. I think it comes down to jobs. That speech I mentioned from Chris
Wray, he cataloged an event with General Electric where the Chinese, same thing I've been
describing but more specifically, went for a piece of their electrical property, went for
someone with the Chinese government, had them give something they weren't ready to
give over, but that was part of their strategic plan around aerospace projects. It was 50,000
jobs at risk just for General Electric. That doesn't even count all their sub-suppliers, the raw
materials that make those engines, the fuel that will power it. It doesn't even count those
jobs. So for me it's the future of our world, future of our government is digital. If we're
allowing our adversaries to take highly sensitive technology, be that in manufacturing,
artificial intelligence, that is undercutting our future as a society. And the future, if we allow
it to be yielded to our adversaries, will not be a future we want to live in, a place where mass surveillance exists everywhere, because everything made in America was sold in China and it gets sent back to the Chinese government. That's not a future I want for my children.

298 16:51:54 >> This is such a thoughtful question. I'm glad you asked it and it's a challenge to remember how we talk to the American people about these issues is an important thing. 299 16:52:06 I'm going to pick up where Brian left off. I thought his play on jobs was a good one, but mine would be about the American way of life. If I had to distill down what we've been talking about here to the way it might impact my sister in Atlanta or someone's brother in Washington state, I would say it like this. We enjoy certain things about the American way of life because we have written the rules since the end of the Second World War about how the world operates. Unless you want pictures of your children, yourself, your loved ones that you posted on social media because it's a great way to stay in touch with your friends, to train algorithms that are going to target Westerners in a future war, then you're for the American way of life. That idea of collecting information like that whether people are for it or against it, they have no say in a country like China. That's the Chinese way of -- those are their rules of the road. I don't think Americans want to play by those rules, and so that's what this really comes down to and that's what's at stake.

300 16:53:23 >> I'm just going to ask Andrew and Lily if you have any questions. We have three minutes left.

301 16:53:32 >> Before I answer your question, I'd like to make a proposal, Mr. Chairman. I propose that Reggie reviews every document that produces this to make sure it makes sense to the American public. Reggie, that's the right question. All those in favor say Aye.


303 16:53:58 >> So the way I've tried to explain it, and this is always going to be changing, for our generation it's equivalent to typing. If you couldn't type, you're not going to get a job. For our kids, for our grandkids, and even current folks, your jobs are going to depend on understanding machine-learning tools, understanding data analytics, understanding being able to use AIs. It's not just the job of the future, it's going to be a transition of our current jobs. We have to have the tools to do this. AI is equivalent to nuclear fission. Nuclear fission controls because it's nuclear power that can light up the world. We always have to give examples of why this matters, and that's why it's hard for a group like this that understand it so well, you have to be able to make sure that Tara's sister understands it and my brother in San Antonio has as well.

304 16:55:00 >> Andrei, one last minute, one last comment from you.

305 16:55:04 >> Yeah. So I believe we're at an inflection point, a historical inflection point at this moment in time vis-a-vis these technologies. Let me broaden it just briefly beyond artificial intelligence and contemplate the standard in the world going forward. We have imagined soldiers that are driven by artificial intelligence, that are computing at quantum computing speeds and in fast speeds, 5G and 6G and well beyond that. When those three technologies merge, just one example, that will control the future for at least the next century. Quantum computing is 150 million times faster than the fastest supercomputer.
today. Imagine autonomous soldiers computing at that speed based on huge amounts of data that is fed by the national security system of a foreign adversary. Do we want to be second when it comes to that race? This is a question of absolute national security, and as the other panelists have said, a question for the American way of life. We must win this technological race.

On that note, Andrei, I want to thank you. I want to thank Representative Hurd, Brian, Tara and my colleagues on the Working Group 4. Please join me in a round of applause for today's panelists.

Thank you, panel 4. We'll take a break now and we'll reconvene at 3:05 with Panel 5. Thank you. 6.

We'll now have panel Kapp 5 headed by -- okay, Streyer. Thank you. For the purposes of today's panel, I would like to introduce our panelists. Gerard de Graaf is senior EU Envoy for digital and head of the new EU office in San Francisco. Thank you for coming in today. And Cameron Kerry, who is the distinguished visiting fellow in governance studies and center for technology innovation at the Brookings Institution. I am a fellow committee member that is going to conduct the conversation. Mr. Kerry?

Gerard, welcome. Thank you for being here. I know you just got appointed to this new position, so I just want to ask you, what are some of the expectations you have?

