

>> Okay. Welcome, everybody. We will be starting shortly. First we are going to go around the table and introduce ourselves. I'm Evan Heit.

>> Hi. My name is Lara Campbell, and I'm part of the Convergence Accelerator team.

>> Jeremy Epstein, part of the Convergence Accelerator team.

>> I'm Jim Kurose, also part of the Convergence Accelerator team, and Assistant Director of CISE at the NSF.

>> Hi. I'm Sarah Kiesler, and I'm also part of this team.

>> Hi. I'm Vandana Janeja, also part of this team.

>> Hi. I'm J. P. White. I'm providing IT support for this meeting.

>> Hi. I'm Nancy Kamei, and I'm part of the Convergence Accelerator team.

>> Okay. We will start shortly.

Okay, so hello, and welcome to the Convergence Accelerator pilot webinar. I am Evan Heit of the National Science Foundation. I will be speaking for about 10 minutes, then my colleagues and I will be glad to answer your questions about the processes as well as research areas for this pilot.

First, a few logistical matters. Attendees will be in "Listen Only" mode during this webinar. To post questions, please use the Q and A feature of WebEx and submit questions to all panelists. Real-time captions are available for this webinar. We will be posting presentation slides and a webinar recording as soon as they are available. We also intend to post FAQs very soon.

In this webinar, we will cover the following topics. First, just what is a Convergence Accelerator? Second, what is the timeline for what will happen under this pilot activity? Third, we will focus on Phase 1, the initial part of the pilot for which we now are seeking proposals. Next, we will cover the research topics in this Dear Colleague Letter, which I'll refer to as Tracks A1, B1 and B2. Then we will focus on the very first step, which is to submit a two-page research concept outline with a target date of April 15th, 2019. Finally, we will respond to questions. Again, to post questions, please use the Q and A feature of WebEx and submit questions to all panelists.

>> I'm sorry to interrupt you, I have a message that people are not able to -- or someone is not able to hear audio. Can we get somebody who is able to hear the audio to please message us through the Q and A system, so we know that someone is hearing us out there? Okay.

>> Okay, fine. Okay, that's good news.

>> We know that you're paying attention, too.

>> Okay. What is a Convergence Accelerator? This is a new effort at NSF to accelerate use-inspired convergent research, directed at solutions for important national challenges. Convergence refers to the multidisciplinary expertise assembled by the team so they can converge to accelerate the research. Each team should include, or have a plan to include, the

necessary disciplinary expertise and partnerships with non-academic organizations that can move the research results into applications that serve the public. This work will take place in phases. There will be approximately 50 Phase 1 awards for up to \$1 million each for initial work, then there will be a smaller number of Phase 2 awards for up to \$5 million each.

Here is a timeline of the two phases of the C-Accel pilot. With the Dear Colleague Letter issued on March 15th, 2019, we are seeing proposals for Phase 1 projects. Two-page documents known as research concept outlines have a target date of April 15th, 2019. By "target date" we mean that it is still possible to submit research concept outlines after this date. Once we have received the research concept outlines, we will aim to respond quickly. Full proposals are submitted by invitation only, based on how well research concept outlines fit the NSF merit review criteria, and the Dear Colleague Letter. We will let investigators know whether or not they're invited to submit a full proposal. Full proposals will be due June 3rd, 2019. Note that June 3rd is a deadline, and not simply a target date.

We expect that Phase 1 projects will start in the Third Quarter of 2019, in September or October. Phase 1 projects will focus on team formation and research plan development. In the First Quarter of 2020, each Phase 1 team will be invited to make a pitch involving a Blue Ribbon Panel for Phase 2 funding. Written proposals for Phase 2 funding will be due in the First Quarter of 2020. Further instructions about submitting Phase 2 proposals will appear in a new solicitation, to be issued later in 2019. Only Phase 1 awardees will be eligible to compete for Phase 2. The Phase 2 projects will start in the Second Quarter of 2020, and are expected to continue for approximately two years. Phase 2 will emphasize creating deliverables, such as prototypes or tools. Again, to post questions, please use the Q and A feature of WebEx, and submit questions to all panelists.

Here is some more detail on what happens during Phase 1. Phase 1 projects will have a duration of approximately six to nine months. This will be an opportunity to build project teams and partnerships, create research and development plans, and move towards proof of concept. During this period, NSF will organize cohort activities that team members will be expected to attend. These will be training activities covering technical information, and other topics such as convergence science and market analysis. At the end of Phase 1, teams will make pitches for Phase 2 funding.

The Convergence Accelerator pilot has three research tracks; the first is called "Open Knowledge Network," and is referred to as "A1." This track is associated with NSF's Harnessing the Data Revolution Big Idea. The goal of this track is to create an open, non-proprietary, shared knowledge infrastructure, with a particular focus on publicly available U.S. government and similar public datasets. This Knowledge Network will allow stored data to be located, and the relationship to other data and to real-world objects to be understood at a semantic level. Challenges will include creating, underlying representations of facts, services that perform reasoning tasks, and secured access. Potential topic domains include geosciences, education, smart health, finance and manufacturing.

