Slide 1: Webinar: 2018 Smart and Connected Communities (S&CC) Program Solicitation (18-520)

DAVID CORMAN: Welcome everyone and good afternoon! We are glad you could join us for this webinar focused on NSF's Smart and Connected Communities (S&CC) Program Solicitation. I'm David Corman, a Program Director for the Computer and Network Systems Division, in the Computer and Information Science and Engineering Directorate at NSF.

Before we start, I want to discuss a few housekeeping guidelines: The webinar will be 1 hour in duration, we will present for approximately 40 minutes, ending with answers to frequently asked questions, and then the remainder of the time will be dedicated to a Q&A, question-and-answer, session with the participants. That said, please save your questions until the end of the presentation.

The Q&A session will be guided by the operator, so please follow the operator's instructions for that part of the webinar. We have a large number of participants on the call today, so there may be a delay before you get an opportunity to ask a question. A few frequently asked questions (FAQ) have already been identified and will be reviewed at the beginning of the Q&A session. A summary Q&A list will be published on the S&CC solicitation Home Page within the next three weeks.

Slide 2: Smart and Connected Communities (S&CC): Welcome

On the webinar today, I also have with me, Dr. Richard Malak, a Program Director for the Civil, Mechanical & Manufacturing Innovation Division, in the Engineering Directorate. Richard will participate in the Webinar presentation as well as the Q&A session.

To begin, I'll provide context on NSF's Smart and Connected Communities vision for the 21st Century and provide an overview of a few 2017 awards within the S&CC portfolio. We'll then transition to the S&CC solicitation, NSF 18-520, which is requesting proposals for Integrative Research Grants. We'll talk more about the scope and requirements for the S&CC Solicitation. Finally, we will end with the Q&A session.

Slide 3: S&CC: Important Information and Revision Notes

This is the second year of the solicitation. In 2017 we exceeded our goals for the number of projects we expected to fund in each of the award categories.

You will note that the 2018 S&CC solicitation is somewhat different from the previous year. Some of the changes are as follows.

First, we eliminated the requirement for preliminary proposals. Our sense is that the community is aware of the program and its goals. Instead, we are requiring submission of a Letter of Intent. The Letter of Intent is not subject to merit review but will help us in determining how many panels and reviewers are needed and it must describe the work in sufficient detail to permit appropriate selection of potential reviewers.

Next, instead of four award categories, there is now only a single category. We eliminated the planning grant award category – we funded 23 in 2017, and want to see how those evolve. We also eliminated the Research Coordination Network award category. In 2017, we funded five – and are similarly looking to see where those lead.

For the single award category, we combined track 1 and track 2 awards from the Integrative Research category, and changed the limits to between $750,000 and $3,000,000.

We added additional structure to the project description, in order to make very explicit the topics that need to be covered. Pay close attention to the required sections in the project description. This change arose as a consensus following many discussions internally, and with proposers and reviewers.

The solicitation emphasizes four main requirements:

- **Integrative research**, that deals not only with technology itself, but also with the human and social dimensions of smart and connected communities;

- Substantive and meaningful **community engagement**, including clear identification of participating community partners and activities;

- A **management plan** that describes how the project will ensure that collaboration occurs across disciplines and sectors, and lays out the roles of all participants in the project; and

- An **evaluation plan** that says how success will be defined, and how progress toward success will be measured.

You will note that we eliminated the supplementary document for collaboration plan, and we added a checklist to help you verify compliance with the solicitation.

Slide 4: S&CC: A Vision for the 21st Century

NSF's Smart & Connected Communities (S&CC) program aims to leverage research activities at colleges and universities across the US, in close collaboration with local cities and communities as well as industry, to enable cities and communities to bring about new levels of economic prosperity, jobs, and security, consistent with the National R&D Priority Areas.

The NSF S&CC program is carrying out this goal through support of integrative sociotechnical research that brings together computer and information scientists; engineers; social, behavioral and economic scientists; and learning scientists. These research teams are working collaboratively with communities to transform a broad range of sectors.

The NSF S&CC program includes participation from the NSF Directorates for Computer and Information Science and Engineering (CISE), Education and Human Resources (EHR), Engineering (ENG), Geosciences (GEO), and Social, Behavioral, and Economic Sciences (SBE).