It's a question I'm asking myself almost every day. This is a very important area of technology or innovation. This could go all over the world and it's important to know what's coming down the pike. We need to aware of the past, we need to be fully aware of what's happening. That's one thing.

Another thing we have a lot of technology innovation in view of regulations and AI, as we've discussed, and we are welcome to Digital Services activity or data. This provides an impact on the European market because of all the U.S. companies established in this area. They are very successful in the European Union. Why we have regulated in these areas and what is behind, so that's the second task.

More generally and this goes a little bit closer to the discussion we had in this panel. We have a keen interest to promote cooperation with the U.S. We are living in a world that is a dangerous place. It is one of our major resources on which our strategy is built. We see effort for possible Italian companies, China, Russia, Turkey to break up the Internet, build their own Internet and use it for purposes with a take on human rights that we do not agree with. It is important in this world, even more important than before, that the U.S. work as closely as possible and together we know there are countries like China, Australia, New Zealand, we work together and we show, because effectively there are three multiples of the Internet governance in the world. I don't talk about the technical side of Internet government. A third model is basically leaving it to the actors, often the private industry, to kind of set the rules of the road and make it to some extent of a viewers model. We want to work with the U.S., certainly toward a human-centric goal. We follow different tracks or opposing tracks. It is not going to help us in the kind of current politics we find ourselves in. We have channeled with other countries and if we can make a small
contribution on the West Coast, it would be very good. We have intense conversation with the U.S. administration and I have been co-chairing with big tech and data governments and there is an attraction between digital and climate. And the cooperation, the exchange of news, the discussions that we’ve had are very interesting and lively and it involves the White House, it involves the Commerce Department, the state house and the UR. We have a common problem analysis so we don't see the situation from a different perspective. We arrive at common conclusions. Again, there is a lot of interest in what the EU is doing in the DMA and the data, and I wouldn't say the U.S. agrees with everything we do, but at least there is an understanding of how we are addressing these issues.

314 17:16:34 I think here your committee can contribute to promoting this convergence of a new similar program. The next step begs the question, what did you do about it? There are policy questions you withdraw from the take people have together in the U.S. I think the U.S. came out in AI with a Bill of Rights last week on substance. That's excellent. There is nothing missing in this, other than it's not binding. It's a framework that's a call to action. As I said earlier, we in the European Union, we do not believe in areas as important as AI where we really have -- maybe I should state in Europe we're only regulating 5% or 10% of AI space. We're not regulating like 90% of AI. But where there is a risk, either a non-acceptable risk or a very high risk, we think regulation is something, because we go here into areas which are fundamental to the freedoms that we have and the rights we have and the fundamental values that are enshrined in our treaties. There you cannot rely on the goodwill of actors and people, because you always will have some that will comply and others that won't, and the result is creating a vacuum, we create uncertainty, people lose trust and one of the fundamental ingredients for being a successful digital economy in society, we heard in the previous session how we continue to lead the technology for evolution. One critical ingredient that is incredibly difficult to me is trust. If our citizens lose trust in AI because they believe it kind of discriminates against them and leads to outcomes which are harmful to their lives, they will shun AI and we will never be successful.

315 17:18:48 I think the other element here that was alluded to in the previous discussion, we don't want AI that does not meet our values, our standards in EU. Wherever it comes from, and obviously what is being developed in China by way of example, that is not the kind of AI our citizens should be exposed to. Therefore, we set the rules of the road in a binding way and this enables us to say this AI is not welcome in the European Union because it doesn't meet the standards of the European Union. Much like cars that don't meet the expectations of the European Union can not be sold in the European Union. We think the environmental committee needs to suggest what is politically right to do. We do the right thing in the public interest to say what do you think needs to be done in the general interest? Whether that's politically achieved in the U.S., it's not a question. We know in the EU the capacity to implement legislation in this area and possibly in other areas as well is greater with the help of the U.S.
technology companies, the world's largest technology companies, though not exclusively, because they're an effect on your population, on your sovereignty, on your values. That's why you're here. I know it's a new job. I just want to get your thoughts on your recommendations to us on behalf of the U.S. to turn a unilateral relationship into a more bilateral one. What can we do or what can we recommend to enable the EU, and frankly, and Cameron referred to this earlier, the other 40 cyber ambassadors which they're not all based here. I think there are 15 based in the Silicon Valley but they do spend a lot of time here. What can we do to help support the EU on its mission to turn this into more bilateral dialogue?

