

[Note to readers: due to a technical error, the first few minutes of the webinar were not recorded. The following three paragraphs, in italics, are from the script used, and may be slightly different from what was said. The remainder of the transcript is from the audio recording.]

Hello, and welcome to the Convergence Accelerator Pilot webinar. I am Jeremy Epstein 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. Before I start, I'll ask my colleagues around the table to introduce themselves.

First, a few logistical matters. Attendees will be in listen-only mode during this webinar. To post questions, please use the Q&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.

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 are referred 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 15, 2019. Finally we will respond to questions. Again, to post questions, please use the Q&A feature of WebEx, and submit questions to All Panelists.

I'm going to discuss, what is a Convergence Accelerator? What is the timeline for what will happen under this pilot activity? Third, we'll focus on Phase 1, the initial part of the pilot for which we are now seeking proposals. Next we'll cover the research topics in the Dear Colleague Letter, which are referred to as Tracks A1, B1 and B2. Then we'll focus on the very first step, which is to submit a two-page research concept outline, or RCO, with a target date of April 15th, 2019. Finally, we'll respond to questions. And again, to post questions, please use the Q and A feature of WebEx, and submit questions to All Panelists.

So what is a Convergence Accelerator? This is a new effort in 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 that 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 a million dollars each for initial work, then there will be a smaller number of Phase 2 awards, for up to about \$5 million each.

Here is a timeline of the Convergence Accelerator pilot. With the Dear Colleague Letter issued on March 15th, we are seeking proposals for Phase 1 projects; two-page documents known

known as "research concept outlines" have a target date of April 15th, 2019. By "target date," we mean that it is possible to submit research concept outlines after this date. Once we receive the research concept outlines, we will aim to respond quickly. All proposals are submitted by invitation only, based on how well the research concept outline fits 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 this is a deadline, and not simply a target date. We expect that the 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 will be due in the First Quarter of 2020. Further instructions about submitting Phase 2 proposal 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 pose questions, please use the Q and A feature of WebEx, and submit questions to All Panelists.

Here is some information about what happens during Phase 1. Phase 1 projects will have a duration of six to nine months. There 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 convergent science and market analysis. At the end of Phase 1, teams will make pitches for Phase 2 funding.

The convergence accelerate 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 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, or 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 to these projects.

Track B2 is called the "National Talent Ecosystem." This track will fund innovative approaches for employers to support workers seeking the skills required for twenty-first century work related to data science, predictive analytics, AI machine learning, or other technologies of the future. These projects may include prototypes of learning environments, platforms, interfaces or simulations, tools for analysis, assessment or prediction, and vehicles for recruitment and engagement that have potential for 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's a target date of April 15th, 2019. That 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" -- A1 is Future Jobs, or "C-Accel Pilot-Track B2, National Talent Ecosystems."

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 those deliverables. Please include names and organizational affiliations of the proposed team, including designation of a principal investigator. Describe how the multi-stakeholder convergence team includes, 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 in advancing the convergence research. Note that we intend to respond quickly to research concepts outlines, leaving time to prepare full proposals for the June 3rd, 2019 deadline.

So this concludes the presentation. We'll now respond to questions. Again, to pose questions, please use the Q and A feature of WebEx, and submit questions to All Panelists. Note that we'll post further information when available. After the webinar, please email questions to C-Accel@NSF.gov, or join us for an office-hours session on Tuesday, April 9th from 2:00 p.m. to 3:00 p.m., which will be less structured than this one-hour webinar; there won't be this introductory presentation. Details of how to join that, office hours are available on the main Convergence Accelerator webpage.

With that, let's open it to questions. What I'm going to do, because we had a bunch of questions last time, is I'm going to leave the descriptions of the Tracks up, and I will cycle through them periodically.

>> All right, wonderful. We have some great questions already. So the first question is, will the 50 Phase 1 pilot activities be condensed to arrive at a smaller number of Phase 2 projects?

And of course, we will make a smaller number of Phase 2 awards than the 50-odd Phase 1 pilots, but I think Jeremy can speak to the goals of coordination.

>> We expect that the teams will form and reform during the Phase 1 process. They'll discover that their true Phase 1 groups that are working on compatible topics, since they may join together to come up with a combined Phase 2 proposal. We may expect that they'll also, some Phase 1 groups may find that they have somebody who isn't necessary to move forward, and combine with somebody else. So we expect that there will be mixing and matching during the Phase 1 process.

>> All right. Another question is, are non-academic partners going to be a requirement for all Tracks?