Tracks B1 and B2 are associated with NSF's Future of Work at the Human Technology Frontier Big Idea. Track B1 is called "AI and Future Jobs." This track will support the development of tools that help workers to connect with jobs of the future. Components of these projects may include predictive AI, economic and labor market analyses of needed skills, and educational technology appropriate for adult learning. These projects may focus on particular industries or regions, populations, or types of workplaces. Ethical and fair treatment of workers is essential in these projects.

Track B2 is called "National Talent Ecosystem." This track will find innovative approaches for employers to support workers seeking the skills required for twenty-first century work related to data science, predictive analytics, AI and machine learning, and other technologies of the future. These projects may include prototypes of learning environment platforms, interfaces or simulations, tools for analysis, assessment or prediction, and vehicles for recruitment and engagement, all potentially having application or take-up by industry.

Again, to pose questions, please use the Q and A feature of WebEx, and submit questions to all panelists.

The first step for interested teams is to submit a research concept outline. Note that there is a target date of April 15th, 2019. This means that it is desirable to submit by April 15th, however, we will respond to submissions after that date as well. Submissions are made by email to C-Accel@nsf.gov. Submissions should be two pages in length. There should be a title reflecting the track of interest, beginning with "C-Accel Pilot - Track A1 (Open Knowledge Network)," "C-Accel Pilot - Track B1 (AI and Future Jobs)," or "C-Accel Pilot - Track B2 (National Talent Ecosystem)." The project description should include the following information: State how the project idea will involve researchers from two or more intellectually distinct disciplines. This is necessary for truly convergent research. State what are the intended practical applications, or useful results, and what is the timeframe for these deliverables. Include names and organizational affiliations of the proposed team, including designation of a principal investigator. Describe how the multi-stakeholder convergence teams include, or will include, academic and non-academic organizations, including private sector entities. Describe how each team member will contribute to creating a bold research and development plan, and advancing the convergence research. Note that we intend to respond quickly to research concept outlines, leaving time to prepare full proposals for the June 3rd, 2019 deadline.

This concludes the presentation. Thank you! We will now respond to questions. Again, to post questions, please use the Q and A feature of WebEx, and submit questions to all panelists. Note that we will post further information when available; we expect very soon. After the webinar, please email questions to C-Accel@nsf.gov. At this point, we're going to pause for one minute, and then my colleagues, Lara and Jeremy will be organizing answers to questions.

>> Great. Thanks very much, Evan. So there's a few quick questions that I'm just going to tell you what the questions are, and give the answers, because they're simple. Then we'll get into some that are more discussion.

>> Great.

>> So there was a question, how quickly are we going to respond to the research concept outlines, the RCOs, as we call them? And the answer is, our plan is to reply to them within one to two weeks.

A second quick question is, will the feedback to the RCO be a simple Yes-No, or will there be constructive feedback? And the answer is, for those where we're giving a Yes, there will be constructive feedback, and there will be guidance to help write a Phase 1 proposal. For those that are No, it will just be a No. Now we've had questions that require a more detailed response -- let's see --

>> There was a question -- this is use-inspired research. So there's a request for some examples of what use-inspired would be. I'm just going to pass that to Jim Kurose first.

>> Okay, great. I'd be happy to answer that question. Again, I think when we talk about what we're accelerating here, yes, we're accelerating convergence research, but as Evan mentioned, it's accelerating convergence research into practice. And I think that's where the term "use-inspired" comes in. I think if we think about test beds, we think about software tools, we think about living labs -- so we think about creating, well, creating test beds, tools, living labs, creating these things that are instantiated, and that are used as part of -- will be picked up by -- the research community, potentially picked up by industry as well. So if we think of sort of spiral design in software, for example -- you know, we build something, we learn a lot. We build something, we learn a lot. So I think use-inspired is somewhat the quintessence of that, if you will, this notion that we will be building these tools. We'll be building things that will be used by the research community.

>> Okay. Please explain intellectually distinct disciplines. Would math versus computer science be distinct? Evan?

>> Yes, that would count as intellectually distinct disciplines. Being at NSF, we're seeing this to the framework of our directorates at our divisions, but the short answer is yes, right?

>> Could I add on a little bit to that?

>> Yeah.

>> I think also that we don't necessarily look at how disciplines are organized within a college. As Evan mentioned, computer science and math are distinct disciplines but sometimes they're in the same organizational unit within a college and they're all within a university. Other times they're not in the same organizational unit. If you think about a directorate at NSF, like Social, Behavioral and Economic sciences, that's so broad. That doesn't mean that if you're an economist collaborating with a sociologist that you're not interdisciplinary, that it's not collaborative interdisciplinary research. So we don't want to -- people shouldn't think that the particular organizational structure of the university that they're at, or the organizational structure, and that sort of dictates that.

>> Make your case when you tell us what you're going to do about how interdisciplinary and distinct your team is.

>>I have another question. Since some of the activities of Phase 1 includes team formation, but the two-pager concept outline also requests information about the team, the question is, should they submit a core team, and then expand it in Phase 1?

>> So for the Research Concept Outline, we'd like to know who you have on your team and who you imagine you would try to bring on your team during the course of the Phase 1 grant. So the Phase 1 grant will be six to nine months, and we do expect that there will be a lot of changes from the time your RCO two-pager is submitted to the time that you actually would be finishing your Phase 1 grant. That's part of what will happen during the Phase 1 process.

