

Artificial Intelligence and Autonomy for Improved Operations and Modernization of Navy Shipyards

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Submitted: 2025, Dec 15; Accepted: 2026, Mar 02; Published: 2026, Mar 13

Citation: Martinez, R. S. (2026). Integrating Tomen Filters into the Water Distribution System for Improved Water Availability and Quality. *J Electrical Electron Eng*, 5(2), 01-02.

Abstract

This paper presents a comprehensive proposal for the modernization of Navy shipyard facilities through artificial intelligence (AI) and autonomous systems. The proposed system, Hydro-Helmsman Stealth Coordinates A.I.-10, integrates digital twin technology, AI, and autonomy to transform century-old shipyards into modern facilities. The proposal focuses on three primary areas: improvement of materials handling workflow, autonomous 3D precision scanning, and autonomous non-destructive inspection. Implementation is structured across multiple phases, with specific applications in maritime navigation, vessel tracking, and shipyard operations. All technologies described are under patent protection by Anonemis Research, LLC.

Keywords: Artificial Intelligence, Autonomy, Navy Shipyards, Digital Twins, Autonomous Inspection, Maritime Operations, Modernization

1. Introduction

The modernization of Navy shipyard facilities represents a significant opportunity to leverage cutting-edge technologies in support of national defense infrastructure. This proposal focuses on artificial intelligence and autonomy applications to improve operations in naval shipyards. The proposed system encompasses three primary lines of effort: Drydocks, Infrastructure, and Industrial Plant Equipment, all enhanced through digital technologies including digital twins, AI, and autonomous systems [1].

2. System Overview

The core technology, Hydro-Helmsman Stealth Coordinates A.I.-10, functions as a digital laser system with environmental integration capabilities based on regional water vapor components. This system works in conjunction with three complementary technologies: The Helmsman Magnetic Drone Weaponry Assembly, the Helmsman A.I.9a Marine land Precision Missile, and the Helmsman Weaponry Chip and Detection Suite [2].

2.1 Focus Areas Improvement of Materials Handling Workflow

The proposed system addresses materials handling through several technological interventions:

- Automation of cranes and forklifts

- Near real-time logistics tracking
- Deployment of analytics, AI, and machine learning tools for scheduling
- Support for continuous 24/7 operations
- Enhanced safety protocols and inventory management
- Maximization of operator talent and decision-making efficiency

2.2 Autonomous 3D Precision Scanning

The system incorporates advanced command, control, and communications capabilities through:

- Autonomous 3D scanning for large platforms
- Enhanced precision scanning with improved stand-off distances
- Advanced image rendering capabilities
- Digital twin creation and structural issue detection

2.3 Autonomous Non-Destructive Inspection

The proposal includes autonomous solutions for non-destructive inspections utilizing:

- Various NDI techniques including penetrant testing
- Ultrasonic testing capabilities
- Magnetic testing applications
- Inspection capabilities for diverse geometries and sizes
- Submerged asset inspection capabilities

2.4 Implementation

The initial phase establishes the foundational infrastructure:

- Implementation of compass orienting lines operating horizontally and vertically
- Deployment of transparent communicating water drones for data collection
- Behavioral monitoring systems to detect unusual movement
- Remote notification systems for ship captains
- Warning mechanisms for adverse conditions and unauthorized entry
- Ocean traffic logging and wreckage/crew recovery assistance
- Implementation of Helmsman Number plate digital identification system
- Installation of access points with quality assurance methodologies
- Regular testing of ports to ensure efficient communication frequencies the development and refinement stage includes:
- Development and demonstration of functional prototypes
- Focus on usability features required for integration
- Collaboration with end users and systems integration personnel
- Pilot testing in operational environments
- Modification and adaptation based on feedback

The final implementation stage addresses broader applications:

- Support for transition to Navy use
- Coordination of funding for full implementation
- Generation of new guidance and standards
- Leveraging commercial development in autonomous systems
- Partnership with commercial entities for industrial maintenance

2.5 Commercialization Strategy

The commercial applications of this technology include:

- Guidance systems for commercial ships on separate servers
- Vessel recovery using Helmsman Coordinates and identification plates
- Annual registration services for fleets and Naval Wireless Signal Channel access
- Projected revenue of \$295,956,600 based on registration fees of \$300 per vessel for an estimated 1,479,783 vessels [3].

2.6 Patent and License Availability

All technologies described in this proposal are patented, registered,

and copyrighted by Anonemis Research, LLC. Licensing opportunities may be available through direct consultation with the company. All rights are reserved, and unauthorized use, duplication, or disclosure is prohibited without express written consent from Anonemis Research, LLC [4].

3. Conclusion

The proposed AI and autonomy technologies represent significant advancements for naval shipyard operations, with potential applications extending to the commercial maritime sector. Through phased implementation, these systems can transform operational efficiency while enhancing safety and decision-making capabilities.

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Additional Resources

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