Slide 1:
Cover Page

Slide 2:
Good afternoon. I'm Anindya Banerjee, and I'm one of the seven Program Directors managing the program Formal Methods in the Field, or FMitF. Other program directors attending today's webinar are: Nina Amla, Dan Cosley, Darleen Fisher, Samee Khan, and Weng-Keen Wong.

We are delighted to have with us Dr. Erwin Gianchandani, Deputy Assistant Director of CISE, who will provide opening remarks, following which I'll give a brief overview of the program and some of the most important things you need to know about submitting a proposal. After the overview, we will be happy to take questions.

Slide 3: Agenda
Here is the agenda for today's presentation. I'll start with a brief overview of the FMitF program. Next, I'll cover some important aspects of the solicitation including the types of awards to be made, submission requirements, and of course the deadline. I'll cover a few frequently asked questions, and finally I'll invite further questions from the audience and answer them with help from my colleagues.

Slide 4: Motivation
One of the inspirations of the FMitF program is this quote from Robin Milner's double thesis, namely "the design of computing systems can only properly succeed if it is well grounded in theory, and that the important concepts in a theory can only emerge through protracted exposure to application".
Two NSF workshops, held in 2012 and 2015, echo this important point, and emphasize the urgent need for rigorous formal methods in systematic, and reliable system design.

Slide 5: Objectives
The FMitF program aims to bring together researchers from different communities to jointly develop rigorous and reproducible methodologies for designing and implementing systems and applications with provable correctness guarantees. We hope that these collaborations result in both new formal methods that are inspired by practical problems, and find novel, unanticipated applications of existing formal methods that can be validated in the field.

Slide 6: Scope

For the purposes of this solicitation, Formal Methods is defined broadly as principled approaches based on mathematics and logic, and includes modeling, specification, design, analysis, verification, synthesis, and programming language-based approaches. More informally, this would include work that would be in scope in conferences like CAV, POPL, TACAS, PLDI, VMCAI, FMCAD, etc.

The field, again for the purposes of this solicitation, is defined as a subset of areas within computer and information science and engineering that currently do not benefit from having established communities already developing and applying formal methods in their research. Initially the program will limit the field to these four areas that stand to directly benefit from a grounding in formal methods: computer networks, cyber-human systems, machine learning, and operating and distributed systems. However other field(s) may emerge as priority areas for the program in future years, subject to the availability of funds.

Slide 7: FY 18 Solicitation (NSF 18-536)

Here are some highlights from the FMitF solicitation. Please note that while I'm spotlighting key pieces of information you need to know in order to submit a proposal, this is not a substitute for reading the full solicitation. You can easily find the solicitation by using the search string N-S-F space F-M-i-t-F.

Proposals are due May 8th.

We expect to make around 8 awards, each up to one million dollars for a duration of up to 4 years subject to availability of funds.

Please note an investigator may only serve as PI, co-PI or senior personnel on one proposal submitted to FMitF.

Slide 8: Proposal Preparation

FMitF proposals are expected to contain the following information.

First, all proposals *must* include one or more keywords that correspond to the field area in the project summary. The keywords should be one of these: Computer Networks, Cyber Human Systems, Machine Learning, and Operating/Distributed Systems.

Second, all proposals should discuss the fundamental contributions to be made in the area of formal methods and the respective field(s).

Third, all proposals should include a detailed evaluation plan that discusses intended proof of concept, experiments in the field, scope of applicability, trade-offs and limitations.
Finally, a critical component of the FMitF program is the continuous bi-directional collaboration between the researchers in formal methods and those representing the field. Proposers are encouraged to highlight this continuous bi-directional collaboration in the work plan.

Slide 9: Required Supplementary Documents

There are 3 types of supplementary documentation required.

First is the collaboration plan, which I will describe in more detail in just a moment.

Next is the data management plan. This is where you are encouraged to discuss any planned release of applications, tools, languages, compilers, libraries, architectures, systems, data, and so on.

And finally there's the postdoc mentoring plan, which is required in any proposal that includes funds for a postdoc.

Slide 10: Collaboration Plan

Each proposal is required to have a collaboration plan as a separate supplementary document, which must describe the backgrounds and expertise of the PIs and how the PIs plan to collaborate. The plan should clearly describe the mechanisms for continuous bi-directional interaction.

This document will be evaluated by the panelists or reviewers as part of the proposal review process. It is up to the proposers to make the argument that they provide distinct expertise.

If the collaboration plan is missing, your proposal will be returned without review.

Slide 11: Solicitation specific review criteria

Proposals will be evaluated on the basis of the following solicitation-specific review criteria.

The first review criterion which is specific to the FMitF solicitation is the extent to which the proposal addresses one or more of the four field areas.

The next review criterion is the extent to which fundamental contributions to both formal methods and the field area are a likely outcome of this project.

The final review criterion is the extent to which the collaboration plan meets the criteria identified in the solicitation.

Slide 12: PI Meeting

The FMitF program plans to host a PI meeting in 2020 to be held in the U.S.; this is of course subject to availability of funds.

All funded PIs are expected to participate in this meeting. Each award is expected to be represented by at least one PI focusing on formal methods and at least one PI focusing on a field area, and their students.

The budget should include costs for participation of the PIs, co-PIs, and their students.

Slide 13: FAQ 1

Let me now transition to a few frequently asked questions.

The first question is: Should I discuss my proposal with NSF Program Directors?

Yes, we encourage you to discuss planned proposals with Program Directors to help determine fit to the program. We ask that you refrain from scheduling separate meetings or calls with multiple Program Directors. Once submitted, the substance of proposals will not be discussed by NSF Program Directors, as this would constitute unfair competition, or the perception thereof.

Please note you do NOT have to talk to an NSF program director before you submit.

Slide 14: FAQ 2

The next question is: Do FMitF proposals count against the CISE Core program limits on number of proposals allowed per year?

No, but there is an FMitF program limit. Proposers can NOT be PI, co-PI, or senior personnel on more than one FMitF proposal.

Slide 15: FAQ 3

The next question is: Is security in scope for FMitF?

CISE has a long history of supporting related work in security through the Secure and Trustworthy Cyberspace (SaTC) program. And while research that includes security as part of a more general effort to ensure correctness and reliability is in scope for FMitF, the focus of FMitF in FY 2018 is on formal methods in the field areas that are specifically called out in the solicitation. Research that is focused on using formal techniques to protect against specific vulnerabilities or attacks is better suited for SaTC at this time

Slide 16: FAQ 4

The next question is: My field area is not explicitly listed as one of the four areas; can I still submit to FMitF?

No, the FY18 FMitF solicitation restricts the field to only these four areas. We may add additional areas as needed in future solicitations, subject to availability of funds.

Slide 17: FAQ 5

The next question is: Are field areas like robotics, cyber-physical systems, and hardware in scope for FMitF?

Not at this time. The use of formal methods in these areas is more mature than in the four field areas identified in the solicitation. Therefore, these are not in scope for FMitF, and are supported by existing programs at NSF like National Robotics Initiative 2.0: Ubiquitous Collaborative Robots (NRI-2.0), Cyber-Physical Systems (CPS), and Software and Hardware Foundations (SHF). Other field areas may be added in future solicitations, subject to the availability of funds.

Slide 18: For more Information

The slides and the script for this webcast, as well as an audio recording, will be available via the NSF Events web page. I've also listed the email addresses for the program officers, if you'd like to follow up with a question via email.

Now, I'd like to invite questions from the audience.

If there are no more questions…

That brings us to the conclusion of today's webinar. The slides and the script for this webcast, as well as an audio recording, will be available via the NSF Events web page; the URL is shown.