>> So follow on to that. How big is each team expected to be?

>> As big as required to take on the project that you've articulated. But I don't think that it could be smaller than three, based on what we've said.

>> So -- sorry, is B2, Track B2, focused only on the existing workforce? Or can it include K-12 and higher education?

>> So B2 in general is focused on employers, right? So it is certainly aimed at current workers who are working in those jobs. B2 also refers to recruitment and engagement. So it could be possible to imagine that people who are going to be workers very soon, who are going to be recruited by those employers that they could be engaged and recruited. So you could see lengths to education that are feeding into that. But at the same time, I would think that the strongest proposals are going to be the most directly intend -- you know, address the intent of what's there.

>> Can I ask a follow-up question?

>> Sure, yes.

>> Could the employer in B2 be a school system, a school district?

>> Yes. Thank you, yeah.

Here are some small administrative questions, is there a limit in the number of proposal or outlines RCOs a PI can submit? And does the PI need to be an academic?

>> The answer to, does the PI have to be an academic is no. However, the PI should come from an organization that is capable administratively and logistically of managing an award and managing the process of doing a Convergence Accelerator project. But it does not have to be led by an academic organization. But you need to make a case for how your organization is capable of being the lead. Do you want to say anything else about that?

>> There is no limit to how many any given person can put in. But please don't flood us.

>> I just wanted to -- maybe you could dive down one level deeper on what "capable" means.

>> So they have to be capable of accepting an NSF grant, which has certain characteristics; for example, grants which is what these Phase 1 awards will be - do not have profit associated with them. And you have to -- if you're an organization that has not received grants for NSF, you have to be able to go through an NSF audit, and so on. So there is a certain amount of ability required to process federal funds.

>> Right. I guess that's what I was getting at, that in order to be capable, you have to have gone through a process by which there's been some kind of audit. You have an overhead rate associated, and --

>> Right. And you have to have a DUNS number, yeah.

>> So if you've never received an NSF award before, it may be hard for you to justify that your institution could effectively lead a Phase 1 activity.

Another question is, what is the difference between the future of work at the Human Technology Frontier call and this call, Track B1 and B2? Sara?

>> Yeah, I can answer that. So the future work of solicitation for Human Technology Frontier is a program for research, fundamental research, but also convergent, but is problem-oriented, but does not expect a deliverable or translation at the end, even though that's a fine habit. That's not the focus of that. That is very much more traditional NSF research. This program is more focused on translational research, which not only includes research, but also includes an end product that has impact which could be not just technology of a tool, but it could also be a new policy. It could be a new way of organizing people. It could be a new way of presenting information to the world, or a new support system. It could be many things.

>> And I would add to that that Tracks B1 and B2 are on specific topics, whereas the future work at the Human Technology Frontier is detail-driven, it's open to -- it's very open in terms of topics. If you have an award from the Convergence Accelerator, it's going to be on a particular topic, and you're going to be part of a cohort who are all working on that topic. So it's different than what we typically do at NSF, which is more individual investigator, rather than topic driven.

>> Yeah. And one more difference is that the timeline is much more speeded up in the Convergence Accelerator. A lot of research takes years before it comes with something having strong impact. So probably the work here will be based on ongoing research that's ready for translation, rather than starting from scratch.

>> I think that word "translation" is really a critical one. And that's in, as Sara just mentioned, that means that if it's ongoing work, and you're thinking translational and putting research into practice, then there's a notion that, oh, there'll be goals and milestones that are much more concrete than, you know, broad, basic research in a new area that [INAUDIBLE], so there'll be more directed deliverables, there'll be more directed management.

>> Okay. So there's a whole bunch of questions. We'll try to get to as many of these as we can. What is the requirement for the principal investigator, does he or she need to have a PhD? No. They have to have the requisite qualifications to lead the project, but not a PhD and they need to be eligible according to their own institutions.

>> Right. Mm-hmm. Yeah. How much funding will a Phase 2 award receive?

>> Up to \$5 million, for a Phase 2 award is what we're planning.

>> There was also a question about, should the Research Concept Outlines include a budget request? The answer there is no. The Research Concept Outline should tell us about your idea, enough that we can decide whether your idea merits submission of a full proposal.

>> And the budget will be on the full proposal.

>> Correct.

Then there was a question about the page limit or the full proposal, the full Phase 1 proposals. The Phase 1 proposals will be standard NSF proposals. They'll have a 15-page limit. You don't have to use all the pages. But you can't use more than that.

>> If you have a future of work proposal in submission at NSF now, does that preclude us from applying for this program? No.

>> No. It would be unlikely that it would be the same proposal, since this is so much more specific.

>> Right. The same proposal cannot be submitted more than once at the same time.

>> Yes.

>> But there's nothing that precludes you.

What are some examples of smart health the pilot seeks to find out? For sure I wouldn't say we "seek" to find anything, but that we're hoping to. Would someone like to talk about smart health that might be applicable?

>> Smart health would be -- so smart health could be considered as what we call verticals in the Dear Colleague Letter. So there is a possibility of taking these domain areas and pitching ideas from the domain areas. Smart health could be one of the vertical ideas.