Slide 5: S&CC: 2017 Awards

In its first year of funding in fiscal year (FY) 2017, the S&CC program awarded $19.5 million to support 38 projects involving researchers at 34 lead institutions across the Nation.

A complete list of the S&CC awards is available online at nsf.gov/scc

These awards address a range of applications, including public safety, water systems, community health and wellness, energy, transportation, infrastructure, manufacturing, food systems and rural and urban planning. They also span a diverse set of communities from large urban to small rural regions.

Many of the S&CC projects focus on building capacity for long-term research innovation. These awards support planning and coordinating activities to grow interdisciplinary and cross-sector teams that in turn can foster new lines of research with meaningful community engagement for years to come.

Other awards aim to pursue visionary and integrative research agendas. Through these projects, academic researchers substantively engage with local community stakeholders to advance understanding, development and implementation of S&CC solutions from both social and technological perspectives.

Let me take a moment to highlight three examples of the kinds of Integrative Research awards that NSF supported in 2017:

The first is titled: Sociotechnical Systems to Enable Smart and Connected Energy-Aware Residential Communities, Panagiota Karava, Purdue University

PI Karava leads a multidisciplinary research team focused on large-scale data analytics and predictive modeling to provide residents with information and feedback to optimize and incentivize their energy management. The project aims to foster energy-aware communities that can be scaled across the U.S. The researchers will test their model in several hundred households through a partnership with the Indiana Housing and Community Development Agency.

The second is titled: Overcoming Social and Technical Barriers for the Broad Adoption of Smart Stormwater Systems, Branko Kerkez, University of Michigan, Ann Arbor

PI Kerkez partner with engineers, social scientists, computer scientists and environmental experts in collaboration with decision-makers and local residents across four U.S. communities, prototyping the development and use of smart stormwater systems. These systems will be able to anticipate changes in weather and the urban landscape, and adapt their operation to drastically improve community resilience to floods and changing water quality.

The third is titled: Connecting the Smart-City Paradigm with a Sustainable Urban Infrastructure Systems Framework to Advance Equity in Communities, Shashi Shekhar, University of Minnesota

PI Shekhar conducts research in the cities of Minneapolis and St. Paul, Minnesota, and Tallahassee, Florida, leading to a smart, urban infrastructure systems framework that optimizes the spatial deployment of new infrastructures in cities and communities. The goal of this effort is to improve well-being, health and environmental sustainability outcomes for all residents.

These projects all feature strong integrative research spanning social and technical dimensions and rich community engagement.

Slide 6: S&CC Overview

Communities in the United States (US) and around the world are entering a new era of transformation in which residents and their surrounding environments are increasingly connected through rapidly-changing intelligent technologies. Concurrently, communities are unique and constantly evolving. Shifts in population size, demographics, economic opportunity, technology, built and natural environments, and available services all impact overall community culture, needs, and opportunities. A fundamental understanding of the complex, dynamic interactions between technology and society is essential for unlocking the potential benefits of smart and connected communities.

The goal of the NSF Smart and Connected Communities (S&CC) program solicitation is to accelerate the creation of the scientific and engineering foundations that will enable smart and connected communities to bring about new levels of economic opportunity growth and prosperity, safety and security, health and wellness, and overall quality of life.

Slide 7: S&CC Overview

For the purposes of this solicitation, communities are defined as having geographically-delineated boundaries—such as towns, cities, counties, neighborhoods, community districts, rural areas, and tribal regions—consisting of various populations, with the structure and ability to engage in meaningful ways with proposed research activities.

Generally, smart and connected communities are those that integrate information and communication technologies with the natural and built environments, including infrastructure, to improve the social, economic, and environmental well-being of those who live, work, or travel within it.

Slide 8: S&CC Component: Integrative Research

As mentioned earlier, the project description must include separate subsections labeled Integrative Research, Community Engagement, Management Plan, and Evaluation Plan. We will now explain each of these subsections in greater detail.

The integrative research component must address both technological and social dimensions of smart and connected communities, and describe how the dimensions are integrated together. Proposals should engage the multidisciplinary perspectives of scientific areas supported by participating NSF directorates.

Integrative research may address a range of application domains including but not limited to the following: agriculture, civil infrastructure, disaster mitigation and response, education and learning, energy, environmental quality, health and wellness including healthcare, resiliency, safety, social services, telecommunications, transportation and mobility, urban and rural planning, and water resources.