317 17:21:45 >> I think it's interesting you mentioned the inventions innovationsthe technology that was not done which moved fast, et cetera. This is not the way the future is going to be at 2.0. Whatever you call it can be designed. These things will have to be first and foremost in the minds of those developing the technologies. It's a bit like a hypocratic oath. Engineers are trained here at Stanford. It's not just about technology, it's how the technology will be used in the societies. A medical doctor takes the hypocratic oath and doesn't do any arm, maybe the engineer should make a similar oath and say I will do no harm to the technologies. Yesterday there was a very interesting speech about hardware and innovations. What about policy? How are we going to make sure the metaverse is safe? There is nothing saying if you buy stuff you get ripped off. Very important questions that you better answer now because the metaverse is still in development and in five years, ten years, it will be part of you. That's one of the kinds of opportunities we have here which is to raise these questions before they turn out in a material way to be overlooked at the time when the technology was designed. What, again, can the committee do? Many others will read your report and I think it's those kinds that will think about technology not just for the sake of it. Technology for good. How can technology, particularly in this world when we are facing Monumental challenges, all of us together, how can technology help address these challenges together? How can I make the most money, how could I do something that benefits society, and at the time there is a nice expression, doing well by doing good in the U.S. At the same time, of course, make sure the benefits and the fruit of the world shall see who is behind it. I think your report, your recommendations should be recommendations in the round and not just recommendations.

318 17:25:25 >> Thank you very much. Let's go towards Cameron because it builds off really well around the conversations we've already had. Cameron, thank you so much for being here. On behalf of this working group I really appreciate your time today. You know, most of the folks might not know but you have made an extensive report on AI. Maybe just launching off what Gerard was just mentioning, why is the operation of artificial intelligence really critical right now, and what do you think are the main dimensions of alignment globally and geopolitically?

319 17:26:17 >> Thank you for the invitation to be here and to talk about this topic and our work. That work really grew out of three years ago of heading off the divergence and dysfunction that we've seen when it comes to privacy of data protection and data flows. And to act early on to try to produce some convergence, well, AI was still unplowed ground
as far as policy development and legislation. And cooperation in this area is particularly important in the artificial intelligence field. In collaboration of disciplined institutions and, of course, national borders is really the norm for scientific research today. It's particularly true for artificial intelligence for many of the reasons we heard. Access to compute, to scale, to reach across disciplines. And the result is, as we said, no country can go it alone. And so international cooperation needs to be built into policies. It is certainly part of what we've seen in executive orders in the United States. It's part of other international strategies and policies on AI and part of many different multilateral configurations.

320 17:28:24 But that engagement needs to sustain the existing systems of international collaboration and build on that. As Brian Drake said, it's important in this area to have allies and alliances. That's what our work has been focused on. We made 15 recommendations in a progress report just about a year ago, really grouped across three categories. There was regulatory alignment and international standards development and cooperation on large-scale R&D. Let me touch briefly on some of those and we can explore that for Q&A.

321 17:29:21 On regulation, the EU moves forward unilaterally with the AI act in an array of digital legislation. And Gerard said, as others have said, the AI Bill of Rights align in many respects with the AI act and its focus on risks, on individual rights, on the human effects. But there is that difference, that it is non-binding. I think that has less to do with a laissez-faire approach, a less approach to legal principles as necessary to the deployment of innovation compared to inductive, iterative, case-by-case approach. These are systemic differences. I have been intimately involved in EU relations for the past 15 years and the dissonance that results is hard to overcome.

322 17:31:06 But what we need is bridges. That's where I think the standards come in and join R&D. When I met with you in June, we talked about the opportunity to use standards under the AI of the act as proposed would permit compliance with harmonized standards with high risk assistance. The harmonized standards comes from applicable standards. There's good research from Oxford and that approach. There is the opportunity to move from international standards. I spoke with the European Parliamentarians involved in the negotiations over the bill may look to that. I think that is something to encourage. More broadly, I think to encourage U.S. stepped-up engagement, the development is a great one and I think reflects some shift in the world's thinking about China and about Russia and about authoritarian states.

323 17:32:45 To increase the support for standards development organization, including standards support, would enable publication of standards so that there's access to both innovators at home who are not wealthy but also around the world involved Africa, as we talked about the rest of the global south in the standards development system. We need to make it accessible. Those investments will be important and NIST and RMF can help steer in that direction. So can the TTC.

