

Department of the Navy SBIR/STTR Transition Program

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NAVSEA #17-565

Topic # N141-042

GECKO: Agile and Dexterous Robot for Maintenance of Ship Tanks

Intelligent Automation, Inc.

WHO

SYSCOM: NAVSEA

Sponsoring Program: SEA05T1R

Transition Target: Cross Platform Systems Development (CPSD)

TPOC:

(301)227-4121

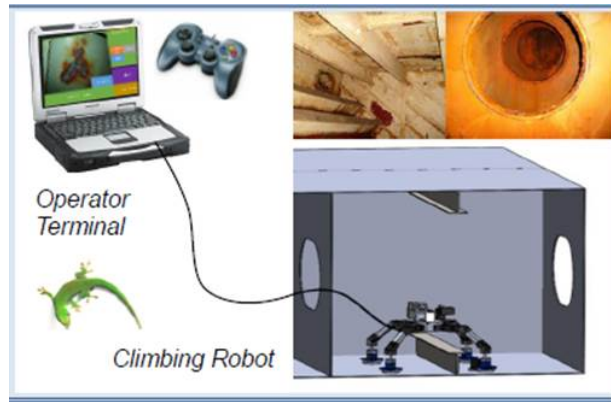
Other transition opportunities:

PEO Ships

PEO LCS

PEO Subs

PEO Carriers



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Notes:

As a crawler designed for remote inspection that walks directly on the surface, GECKO may be of interest to any potential users that require inspection of regions where it is difficult/dangerous to send humans.

WHAT

Operational Need and Improvement:

A remotely-operated, semi-autonomous robotic tool for inspection of potentially hazardous confined space ship environments. Such a tool would allow inspection and exploitation of confined spaces without the need to gas-free the space.

Specifications Required: Robot that has:

- Ability to position and operate camera and tools required for Level 1 inspection.
- Spatial navigation, can grip, and has stabilizing features.
- Operate on different metals; steel and aluminum.
- Navigate structural members - frames, bulkheads, piping, cabling and ladders.

Technology Developed:

A legged, walking platform that climbs over and through obstacles

- Adhesion feet (vacuum & magnetic) allow the GECKO to climb up walls.
- Camera system for inspection, dexterous camera manipulation to access difficult-to-see locations.
- Semi-autonomous behaviors allow user to drive GECKO with minimal workload.
- Software allows for real-time assessment and documentation of ship damage and corrosion.

Warfighter Value:

- Allows inspection of ship structures without exposing sailors to hazardous environment.
- Real-time assessment and data collection expedites evaluation lowering cost.
- Reduced workload by automating a streamlining the reporting process for inspection.

WHEN

Contract Number: N00024-16-C-4047 **Ending on:** May 3, 2018

Milestone	Risk Level	Measure of Success	Ending TRL	Date
GECKO Performs Simple Maneuvers, Lab Environment	N/A	Walks on Lab Surface, Demonstrated	4	June 2017
GECKO Performs Complex Maneuvers, Lab Environment	Med	Climbs through Bulkhead, Demonstrated	4	January 2018
GECKO Performs Mock Inspection in Representative Tank (Dry)	Med	Demonstrates Inspection Tasks	5	April 2018
GECKO Performs Mock Inspection in Representative Tank (Wet/Dry)	Med	Demonstrates Inspection Tasks	5	December 2018

HOW

Projected Business Model:

- IAI's plans to pursue GECKO as an IAI-branded product. IAI will lead product management, development, training, and support.
- IAI will work with an established manufacturer to lead manufacturing of the hardware platform.
- IAI will also investigate partnering with established service providers to support GECKO sales, marketing, distribution, and on-site customer support.

Company Objectives:

IAI intends to commercialize GECKO technology, as well as expand our portfolio in the robotic manipulation/locomotion, remote inspection, and non-destructive evaluation (NDE) arena.

Potential Commercial Applications:

- Classification Society
- Inspection and Maintenance of:
 - Commercial ships
 - Oil & gas rigs
 - Nuclear power plants
 - Bridges

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