>> Non-academic partners are a requirement. That doesn't mean they have to be industry partners. They could be other governmental agencies, they could be NGOs, nonprofits, anything like that. But there is a requirement that you have some non-academic partners in the group.

>> And let's just remember that for April 15th, in your two-page research concept outline, you just have to tell us who you believe will be on that multidisciplinary, multi-institutional team. And we understand that you'll be working on assembling that team during the Phase 1 period.

>> So you might identify that we're going to, for example, look for someone from one of these sorts of government agencies, or someone from this industry within private industry, but without identifying, and certainly without necessarily having a commitment from a particular company.

>> There are a couple of questions about the pitch, whether the pitch is made by the larger team, or it would be made by just the PIs. Also, if the pitch would be in-person or by webinar, or as a video link?

>> Those are details we're still working out, and we'll communicate that as part of the information that we give towards the end of this calendar year. As people are preparing their Phase 2 proposals, we'll also be giving them information about that. We're also going to be providing the Phase 1 awardees with pitch training in the fall, so you'll get a lot of information through that process that will help you.

>> All right, so there's questions about submitting proposals, and whether individuals can submit proposals, or whether they should be submitted by the institution. I think that NSF's policy is that awards are made to institutions, with an individual as the lead investigator, the principal investigator. So no, an individual could not readily submit a proposal to this, as far as I know. Jeremy, do you want to clarify?

>> The RCOs get emailed in by you, the researcher, not by the research office.

>> So someone from industry could be the person who is submitting, and that person would also email in, and they don't have to have their industrial office, or whatever, submit it. They

could submit it on behalf of their organization. There's no commitment in submitting an RCO that promises that you will submit a proposal, if invited.

>> There was a question about the number of proposals per institution or individual.

>> There are no limits to the number of proposals by an individual or an institution. But please don't flood us.

>> Unless they're great ideas. And similarly, there's a question on the limit of the number of PIs, co-PIs or senior experts who can participate.

>> There are no limits.

>> But we do ask in the RCO for you to identify a principal investigator.

>> For Track A1, there's a question about whether the intent is to use or manipulate existing public datasets, or to create new datasets for use.

>> So it's actually in some ways higher-level infrastructure than the datasets themselves. If you look at some of the reports that came out of workshops in this area, you'll see that -- and as Jeremy mentioned -- it's about finding, searching and being able to use datasets. It's not about building the dataset themselves.

>> That's absolutely right. And the link <https://www.nitrd.gov/news/Open-Knowledge-Network-Workshop-Report-2018.aspx> has the real examples. Let's say, for example, you already have some knowledge network existing, and you'll want to reuse them, obviously, instead of creating new data.

>> Right. So there's underlying, say, government datasets. There may also be pieces of knowledge networks that might be federated as part of this.

>> So related to that, the question is, for the Open Knowledge Network track, can they -- are they required to use data that is available through data.gov, or other government sites? Or can they create a Knowledge Network using other data?

>> I think the key point is that it needs to be publicly available data, not proprietary data that couldn't be then shared.

>> Great. So there's another question, are the team members who are listed in the research concept outline final? Or can we add additional team members?

>> As I mentioned earlier, we expect you to mix and match. You're giving us an indication of where you're starting from, and the types of people you've identified. But we fully expect that between the RCO and the Phase 1 proposal, there will be changes, and there will also be changes between Phase 1 and Phase 2 proposals.

>> When you are submitting your RCO and you're articulating who the team members would be, you are, in some ways, telling us who you imagine, in what disciplines, are going to be required on your team to be successful in Phase 1 and Phase 2.

>> We have another question about Track A1, about how restrictive the list of domains are, and whether other domains are or are not included.

>> Not at all restrictive. Those are really just examples.

>> Great. Another question. How is this Dear Colleague Letter different from the future of work calls?

>> Maybe a good way to address this question is just talk about the difference between what's happening in a Convergence Accelerator and what happens in other calls and types of research that NSF funded. So I think if you go back to -- will you go back to the very first slide, where you talk about what is a Convergence Accelerator? If you look at the first bullet here, I think every single word, except for the "a's" and the "the's" are really important here. So it's a new effort to accelerate use-inspired convergence research, convergent research. So that talks about bringing different disciplines together. That's also true of Future of Work at the Human Technology Frontier. Where you'll see a difference is in the phrase, "directed at solutions for important national challenges." And I think when we're thinking about "directed at solutions," we're talking specifically in the case A1, for example, prototyping things. And that goes beyond -- it's something different than just basic research in a broad area. So yes, Future of Work at the Human Technology Frontier and what we're targeting here with the convergence accelerators are all areas of national challenges. But I think that here, we're looking more for prototyping solutions, and that the research itself is more directed, and maybe a little bit more focused than in a typical NSF proposal.