The slide illustrates examples of both technological and social dimensions. These are illustrative and not all inclusive. These include new algorithms and modeling frameworks for understanding and exploiting high volumes of diverse and complex infrastructure- and community-related data, and improved understanding of institutional and social responses to technological change within communities-to highlight a few.

Slide 9: S&CC Component: Community Engagement

The community engagement subsection should clearly identify and define the community and participating community stakeholders, and also describe activities that reflect meaningful community engagement. Such activities should extend beyond a single point of engagement, such as a public hearing prior to the start of the research project or a survey at its conclusion. Rather, community engagement should consider community stakeholders as integral to the research. Investigators and community partners are encouraged to work closely to develop and evaluate creative approaches to accomplish the goals of the proposed research. Community partners may also have leadership roles within the proposing team.

Community stakeholders may include some or all of the following: residents, neighborhood or community groups, nonprofit or philanthropic organizations, businesses, and municipal organizations such as libraries, public works departments, health and social services agencies, and schools. In addition, stakeholder engagement may leverage partnerships with regional stakeholders, including local, county, and state governments and departments as well as regional cooperative initiatives.

Importantly, the sustainability of research outcomes should be considered as a dimension of community engagement, for example, by developing plans for transitioning research results to practice, pursuing collaborations that link research outcomes to planned efforts within the community, or identifying joint investment models for implementing innovative research solutions.

Key Takeaways: Who is your community, how are they engaged, and how are you working with them to accomplish the goals of the research. Be specific and clear.

You can work with more than one community and NSF does not restrict funding community partners to help accomplish the goals of the research.

Slide 10: S&CC Component: Management Plan

Researchers from diverse fields are expected to work collaboratively and interdependently, creating shared visions, models, methods, and discoveries. Each proposal must contain a Management Plan that describes how the project will be managed across disciplines, institutions, and community entities. This plan should identify specific collaboration mechanisms that will enable cross-discipline and cross-sector integration of teams, and provide a timeline including principal tasks and associated interactions.

Each proposal must provide a summary of expertise of the team members in the Management Plan. The plan must also address the specific roles and responsibilities of the collaborating PI, Co-PIs, other Senior Personnel, paid consultants, and stakeholder participants, and describe how tasks will be integrated over the course of the project.

Key Takeaways: Tell us how you are going to work together and integrate the disciplines of your team.

Slide 11: S&CC Component: Evaluation Plan

In your evaluation plan, tell us how you are going to gauge your progress to meeting the proposal's goals and milestones.

What are the metrics that you are going to use?

Evaluation may employ any of a variety of systematic methods: qualitative and/or quantitative methods, public participation in data collection, periodic and/or longitudinal analyses, experiments, or other approaches required to successfully evaluate the project

Now, I'm going to turn it over to Dr. Richard Malak to walk you through the details of S&CC Proposal Category, Award and Eligibility Information and Preparation Instructions.

RICHARD MALAK:

Slide 12: S&CC Proposal Category: Integrative Research Grants

Thank you, David.

This S&CC solicitation will support S&CC Integrative Research Grants (S&CC-IRGs). Awards will support the conduct of fundamental, integrative research with meaningful community engagement. S&CC-IRG proposals may request total budgets ranging from $750,000 to $3,000,000 for periods of up to four years.

Propose what is appropriate to accomplish the goals of your proposal.

Slide 13: S&CC Award Information

The number of awards is dependent upon the proposals received and the degree to which proposals meet the solicitation goals, NSF merit review criteria, and solicitation-specific review criteria.

NSF anticipates investments up to $19.25 million. Estimated program budget, number of awards and average award size and duration are subject to the availability of funds and quality of proposals received.

Slide 14: S&CC Eligibility Information

This program does not impose restrictions to propose. However, proposals must meet NSF criteria for intellectual merit and broader impact.

As specified in the solicitation, an individual may appear as PI, Co-PI, Senior Personnel, or Consultant on no more than two proposals submitted in response to this solicitation.

Proposals involving multiple institutions must be submitted by a lead institution with funding for all other participating institutions made through subawards.

