



## I-SENSE Funding Opportunities

### **Internet of Battlefield Things (IoBT) Collaborative Research Alliance (CRA)**

**Funding Opportunity Number: W911NF-17-S-0005**

**Funding Agency: Department of the Army – Material Command**

The ability of the Army to understand, predict, adapt, and exploit the vast array of internetworked things that will be present of the future battlefield is critical to maintaining and increasing its competitive advantage. The explosive growth of technologies in the commercial sector that exploits the convergence of cloud computing, ubiquitous mobile communications, networks of data-gathering sensors, and artificial intelligence presents an imposing challenge for the Army. These Internet of Things (IoT) technologies will give our enemies ever increasing capabilities that must be countered, but commercial developments do not address the unique challenges that the Army will face in using them. The U.S. Army Research Laboratory (ARL) has established an Enterprise approach to address the challenges resulting from the Internet of Battlefield Things (IoBT) that couples multi-disciplinary internal research with extramural research and collaborative ventures. ARL intends to establish a new collaborative venture (the IoBT CRA) that seeks to develop the foundations of IoBT in the context of future Army operations. The Collaborative Research Alliance (CRA) will consist of private sector and government researchers working jointly to solve complex problems. The overall objective is to develop the fundamental understanding of dynamically-composable, adaptive, goal-driven IoBTs to enable predictive analytics for intelligent command and control and battlefield services. For more information, click [here](#).

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### **Communications, Circuits, and Sensing-Systems**

**Funding Opportunity Number: PD-16-7564**

**Funding Agency: NSF**

**Deadline: November 1, 2017**

Description: The **Communications, Circuits, and Sensing-Systems (CCSS) Program** is intended to spur visionary systems-oriented activities in collaborative, multidisciplinary, and integrative engineering research. CCSS supports systems research in hardware, signal processing techniques, and architectures to enable the next generation of cyber-physical systems (CPS) that leverage computation, communication, and algorithms integrated with physical domains. CCSS supports innovative research and integrated educational activities in micro- and nano-electromechanical systems (MEMS/NEMS), communications and sensing systems, and cyber-physical systems. The goal is to design, develop, and implement new complex and hybrid systems at all scales, including nano and macro, that lead to innovative engineering principles and solutions for a variety of application domains including, but not limited to, healthcare,



medicine, environmental and biological monitoring, communications, disaster mitigation, homeland security, intelligent transportation, manufacturing, energy, and smart buildings. CCSS also supports integration technologies at both intra- and inter- chip levels, new and advanced radio frequency (RF), millimeter wave and optical wireless and hybrid communications systems architectures, and sensing and imaging at terahertz (THz) frequencies. For more information, click [here](#).

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### **Energy, Power, Control, and Networks**

**Funding Opportunity Number: PD-16-7607**

**Funding Agency: NSF**

**Deadline: November 1, 2017**

Description: Recent advances in communications, computation, and sensing technologies offer unprecedented opportunities for the design of cyber-physical systems with increased responsiveness, interconnectivity and automation. To meet new challenges and societal needs, the Energy, Power, Control and Networks (EPCN) Program invests in systems and control methods for analysis and design of cyber-physical systems to ensure stability, performance, robustness, and security. For more information, click [here](#).

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### **Smart and Autonomous Systems**

**Funding Opportunity Number: 16-608**

**Funding Agency: NSF**

**Deadline: December 11, 2017**

Amount: Foundational projects: \$350,000-\$700,000; Integrative projects: \$500,000-\$1,400,000

Duration: Foundational projects: three years; Integrative projects: four years

Description: The **Smart and Autonomous Systems (S&AS)** program focuses on **Intelligent Physical Systems (IPS)** that are cognizant, taskable, reflective, ethical, and knowledge-rich. The S&AS program welcomes research on IPS that are aware of their capabilities and limitations, leading to long-term autonomy requiring minimal or no human operator intervention.

For more information, click [here](#).



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### **Human Performance Sensing**

**Funding Opportunity Number: BAA-RQKHB-2015-0003**

**Funding Agency: Air Force – Research Lab**

**Deadline: October 29, 2017**

Description: This BAA focuses on identifying, developing, characterizing, and accelerating sensing technologies that can be utilized to assess the physiological, cognitive, and psychological states of human operators. It is also anticipated that these technologies will be implemented into fieldable systems. Research will have an emphasis on developing technologies capable of detecting & sensing physiological, biomarker, and behavioral metrics which are or can be correlated with human state/performance. An emphasis will also be placed upon the development, integration, miniaturization, initial operational test and evaluation, and verification and validation of human-centric multi-sensor suite designs. Research focusing on the manufacturing of nano-biomaterial sensors are of particular interest. Research may also focus on developing and implementing empirically-based models, frameworks, and novel evaluation capabilities, to identify assessment linkages to performance. Initial testing & evaluation and verification and validation of the developed technologies is vital to ensure appropriate and proper performance in laboratory and operational-type settings. For more information, click [here](#).

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