>> So we have our question on Track B2. And this question is asking sort of, to what extent the work needs to create new products or algorithms, versus use existing predictive algorithms. And they give an example of nurse navigators, using a dashboard of patient data that includes data predictions and alerts.

>> Certainly I think you would use existing algorithms if you have them, and you create new ones if you don't. Take advantage of what you have, apply it in the domain, what you're working on. And there certainly can be new creations, as far as Phase 1.

>> There is an expectation by the end of Phase 2, which would be approximately two years after you finish the Phase 1, that you would be delivering some kind of deliverable at the end of that period.

>> And I think most people will probably find that algorithms don't quite work just out of the box. As Doug mentioned, you have to -- minimally, you have to adapt them and tweak them. In some cases as you're going along, you may find that there are particular features of an algorithm that are particularly important, so maybe the algorithm needs to be tweaked for that particular application.

>> Great. We have another question. Does any IP-generated intellectual property generated through these projects remain with the investigators? The non-academic partners, of course, they're interested in how the Convergence Accelerator will deal with intellectual property.

>> All NSF funded research is subject to the Bayh-Dole Act, which places the intellectual property -- sorry -- not with the PI, but with the institution, and what your institution chooses to do with that is up to the individual institutions. But NSF does not hold the intellectual property. It's held by the institution.

>> The one addition I would make to that is that because of what we're doing here, with having multiple researchers work together to come to a prototype or technology that's more than just a bunch of individual parts, there's going to need to be methods for the intellectual property to be shared at some level among your peer research teams, so that you can come up with something that works together. That doesn't mean that they will own it, that it'll all necessarily be open. But there will be access by the other members of the Convergence Accelerator effort, so that they can use -- they can integrate with your technology.

>> Great. I will say also that in past solicitations -- which again is different from the Convergence Accelerator -- but just talking about interactions between academia and industry as part of NSF-sponsored programs, often the industrial sponsor will have a non-exclusive, royalty-free and also sub-licensable license. I think that's the correct phrase.

>> Is that something that's worked out amongst the team members? Or is that something that the NSF legislates about these Convergence Accelerator teams?

>> I think it's going to be some of each. Certainly the team is going to have to work it out within themselves, but then there's going to be language in the Phase 2 solicitation that will give some additional guidance on how this is going to have to work, so that the different teams can work together effectively.

>> And some of that will depend upon the intellectual property they bring to the table, and what gets created during the project. And both of those have to be addressed differently.

>> Good point.

>> Great. So we have another question. This one is about what limitations exist for the Phase 1 budget. What can be used, and what can't be used?

>> If you search for PAPPG on NSF.gov, that gives the rules -- it is Proposal and Award Policies and Procedures Guide that will give you the rules of what can and cannot be included in the budget. Now in your two-page -- you're just giving a very high-level number. You're not giving a detailed budget. The detailed budget won't come until the Phase 1 proposal. Having said all that, the basic idea is that the large majority of the costs are going to go to salaries and similar costs for researchers, for post docs, for students, for employees with money going through travel, and relatively small amounts going for equipment is the typical model that you see for an NSF proposal.

>> Great. So there's a question about the target date for Research Concept Outlines on April 15th. Will they be accepted after that date?

>> Yes. We will accept applications after that date. But we encourage you to get them in by April 15th, if you can, so that we have enough time to give you the maximum amount of time to write a proposal for Phase 1, once you get the answer. The closer you get to that June 3rd deadline, the higher the risk that we won't be able to get back to you in time to say yes or no.

>> Perfect.

>> And to be clear, you must submit a two-page Research Concept Outline, and be invited to submit a proposal. So there's no way to get to a proposal if you haven't submitted that two-pager.

>> Thank you, Nancy.

>> Now we have another question. This one is about the use of the phrase "secured access," and asking how that works in the Open Knowledge Network. Is it supposed to be an Open Knowledge Network?

>> In the DCL, we mentioned the horizontal and the vertical aspects of the Open Knowledge Network, so eventually we will have an Open Knowledge Network, so eventually we will have an Open Knowledge infrastructure, which will have some core capabilities. So planning work in these, in this environment, how does trustworthiness work in this environment, and similarly how does secure access work in this environment.

>> Actually, I wanted to ask you a follow-up question on that. Might I think of access control as one example that the Knowledge Network may incorporate a lot of datasets, but people will be able to search it and use it different ways, depending on identity and access?

>> Yes, that's absolutely right. And those could be core competencies that you could propose as a horizontal component to the Open Knowledge.

