

Department of the Navy SBIR/STTR Transition Program

DISTRIBUTION STATEMENT A. Approved for public release. Distribution is unlimited.

NAVSEA #2021-0376

Topic # N18A-T013

Rapid Identification of Effects of Defects within Metal Additive Manufacturing (RIED-AM) Intelligent Automation, Inc.

WHO

SYSCOM: NAVSEA

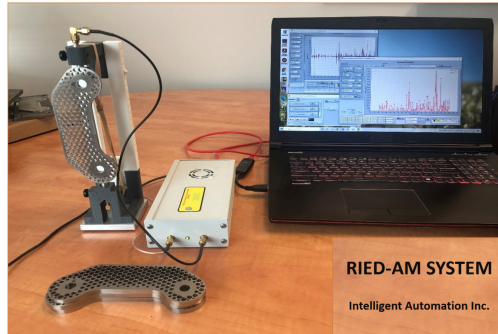
Sponsoring Program: Cross Platform Systems Development (CPSD) Research & Development (R&D) Program

Transition Target: NAVSEA Technology Office (SEA 05T)

TPOC:
(571)316-7323

Other transition opportunities: Commercial vendors such as Lockheed Martin, 3D Systems, etc.

Notes: This technology improves the Quality Control (QC) and Nondestructive Inspection (NDI) of additively manufactured metal components, and has been initially verified using complex NAVY parts fabricated by Additive Manufacturing (AM).



Copyright, 2021, Intelligent Automation Inc.

WHAT

Operational Need and Improvement: AM brings revolutionary capabilities to enhance warfighting readiness, and there is a great need to enhance the QC and NDI process of AM metallic parts used in the battlefield to ensure safe operations.

Specifications Required: Comprehensive database software include representative AM alloy systems, rigorous QC flow and portable NDI system

Technology Developed: This technology quantifies the effects of multiple AM defect types on the material properties of 3D printed metal parts based on a comprehensive AM material database developed in prior. The QC process also adopts advanced Resonant Ultrasound Spectroscopy (RUS) and vibrothermography NDI methods to enable quick filtering of unqualified parts.

Warfighter Value: Ensure part quality, save inspection costs, and accelerate the design, development, and certification process of AM metallic components

WHEN

Contract Number: N68335-20-C-0146 **Ending on:** May 18, 2021

Milestone	Risk Level	Measure of Success	Ending TRL	Date
Proof of Concept of RIED-AM System	Low	Demonstrate with Experimental and Simulation Results	2	February 2019
Implement RIED-AM Prototype System	Med	Demonstrate the Nondestructive Inspection Equipment and Database Software	3	May 2021
Enhanced RIED-AM Prototype System	Med	Enrich Material Database and Quantify Testing Benchmarks upon Different Applications	4	August 2022
Deliver Final RIED-AM Prototype System	Med	Further Expansion to other Additive Manufacturing Alloy Systems, and Test in the Field	5	August 2023

HOW

Projected Business Model: Consultancy for enhancing AM processing, evaluation of the AM parts, direct product sells and software licensing to the Navy and Navy-recognized AM machine shops or vendors.

Company Objectives: Connect with new customers, expand the application and transit the technology

Potential Commercial Applications: Improve AM processes and material performance and aid the quality control of AM metallic components in aerospace, automobile and biomedical fields.

Contact: Xiaoliang (George) Zhao, Director, Transportation and NDE Program
xzhaol@i-a-i.com 301-294-5232