

- Fred Hanna
00:00Starting 54321 start.



- Jeff Forbes (NSF)
00:33You guys are live.

- 02:03Hello.
- 02:05and welcome.
- 02:08To the 2022 webinar on the I use computing an undergraduate education program i'm Jeff forbes a program officer and director for computer science and.
- 02:20computer science, engineering Directorate at the National Science Foundation i'm joined by my colleagues were off camera here but allison Kennedy and Michelle Rogers.
- 02:32With this program is a joint effort between size and directed for education and human resources with their division of undergraduate education.
- 02:43So today we are going to provide an overview of the new I use Q solicitation requirements and provide an opportunity for audience q&a you have a question, please use the Q amp a function at bottom of the screen this presentation will be recorded and the slides will be uploaded.



- Unknown Speaker
03:05Right.



- Jeff Forbes (NSF)
03:09So the motivation of the.

- 03:13Q program is to increase the number of diversity of domestic students receiving post secondary degrees in computer, this is align with a sizes broader.
- 03:25strategy for broadening participation sizes of particular interest in addressing the underrepresentation of various segments of the population.
- 03:34Including people who identify as women blacks in African Americans Hispanics American Indians Alaska natives native hawaiian Pacific islanders and persons with disabilities.
- 03:47And this program exists to try to address some long standing and computing specific trends.
- 03:57That, in terms of under-representation these graph you see here, show that women and students of color but dissipate in size undergraduate majors at rates much lower than the representation of the general population.
- 04:15The overall goal of the Q program is to re envision how to teach computing effectively in a scalable manner, focusing on those undergraduate students group.
- 04:28underserved by just some computing courses and careers, which we are using the with a particular focus on those groups that on a previous life.
- 04:42So we have three tracks for the Q solicitation there's transformation which is trying to address key challenges and undergraduate education and looking to see how we can transform education.

- 04:58 In computing at a regional and national scale pathways track is trying to address effective pathways involving two year college that may be entry points.
- 05:11 going from high school into college and also transitions from to your institutions into four year institutions and it's the third track mobilized which is devoted to developing a national vision through convening the size community.
- 05:29 it's important that all pupils will shoot address broadening participation all proposal's have to explicitly address broaden participation with us back to two additional solicitation specific review criteria beyond the two standard in SF criteria.
- 05:44 Intellectual merit and broader impacts, so does the proposal identified the characteristics in need of identified under represented or underserved groups to be served.
- 05:53 And does the proposal includes the SIP plans or strategies we're addressing or accommodating the particular needs of participants of the identified underrepresented.
- 06:02 group so you have to actually identify a group and then talk about how your approach is actually going to address that group.
- 06:12 So.
- 06:15 For the three tracks, we have different funding amounts, so the maximum amount in for transformation and pathways is \$2 million for net total for duration of up to five years.
- 06:31 And then mobilize is up to \$1 million for up to 18 months for a transformation and pathways there's the expectation that higher.
- 06:40 Request for funding will have a higher expected impact on undergraduate.



Unknown Speaker

06:48 computing education.



Jeff Forbes (NSF)

06:51 So we're going to talk about the transformation track first.

- 06:57 So.
- 06:59 The two transmission proposals should address some key challenge in undergraduate education and the specific challenges include but are not limited to the intersection of computing and other disciplines so.
- 07:14 The idea is, we want to find innovative approaches to address the growing demand being placed on science departments across all types of institutions of higher education.
- 07:24 Thinking about computing courses, not just because people were interested in becoming a software engineer, but they might be applying sophisticated compositional skills and methods to a wide range of disciplines their undergraduate computing courses for 2025.
- 07:42 computing is rapidly evolving, both in terms of research and practice in industry and sometimes those innovations and emerging technology developing at a rate that is too great for me excited departments to accommodate given their limited resources so.
- 08:00 There may be a growing gap between the topics addressed by some undergraduate computing coursework and current problems in research and industry practice, so this challenge is looking for innovative ways to update pathways to my students would better court better pathways for 2025.
- 08:19 Third, one is holistic support towards competing degrees and certifications.