>> Right.

>> Okay. Thanks. So there's an additional question about, so what are the selection criteria for the proposals so that people can, of course, write their research concept outline with that in mind? So as with all NSF activities, the selection criteria are on intellectual merit and broader impacts. In this case, we'll be specifically looking at the extent to which your proposal matches one of the Tracks, as in keeping with the criteria and the Dear Colleague Letter. So matching the Tracks. You need to include a plan for partnership, and if not already, non-academic partners, a plan for getting those partners. You need to have a team that has more than one intellectually distinct discipline.

>> So we have a related question that is wondering, to what extent the partnership with the non-academic partners needs to be described, or can -- is it sufficient to just mention their name?

>> I think there needs to be enough to convince us that you have an idea how you will work with them to -- it's more than a wish, but that you actually have some model of what

capabilities they might bring, what technologies they might bring. So saying we're going to work with Giant Pharmaceutical Company A, without saying what they would bring to the table wouldn't be as compelling as saying we're working with Giant Pharmaceutical Company A, or we're hoping to work with Giant Pharmaceutical Company A, and we think they're going to share this kind of data which would be relevant to the project.

>> Okay. We had another question. This person would like for us to talk about the criteria for awarding grants in comparison to other NSF programs, and in particular, what's the weight of intellectual innovation versus practical infrastructure and demonstrated impact.

>> I think that a lot of the focus is going to be on seeking research and translating it into a practical impact, so I think the practical impact for it will be a lot more important than a typical NSF award. And I'm hesitating a little bit on that, because NSF has many different types of awards, some of which are extraordinarily practical, like the SBIR program that Nancy is involved in, and some of them are very theoretical. So I'm not going to say it's more practical than anything else, because it's not more practical than SBIR. But it's more practical than a typical NSF award.

>> All right. So another question. Is the federal government, that is, other federal government agencies, are they precluded from participation as a team partner?

>> No. They are not. We will be thrilled and delighted, and encourage you to identify federal government partners. The challenge, however, lies in allowing funding to flow to other government partners. There's information on this in the previously mentioned PAPPG, and our FAQ will also, when it's posted hopefully later today, also have information. But any federal government agencies that would receive funding in an NSF award has to commit to agreeing to all of NSF's award requirements, as described in an award letter. And that is where the challenge usually lies in other federal agencies or entities, like FFRDCs receiving NSF funds. So please partner with your government agency colleagues as much as you can. But funding may not be able to flow to them.

>> There are some government agencies that are easier to deal with, for example, academic institutions within the government, like West Point or the Annapolis Naval Academy, and so on. Those are pretty easy to fund out of NSF. Others are more challenging.

>> We have a question about Track B2, and who, or what sorts of partnerships or entities would be suitable? Could educational institutions partner with nonprofits or government agencies that are focused on developing the talent ecosystem in data analytics be suitable for this? Could this include support for innovations in curricular development?

>> Certainly any of those types of organizations are welcome to participate, and I could see educational institutions. Because we're focusing on the workplace, I wouldn't expect to see, for example, K-12, except perhaps at the high school level. But programs targeting kindergarteners is probably not the right example. I'm not going to say it's impossible, but probably not. Please repeat the second part of the question.

>> That can support with a good new curriculum?

>> Yes.

>> And we have a related -- somebody else asked a similar question about undergraduate curriculum concepts within the scope for a research grant.

>> Well, it could be that the curriculum was related to a new type of learning environment, or new learning platforms. But again, let's just remember that Track B2 is really focused on an employer and an institution, and it's trying to help its workers.

>> Great. Another question. What are the anticipated turnaround times for the review of the two-page research concept outline?

>> We're going to do our very best to respond within no more than two weeks. And if there aren't too many of them, hopefully faster than that. So those of you who ask, how many is the maximum I can submit, I thought I'd -- if you submit too many of them, it will slow us down. But in general, definitely within two weeks, and hopefully quite a bit faster.

>> Right. We're also trying to accelerate here, in terms of our response time for the applicants. So once your research concept outlines come in on April 15th, we'll be starting the process of them on April 15th.

>> Related to that, there is a question about how the review process will be similar or different from other regular NSF programs.

>> So the RAISE program is defined in the PAPPG, again, and it says that the RCOs are going to be reviewed by NSF program officers and other NSF staff only. There's no external review for the two-page RCOs. For the full Phase 1 proposals, as the RAISE mechanism in the PAPPG describes, we may use external reviews as well as internal reviews.

