

2016 Maintenance Innovation Challenge

In-System Maintenance Robotics

PROBLEM STATEMENT

Need to adapt existing unmanned and autonomous robotics to perform more efficient system assessment and repairs on-board Navy vessels in support of depot maintenance

Progressive series of challenging maintenance activities:

- Exterior metal assessment
- Exterior metal repair and preservation
- Interior tank assessment
- Interior tank surface repair, preparation and preservation
- In-system piping inspection and repair

BENEFITS

Savings

- Less intrusive inspections = less system downtime and restoration
- Unmanned and/or autonomous systems supplement existing productivity capacities
- Put into operators hands to push forward depot maintenance capabilities
- Autonomous/unmanned and real-time Battle Damage Assessment and Repair

Shared Applicability

- Emergency response organizations – structural/system assessments
- World-wide industries

TECHNOLOGY SOLUTION



Adaptation of existing systems such as:

- iRobot - Roomba vacuum
- Robotex – Avatar III EOD Robot
- BlueFin – Hovering Autonomous Underwater Vehicle
- SRI International – M7 Surgical Robot
- Bridge Inspection Robot Equipping Magnets (BIREM)
- Zymergen – nanobot development
- Navy – Swarming LOCUST UAVs



Assessment, repair, surface preparation, preservation, non-destructive testing

Collaboration with National Institute of Standards and Technology



GRAPHIC



Seamlessly traverse, assess, and repair systems in-place