324 17:33:45 Joint R&D, a recommendation is that countries, seven countries participating in our project or others, pursue AI and R&D jointly, the premise that it can combat AI for good, but it also provides a specific context in which to resolve some of the differences. These are more easily dealt with in the context. There will be a paper that takes that
further and the areas to focus on would be climate monitoring and management, leverage existing data sources and also on privacy-enhancing technologies, technology that needs to develop further but that can help with some of the data issues that we’ve heard about today. Wider to make it more diverse data, more widely available to help power AI research and to expand AI application in the areas like health research that involve highly sensitive data.

325 17:35:21 I have one other comment to pick up on what Will Hurd said. I think the U.S. is handicapped in some of these international discussions when it comes to protection, having comprehensive private legislation on the books would make an enormous difference in understanding those international discussions and in the trust out there in American technology or our rule of law. I could not agree more with Gerard that trust is the fundamental value when it comes to dealing with technology.

326 17:36:08 >> Thank you so much, Cameron, for that. You spoke about privacy, so let's stay on that topic for a little bit longer. We've heard a lot about privacy today in relation to algorithmic accountability and the current gaps which exist in privacy laws which don't occur in what we're discussing. I appreciate both your perspectives, but what is the elaboration to ensure that innovation protection exists to be sure the algorithms serve the countries we're trying to serve? Cameron, maybe we could start with you, and then, Gerard, I'd love to hear your perspective.

327 17:36:59 >> Sure. I think this is where the American legislation can help with the Privacy Protective Act, some inviting more extensive ones to larger entities. We bring to bear algorithmic assessments, and I think we’ve heard a lot from subjects and this begins, I think, the process of having more thoughtful use of algorithms and beginning to develop a greater understanding of how algorithms operate and what their impacts are on individuals.

328 17:38:03 >> Maybe data protection, if you're at all familiar with the GPR in the form of an executive order by the president which will hopefully facilitate an agreement on the Privacy Shield issues before too long. They're taking internal steps now with the European data protection board, and the parliament will take a little bit of time, but I think we're quite confident it will lead to a result which may subsequently again be brought before the European court of justice, but we have stronger safeguards if place so we're quite confident it can withstand the scrutiny.

329 17:38:56 What I wanted to say on the data protection, not that interpreting it is not important, we talk about data protection, and when we talk about artificial intelligence, we need to talk about that use. The only focus in Europe is to protect data but not to valovize data, and with GTR we are very active with the data act. We have a data governance act. Europe has a big handicap compared to the U.S. and compared to China. They are not residing in the big platforms or residing in the communist party or the ruling systems in China. So what we need to do is to make sure that the data that exists, which is a lot and growing very, very fast, that we make that available for artificial intelligence. Medical data is still very much stored and not shared despite kind of all the GDP protection. I'm not implying that has become less important to Europe, but I think given five years time, you
hear data protection more than they can use of data, so we're now focusing very, very strongly in Europe and making sure that data is shared, data space in particular so that the data can be used with AI applications to find breakthrough cures to cancer or other kind of diseases. We can use it in order to optimize farming, to use less pesticides, less fertilizer. We can use it to promote energy efficiency. We improve energy efficiency by 50% with the technologies that exist today. I just wanted to talk about that a bit because it's all about GTR and it is increasing our data and making sure we have enough data to run algorithms and see what potential AI holds for our societies and for our colleagues.

330 17:41:44 >> Thank you for taking time to talk about this today. David Dankst here. I'm wondering if you could at least perhaps speak a bit about issues involving cooperation and coordination with countries who might be, to borrow your phrase, technological minnows. There are many cases in which companies or actors in our respective governments or our respect active nations have acted in ways that have impacted others that aren't as sophisticated. I'm wondering if you could speak about, from your perspective, what are the opportunities and/or obligations that might be incumbent upon the U.S. government since we are a body to advise the U.S. government principally, in terms of acting in those positions that are not in the position of the EU to jointly set standards but impacted by the standards we set, impacted by the actions we take directed toward the companies who are housed here in the U.S.