>> I'd like to add to that. There's a question about if the reviewers would have diverse backgrounds? I would say that in this case, they will have especially diverse backgrounds, because the goals of the Convergence Accelerator are, in many ways, different from the traditional core research activities of NSF. So we'll definitely be focusing on having internal NSF reviewers and external reviewers who have very, very diverse perspectives.

>> And the internal NSF review team consists of members of every directorate within NSF. So that's as diverse as you can get within science.

>> Does the PI have to have a PhD?

>> No.

>> Will there be a detailed budget requirement at the RCO level?

>> No.

>> You do not need to submit a budget with your research concept outline. Those two pages are for you to explain what is exciting about your idea, and how it goes with the goals of the

Convergence Accelerator described in the Dear Colleague Letter. So there was a question, how should your abstracts be different? Well, it shouldn't be a regular NSF abstract. It should be a research concept outline that seeks to the Dear Colleague Letter Requirements in terms of the Tracks and the goal of accelerating your research.

>> So there's a question about the pitch. So the pitch is due in Q1 of 2020. The question is whether the proposals for Phase 2 will be due prior to knowing the results of the pitch competition.

>> Yes. The proposals will be due before, so that the proposals are available to the people listening to the pitch. We haven't finalized the mechanism, but that's sort of what we're looking at now. But the proposals will definitely be due before the pitch.

>> And so the decision of which team's getting awarded Phase 2 are going to take into account not only the proposal and the reviews of those proposals, but also the input from the Blue Ribbon panel.

>> There's a question about Track B1, which is focused on AI. This individual is wondering if they can include related technologies like IOT (internet of things).

>> Sure. It doesn't have to be AI.

>> Yeah. But it's more about how the AI technologies will be used within the future jobs. If the future job has to do with IOT or any other technical areas, they could use solution space to make the job easier and better, it's not limited.

>> And there was a question in our last webinar, whether someone has to use AI, or whether they could use some other technology that would address this. And although the title is AI in future jobs, if somebody has a technology that isn't AI but still addresses this, we're open to that as well.

>> Great. There's a question about, what is the key motivation for this funding program, and how does it differ from regular research funding?

>> Great. I'll take that one again. And I'll go back to one of the slides that Jeremy showed earlier again, where I said every word was important. Because I think that does actually distinguish it from standard NSF grants. Maybe the first thing I'll say is that the amount of investment NSF is making on this is less than one percent of the overall budget. So this is not a momentous shift in what NSF is doing. Basic research is absolutely what we do. In this particular case -- can you show "What is a Convergence Accelerator" again? What's different between this and maybe a few of the standard NSF grants is that this is more directed. It's more directed at solutions, and it's more directed in particular areas. So basic research. There will be milestones along the way. There will be more directed deliverables, and probably more directed management than a typical NSF grant. So with many NSF grants, you're never quite sure exactly where things are going to end up. I think there's a little bit more surety there, and again, it's looking more at solutions where you've got a good idea of what those solutions are going to be.

>> Can you say what inspired the NSF to start up this program?

>> Well, that's a good question. There are different ways of doing research, especially if you want to build prototype systems in order to demonstrate a concept, and to move a tool forward, or think of a living lab. For example, you're going to build something to actually explore a concept. You're going to build a software tool. In those cases, and they are a little bit more infrastructure-oriented, and it's the case that you have an idea, maybe a little bit better an idea of where you're going in terms of the tools and outcomes than with the standard NSF grant. You're looking for specific solutions. And again, in this case, in particular areas.

>> We have another question. I believe this one is about the Open Knowledge Network, although it doesn't specify. Asking for this more about distinguishing between full open access versus controlled access, and sort of what are the criteria for purposes? What conditions allow for access, and so forth?

>> Really, the vision is that there should be an Open Knowledge infrastructure that can propel research in multiple areas that people can reuse and share infrastructure, just like the internet did many years ago. So you might have several data access controls, but there are many public datasets that are already out there. Many ontologies, for example, that are already out there. The vision is really to bring these together into the shared infrastructure that people can reuse and develop.

>> And again, I'll just focus on the word "open" there. So the presumption is that the data over which knowledge networks are operating are open. On the other hand, you might be in an institution, and within your institution, you want to do a query over data. But some of that is your own proprietary data within your own institution, are there ways to do that. Again, I think the real focus is on open, but there may be cases in which access is going to be not open to everybody.

>> And it could be adapted to your own organization.

>> Great. So there's a question about whether a proof of concept demonstration activity is required at the end of Phase 1 for Track B2, or honestly for any of the Tracks. So can you say a little bit more about what kinds of accomplishments we expect by the end of Phase 1?