- 08:23that's trying to find innovative strategies that support students on their path to computing careers, with particular focus again on.
- 08:32Those students traditionally underrepresented today, and there are many ways, you might want to do, and the fourth and final challenge is effective, inclusive and equitable online teaching for computing.
- 08:45Online courses, particularly during the coven 19 pandemic have become increasingly common.
- 08:53And as remote education becomes more common it's critical that online curricula foster effective inclusive and equitable learning environment for our student body.
- 09:04i'm for transformation proposals their expectations that your proposal make a substantial regional or national impact on some aspect of compute pathways so it's supposed to be.
- 09:17Going beyond just a single institution or even a couple of ideas you're having some substantial impact and then we're looking for innovative ideas and getting.
- 09:30Those should be some kind of new approach in action produce fundamental structural changes and go outside of or beyond existing norms and principles.
- 09:42Next, I want to talk about the pathways tracks.
- 09:46So pathway proposals should support unexplored effective pathways to computing degrees and careers involving to your colleges.
- 09:55You specifically we want proposals to address.
- 10:00entry and exit points in through two year colleges so entry points into your colleges many school districts have made progress at the high school level implementing equitable and rigorous computing courses.
- 10:14But need to coordinate, how do we actually articulate into college degree programs those puzzles may explore variety of strategies for that transition from high school into a two year college.
- 10:31Then there are the two year to four year college transition students often go into to college, but then students.
- 10:38Are range of barriers, while pursuing a pathway into a four year college program including Roman caps for the divine transfer criteria and cultural differences, so they can address any of these issues to try to.
- 10:54Make that transition, more effective and efficient and the program encourages synergistic partnerships with industry, given the Q role of two year colleges in workforce.
- 11:10Who can apply for.
- 11:13These so.
- 11:16Most people can buy for nsf pools for a program can apply for.
- 11:23These tracks, but it's worth to recognize that transformation and pathak proposals must have a multi institutional partnership, there needs to be a lead is due to higher education in at least two other institutes of higher education.
- 11:39or other organizations involved, so you need at least three could be more in many cases and pathways proposals must include a two year College as part of the partnership.
- 11:52So key components of two proposals, so we expect at your proposal will have a knowledge base, so it should be grounded in relevant literature and prior work evaluation is a key component.

- 12:06 So you need to have an evaluation plan with an independent evaluator and description of how that I wish and will inform and is related to the project goals and objectives and how you're going to actually report and use those folks I.
- 12:22 While up to proposals have we expect to be some of implementation, we expect there will be relevant research questions So how are you building knowledge with this effort and how have.
- 12:34 Those restrictions aligned with the research plan project activities expected outcomes and we expect those research questions to be answerable to data generated by the activities.
- 12:44 And, given the expectation that these proposals are going to have a substantial regional and national impact, it needs to be good plans for dissemination with appropriate channels of elimination.
- 12:58 I.
- 13:00 All information proposals are going to involve some collaboration, so you need to include a collaboration plan which describes.
- 13:08 The partnership relevant characters members different roles what the common goals are impossible common metrics.
- 13:16 How you're going to communicate manage administer it and you be helpful to actually have specific references to the budget line items that are going to support the collaboration of coordination mechanisms.
- 13:32 In the third and final track is the mobilized track.
- 13:36 mobilizing track invite proposals to convene diverse set of size stakeholders through a series of workshops model that after biology's vision and change movement, develop a shared national vision around innovation and inclusion in undergraduate competing education.
- 13:56 These workshops might address a number of different things, for example, curricula supports in key areas so that might involve like revitalizing core courses thinking of how do we modernize Kirk.
- 14:12 How do you integrate privacy security society robust programs, a lot of things are addressed in the transformation.
- 14:22 There will be how do have transformation across institutions, so if you have with national vision, how is we're going to have.
- 14:31 competing demands across institution and importantly the needs to be development of a common scalable educational infrastructure.
- 14:40 That would ensure equitable access to critical support across educational.