331 17:42:57 >> I talked a little bit about that in the context of standards, some of the support or SDOs needs to be focused on essentially fellowships and the identifying talent in those countries to participate. The problem we have today is that a lot of the technological skill that goes into SDOs, and even more than that, the resources to put in the time, the work and pay for the standards comes from large technology leaders. So providing that support can help to broaden that base in terms of who can participate and help to build up the knowledge and the experience among other countries as well. This part of the international collaboration, international cooperation strategies needs to be a focus on how will we become more globally [indiscernible]. Our organization will not work without standards, so you need to kind of assess the risk of your software embedded so it's absolutely essential that standards are brought. It's not the favorite subject of political leaders, I can tell you, not in Europe. It now has to be because strategically, a German word in the American language, it's called Chef Sokka, and that's a huge debate about standardization. We've seen countries like China and others trying to capture the standardization system and actually driving their industrial policy interests through that system, and in some cases in succession. The standardization system has to adjust considerably to the challenges that I would call value driven. I talked about the important of value. When we talk about AI or privacy, we talk about fundamental rights in the treaty and these are not technical issues. Standardization bodies, we have what we call new approach legislation, toy pleasure boats, all kinds of things, and in standards you buy from one country to another country. How long does it take for a door to burn down? Not 30 seconds but at least three minutes. Those are the kinds of issues the standard setters deal with. They're a private sector so they come from companies and they have their own
industrial interest. Here we talk about issues that go to the core of who we are as societies, as individuals. They go to our values. This is a little bit kind of -- how you say -- difficult to think that these standards can easily be set by private sector operators who are used to working on the very technical issues, but when you talk about values, that is not their bread and butter. We are seeing our standardization bodies struggle with these issues which are eminently political and where a little tweak can have a major impact on, say, the approach that we take. In Europe we see that locally as well, and we have to say the general problem of our standardization system, the bigger ones are most active and it is not very active. The standardization system is as much challenged by these new developments that need to be put into standards.

332 17:47:40 The second point to make is how do we help the developing countries who don't have the capacity. I think we're all familiar with the roads initiative. There's been a lot of investment in Africa, and we also see some of the implications. The European Union now has an initiative called the Global Gateway. We need to make sure, for example, in their decision making, they can use daytime intelligence that comes from AI. For example, we are developing a very ambitious project called Destination Earth. We bring together all data from space, the fastest supercomputers to make predictions about what will happen to sea levels, what about extreme weather events? We had a massive flooding last summer in Europe and Germany. Many people died, and also in Belgium and adjacent countries. With good intelligence, it was kind of -- you could predict where the water would go and which liabilities in towns were at high risk of getting flooded and then people, of course, drowning and all kinds of human suffering. So we're making that data available. This is also something we would want to share with countries around the world. This is a global public good. This is a resource for the world, so to help countries in Africa and around the world to say, Here is data. This is the kind of data you can use in order to improve your decision making if. It won't be extreme many indigenous people.

333 17:50:07 >> Both of you have understood the challenges and opportunities in standards setting. The United States and European Union currently have a method through the TTC council. I'm struggling with what could be meaningfully taken away as, say, one recommendation that this working group should be suggesting to make progress on useful contextual standards? If he were to make one recommendation for a working group, what should that be for across artificial intelligence?

334 17:50:48 >> Some of the work in the TTC is focused on strategic challenges. It's important we step up our collective game on standards, and I think look at that strategically. But to avoid politicizing standards in the way that China has done, you bring an academic from Latin America into SDOs with the commitment that you'll support the standards that American companies advance. We have to be careful not to politicizely the standards-developed process. I think one of the great strengths of SDOs, strengths of the work that NIST does, is that it is research-driven, it is bottoms up and it is consensual, and we need to preserve that in SDOs even as we talk about the number one recommendation would be to invest more in supporting SDOs, both to enable the work, to enable more inclusiveness and to deal with some of the challenges that Gerard talked about, moving...
into the sociotechnical standards. That can be done, it's not easy, but Tripoli was an early mover in how to develop standards for AI? R&Ds do this a number of times in terms of that subject with better research. As NIST is joining, break those issues down into categories and references and practices that are non-competing.

335 17:53:46 >> We can't just sit in a room and set our own agenda. The agenda needs to be set for both, and there is a clear desire of doing even more of that, and I think your input will be very timely for the TTC. What can we do together? We spend a lot of time getting to a common understanding of the principles and the AI activity and the Bill Of Rights with the understanding that is being achieved. How do you cement this, or will it be done in a voluntary way? In the U.S., the challenges issues are similar. You can go to a court and enforce it.

