National Institute of Standards and Technology
Department of Commerce

SBIR

SMALL BUSINESS INNOVATION RESEARCH PROGRAM

PHASE I and PHASE II

AWARDS FOR FISCAL YEAR 2024

INTRODUCTION

Abstracts of Awards for Fiscal Year 2024 SBIR Program

Note: Certain non-ASCII characters may not be represented accurately in this document. In cases where there may be doubt, please direct your questions to sbir@nist.gov.

Fiscal Year 2024 List of Awardees

Award Number	Company Name	Phase
70NANB24H068	AMAG Consulting LLC	Phase I
70NANB24H071	Applied Imaging Solutions LLC	Phase I
70NANB24H072	Calimetrix LLC	Phase I
70NANB24H064	Dapple Security Inc.	Phase I
70NANB24H063	EMode Photonix LLC	Phase I
70NANB24H066	HighRI Optics Inc.	Phase I
70NANB24H067	Icarus Quantum	Phase I
70NANB24H061	MyExposome Inc.	Phase I
70NANB24H069	NUTS Technologies Inc.	Phase I
70NANB24H070	ObjectSecurity LLC	Phase I
70NANB24H065	Tiami LLC	Phase I
70NANB24H062	Universal Schedule and Booking LLC	Phase I
70NANB24H198	SygnaMap	Phase II
70NANB24H199	ITA International	Phase II
70NANB24H201	Xmark Labs	Phase II
70NANB24H205	Exabyte, Inc.	Phase II
70NANB24H306	Applied Research Transformation, PLLC	Phase II

FY 2024 PHASE I AWARDS

AMAG Consulting LLC (Schenectady, New York) — $100,000
Advanced SEM simulation software for the semiconductor industry — a graphical user interface for software that simulates the interaction of electron beams with solid materials in scanning electron microscopy and that will help solve critical problems in the measurement of very small components in semiconductors and other devices.

Applied Imaging Solutions LLC (Quincy, Massachusetts) — $99,759
Hyperspectral imaging with AI/deep learning for online monitoring of NISTCHO viability and cell culture metabolites in real-time — to advance the safe and efficient adoption of contactless AI/deep learning sensing systems for fine control of bioreactor environments, which is an important need in the fast-growing biopharmaceutical industry.

Calimetrix LLC (Madison, Wisconsin) — $105,284
Multimodality quantitative phantom for magnetic resonance imaging and computed tomography measurements of steatotic liver disease — to develop an imaging test object, or "phantom," of the human liver, to promote accurate and comparable measurements of liver fat concentration using MRI, CT scans and other methods, with the goal of improving clinical outcomes for patients.

Dapple Security Inc. (Centennial, Colorado) — $100,000
Evaluating biometrics for a cryptographic application — to evaluate the security of a novel authenticator for passwordless login access that uses an innovative combination of biometrics and cryptography.

EMode Photonix LLC (Boulder, Colorado) — $100,000
Quantum waveguide infrared photodetector — a new type of room-temperature photodetector that can be integrated with chip-scale components to enhance the efficiency of gas and chemical detection and make high-precision measurement technologies more accessible and cost-effective.

HighRI Optics Inc. (Oakland, California) — $99,995
Binary pseudo-random array (BPRA) for the enhancement of optical imagers — to demonstrate the feasibility of a product that enhances the performance of high-end imaging systems through the use of accurate calibration and advanced image processing techniques.

Icarus Quantum (Boulder, Colorado) — $100,000
Noise-free excitation of semiconductor quantum dots — a novel method to enhance the efficiency and compactness of quantum dot technologies for generating quantum light, which is crucial in quantum networking and computing.

MyExposome Inc. (Philadelphia, Pennsylvania) — $98,800
Using silicone wristbands as personal monitors of PFAS exposures — to conduct fundamental research needed to enable silicone wristbands that monitor personal exposure to perfluorinated compounds, or PFAS, which have been associated with increased risk of cancer and other health risks.

NUTS Technologies Inc. (Glencoe, Illinois) — $99,990
Easing transitions to new cryptography with structured data folding with transmutations (SDFT) — SDFT provides a framework for efficiently updating encryption algorithms in response to changing threats. This project will extend the SDFT framework to handle NIST's newly standardized post-quantum cryptography algorithms.

ObjectSecurity LLC (San Diego, California) — $106,403
Operational Technology Artificial Intelligence — NIST Compliance Tool (OTAI-NCT) — a new tool that streamlines and automates cybersecurity analysis and maps vulnerabilities directly to NIST standards, making it easier for industry to address risks without modifying physical devices.

Tiami LLC (Elk Grove, California) — $100,000
Zero-trust cybersecure cellular vehicle-to-anything (v2x) for autonomous vehicles — a cybersecurity architecture that safeguards real-time data exchange between vehicles and their surroundings with the goal of protecting vehicles from cyberattacks while enhancing road safety.

Universal Schedule and Booking LLC (Harpers Ferry, West Virginia) — $106,500
Home-by-home residential building energy-load profile optimization for rapid decarbonization using scalable and personalized sensor-independent efficiency and emissions guides for households — proof of concept for a machine learning-based tool for energy-efficiency modeling in residential homes that will help homeowners reduce energy consumption and use renewable energy.

FY 2024 PHASE II AWARDS

SygnaMap (San Antonio, TX) - $400,000
Metabolite Reference Standards to Normalize Spatial Metabolomics Across Tissue Sections - tackle the challenge of common internal standards in drug development by further developing a computational quantitative normalization approach suitable for robust statistical analysis across tissue sections from normal, diseased, and drug-treated samples.

ITA International, LLC (Newport News, VA) - $399,998.23
Method for Quantifying Fitted Filtration Efficiency of Face Mask and Respirator Products – a novel Fitted Filtration Efficiency (FFE) protocol to assess mask/respirator efficacy on a true exposure basis.

Xmark Labs, LLC (Barrington RI) - $400,000
Feasibility and proof of concept of a dense, low cost, network of sensors driving Intelligent Building Agents for air quality and energy control – combine an affordable, reliable, building efficiency sensor for retrofits in commercial buildings with intelligent building agents, enabling interoperability between building systems, and the potential for automatic optimization of HVAC and indoor air quality (IAQ).

Exabyte, Inc (Walnut Creek, CA) - $399,752
Developing data standards for accelerated digital R&D of semiconductor materials from nanoscale - improve the speed and efficiency of the research and development of new materials and chemicals and enable Artificial Intelligence/Machine Learning (AI/ML) data-driven capabilities that facilitate the development of new kinds of products for semiconductor electronics.

Applied Research Transformation PLLC (Cary, North Carolina) - $399,924.21
Sentinel 4.0™: Measurement and Control System for 3DCP Interlayer Bond Strength - develop a commercial system for measuring and controlling the quality of this interlayer bond strength under multiple environmental conditions likely to be encountered in the construction industry,

including temperature, humidity, wind, dust, and printing delays.