

NIST

National Institute of Standards and
Technology
Department of Commerce

SBIR

**SMALL BUSINESS INNOVATION
RESEARCH PROGRAM**

**PHASE I
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

<u>Award Number</u>	<u>Company Name</u>	<u>Phase</u>
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

FY 2024 PHASE I AWARD

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-everything (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.