336 17:54:46 What we're now looking at, with NIST and the Department of Congress is looking for some road map we would work on together, and ideally they would make up the common proposals and get the rest of the world behind us. Measurements, monitoring, risk assessment, some areas, maybe, even looking at how standards can kind of help with the implementation. That's where the practical -- I think you talk quite right about where can we find bridges? Standardization we can find bridges and then it leads to implementation challenges where we both are, either because it's part of the Bill of Rights that we have shown you as an administration. We would hope the Bill of Rights got some practical application. I think that's where we need to look. That's where we are touching on similar problems. In this particular area, how do you do that? Maybe also with other kinds of people you have achieved and as an advisory committee, you can help the TCC to kind of prioritize, that these are areas we think you should focus on first.

337 17:56:15 >> Thank you for both those comments. We're coming to the end of our session here. I don't have any questions. I would like to make a couple points. There are two sides to international cooperation when it relates to AI policy. There is the regulation of AI and there is the diffusion of AI. We talked a lot about -- well, we actually talked about both but we talked a little more about the regulation, which makes sense. But you also, Gerard, multiple times, and I appreciate this. I was almost thinking were you able to see my iPad because you were lifting words right out of it. You talked about the benefits and the sharing of benefits. I'm glad you did that and I want to double-click on that because David brought that up as well. The diffusion of AI extends from trade and immigration policy straight through to just collaborations on the tactical implementation of AI systems, so it covers a wide range of activity. We do have this have and have-not world, right? The issue of a digital divide is a well-documented concept. Now we're in it the training divide and other levels backed up. It's not theoretica. The future of weather computation is end-to-end confrontational. We're talking about 50,000 times more effective, 10,000 times less energy, consuming less energy to get to a better result. And not just for Europe, it's vital for the world. It's vital for us, it's vital for Latin America, Southeast Asia.

338 17:58:07 So the idea to collaborate and the obligation of the U.S. and EU to work together to ensure that the global south not only has access to the Internet but has access to climate intelligence to make sure other things like their industry, their health care
survive the next generation. These are great opportunities for us to collaborate, so I'm very encouraged by the fact you brought that up so proactively, so thank you for that. And Cameron, thank you for your expertise on these topics.

339 17:58:38 >> I'm encouraged. Look, I've been deeply involved in EU since I joined the Obama Administration, but in some respects, growing up a military brat stationed in Europe, I think our U.S. relations are better today than they have been any other time. The Biden administration, from an early time, reached out to the EU to recognize it as an essential partner. We've seen that partnership grow and the reaction to the events in Ukraine. It is a guiding principle that we need alliances, a guiding principle for the administration, and often that begins with the EU.

340 17:59:45 >> Back to the point. Just imagine a time when the EU and the United States would be at lagerheads in this world. We need to work together and I think we all hope this fundamental understanding that the EU and U.S. for many reasons, but particularly because we are a rules-based society, and the Democratic rules-based societies are at risk, and we need to work together to make sure they work together against regimes that don't have our best interests at heart. We also need to show we bring benefits to the world. Destination Earth, I think, is a good example. We are pumping lots of money into this. The EU is very keen to work with the U.S. and other countries like Japan and India and Canada to say this is something we need told together. Because we have to show to the world that AI isn't just something for the rich nations, the prosperous nations, AI isn't just something for private companies to develop and make even greater profits. AI is there for the general good. What a better example to show if we were to work collectively on climate change. We make that information available to all in the world to be able to take the necessary measures in order to avoid this. You look at these graphics and you know it's not going to get better, it's going to get worse. These are tools to address what should be driven by AI and should be available to anyone in the world. That I think is something that perhaps a recommendation could come out of a report. I would be very happy to act on that.

341 18:01:56 >> That's great. Thank you. On that very positive and upbeat note, let's wrap up and give applause to our fantastic panel.

342 18:02:15 [Applause].

343 18:02:17 >> Thank you, Panel 5. I now call Miriam Vogel, the chair of the NAIAC, to answer questions and provide closing remarks.

