

naval
STEM

NAVAL
STEM
STRATEGY

JANUARY 2016



NAVAL STEM

EXECUTIVE FOREWORD

As the challenges facing our nation evolve, so must the science and technology (S&T) capabilities of our Navy and Marine Corps workforce. A world-class, diverse science, technology, engineering and mathematics (STEM) workforce enables the Department of the Navy (DoN) to maintain technological superiority across its missions and to protect its Sailors and Marines at home and abroad. This Naval STEM Strategy codifies the top priorities and approaches to developing this workforce and supporting student awareness and opportunities in naval-relevant STEM activities and careers.

STEM development begins with outreach programs at the pre-kindergarten through high school grade levels, continues through undergraduate and graduate school, supports student advancement into post-doctoral work and continues through all stages of their professions. “Naval STEM” refers to the community of Navy and Marine Corps organizations and professionals dedicated to supporting STEM development. From the naval research and development enterprise to our naval academic institutions, we all have a vested interest in ensuring our current and future STEM workforces are ready and able to lead DoN S&T innovations.

Historically, Naval STEM has focused on education and outreach initiatives for kindergarten through high school students. These students are an important part of the work within our community, and we’re proud to announce an additional focus on STEM initiatives supporting existing naval STEM professionals—as well as developing and attracting the future naval STEM workforce. Our Naval STEM Strategy provides new strategic direction for Naval STEM.

I am constantly impressed by the STEM education and workforce initiatives that are developed, facilitated and executed by our naval teams across the country and in Department of Defense Education Activity schools internationally. As a community, we continue to learn from one another and to build on the tools, programs and ideas that our colleagues share. This strategy emphasizes collaboration and coordination across the broad Naval STEM community, as well as with our partners in academia, industry and the nonprofit communities.

As you read this strategy, I challenge you to think about how your interests and efforts apply to these priorities and consider how you may be able to get involved with our community. As the Naval STEM Executive, I am committed to the professional success of our current and future Naval STEM workforce and invite you to engage with us on this important endeavor.



MATHIAS W. WINTER

Rear Admiral, U.S. Navy
Chief of Naval Research

THE DEPARTMENT OF THE NAVY & STEM

The Department of the Navy (DoN) has a rich history of providing educational opportunities for students of all ages and cultivating a talented and well-trained workforce for the Navy and Marine Corps. The superiority of our warfighters is dependent on the scientific and technological innovations and breakthroughs of today and in the future. To promote an environment where these breakthroughs continue, it is imperative that the DoN fosters initiatives and collaborations to promote the development of the future and current naval science and technology (S&T) workforce.

Deliberate investments in naval science, technology, engineering and mathematics (STEM) education, outreach and workforce initiatives are a key component for maintaining technological advantage. A coordinated approach within the department is imperative in order to optimize resources and achieve greater impact.

This document articulates the strategy of Naval STEM and provides a shared roadmap for DoN commands and components engaged in STEM efforts.

This shared roadmap was developed by the Naval STEM Coordination Office under the guidance of the Naval STEM Executive and in partnership with representatives from Naval STEM Stakeholder Organizations (see Appendix A for the Naval STEM Organization Structure).

The Naval STEM Coordination Office is uniquely positioned to serve as a liaison between local STEM efforts and leadership's strategic priorities—and in this capacity, we will work to clarify demand signals and grassroots needs. As a result, this strategy is intended to be agile and capable of addressing the dynamic challenges and opportunities incumbent in the evolving Naval STEM environment.

Within the United States, federal agencies, industry, academia, nonprofit organizations and K-12 schools are focused on many different aspects of the educational and workforce challenge. These external stakeholders are important Naval STEM partners. Increased coordination and collaboration among DoN commands and with external stakeholders, including the general public, will promote effectiveness and efficiency for Naval STEM programs and initiatives. This strategy provides the framework and vision for Naval STEM efforts and highlights the opportunities for internal and external stakeholders to contribute to and engage with these efforts.

This strategy aligns with the 2013 Federal STEM Education Five Year Strategic Plan and the Department of Defense strategic direction. This strategy and a proposed implementation plan will be compiled into a Naval STEM Strategic Plan outlining the priorities, goals and recommended actions to bring this strategy to fruition.