>> So Phase 1 is about team building, and figuring out exactly what the problem is, what the technologies are, who the partners are. If there are proof of concept prototypes or other things, that might make a compelling part of a pitch. But it's certainly not an expectation.

>> And the other components that we would expect you to have by the end of Phase 1 is a very clear research and development plan that speaks to your goals for Phase 2.

>> Okay, we have another question. This one says that the website talks about potentially high-risk proposals, and asks for some elaboration on what is meant by that.

>> As was explained earlier, that there are many kinds of big data centers out there. People have not talked about -- and some research has been going on about bringing this data

together, maybe intersecting very unrelated datasets that you may not see in a traditional grant. Let's say I'm trying to connect fisheries with environmental data, right? The fishery data with environmental data, or other types of very non-intersecting datasets that you may not see in traditional grants, which is high-risk. I think those are the types of things that would be exciting to come out of the user community.

>> And I think that we're looking for research that will push the boundaries. So it's not just a question of sitting down and building a piece of software, for example. You're saying everything that's been around for N-years, there -- we want to be able to develop new capabilities, not just integrate old capabilities. So there is research that has to be done there. Any kind of research is going to have risks associated with it.

>> Let me go even a little wilder and wackier on that. So what about bringing together sports data and farming data, because people eat more chicken wings when the Super Bowl is coming, or something? I don't know, I'm not a sports fan. But maybe there's some interesting stuff you could do with that. I'm just trying to say things that are really far apart might be higher-risk. If you can make a compelling argument that it's not just silly like my example was, that there's something useful about it.

>> I was just going to say the Open Knowledge Network workshop report that is linked in the DCL has some discussions that are non-conventional examples there.

>> All right, I'm going to try to answer a few questions in quick succession. One question is, will there be guidance for developing the Phase 1 proposals for those who get an indication based on their research concept outlines? Yes, if you are invited to submit, you'll get a standard letter, and everyone will be told more about what we would expect a Phase 1 proposal to actually look like. It won't be that much more guidance, but we'll give you some structure, so yes.

>> It is just a regular 15-page proposal, right?

>> Exactly. It's just a regular -- it follows the usual requirements of the PAPPG.

Another question, can non-U.S. organizations be part of the team?

Absolutely. You can have international partners. They are welcome, if they are able to provide interesting additions to your activity that enhance the intellectual merit or broader impact of your proposed work. However, there are greater challenges in having funding flow to an international partner. So we hope that you will have international partners, and you will describe the great insight that they can provide, the unique resources that they give you access to. If you need -- if you would like funding to flow to them, the PAPPG gives you more information. The short answer is that you have to demonstrate that their contribution is absolutely required for the effort to be successful, and that a U.S. entity could not do that activity instead.

>> But you can also encourage your international partners to reach out to their foreign governments to provide funding. We would welcome that also.

>> Thank you. Yes. Okay. We have a question about the difference between this solicitation and the Growing Convergence Research, which has a deadline on May 8th.

>> So the Growing Convergence Research call is for five years, and it is more focused on the research that is convergent. And this is convergence research that is also accelerated, and much more use-inspired.

>> Perfectly said. I was going to go back to that same first bullet again, but you said it very well.

>> There was a question about whether there will be feedback, so that those who don't get an invitation for an RCO can iterate. And actually, no, we probably -- well, if we have only a few RCO's, then we'll try to give you some feedback so you could improve in a future round. But if we receive a lot, then we will not be providing any information that's specific. It will be general information about why RCOs often were not successful.

We have another question for Track B1, about what sorts of educational technologies for adult learning can be created, and whether they needed to pertain specifically to a particular topic or subject area, or whether they can target meta-skills that properly apply to a range of subject areas.

>> I would say meta-skills are fine. I think we're pretty open to any of the above.

>> There's a question here, how distinct do the partners need to be? So, for instance, if a collaboration included physics and computer science within the same university, and then an industry partner who was relevant to, say, physics or computer science, would that be adequate disciplinary diversity?

>> Maybe I can answer that. I would say the answer to that question is absolutely yes. But I think it's important not to equate or define disciplinary diversity with a particular organization's structure, whether that be a university or NSF. So, for example, within NSF, we have social, behavioral and economic sciences, and that covers a broad swath of interdisciplinary, or different disciplines. So certainly just because two disciplines come together from one directorate, it doesn't mean it's not interdisciplinary.

Same thing for a university. Just because you happen to be in an Arts and Science, if you bring religion and computer science together, those are pretty distinct disciplines, even if they're in the same college.

>> But it's also true that if you just had two researchers from a university, even if they were multidisciplinary, that's not enough to make a Convergence Accelerator team.

