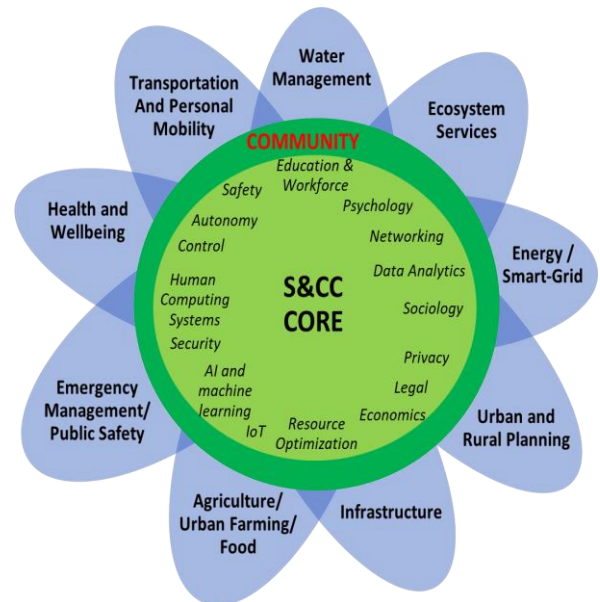


Research at the Intersection of Technology and Society: Enabling Smart and Connected Communities

A *smart and connected community* is a community that synergistically integrates intelligent 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.

In 2016, NSF launched the [Smart & Connected Communities \(S&CC\)](#) program, as well as spin-off programs and activities, which support projects that have tight integration of **technological and social science** dimensions together with deep **community engagement** aimed at advancing research questions that address real community needs and achieve impact. The engagement is in the form of partnerships—between universities, non-profit organizations, and communities (residents, community organizations, government)—that enable **research, testing, and piloting** in and with communities.



Foundational Research

Smart and Connected Communities Program

A fundamental understanding of the complex, dynamic interactions between technology and society is essential for unlocking the potential benefits of smart and connected communities. Building on NSF’s focus on foundational research, these projects are demonstrating the value of testing out theory in real life and working on problems that have the potential for lasting impact within five to ten years, a short time horizon by research standards.

Partnerships to Achieve Greater Impact

Partnerships have been developed with the Departments of Agriculture (USDA), Energy (DOE), Homeland Security (DHS), Department of State (DOS), and Department of Transportation (DOT). The USDA partnership includes funding of awards as part of the partnership announced in a [Dear Colleague Letter, NSF 19-051: Supporting Research at the Intersection of Agricultural Science, Big Data, Informatics, and Smart Communities](#) as well as through the Joint Agency Cyber Physical System Program. DOT partnership has included research in connected and autonomous vehicles, traffic system control, and safety in micro-mobility (e.g. scooters) environment. The Japan Science and Technology Agency (JST) has co-funded planning grants as described in [Dear Colleague Letter, NSF 19-077](#), that include US and Japan researchers supporting a variety of applications in disaster response and emergency management, adoption of aging in place technologies, and associated needs for data privacy and addressing the digital divide. JST and NSF will co-fund a set of full awards in the upcoming S&CC solicitation.

Scalability, Transferability, Sustainability

The S&CC effort is **also** interested in projects that consider the sustainability of the research outcomes beyond the life of the project, including the scalability and transferability of the proposed

solutions. **Several efforts have been targeted for this purpose and aim to accelerate the innovation process and result in community impacts over a shortened time horizon.**

Civic Innovation Challenge

[The Civic Innovation Challenge \(CIVIC\), NSF 20-562](#) is a new “research and action” competition that will support ready-to-implement, research-based pilot projects that have the potential for scalable, sustainable, and transferable impact on community-identified priorities within 12 months. This \$11 million competition, led by CISE, is also supported by NSF’s ENG and SBE directorates together with DOE and DHS. Teams will respond to one of two tracks that represent universal challenges faced by communities and were developed over this past year with input from local government representatives from across the U.S. The first track focuses on communities and mobility and addresses the spatial mismatch between housing that is affordable and jobs. The second track focuses on resilience to natural disasters and seeks to increase community preparedness and resilience to natural disasters. The Civic Innovation Challenge will employ “communities of practice” to leverage the learnings of teams of researchers working in lockstep with civic partners from states, local governments, public agencies, or other community-focused entities, addressing similar priorities across communities.

Transition to Practice

NSF issued a [Dear Colleague Letter, NSF 19-026](#), to support Transition to Practice (TTP) funding for project teams with active awards in the S&CC program and also the related Cyber Physical Systems (CPS) program, to enable on-going projects to go beyond their original, planned research activities.

Transition of Research into Southeast Asian Nations

As part of the U.S. ASEAN (Association of Southeast Asian Nations Cities) Smart Cities Partnership, NSF, together with DOS, issued a Dear Colleague Letter, to support transition of research into ASEAN cities. The goal was to support projects which have demonstrated preliminary piloting or deployment in the US and, while considering the unique character(s) and challenge(s) of that new community, carry out activities such as expanding or adapting the activities to an eligible ASEAN city, or accelerate the maturation or scale-up of the research technology readiness level.

NSF Leadership Across the US Government

NSF leadership plays an important role in helping drive and coordinate smart and connected communities research and development (R&D) efforts across the Federal Government. For the USG, the NITRD (Networking and Information Technology Research and Development) performs a coordinating activity for Smart Cities and Communities research through its Computing-Enabled Networked Physical Systems Inter-agency working group. The NSF S&CC program leader serves as co-lead for this working group which includes participation from NSF, NIH, DOT, NIST, NIFA, DHS, and other Federal agencies.