NAVAL STEM VISION

To foster and cultivate a diverse, world-class STEM workforce in order to maintain the U.S. Navy and Marine Corps' technological superiority.



STRATEGY

The Naval STEM Strategy includes five strategic priorities and one coordination strategy (highlighted on the next page). Due to the broad focus and strategy of Naval STEM, many of these strategic priorities apply to future members of the workforce as well as the incumbent workforce. Individuals at different stages of their education and careers require different types of engagement and attention. In developing this strategy, special consideration was given to how individuals fit into the naval workforce pipeline. The graphic below provides a general overview of how strategic priorities encompass individuals at these different stages.

The strategic priorities included in this strategy are not intended to be a comprehensive list of all that needs to be done within Naval STEM. Additionally, it is important to note that it is not intended that each Naval STEM stakeholder organization will execute programs related to all of the strategic priorities. Each command and organization will continue to focus on the efforts and strategic priorities that best align with their respective missions, workforce talents, capabilities and needs. As a naval community, we will work to collectively address all aspects of this strategy.

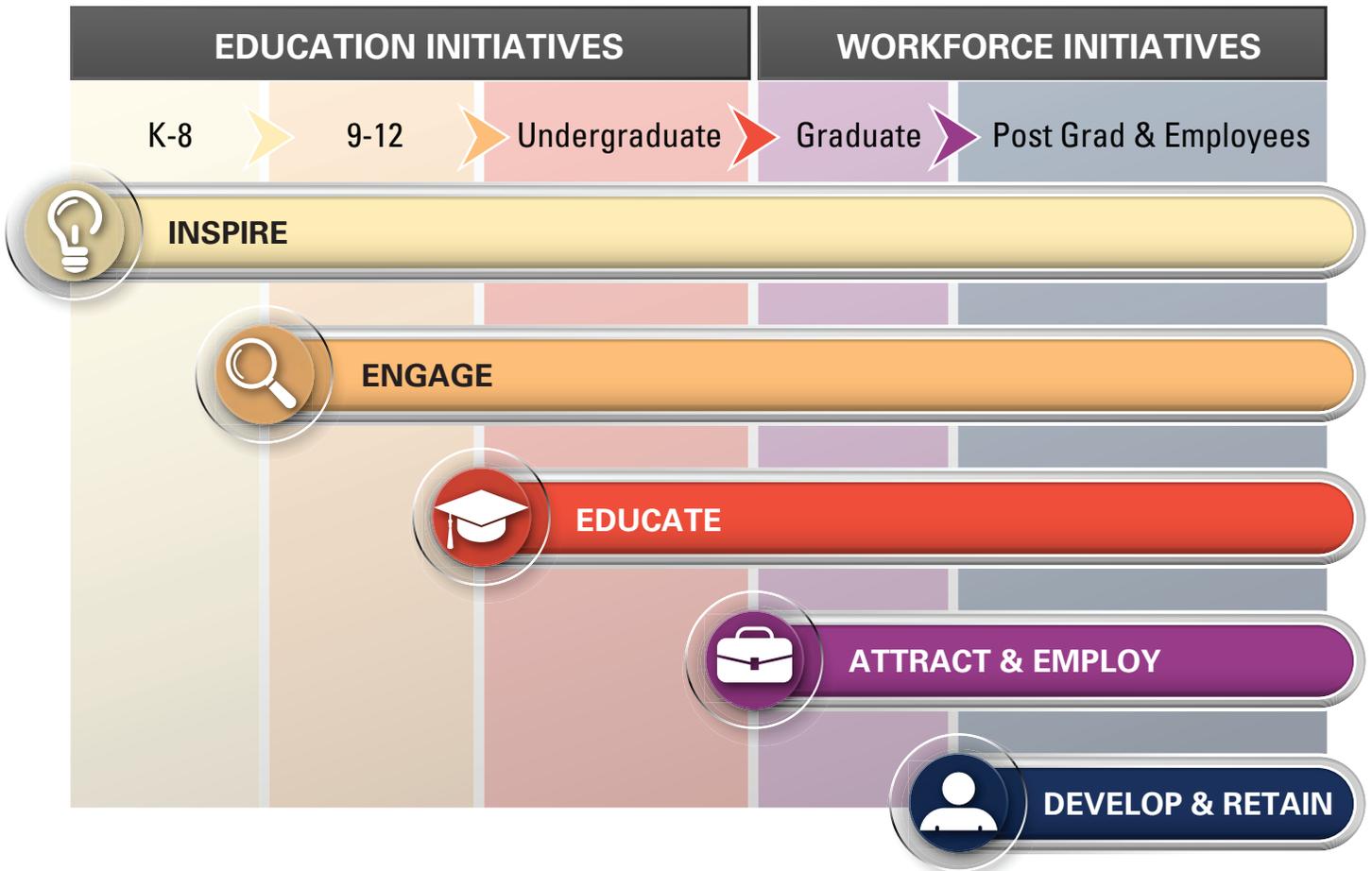


Figure 1: Naval STEM strategic priorities mapped to individuals at different stages in the workforce pipeline.



NAVAL STEM STRATEGY

To inspire, engage and educate the next generation of scientists and engineers, and to attract, employ, develop and retain our diverse technical workforce through collaboration to promote an effective and efficient STEM portfolio across the DoN, the federal government and the broad STEM community.

STRATEGIC PRIORITIES



INSPIRE

Future and current generations of scientists and engineers to pursue naval-relevant STEM opportunities.

The Inspire strategic priority applies to both the future and current workforce and aims to promote excitement surrounding naval-relevant STEM opportunities. For students of all ages, awareness of how STEM relates to their lives or the content and skills they are learning in school is the first step to inspiration. For the current workforce, this enthusiasm may result from seeing the excitement of students learning, or through motivation to improve their professional skills, or connect with other scientists and engineers.



ENGAGE

Students and professionals to enhance their capacity and confidence in areas of naval relevance.

The Engage strategic priority builds on participant inspiration related to STEM and applies it to specific naval-relevant learning opportunities and activities. For students, this includes hands-on activities that bring STEM to life and for the current workforce it includes mentorship opportunities to connect with students. Through active participation in naval-relevant STEM opportunities, students and professionals learn from each other and increase confidence in themselves and their abilities.