Unknown Speaker

14:46 Institutional types.



Jeff Forbes (NSF)

14:50 So.

- 14:52 This is, you know this webinar I hope will be an important resource, but the most important.
- 15:00 thing to review is the full Q solicitation.
- 15:04 And it's F 22 588.

- 15:08 Note the proposals are due September 19.
- 15:12 The deadline was changed.
- 15:16 And if you have any questions you can ask now, but you can also send mail to the program officers association or email questions to our decision list I used sq@sf.gov.
- 15:31 So now we would like to open up for questions from the audience.
- 15:39 Using the Q and A function.



Unknown Speaker

15:45 Okay, so there's one question here for the high school.



Jeff Forbes (NSF)

15:50 The pathways track transition from high school into two year and the question is, can it just focus on high school or does it need to address that transition.

- 16:01 And it needs to address that transition.
- 16:03 These are just a transition, it has to undergraduate education absolutely yeah if you're interested in just the high school level, I encourage you to look at the CS for all solicitation which has several ways to address that specific part of the pathway.
- 16:22 Okay, another question, could you define computing education specifically what fields are included in computing.
- 16:31 When we say computing we as a shorthand for.
- 16:37 The.
- 16:39 computer science information science and computer engineering.
- 16:44 Which size director, but I certainly when you, it can also be reasonably broad.
- 16:56 In addressing any of the disciplines that are sister disciplines, but we do expect that there's going to have some impact and some intersection with computer scientists missions, I think, in computing.
- 17:15 Okay, so I think we have a few questions about specifically the pathways.
- 17:21 track and can applicants focus on just one of those those two different entry and exit points do they have to address all of them what.
- 17:34 is appropriate so absolutely you can just focus on what you can do either entry points or exit points.
- 17:41 You could do both, but we would expect you're only going to do one or the other yeah I want to add to that another entry exit.
- 17:50 point of entry point that you could consider is sort of adult learners returning into two year colleges or certifications or going back into the education and back into the workforce so that's another aspect.
- 18:02 that's outline a little bit more clearly in the solicitation so any of those sort of bridge points around to your colleges are open for exploration and that track things out so that's.
- 18:12 A dog.



Unknown Speaker

18:16Okay.



Jeff Forbes (NSF)

18:21A couple people want to know if.

- 18:26Each proposal only covers the one track, or more than one of those will see only cover one track to either a transformation proposal a path of disposal or mobile proposal, and you need to indicate that, as indicated.
- 18:42In your title the in the solicitation tell you, but will be a Q Dashti then your title if you're a transformation to desk P, but you can only do what.
- 18:54Okay let's see we've got one participant who's interested in the transformation track, but it has an objective to organize workshops, as part of sharing our teaching methodology with faculty and see us and in CS and other disciplines.
- 19:11workshops are getting into the mobilizing tackles is it okay to have this kind of overlap.
- 19:18um I would say that if you're going to do work, so it has to be one track.
- 19:25If you're going to do workshops that focus on a particular curricular thing and not trying to do a shared national vision.
- 19:35Around all competing education denied would recommend.
- 19:39You do, for example, a transformation proposal that could involve some workshops in.
- 19:47Every challenge you're trying to address.
- 19:50Okay, another question about.
- 19:54The target students to to address is the exposure of CS to non CS students within the scope of the solicitation or is it limited to generating more CS degrees for students already.
- 20:11is not limited to general during morpheus degrees.
- 20:15Absolutely, working with non tf students can absolutely be.
- 20:21A good, very good proposal again just making sure that these are innovative and.
- 20:31transformational approaches so, for example, if what you're going to do is offer a.
- 20:37CS one course to students non majors this one course that in itself does not seem like something that would be transforming.
- 20:46computing an undergraduate education.
- 20:49Okay, on the transformation track.
- 20:52Specifically, the challenge of undergraduate and undergraduate computing courses for 2025 is curriculum change expected can there be a focus on activities outside of the classroom.
- 21:06Yes, that can be.
- 21:10work outside of the classroom um it needs to be situated within a to have higher education, so you couldn't be like a boot camp.
- 21:21like that, but yes.
- 21:23Certainly, can be outside of.
- 21:27Higher but outside of courses yeah and those challenges are guiding your challenges to do you can propose others have with as long as there's a strong rationale and it's grounded in relevant work.
- 21:45Can the Q pathway track include workforce and or graduate study after the transition into a four year institution.
- 21:54So.