>> In Open Knowledge Network, and in Track A1.

>> To help me better form my team, can you explain a bit more about the possible roles of non-academic units? Is it for future deployment and-or Track transfer and-or economic engagement of regions?

>> So the composition of the team is going to depend on what the research goal would be for Phase 2. And there might be specific industry-related skills, or instrumentation or other things that only industry could bring to the team.

>> Can I get back to smart health?

>> Sure.

>> We had a good answer for Smart Health in terms of track A1, and I just wanted to comment on Tracks B1 and B2. So imagine that the medical workplaces of the future, either an individual learner who wants to prepare her work that is going to be more automated, more involving artificial intelligence and medical settings, and/or an employer could be a hospital, a doctor's office, a medical research laboratory, et cetera, that they want to think about how to prepare their current employees and their future employees to work in the smart health workplace in the future.

>> So Lara answered about 15 pages, and how extensive the full proposal can be, given that the team formation and proof of concept is going to be done in Phase 1 on time, would anyone like to address what, exactly, we're expecting in a Phase 1 proposal? And it doesn't have to be 15 pages, as Lara said. But the research isn't going to have been done.

>> Right. The Phase 1 period, which we're expecting to be six to nine months, will be a time for the team to develop their research goals and develop their, maybe, initial research and development plans, as well as their plans for partnership. So that is what we would want to understand in the Phase 1 proposal. They may come to this process with a team fully formed. But we also expect that there will be many teams that need to add on people or institutions during the Phase 1 period.

>> Yes. And I would add that team formation is well beyond coming up with a list of who is going to be on the team. So team formation, particularly for convergent research, includes collaboration between academics and industry -- it's an activity where you're going to build common ground. You're going to build ideas. You're going to be doing things. So I wouldn't interpret team formation with just coming up with a list of who's on the team. And the proposal should hash that out in terms of what the activities will be, to build a team.

>> Exactly. What do you need to do to identify who needs to be part of the research activity? There are several questions about whether the cohorts that we've mentioned are like I-Corps™ cohorts.

Well part of the Convergence Accelerator concept was, in fact, inspired by what has gone on at the NSF I-Corps . So the word "cohort" is used in I-Corps as it is being used here. So all the awardees that come into the cohort for this Phase 1 pilot will be part of the very first Convergence Accelerator cohort, and will be, as Evan said earlier, participating in some workshop and training activities over the course of the Phase 1 grant, both in person and virtually. And there will be some activities that will cut across all of the tracks, and there will be other activities that will be track-specific.

>> Okay. Will we have another call for Phase 1 the next year? We haven't figured that out yet. We're focused on this year.

>> Maybe.

>> This is a pilot, as we say in the Dear Colleague Letter.

>> So there's a question on, does the work in B2 have to be centered on AI? Can other technologies or approaches be used? And the answer is no. It does not have to be centered on AI.

>> It can be other --

>> I would say yes, it doesn't have to be centered. Yes, so in Track B1, the AI is relevant to predicting what the jobs of the future will be, and helping learners to get there. But it's not trying to assert that all of the jobs of the future will be in AI. They could be, yeah, pretty much any sector of the workforce.

>> Does this grant focus only on computer systems-related work? Or can it be extended to using this as tools to build a database in AI for applications such as photovoltaics and energy? I don't think there's any requirement that there be an AI -- or computer systems, specifically. I'm not sure where this question is going. Maybe if the questioner would like to post a follow-up question.

>> So there has been a question about what do we mean by "Convergence plan?" What do we mean by "Convergence research?"

>> Well, this is Jim. I guess I'll take a crack on that. Convergence research is where multiple disciplines are required to come together, and it's often with a very intentional focus on particular problems that they want to solve. And it is more than just sort of stapling together a team that has people that come from different departments, or in different parts of the organization. It really is bringing people who bring the expertise that's needed to solve a particular problem. Together they bring the expertise together. And typically, that's going to be a much longer-term process. I mean, when you look at convergence research -- actually, if you haven't read about convergence research, you might look for a circa 2015, I think, National Academy report that came out on convergence research. And there were a couple of workshops at MIT that came out a little bit earlier on that. So I think that one of the ideas that's highlighted there also is that the characteristics of the research tends to be a little bit longer-term, because it takes a while to understand the vocabulary and the ontologies from different disciplines, for people to come together and truly collaborate.

>> I'm going to toss this one to Nancy. Can you describe the pitch competition anticipated in convergence? It's all yours.

>> The pitch competition at the end of Phase 1 is anticipated to be approximately February or March of 2020. And it will be a relatively short presentation on the part of the Phase 1 team. Probably live and in person, but it hasn't been completely determined yet. And that pitch will be to a Blue Ribbon Panel, and will be part of the evaluation of the Phase 1 team moving into the Phase 2.

>> Question for you, Evan. Could you display the tracks again?

>> Okay, well, we've got different ones on different slides, but we'll rifle through them.

>> Okay. A million dollars seems like a lot of money to spend in six to nine months. What are some examples of budget line items you expect to see?

