

# ALION

We are helping advance the nation's defense through improved human-machine teaming for military action.

## UNMANNED SYSTEMS

Intelligent Platforms to Support National Security

### SMART SYSTEMS IN ACTION

Unmanned and autonomous systems are already prevalent on the battlefield. Unmanned aerial vehicles (UAVs) have proven valuable in surveillance and strike missions, leading to the Department of Defense (DoD) to expand its investment in the air as well as seek out new capabilities for unmanned ground and water systems.

While UAV technology is relatively mature, unmanned systems for land and sea require more development to get to production. DoD leaders are working to quickly design and develop these comparable systems in a budget environment that restricts much of the necessary activity and a threat environment that requires speed.

As human-machine teaming further matures, these platforms will become even more ubiquitous and even more precise, meticulous, and exacting than they are today. For the U.S. to keep pace with our adversaries, we must embrace calculated risk-taking, innovation that's free from constraints, and rapid prototyping that supports scale and replication.

### ENGINEERING WITH AI

At Alion, we are helping advance the nation's defense through improved human-machine teaming across the full spectrum of military action. By applying practical artificial intelligence (AI), we design, create, and optimize counter-UUV technologies, autonomous weapons systems, and unmanned platforms that can better pinpoint potential targets, while keeping humans on the loop, and offer superior navigation and collision avoidance capabilities.

Our leading-edge technical skills, hard-won insight into critical integration challenges, and unique credentials and facilities enable fast experimentation and testing of unmanned systems to meet DoD and national security objectives. And, with 30% veterans and forward-deployed engineers, we bring deep operational experience to be sure all of our solutions work in the real world.

By pairing data insights and systems expertise with machine and deep learning capabilities, we help you engineer unmanned systems that support fast, secure, and decisive military operations.



# ALION'S UNMANNED SYSTEM SOLUTIONS

Our engineers use machine and deep learning to prototype, test, and deploy the next generation of weapons platforms. As curators of commercial technology, we apply a vendor-agnostic approach and agile engineering methodology to every project and program, saving you time and money while delivering industry-leading unmanned systems solutions.



## DESIGN & DEVELOPMENT

With design, rapid prototyping, and development capabilities, we reverse engineer aged devices, expand the capabilities of existing systems to support ISR, and invent new autonomous systems for military use.



## TECHNOLOGY INTEGRATION

Whether created in-house or translated from the private sector, we integrate unmanned and autonomous capabilities that turn existing systems into powerful military weapons of today — and tomorrow.



## TEST & EVALUATION

Our experienced engineers and data scientists understand the evolving complexity and sensitivity surrounding testing and evaluation of unmanned systems — and systems of systems — for military use.

### FEATURED WORK: THE SKIMMER UNMANNED OIL RECOVERY SYSTEM

Mechanical systems are important for collecting, containing, and recovering oil in response to offshore spills, helping to immediately remove oil from the environment. Under a Bureau of Safety and Environmental Enforcement (BSEE) contract, we developed an unmanned oil recovery system with the capability to skim oil from ice-infested waters.

This skimmer system has the unique ability to submerge and travel under water or ice and surface within an ice pocket to recover oil. We integrated our previously designed ROV-based submersible

sled technology (SEAHORSE) with COTS skimmer technology to develop the prototype ICEHORSE system, which was tested at Ohmsett in 2016.

After successful testing, we designed ICEHORSE 2, with modifications suggested by the original ICEHORSE test results. The enhanced version advances the original proof-of-concept to improve the design, making it more useful in an operational environment and including the ability to locate and guide the system from beyond visual sight of the tending vessel as well as from below the ice pack.

Alion's experienced engineers are partnering with the U.S. government to revolutionize America's national security systems. To learn more about our complete package of unmanned system solutions, or to get connected with one of our experts, visit us online at [www.alionscience.com/unmanned](http://www.alionscience.com/unmanned).

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#### About Alion Science and Technology

At Alion, we combine large company resources with small business responsiveness to design and deliver mission-critical engineering solutions. With an 80-year technical heritage and an employee-base comprised of more than 30% veterans, our engineers, technologists, and program managers bring together an agile engineering methodology and the best tools on the market to deliver mission success faster and at lower costs. Based just outside of Washington, D.C., we help clients turn big ideas into real solutions. For more information, visit [www.alionscience.com](http://www.alionscience.com).

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