**SECURE AND TRUSTWORTHY CYBERSPACE (SATC)** **$129,000,000**
**-$7,530,000 / -5.5%**

**Overview**

In today's increasingly networked, distributed, and asynchronous world, cybersecurity involves hardware, software, networks, data, people, and integration with the physical world. Seemingly overnight, society has become deeply reliant on the smooth functioning of its digital infrastructure. Unfortunately, attacks on corporations, agencies, national infrastructure, and individuals have exposed the fragility and vulnerability of this complex cyberspace. Achieving a truly secure cyberspace requires addressing not only challenging scientific and engineering problems involving many components of a system, but also vulnerabilities that arise from human behaviors and choices. Examining the fundamentals of security and privacy as a multidisciplinary subject is the most promising approach to develop better ways to design, build, and operate cyber systems; to protect existing and future infrastructure; and to motivate and educate individuals about cybersecurity. Achieving these goals not only requires application of expertise in computer science, engineering, statistics, mathematics, social and behavioral science, economics, and education, but also the translation of new concepts and technologies into practice.

SaTC is a multi-year investment area, spanning FY 2014 - FY 2020. However, NSF's emphasis on cybersecurity research is expected to continue beyond FY 2020 because it constitutes an enduring challenge for science and engineering research and education that must evolve constantly to address new threats.

Outcomes from SaTC will include an organized scientific body of knowledge that informs the theory and practice of cybersecurity and privacy, and an improved understanding of the causes of and mitigations for current threats. SaTC will contribute to the development of foundational countermeasure techniques leveraging sound mathematical and scientific foundations, principled design methodologies, and socio-technical approaches that consider human, social, organizational, economic, and technical factors, as well as design metrics for evaluating success or failure of these approaches. In the space of training and education, SaTC will make recommendations for new instructional materials, degree programs, and educational pathways. Foundational research in SaTC will lead to a research community pursuing a broad and deep multidisciplinary research portfolio spanning cybersecurity and privacy, whose results underlie methods for securing critical infrastructure. Ultimately, through SaTC, NSF expects to produce an innovation ecosystem that ensures new and existing technologies are secure from attack and users' information is protected from violations of privacy despite the new attack surfaces these technologies present. Similarly, the creation of an American workforce and citizenry with an understanding of cybersecurity and privacy issues is an anticipated benefit of NSF's support of activities related to the education and training of cybersecurity researchers and professionals.

**Goals**

- Goal 1: Foundational Research: Develop the scientific theory, methodologies, and tools necessary to the development of trustworthy and usably secure systems and appropriate privacy safeguards.
- Goal 2: Accelerating Transition to Practice: Transition successful basic research results and commercial innovations into early adoption and use, allowing NSF cyberinfrastructure to serve as a premier proving ground and state-of-the-art environment for advancing cybersecurity solutions and moving them into technical and organizational practice.
- Goal 3: Education and Preparation of Cybersecurity Researchers and Professionals: Increase the number of qualified American students entering the fields of information assurance and cybersecurity, and enhance the capacity of higher education to produce professionals in these fields to meet the needs

of our increasingly technological society. This includes NSF's investment in the CyberCorps®: Scholarship for Service program, which supports cybersecurity education and workforce development.

**Secure and Trustworthy Cyberspace**
**Funding Levels**
(Dollars in Millions)

| Dir/Office | FY 2017 Actual | FY 2018 (TBD) | FY 2019 Request |
|---|---|---|---|
| CISE | $73.00 | - | $65.75 |
| EHR | 54.95 | - | 55.00 |
| ENG | 3.25 | - | 3.25 |
| MPS | 1.03 | - | 1.00 |
| SBE | 4.30 | - | 4.00 |
| **Total** | **$136.53** | **-** | **$129.00** |