>> I don't know that we're willing to discuss budget line items, but a million dollars is the max, and we expect that you will be sending a significant amount of personnel time to get a research plan together, and to identify the people who need to be part of your team. So you should propose a budget that's appropriate for the level of effort. But we -- I think we expect that it will take a significant amount of dedicated effort for the six to nine months of the pilot to get a strong Phase 2 proposal together.

>> For Track B1, could you explain "connect individual workers with jobs"? Does it have to be tools that can educate our health workers to find jobs? How about tools to apply AI to replace workers?

>> I would say if you go by the direct wording of what's in Track B1, it does say, "tools to link workers with future jobs," and it says that some components might be predicated on artificial intelligence, which would be trying to make a prediction of either what someone might be able to do in the future as a job. Labor market analyses -- you know, where the jobs are going to be in your geographic region or in your industry, are also tools that you can think of as educational platforms that would help an individual worker get to a place where they are able to do that job of the future. So those would be the aims of Track B1.

>> And following along on Track B1, could you give an example of predictive artificial intelligence tools?

>> A predictive tool might use advance computational analyses in order to find out not just on the surface what worker is looking for a job and what job there is, but also different components of the requirements of the job, what the employer is looking for, what maybe the worker is looking for. Maybe it could even include other attributes of the worker, like do they have family, or do they have a spouse who is -- so what would go beyond what's done now, and complex data in the analysis that you could much better match people with jobs than is done now.

>> I would say there would be prediction, for example, of what someone's future capabilities might be. There would be prediction there. There would also be prediction in terms of the landscape, what's going to be available in the future, so that there's a lot of opportunity for prediction there.

>> And also what the opportunities are for training, and what that would cost, and how that would change the marketplace.

>> What are the expected deliverables for A1? A dataset, a software tool, or publications to develop those data or software assets?

I want to emphasize, we're talking here about the deliverables that would happen at the end of Phase 2, not Phase 1. Because Phase 1 is about putting together a strategy and a team.

>> Right. So I'm going to say something, to jump in, but the idea here is to generate the Open Knowledge Network, which is going to be the open infrastructure containing knowledge networks, so that it can be used and reused by others [INAUDIBLE]. At the end of this process, we expect to see something like an Open Knowledge Network, which will have impacts like the internet - of a shared infrastructure that other researchers can reuse. So all different projects should be contributing towards the Open Knowledge Network.

>> There was a question about how much time should a PI spend on this project, and percent?

Well, of course we're not going to tell you an exact percent. But you need to assign appropriate staff time to actually accomplish the goals of Phase 1. And so you should have enough staff time there to develop a credible research project that is convergent and accelerating, and most importantly, assemble a team that includes the diversity of personnel and institutions so that you can actually accomplish the goal of accelerating the research project products into use. So you get to choose the amount of personnel time. And we will be thinking about it when we read your proposals.

>> And we could perhaps pivot to another question which hasn't been asked, but which is, what sorts of activities we anticipate for the cohorts that will be -- and Nancy, you might be a good person to address that. Because we will expect an in-person component.

>> Right. So during the Phase 1 period of six to nine months, we anticipate that all team members will come to a specific location to meet face-to-face two or more times during that period. And then there might be other times that we will be meeting virtually. We're developing a curriculum that is going to address some of the issues of these convergent multidisciplinary, multi-institutional teams. So examples could be cross-functional communication, cross-cultural team building, learning how to do a pitch presentation. There might be modules on market analysis or customer discovery, as well as domain-specific tracks/domain-specific information for each of the three tracks.

>> That's great.

>> Great, so there's sort of a follow-on to that. Do the applicants need to know what the deliverable will be in Phase 1? Or can they use the time in Phase 1 to figure that out?

>> The results of Phase 1 aren't a deliverable. The results of the program, Phase 2, are a deliverable. Results of Phase 1 is a fleshed out, enhanced team ideas, preliminary research, things like that that will enable a pitch. But it's not a deliverable in Phase 1.

>> Right. But with that said, in the instructions for the research concept outline, we need to know -- we would like you to say what is the intended practical application for useful result, and the timetable for the deliverable. So of course this is going to be fleshed out in many different

ways over the course of Phase 1. But right from the beginning, you should have some explicit intention.

>> Yeah. Very much so. "Deliverable" is kind of a difficult word.

>> We want a compelling idea.

>> Right.

>> Where do you think you're going with this?

>> Right. And with a deliverable, something that will be delivered by approximately 2022.

>> All right. This is an administrative question. Are international partners allowed?

Yes. You may work with an international partner, provided that you can describe in your proposal how that international partner brings value in terms of their unique intellectual expertise, or other resources, facilities, unique qualities that they can contribute. International partners are allowed and encouraged. You can only share funding with them if they really are unique, and no U.S. institution could provide that same expertise. That's a separate question. But regardless of where the funds flow, you are encouraged to bring in international partners where they can contribute unique value that is otherwise not available.

Now the next question is, how is the Open Knowledge Network different from, let's say, Wikipedia?

>> So the idea is that the Open Knowledge Network has this high technologic graph that has to be built into the Knowledge Network. And it will be more semantically rich and connected to other datasets. So we have many massive open datasets that are available through the government website. The reuse of that is what we are hoping to achieve through creating knowledge networks from those datasets, and integrating them into the Open Knowledge Network.

If there are existing infrastructures which have the semantic network, they could be used, and that's up to the proposers to explain.