344 18:02:46 >> Thank you very much for our enlightening day. I can't remember the last time I sat for seven hours. I hope those who watched us on livestream enjoyed this as much as I did. I thought every presentation was really enlightening. I'm so glad you have esteemed members of NAIAC, because as you can see, the conversations you all sparked was so important. The speakers you chose to represent the issues you're thinking about, some of the issues with more to come, were spot on and really covered the gamut of issues from opportunities to concerns. International collaborations and international adversaries. Each discussion had the yin and yang, concerns about the average American, how we can be productive, what collaborations should look like. Really exactly what any of us would hope today's conversation would look like
I really want to commend the members for putting together such a thoughtful discussion. We did want to set aside some time for Q&A with questions that came in. We got a few questions in, but keep them coming. Keep your thoughts and questions coming. We have a website naiac.gov. We have a suggestion for a report that should be included in our -- well, I now will have my formal comments. So for the Q&A, the comments that did come in, there was a recommendation that we include an IEEE report. Thank you for sending that in. We'll be sure to include that, and that slides in an important point that that is a resource we plan to make available as we issue our report in the spring. We want to make sure that we survey resources that we find helpful that form our opinions and our recommendations.

To the extent we didn't ask this of the speakers, if the committee members could please ask the speakers to share any reference for reports and surveys so we could include that in our final report as well. With respect to the report we issue in the spring, we do think it would be helpful to share with you our carefully cultivated resources. So that will be coming.

Another query was about privacy concerns, the users of AI, whether their data is protected. I think you could see that was a concern raised throughout conversations today by experts across the scale and scope of perspectives. That's something we'll certainly take into consideration and something that forms all of our discussions.

There was also comments that have come in suggesting we implement other resources that have been published and created, including the AI Bill of Rights. I think that's spot on. I think one of the ways that we'll try to add value as a committee is thinking about what's already out there that we can support, that we can operationalize, that we can highlight and amplify, so the AI Bill of Rights is one of those types of resources we will give deep thought to, how we can add any value or amplify concerns and recommendations and best practices.

There was a final comment that we need to make sure that behavioral scientists are involved in AI creation. I think that's a great idea. And thank you for submitting that recommendation. I think you heard that in many of the comments today. I think the bottom line is AI needs to be a multi stakeholder process in its creation, in its development, in its testing. Anything we can do to further support the multi-stakeholder perspective. There had been some comments that engineers need to take a hipocratic oath or something of the like which is something we can talk more about, but at the end of the day, we can't leave it to the engineers to solve this problem alone. We heard from some of the comments today all of the people impacted. It's not fair or feasible to imagine an engineer could answer all of the questions, think through all the use cases and all the different ways someone could be impacted. It's really going to require systems and teams that we can make more available. We can give some thought how we can make that more a part of the process to involve the broader cross-section. We had a committee member nominated to be a spokesperson for the American people, so thank you, Representative Hart, for endorsing our committee member. Obviously I say that in jest because there cannot be one person who can represent all the views of all the people. That's an essential
piece here of the nut we're trying to crack. How can we make sure that AI is effective, is inclusive and imagine all the various use cases and downstream users. While our esteemed committee member will do a great job to bring that home, this will really take all hands on deck to make sure we're doing this properly.

350 18:09:07 In closing, I really do want to give so many thanks. As I said, thank you to the NAIAC committee members for a masterful job of fostering really thoughtful conversations that we are now going to bring forward in action items. We will think overly the next few months about specific concrete recommendations, how we can take these thoughts and ideas and bring them to the finish line. We will have that in our spring report. We will float those ideas and try different ideas in public conversations over the next few months. But also, this is a three-year process. So we'll have this spring report but we'll have two following as well where we will think more broadly and where we will further develop these ideas and come up with new ones.

351 18:10:00 A thank you to the speakers who came today and sharing their deep insights. Thank you, again, to Stanford for hosting us here. Thank you to the HII institute in inviting us to participate in this wonderful forum you set up to engage in ideas. That is so much in the DNA you created particularly with regard to responsible AI, and we're glad to be the beneficiaries of what you have set up here and to really be able to Foster a collaborative approach here in our conversations in how to move forward.

352 18:10:43 Thank you to the law school for allowing us to sit in here today. I love that we are broadening the ideas in the legal institutions thinking about where we are today. There's been so many discussions about laws on the books, what is helping, what is hindering and what needs to be on the books. I personally appreciate that grounding in our law and fundamental institutions.

353 18:11:05 I think that at this point we have a lot to digest, we have a lot to think through. We'll have another public session tomorrow where we will hear feedback from committee members on what they heard today, where they are thinking about going with recommendations and other action items. So we will look forward to hearing more from everybody tomorrow. And keep the questions and thoughts coming and thank you so much, all, for participating.

354 18:11:44 >> Thank you, Miriam. At this time it's 4:11. I adjourn the meeting. Thank you