- 22:00can certainly if you wanted to study how.
- 22:06People will transfer from to you to for your for your to work for us.
- 22:14That would be fine or four years to graduate school that seemed fine.
- 22:20I guess is if if studying going from two year to workforce that's not.
- 22:27Like that one of our exit points um I don't think that one's aggressively out right yeah I don't think that would be.
- 22:35That might at he might be more appropriate for something like that, yes, directly from the two years to work for us yeah.
- 22:42A couple people have asked about the collaborative structure and whether that seen us more favorable that is required for the pathways as well.
- 22:55Oh, you mean like collaborative as an isn't it a collaborative proposal there's several awards.
- 23:01We know, I mean there needs to be institutions exclusively involved if how you decide to arrange that whether it's a collaborative proposal or it's one proposal with sub award that's up to you know.
- 23:18dictate that that's up to you right and we also can really speak to how reviewers would view one or the other yeah again I.
- 23:28see that not too much.
- 23:31Can a proposal submitted to I use each are also be submitted to the solicitation you cannot submit the same proposal to two programs at nsf.
- 23:42In any circumstances I.
- 23:46Could you submit a similar proposal from.
- 23:51That that can be the case, people do submit smuggle but you can't submit the same proposal to different programs.
- 24:00There are differences between the programs, so you want to make sure, for example, like the requirement that you have at least be institutions both that's going to be.
- 24:14Much more explicit for Q, the state specific criteria on branding participation those while I use the HR definitely encouraged by the police, they don't have those.
- 24:26specific criteria but absolutely the programs have very similar goals, which is part of these why this This is, in partnership with division of undergraduate education.
- 24:36Similar question, but just to follow up so you've got like some of the differences between this specific is program and others.
- 24:44Will the review panels likely be more computing specific expertise, rather than broader stem expertise like you would see on other panels, yes, I would say that is fair that we will have.
- 24:58computing.
- 25:01Much more computing these will be expected with there'll be some education, expertise and evaluation expertise again the need for research planned and evaluation plans but absolutely we will you should expect to have some people from size departments.
- 25:25On the panel.
- 25:27i'm a lot of questions about future rounds, the deadline so again, the deadline has been moved to September 19 for this round yes Jeff do you want to speak to the we cannot really.
- 25:44The program has a deadline of this year September 19 we do not it.
- 25:52We don't know what will happen in the future.

- 25:56And that's subject to blogging frankly beyond our control so but I would say that certainly size, has an interest in undergraduate education but we don't know if what will happen with this particular solicitation.
- 26:18Okay um does the transformation track support learning communities, including pre freshman summer programs.
- 26:26Yes.
- 26:33Okay, a question about someone who's considering creating an undergraduate scientific computing program that cuts across mathematics, physics, chemistry biology and neuroscience since most.
- 26:45Of the undergraduate students at this person's institution, do not have computing skills to do computational research are such proposals be.
- 26:56Encouraged by Q, it sounds to me like that would fit into the transformation and in the space of computing and the intersection of other disciplines yep.
- 27:07similar to the older version of the queue solicitation that's certainly something that you could address it could be absolutely you again just want to make sure that it is an innovative idea so.
- 27:20If yeah so if what you're doing is saying we're going to make sure that people know how to use computers or use like the things that they're already that are already commonly and use those disciplines that might not be it.
- 27:36For transformation proposals, proposals can be on understudied questions and existing approaches to transforming and scaling education and students support, or should it focus on proposing a radically new way of doing things.
- 27:50First hi brandon because you must be in the room right around the corner.
- 27:57I, yes, it is possible to.
- 28:03Look at existing approaches and think about in particularly understudied approaches that are currently exists and ways that you can do that that will.
- 28:16transform competing education mean, in the end, what you're trying to make an argument about is that this.
- 28:22That what you propose is going to make a big difference like for a whole lot of institutions, the reason why we're starting this initiative is thinking about what we can do for computing and undergraduate education across lots of institutions so.
- 28:36it's absolutely the case that you can do either under 32 broke questions or you could also propose radically new way of doing things but note that that radically new way of doing things should be something that does not just depend on your specific institutional context.
- 28:54Okay, another question about transformation, can the emphasis we're just.
- 29:01Saying Oh, I see well as a study on equitable classroom practices, including online teaching but not limited to just online see I said fall under transformation, so we expect that.
- 29:17If you want to do something on stem in general.
- 29:21I would recommend some other programs, to look at.
- 29:27But if, because there is a specific impact on computing education, so I want to make sure if I were proposer, that it was clear the impact that I was having on online computing education and some of the specific concerns that might come up that might be different than other disciplines.
- 29:53Okay, a question about the mobilized track, can you expand on what the share national vision idea is.