>> Yeah, I would add to that that for these open knowledge networks to be used as tools, that they're going to have some particular application, some particular use. It's going to be able, for example, to answer questions in a particular domain. So we had someone on an earlier question mention photovoltaics. So if there was an Open Knowledge Network for photovoltaics, it would have to be able to help someone who's doing something in the topic/domain. It wouldn't be just like a lot of textiles and pictures, although that could be part of it.

>> There's a question, because -- in discussing how important dedicating time will be to assembling the right team and finding what the research would be for Phase 2, can an academic PI commit to more than two months of time, and can the funds be used specifically for course buy-outs?

>> I don't actually know.

>> I could comment on that. So this is always subject to one's own institution. However, NSF is able to make a case to waive on our side that the two-month limit. It has to be justified in terms of workload. And as I said, it has to follow the rules of your own institution as well.

>> There was also a question about cost share, is cost share required or forbidden?

Cost share continues to be forbidden in Phase 1.

>> The committed cost share --

>> Committed cost share, thank you.

>> -- is prohibited in Phase 1, yes.

>> So then there's no requirement for cost share, and committed cost share is not allowed in Phase 1.

>> Let's get back to some of the more scientific and away from the administrative questions. Using data collected from experimental research -- oh, I'm sorry, this is a follow-up on an earlier question. Is using data collected from experimental research to create a database and use computational methods to explore next steps in research, specifically considering research data, which could be millions of data points? Would that be a project?

>> Throughout the knowledge networks, I assume?

>> Yeah, throughout the knowledge networks.

>> So that idea is that this can be integrated into a semantic knowledge graph set, if feasible. It also depends on how this would integrate with other knowledge graphs that would come up. So yes, it's feasible. But it will depend on additional ideas of how this is being used, and how the data is leveraged. And exactly that there are millions of data points, and that's what people do leverage though this logic.

>> So there was a question about asking how what we're asking for in a Convergence Accelerator, Phase 1 -- how is this different from any other collaborative proposal?

And I would like to first say that "collaborative proposal" in the usual NSF sense are not allowed. You can have a single proposal with sub-awards, but you may not submit a collaborative proposal. However, we would like proposals that include a strong link of partners and partnerships participating in the activity. But no collaborative proposals.

>> Can the applicants from one discipline submit the RCO before confirming partners in other disciplines?

>> Yes. So please submit your RCO two-pager with your best idea about who you might be able to have on your team. But we do expect that there will be a lot of changes from the time you submit the RCO until the time you're actually submitting a proposal, or towards the end of your Phase 1 grant.

>> And a follow-up to that, is it essential to include industry partners in Phase 1 about in Phase 2?

>> Well, we would definitely want to understand in Phase 1 who the industry partners will be --

>> Yes.

>> -- who are going to help with this research project. Does that answer the question?

>> And then Phase 2?

>> And then of course, they would be participating in Phase 2 as part of the team.

>> Well, it's expected that industry partners will be involved in carrying out, or the process of Phase 1 projects.

>> Yeah.

>> But they don't have to all be identified in the Research Concept Outline.

>> Actually, let me clarify something. We've said "industry," but when we're saying industry, we're using that as shorthand for non-academic. It could be other government agencies, it could be nonprofit. So you might not have any industrial partners either in Phase 1 or in Phase 2. You might have a nonprofit as a partner in either of those.

>> Related to that, there's a question about whether an employee of another government agency could be part of a team, noting that their challenge is in another government agency receiving funds?

So yes, it is true that NSF does not normally support research education activities conducted by researchers employed by other U.S. government agencies. It can be possible for an agency or a federally-funded research and development corporation, if they're making truly unique and really essential contributions. However, in order to receive NSF funding, the grantee recipient organization must fully comply with NSF award terms and conditions in order to receive funding. As you might have guessed, I was reading that from the FAQs, the frequently asked questions, which will soon, very soon be posted, hopefully within a day or two.

>> Well, I was just about to say, it sounds like you're reading from an FAQ there! [LAUGHTER]

>> And let me add to Lara's comment that we encourage all partnerships in multiple senses. And it might be possible to partner with a government agency that has a resource, has a dataset, for example. So not all partnerships involve paying someone's salary, for example.

>> Yeah.

>> And complementing that, could more than two companies work on a project together?

>> Sure. Yes.

>> As long as there's an academic part as well. It can't be just two companies. I think it has to have academic and non-academic.

>> Well, there should be research guidelines.

>> Sure.

>> I think a company could try to make a case that they were doing research. I think that our policy should especially encourage partnerships between the private sector and the research organization. I think that's in the FAQ's.

>> Okay.

>> Yeah, and a nonprofit research organization could partner with another nonprofit research organization.

>> Exactly.

>> Yes.

>> Okay. I think we may actually be running out of questions. We're going to check again.

>> I noticed one on diversity of populations.

>> Oh, yes.

>> So that's in the context of B1. So at NSF, we are very interested in broadening participation in all sorts of ways, and looking for broader impacts in terms of representation of under-represented groups. So in general terms, thinking about diverse populations is something we're very interested in. With that said, Track B1 specifically says that projects can be targeted at particular populations. So, for example, this might be a regional project in New England, for example. It might be aimed at veterans, for example. It might be for a particular job category that we're looking at people who want to be future teachers. So in that way, projects can be focused, and we expect that projects will be focused.