For U.S. universities and two- and four-year colleges with overseas campuses, this solicitation restricts eligibility to research activities using the facilities, equipment, and other resources of the campus(es) located in the U.S. only.

Please see the NSF *Proposal & Award Policies & Procedures Guide* (PAPPG; NSF 18-1) for additional information and to make sure you meet all eligibility requirements.

Slide 15: S&CC Proposal Preparation Instructions: Letter of Intent

Submission of a Letter of Intent, an LOI, is required in order to be eligible to submit a S&CC Integrative Research Grant Proposal. Failure to submit an LOI will result in a proposal being returned without review

Submitting an LOI does not oblige potential proposers to submit a proposal. A single LOI should be submitted by the lead institution only. LOIs are not subject to merit review, but rather are used for internal planning purposes. Investigators will not receive feedback on their LOI. There is no limit on the number of LOIs from any given institution.

The lead PI and institution must remain the same for the S&CC-IRG proposal. However, the composition of the team may change at the discretion of the proposer. The proposal idea may also be modified.

See the solicitation for further details for submitting the LOI.

Slide 16: S&CC Proposal Preparation Instructions: Full Proposal

Proposers must follow the most current version of *NSF PAPPG* for guidance on the required sections of a full research proposal submitted to NSF which will be effective for proposals submitted, or due, on or after January 30, 2018. The Letter of Intent deadline is January 30th and Full Proposals are due February 28th at 5:00pm, your local time.

Proposers of Full Proposals have the option to submit in response to the S&CC Program Solicitation via Grants.gov or via the NSF FastLane system.

Key Takeaway: Give yourself ample time to submit. FastLane is not the easiest system to navigate. Late proposals are not accepted.

Slide 17: S&CC Proposal Preparation Instruction – Full Proposal

It is the responsibility of the proposer to assure submitted proposals meet all requirements detailed within the Smart & Connected Communities solicitation (NSF 18-520).

The title of the proposal **must** begin with "**SCC:**". The rest of the title of the proposal should describe the project in concise, informative language so that a scientifically- or technically-literate reader can understand what the project is about. The title should emphasize the scientific work to be undertaken, and be suitable for use in public press.

Project Descriptions are **limited to 15 pages in length**. (Note: proposals may be submitted only if a Letter of Intent for the same topic by the same PI has been submitted by the LOI deadline.)

The Project Description **must include separate sections labeled Integrative Research**, **Community Engagement, Management Plan, and Evaluation Plan, as described in the Program Description**. **Proposals lacking one or more of these sections will be returned without review.** The Project Description must provide details on an integrative research approach and describe how the community engagement components infuse and support the proposed research. Specifically, the Project Description must:

- Outline specific **social and technological research questions**, hypotheses, and research gaps;
- Fully describe the community; and explain the rationale and breadth of community engagement, and how this engagement will be sustained through the duration of the award;
- Describe management of the project, and the proposed approach to data collection and evaluation; and
- Describe the vision of success for the proposal—specifically defining the project goals and the definition of a successful outcome, and how success will be evaluated.

Supplementary Documents include a Project Personnel and Partner Institutions document and Letters of Collaboration.

Now, I'm going to turn it over to Dr. David Corman to walk you through the S&CC due dates, Program Director contact information, and to provide a review of the key solicitation requirements.

DAVID CORMAN:

Slide 18: S&CC Due Dates

Here are important reminders about the S&CC solicitation

The Letter of Intent Date is January 30, 2018, and

The Full Proposal Deadline is February 28, 2018.

As with all solicitations, proposals are due by 5:00 pm submitter's local time.

Slide 19: S&CC Program Contacts

Here, we have provided a list of the program directors that represent each of the NSF Directorates participating in the S&CC Solicitation. You may use this list to target the appropriate point of contact within each Directorate. Please note that the following information is current at the time of publishing. See the program website for any updates to the points of contact.

Slide 20: S&CC at a Glance

Thank you for joining us today for the Smart & Connected Communities Webinar. Please check the NSF S&CC webpage at nsf.gov/scc for more information about NSF's S&CC activities. Please consider serving on a S&CC review panel and/or recommending individuals to serve on S&CC panels. Your participation in the review process is critical to NSF.

S&CC: At a Glance

- Goal: To accelerate the creation of the scientific and engineering foundations that will enable smart and connected communities to bring about new levels of economic opportunity and growth, safety and security, health and wellness, and overall quality of life.