- 30:03No.
- 30:04Let me, let me try.
- 30:07So, first as Jeff mission, the mobilize track is really inspired and modeled after the biology vision and change movement that occurred in.
- 30:182012 now where collectively biology department got together figured out what the main challenges were and undergraduate biology.
- 30:28courses and then work together to implement a new strategy to change that update that to be more relevant to be more effective.
- 30:36for students and so that's sort of at the heart of this of this track is a lot of it is sort of addressing challenges in the other two.
- 30:48tracks, but what we're trying to do is get all of the people who need to be in the room to figure out how do you actually put that into practice at a national scale and how do you support students, no matter what institution they're at to have sort of this equitable.
- 31:05Rigorous engaging education at the undergraduate level, you would add to that Jeff.
- 31:14Okay um.
- 31:17Okay, another question is the topic of cyber security accounted for within the scope of computing education, for example in the transformation track if they propose a new way to teach cyber security for undergraduates in manufacturing, is that a topic fitting for this patient.
- 31:36could be certainly cyber security is.
- 31:43A key aspect of computing education, so it could be.
- 31:50is hard to predict.
- 31:52How reviewers will consider the impact of what you propose, but I think.
- 32:00Yes, we are not we don't expect, like everything to be narrowly focused on like.
- 32:08Did you enjoy programming something like that back definitely not that so yeah could be.
- 32:15Okay i'm couple ones that just came and just developing computing modules to integrate into existing non computer science courses for non CS majors consider for the transformation sure if you if that if you could argue that that's going to work at scale and for.
- 32:36The intersection of getting other disciplines that could be great.
- 32:39um here's an interesting question about P, I partner, so can proposals have a for profit company as a P, I partner.
- 32:47With institutions to create a remote curriculum for undergrad students that curriculum may not be owned by the universities, but would instead be owned by the for profit.
- 32:57So they can have a partnership with a for profit company that is listed on there, they have to license there anything that comes out of the program with a creative commons creative commons license details are in the solicitation.
- 33:16Okay, so a couple of sort of logistical questions will we receive a link up the presentation video in the PowerPoint yes, it will be uploaded on the same event page where you registered for this webinar all of the webinars materials will be uploaded there.
- 33:34Can you put us in contact with other participants of the webinar to potentially collaborate.
- 33:41We don't think.
- 33:44We could ask and, if so, then you will get an email, but we might not be able to do that.
- 33:51And then.

- 33:53Is there an nsf I use division or another similar program that would be more relevant for research on best practices and implementing computing in the sciences, I definitely recommend the I use ehr a program because they have funded many.
- 34:12Proposals on integrating computing into other disciplines in undergraduate education.
- 34:19All right, that is, it for the Q amp a box, if you have any we still have time, so if you have any other questions, please send them to us using Q amp a function.
- 34:32You can also if a question comes up later, you can use that.
- 34:36I use dash q@nsf.gov email alias.



Unknown Speaker
34:45Any.