>> For Phase 1A -- or should actually say A1 -- I think -- what is the role of semantic networks in schemas? Are they more important than the research questions and partnership?

>> I can try to tackle that. The idea is that, I mentioned earlier there are horizontal and verticals in A1. The verticals are the domains and the horizontal teams can cut across many different domains. So it may be possible that a team may focus on a horizontal idea, versus a vertical idea. There could be teams who are showing examples of a vertical as well. So it depends on how you approach the proposal, focusing on a horizontal team or a vertical domain.

>> Does the PI have to be a tenure track faculty?

No. It's whatever your organization allows. We're not defining that.

Does the concept paper have to be submitted by the OS -- I think that's office of science --

>> No. Just email.

>> Email to us. Whatever your organization defines as the policy for your organization, we're not establishing any criteria.

>> And I would just like to point out again, the email to which you need to send your research concept outline is C, dash, A-C-C-E-L, C-Accel@nsf.gov. We don't want to see them in any other place, please. Send to C-Accel@ nsf.gov. We look forward to receiving them.

>> Could you further explain the OKN track about geoscience research?

>> Use this example.

>> Sure. This could be an example of a vertical space, where you could think scenarios that stick to geoscience, and how they would use, let's say, a knowledge infrastructure. So, for example, if you're doing research in spatial-temporal data mining across many different specialist datasets representing different geo types, to me that could be an example of what could -- and how you cut across those different datasets, using knowledge networks. That's just a very rough sketch of an idea in geoscience.

>> So another participant says, they're still struggling with the artificial intelligence component, and want to confirm that projects could be aimed at other types of technology that facilitate the future of work at the Human Technology Frontier in Track B1 or B2.

>> Well, Track B2 -- we could take that one first -- so Track B2 is aimed at employers developing skills capacity for their workers in multiple future technologies; so AI is listed as one of them. But it is open to whatever -- the data analytics is another one. So it is open to what the future technology is. But for Track B1, if this is for individual learners or workers who are trying to get a job, or trying to prepare for a job of the future, that could be in any sector of the economy, so it's not that they're going to be an AI programmer, for example. We would expect that under the hood, the system has likely used some artificial intelligence. But the workplace sector is open.

>> But I think under the hood, is AI required? I think that's part of the question. I mean, it's in the title.

>> Yeah, I understand.

>> But is it required? Because I don't think it's required.

>> Yeah. So that's -- you could imagine that a project might focus, for example, more on labor market analysis, the economics of future work. And that could be a focus of a project, and AI wouldn't be the main thing.

>> Right.

>> I guess one thing we're looking for is going beyond what's being done now to match -- talking about B1 -- match workers with employers. There are tests that use psychometrics. There are websites that advertise for everybody and his cousin who wants a job. And those tend to be pretty inefficient, and they don't do a great job at matching people. So AI has the

potential to match people better with jobs. But AI is sort of a loose concept. There are lots of AI approaches. There's computational social science that you could use. There's all kinds of other analyses, network analyses, lots of other big data approaches. So we do want to see -- we're looking for something more than conventional matching, job matching, approaches.

>> And let me take this opportunity, because Lara mentioned that soon we'll be posting FAQs, but I will take this opportunity to read or convey what will soon be posted, the FAQs. So you might ask for Track B1, what expertise is needed, potentially, on the team, and certainly artificial intelligence expertise, it could be part of the team. But we would also say, for example, data science expertise, education research and educational technology expertise, labor economics, industrial psychology, ethics and policy, management, human resources, as well as expertise related to particular workplaces and populations. So we would think all of that expertise is potentially relevant to track B1. I'll do the same thing for Track B2 -- we would say STEM assessment and engagement, broadening participation and STEM in higher education, organizational research, human resources, artificial intelligence, cognitive science, team science, in-service training, and cyber learning/educational technologies. So we would expect broad teams potentially working on these projects.

>> Could you please scroll through the tracks again slowly? We have a request.

>> Of course.

>> Someone wants to screenshot them, and I'll also remind you that the slides will be posted soon. But just to give you a chance to screenshot them, Evan will do that slowly. And while you're slowly doing that, question: If you get more than one RCO for a similar topic, will you suggest that they work together?

I don't think we can do that, because that would imply that we're sharing confidential information. So I'm afraid --

>> However, when the Phase 1 grantees, as Nancy has mentioned, will be grouped into cohorts who conduct activities together; they'll receiving training together and have interactions where they're developing their ideas. So at that point, it will be possible for Phase 1 grantees to consider re-aligning their partnerships to work together.

>> Yeah. Are support letters from the industry or other external partners required or preferred? Not in the research concept outlines.

Do you want to read that question, Sara, so we can identify it?

>> This says, I'm a trans-disciplinary researcher, very interested in the structure of knowledge problems. What are you going to do to ensure open minds in reviewers for new paradigms? Well, we are going to have an interdisciplinary review team. Many people are going to look at your pitches and your proposals and your initial concept papers. And we will share and discuss, and we'll have independent reviews so that we can be sure that we don't just all pile on to somebody. And we'll do our best to be open-minded.