>> You would also need non-academic partners, correct?

>> Right.

>> All right. We have another question about the suitability of human health and the treatment of specific diseases or treatments as a suitable topic for this program.

>> Well, certainly healthcare could be a vertical in the Open Knowledge Network.

>> Just to be clear, perhaps if there is a fitting area in, let's say, smart health, that could be part of the vertical. But I'm not sure if I'd stick to disease-related work, or --

>> For example, if it was using lots of different datasets as a cancer prediction tool, or a treatment determination tool, that would be a vertical.

>> But actual drug development, or developing equipment that treats a disease would not be the --

>> an actual product that would be a medical device or a drug would probably not be appropriate. But if there were some data analytic platform that could be used to inform treatments, that would certainly fit as a vertical.

>> There's a question about whether the PI can be from a commercial entity.

>> Yes.

>> However, NSF is not able to pay fee or profit. So if you're a for-profit entity, requires profit in order to allow you to submit a proposal to NSF, you should read the PAPPG. Another related question -- can non-academic institutions, like scientific societies or other nonprofits, could they be the lead institution submitting the proposal? The answer is absolutely yes.

>> Can you maybe just go on just a little bit more, though, about the ability to hold and process NSF awards?

>> Indeed. So in order to apply for a Phase 1 award, you would have to be able to receive an award from NSF. And there's a fair amount of paperwork involved for organizations that have never previously received an NSF grant. And so at the Phase 1 stage, if your institution has never received an award before, it may be a challenge for us to process you into the system in time.

>> "Never" means within the past five years.

>> Yes.

>> So if your institution has not received NSF money in the past five years, I would suggest that you find someone to work with, collaborate with, as the lead institution.

>> At least for the Phase 1 period.

>> Yeah, we hope to be much more flexible for Phase 2. And if you have other specific questions like that, you can submit those to C-Accel@nsf.gov.

>> Right. And maybe if I could just add on a little bit more there, to have an NSF grant, there's standard terms and conditions that come along with that; for example, having a government-approved overhead rate.

>> Yeah.

>> And if you don't have that, it just takes a while to get that. It does take a while to have the infrastructure in place on the awardee side to be able to meet the terms and conditions of receiving awards.

>> But that brings another point that hasn't come up, which is that in NSF programs, we frequently talk about collaborative proposals, which, if you're not familiar with, it means several institutions jointly submitting the same proposal together, and a decision is made to fund or not fund usually the whole thing at once. That is not the way we're doing this here. One institution, whether it's a university, a company, a nonprofit -- one institution is going to submit, and everyone else is going to be a sub-awardee, not a collaborative proposal. So if you're an institution, you know, you're a university working with another university and a company, you would have to choose one to be the lead, and everyone else is going to be a sub-award.

>> Great. There's a question. Are there a limited number of slots for the Phase 1 projects, and will there be a revise and resubmit cycle for those who, for instance, submit and get feedback in time?

So no, it's not going to be possible within this fiscal year for you to submit a Phase 1 proposal, for us to review it, to get those responses back to you, and then still in fiscal year '19 have you resubmit.

>> However, overall, we do hope and intend, in the budget that was submitted to Congress, that there will be future years and future Tracks, and potentially these Tracks will be repeated. So for instance, if your Phase 1 proposal is declined, you may be able to resubmit to this track again in the future.

>> Okay. We have a question about if an RCO is accepted and the Phase 1 proposal is invited, how much deviation and flexibility there can be in the scope and topic that was originally described in the RCO?

>> I'm not sure how I would measure scope and deviation. I think our intention is that you're suggesting in your RCO where you intend to go, and if it's in that same space, we'll be fine. If you come in with something completely different, we might look askance, but I'm not sure how we would measure a deviation. We certainly will not be surprised if your Phase 1 proposal comes in with additional or different people, or even institutions.

>> Right. But between April 15th and June 3rd, it's entirely possible that your ideas could evolve. So I think that that is what the question is addressing.

>> We've had some questions about budget limits, specifying whether it's per proposal, versus per the entire program budgeted for both Phase 1 and Phase 2.

>> So each team in Phase 1 is limited to a million dollars.

>> Up to a million dollars. And we expect that to be -- last six to nine months. In Phase 2, we're still working out the details. But probably each team in the range -- not more than \$5 million, but that's not a firm limit at this point. It might be higher or lower.

>> Indeed. Subject to the availability of funds. For Track B2, the National Talent Ecosystem -- should approaches be fluid enough to apply to workers seeking skills in data science, analytics, AI, or for any industry?