Unknown Speaker
34:47team.



Jeff Forbes (NSF)

34:50i'm We look forward to.

- 34:55A few more questions.
- 34:57What program would be best for working for work on moving fundamental computing topics and curricula to before undergraduate and eight through 12 school setting.
- 35:07That would most likely be the CS for all Program.
- 35:12there's a pathways track fcs for all where you can look at core sequences across those grades, or you could also think about a high school or pk or a pre K level there if you would like to talk about that more you can email me i'm allison Kennedy i'll put my name in the chat can job.
- 35:32Yes, yeah yeah.
- 35:36There we go, so my my emails in the chat if you have questions about CS for all, please reach out to me.
- 35:44Can you give a few examples of novel education approaches are based, etc.
- 35:55um I guess i'm a little biased i'm picking on people who could do that with me I don't.
- 36:03I think.
- 36:09yeah I mean we don't want we don't want to be restrictive right on on what you should propose I mean be our base that.
- 36:16sounds normal yeah I mean you want to ground it again in the research and prior work you scalable scalable and demonstrate.
- 36:26Why its innovative, why is it, why would be impactful well, I will say me about vr in particular is, this is not the rental program this is research on education, transforming technology learning something like that.
- 36:44Which is looking at how can we develop technology that's going to transform like the future of education.

- 36:51 This is more about how do we like improve computing education in a relatively small period of time, I will not trying to do something that we hope that in 2013 will be ready for prime time.
- 37:08 I mean we have programs for that right, we have rental for that, but this is not that program so nothing vr couldn't be that but it's not.
- 37:19 Okay um another question about pathways and whether you have to focus on both the transition from high school to two year and two year to four year you don't have to focus on both you can choose one you can focus on both if you'd like so that's up to you.
- 37:38 and also about the pathways track does it require a new way of teaching computer science courses component in the proposal, I guess, similar to the transformation track know.
- 37:53 And does this submission to I use Q count towards the three submissions, for I use ehr during a given cycle, no, no, I mean i'm pretty sure, though.
- 38:05 I can't imagine that they're looking at it so yeah.
- 38:09 Okay.
- 38:12 Other questions.
- 38:20 Is it okay to have a Community college involved as a collaborative collaborator in the trance formation absolutely It could also the information can be all Community colleges like it there's there's nothing that was the only thing that's restricted is the pathways.
- 38:38 But transmission could be entirely situated at a Community college.
- 38:44 um.
- 38:46 Is it required to involve more than one institution, yes, yes or yes.
- 38:52 or all of them minimum of three yeah.
- 38:58 Okay um one of the attendees has piloted a program for engaging underrepresented individuals and high schools in stem specifically individuals with disabilities encoding programs they've had some success are looking to expand into adults, which track, would you recommend.
- 39:16 We do something for adults my job as not college students.
- 39:26 yeah so maybe let's try to answer this couple ways, so if you're thinking about adults don't learn adult learners coming into a Community college setting to learn coding cybersecurity but whatever skill that would fall within pathways track.
- 39:44 If you're thinking if you're referring to college age students were in college in college.
- 39:52 That might fall in transformation TV if it's for adult learners who are not in school, then that would be a easel yeah is on which is Ai as well, which is something about advancing informal science learning, yes, and that would be that's a different call.
- 40:12 So hopefully that answered your question, hopefully, one of those answers your question.
- 40:21 Lisa Thank you okay and.
- 40:25 I think that's all we've got.
- 40:29 yeah the there's another question about the program continuing and we just can't answer that right now, this open call is until September 19th of this year.



Unknown Speaker

40:43 All right.



• Unknown Speaker

40:47minutes.



• Jeff Forbes (NSF)

40:57Okay, thank you Susan says, this has been very helpful.

- 41:02Again, if you have additional questions.
- 41:06Please reach out to any of us or the IU stash Q email alias.
- 41:14And again deadline in September, yes.
- 41:20Alright well Thank you everyone will stay on for a few more minutes but um.
- 41:25Thanks for joining yep Thank you.