>> Well, let me add that this Dear Colleague Letter is explicitly calling for convergent research. And everyone who is involved in any phase of the review process is going to have the Dear Colleague Letter right in front of them, and they're going to be referring to that. And if anything, we're going to be advantaging convergent research proposals, which is what is called for in the DCL.

>> Exactly. And one more note about the review process -- we're using the RAISE mechanism to receive the Phase 1 proposals after you get an invitation. And those are reviewed initially, internally by NSF program officers. And we will subsequently probably have activities that include external review. But internal review, with the goal of making sure that the review process, is it forward-thinking, and as Evan says, it's thinking as much as possible about truly convergent interdisciplinary research.

>> Can a proposal be somewhere between Track B1 and B2? Or does it need to be one or the other?

Of course, you can do whatever you want. But I think you need to label one of them as primary. It can certainly have implications for the other, or have connections to the other. But you'll make a better argument if you start with a focus on one, and you have a label that's one. And then argue that it can also be applicable to be two.

>> But if you submit something and you say B1, and we look at it and we say, this is a really good idea, but we think it's B2 -- we're not going to say no because you submitted it as B1 and we think it's B2. We're going to move it from B1 to B2. So don't worry about us rejecting it simply because you put the wrong number on it.

>> Yes. But at the same time, I would, as my colleague Sara said, I would aim towards A1, B1 or B2, so you could just as well imagine that something submitted to B1 or B2 could also have some connections to A1. And I think that that would be fine. But I would apply to the one.

>> So that actually brings up a point that nobody asked, but I know it's been on a lot of people's minds, which is, are these the only three tracks that we're ever going to have? Or are there going to be other opportunities, other tracks in the future?

>> You can answer your own question.

>> I'll answer my own question. So we are going to have an opportunity that we're working on to define future tracks. We haven't published yet, but there will be an opportunity to give NSF input on future tracks. But we'll be running workshops and things like that to help us define and narrow down what some of the tracks might be. You can read it.

>> If a geoscience project only involves a national lab at a university, could it fit into this program?

>> Yes, so could a project be acceptable if it included a research institution, a university and a national lab? The answer is yes, but you need to describe how you're doing convergent research, and how that partnership involving just those two organizations would result in

something of value being accelerated into the hands of the public and users. So if you can be convergent and do the acceleration, then give us your team.

>> I'm not seeing other -- I mean, I have to say the list of questions is really long, and the user interface is not great. So if you asked a question and you don't feel it's been answered, please ask again. I hate to say that, but --

>> And we're happy to stay and continue answering questions. It's about an hour. We will have another webinar exactly one week from now. And we also welcome questions on -- you know, but let's wait a few minutes, see if there are any other questions.

>> Can I read a question?

>> Oh, please, go ahead.

>> There is a question, it looks like all topics are focused on software and platform design, would be such as hardware projects be considered.

>> Hardware.

>> We're open.

>> Yeah. Are military affiliates acceptable? By "military affiliates," I'm not sure whether that means, like, U.S. Naval Academy, things like that --

>> Army research.

>> Army research.

>> Well, there's a difference between Army Research Lab and U.S. Naval Academy. So the academic parts of the military, the Naval Academy, West Point, Naval Post-graduate School, et cetera -- those are certainly okay. Things like the Army Research Lab, there are significant restrictions on funding to other parts of the government, rather than read you that, I'm going to encourage you to read the FAQ when it comes out really soon. Or consult the PAPPG, which describes the rules for funding other government agencies.

>> But the most important thing to keep in mind is that your team should include the people that will help you do the research, get a project together and then accelerate it into the hands of users. And not everyone has to receive money from the NSF to do that. So keep in mind that we expect the partnerships to involve all kinds of ways of working together.

>> Okay. That last one, it does seem very confusing.

>> Okay, so we have -- there are three Tracks, Track A1, Track B1 and Track B2. And you can read them all at the Convergence Accelerator DCL. And I'll just go ahead and go forward to that right now.

>> Okay, I'm also going to post the website where we've got information --

And that URL is now up.

>> Yeah, it is. Thank you. There you go. So the Convergence Accelerator website that you are all seeing right now, not only has the link to the Dear Colleague Letter with instructions on how to submit your research concept outline, but that is also where these slides will be posted along with the transcription. And also where the frequently asked questions will soon be posted, I hope.

>> Yep.

>> They will be.

>> They will be. And to the person who wrote, "Thank you very much for your response and for hosting this, it is very helpful". Thank you spending the time to listen to us. We appreciate your patience as we sort through a long list of questions.

>> Yeah, this is it here.

>> Thank you very much, everybody. We look forward to seeing your research concept outlines. We very much appreciate your interest, and with this new, exciting pilot activity, please feel free to email us. Please feel free to join the webinar next week. The presentation, the first 10 minutes, will be very similar, but we will go through the same Q and A process, that it will be open to all questions. Again, any questions that you come up with between now and next week, the address is C-Accel@NSF.gov, as you see on the screen. Please do not email us individually. Please send it to that alias. That way we all see the questions, and you get a faster response.

>> Okay. Thank you very much, everybody. Thank you for your interest.

>> Bye.