- Components: Integrative Research, Community Engagement, Management Plan, Evaluation Plan

- Limit on PI Submissions: yes, see solicitation for details

- Total funding: $19.25M subject to the availability of funds

- Participating directorates: CISE, ENG, SBE, EHR, GEO

- Read the solicitation carefully (NSF 18-520) and visit www.nsf.gov/scc for more info about NSF's investments

- Contact SCCquestions@nsf.gov with additional questions

  (Review Table)

Slide 21: Key Takeaways:

1. Proposals require strong integrative research

2. Be specific about your community and show strong engagement. If you are unclear defining your community and level of engagement, how can the reviewers be expected to evaluate it.

3. Minimal restrictions on who can submit.

4. Collaborative proposals must be submitted by lead institution with funding for all other participating institutions made through subawards.

5. Read the solicitation carefully.

6. Think about the scope and impact of the research.

7. NSF proposals are highly competitive and unfortunately not all great proposals can be awarded.

Slide 22: S&CC FAQ

Formal FAQ will be posted on the S&CC solicitation website in late January, early February.

Questions answered today are informal and serve to clarify. The solicitation is the official word. The formal FAQ is an advisory document, and is not binding.

How is a "community" defined and how many communities are required for partnership?

For the purpose of this solicitation, communities are defined as having geographically-delineated boundaries—such as towns, cities, counties, neighborhoods, community districts, rural areas, and tribal regions—consisting of various populations, with the structure and ability to engage in meaningful ways with proposed research activities.

Proposals should clearly identify and define the community and participating community stakeholders, and also describe activities that reflect meaningful community engagement.

Participation of at least one community is required. It is expected that this participation will be undertaken through collaboration with one or more community partners.

Slide 23: S&CC FAQ

Can an institution (e.g., university, library, hospital) be considered a community for the purpose of this solicitation?

The community that the institution serves must extend beyond the walls of the institution. At a minimum, the project will need to demonstrate substantive interaction with a community that is served by the institution. The research team needs to persuasively demonstrate who their community is and how they are engaging.

Slide 24: S&CC FAQ

What is a community partner, and who might be a community partner for my research?

Community partners are those collaborators who are directly linked to the community.

As described in the solicitation, examples of community partner organizations include but are not limited to such as towns, cities, counties, neighborhoods, community districts, rural areas, and tribal regions.

Community partners can range from neighborhood organizations, non-profits operating in the community, Government entities at local, regional, and other levels. Main thing is

that community partner can both be source of data, and provide a means for integration of research into the community.

Slide 25: S&CC FAQ

When must a letter of collaboration be included in the proposal?

Please see *PAPPG* Chapter II.C.2.d(iv) NSF 18-1 for information regarding letters of collaboration from unfunded collaborators. A letter of collaboration, for example, may be used to demonstrate community engagement from unfunded partners. In addition, that engagement should be detailed in the proposal as outlined in the solicitation.

Slide 26: FAQ

How is the S&CC solicitation distinguished from other solicitations?

A central distinguishing feature of the S&CC solicitation is the requirement to incorporate community engagement and integrative research, whereas these elements are not required (although may be present) in several other programs [e.g., Cyber-Physical Systems (CPS), Critical Resilient Interdependent Infrastructure Systems (CRISP), Secure and Trustworthy Cyberspace (SaTC), Innovations at the Nexus of Food, Energy, and Water Systems (INFEWS), Cyber-Human Systems (CHS), and other NSF core programs].

Slide 27: FAQ

Is a Letter of Intent required?

Yes.

Can a full proposal be submitted if a Letter of Intent is not submitted?

No. A full proposal can only be submitted if a Letter of Intent is received by the deadline specified in the solicitation (January 30, 2018). Many elements of your proposal can change (including team composition, integrative research focus, etc). But if you don't submit an LOI – your proposal will not be reviewed.

DAVID CORMAN:

Several final points. The solicitation does not forestall you providing funds to community partners. Second, you can have more than one community. In fact, you can have an international community. However, NSF cannot provide funds to an international team partner. Their participation must be funded outside of this proposal. Do not miss the LOI deadline, do not submit a proposal without the required elements, and submit your proposal on-time.

(Questions)