>> Any twenty-first century work related industry.

>> Right. It's all about preparing workers for the future.

>> For B2, there's a question about what the expectations are for the scale of the proposed pilot.

>> I don't know that we have any expectations about the scale.

>> I mean, the goal is, this is a National Talent Ecosystem, as the DCL calls it, so something that's only going to be able to retrain 10 workers probably would not be very. Something that can only help 10 workers find a new position probably isn't going to be useful. Something that helps define technologies that can help large numbers of organizations and workers is what we're looking for. And I don't think we'd quantify that.

>> On the other hand, this is not necessarily something that's going to be out of the box, ready to scale to two hundred million workers in the country, for example. But the question of, can it scale would be something that you'd absolutely want to be able to address and, through the work itself, show that there's a possibility of scaling.

>> Great. So the next question is, while Phase 1 is going to be for teaming and planning and scoping, are the projects that are selected for Phase 1 awards precluded from working on solutions and deployment prior to Phase 2?

>> That would be great, and that would make a stronger pitch case, and a stronger Phase 2 proposal. And given up to a million dollars, we expect that many teams will, in fact, do some amount of that during Phase 1.

>> We have another question about the extent to which this grant should be more prototype-oriented, relative to research, or training-oriented?

>> If that's a scale, it's definitely tipped towards prototyping of those --

>> If it's research, that is use-inspired, and use-directed.

>> And also, should bring deliverables by the end of the two-year Phase 2 period.

>> There's some questions, just to reiterate, could a Phase 1 proposal be submitted with industry as the lead, and university partners as sub-awardees? The answer is yes. Industry could absolutely submit the proposal if they could satisfy the requirements of NSF in making an award.

>> And there are many companies that have already been NSF awardees. So that wouldn't be uncommon.

>> We have a question about what needs to be created for each track, and whether for every track, it is true that some sort of technological tool must be created. Is that correct?

>> No, although that's the most likely thing. There could be things other than technological tools that might be developed. We're looking for more than the typical NSF publish a whole bunch of papers, but whether it's technological towards something else.

>> It could be a design for something.

>> Does the budget for Phase 1 need to be included in the two pages?

>> No.

>> No. That will be included in the Phase 1 proposal.

>> So for B2, does the proposed effort need to actually provide the skilled training and development? Or can it support primarily advisory and navigation for it?

>> It can be a tool that enables the retraining, but not necessarily the training itself.

>> Okay.

>> If you have specific questions about a specific idea, please email us, and we'll answer you individually. C-Accel@nsf.gov.

>> Another question, if the proposal has elements of Track B1 and B2, how should you title your research concept outline? Just give us a title of your research concept outline, and we will move it around. But give us your best bet, right? Are you thinking more of the National Talent Ecosystem? Or are you thinking more of activities that are directed towards individual?

>> Right. B1 is more about tools for individuals, and B2 is more about tools for employers or institutions.

>> I'd rather see two separate things than one thing that tries to put the two together into a single entity.

>> Can hospital employees who are also medical school faculty with clinical practices be considered non-academic participants?

>> The goal is to get research activities into practice. So if you envision an activity where the users would be hospital personnel, that could be possible. But keep in mind, so like an Open Knowledge Network, where you needed access to all kinds of medical data, and the Knowledge Network was providing a way to access that -- I think probably people are working on exactly that -- then certainly medical school personnel could be part of the team that helps deliver that practice.

>> Also, if the case is that a faculty member in a medical school would be employed by a university, if they also practice in a university-owned hospital, that's generally set up as a separate kind of legal entity. So it would depend on structure of a particular institution you're talking about.

>> It would be something worth commenting briefly, very briefly, in the two-pager if you got a circumstance like that to explain why these are separate things.

>> Right. That, or just write in and tell us what you're thinking.

>> There's a question about FFRDCs, and their permissibility of partners. As with other federal government agencies, they are welcome as partners. However, they must be able to accept the NSF award terms. And that is sometimes a challenge for FFRDCs that are not directly funded by NSF already. So consult the PAPPG.

It's easier in general for things like FFRDCs to be sub-awardees than to be the lead organization.

>> We'll do a last call for questions, and then we'll wrap it up.

>> Or you can send your questions in by email.

>> Or during office hours next week.

>> That's right. That's Tuesday from 2:00 to 3:00 p.m., Eastern. And the only difference between this event and that event is, there won't be somebody reading you the introductory slides. It'll just be questions. And answers.

All right? It sounds like that's a wrap. I want to thank my colleagues here at NSF for participating. I'd like to thank all of you who joined us for the webinar.