EDUCATE

Students and current professionals to be well prepared for and successful in STEM careers that support the Navy and Marine Corps.

The Educate strategic priority focuses on developing STEM-proficient students and outstanding professionals in naval-relevant S&T areas. Education initiatives include curricula and degree programs for students as well as certifications and further education opportunities for current workforce members. Training the current and future workforce in naval-relevant STEM areas promotes the alignment of professional skills with DoN workforce needs.

COORDINATION STRATEGY



ATTRACT & EMPLOY

A highly competent STEM workforce and network to sustain the Navy and Marine Corps' technological superiority.

The Attract and Employ strategic priority focuses on engaging with high caliber STEM professionals through employment with the DoN or through engagement as a part of the naval S&T research network. This priority includes individuals that are drawn to employment with the DoN or with a partner organization that collaborates with the DoN on research and development. Through access to a robust, diverse network of STEM professionals, the DoN is better able to respond to near and long-term S&T challenges.



DEVELOP & RETAIN

A STEM-proficient workforce and network to drive naval S&T innovation.

The Develop and Retain strategic priority focuses on the current workforce and DoN S&T network by promoting opportunities to improve professional skills and pursue opportunities of particular professional interest. After people are identified and hired, it is imperative that employees are nurtured and provided opportunities to continue their professional growth and expand their professional network. Programs and initiatives that empower professionals promote a sense of intrinsic motivation that endures and helps to drive innovation.



COLLABORATE

Across the DoN, federal government and broad STEM community to promote an effective and efficient portfolio of Naval STEM investments.

Collaboration with and among Naval STEM constituents is a vital requirement for the success of this strategy and Naval STEM efforts as a whole. Our partners in the federal government, industry, nonprofits and the K-12 communities are key participants and colleagues in these efforts and we must work together to support our future and current workforces. Through increased collaboration, we will benefit from sharing best practices and leverage each respective partner's assets, workforce and expertise to develop and execute the highest caliber naval-relevant programs and initiatives.



DEVELOPING AN IMPLEMENTATION PLAN

Following the release of this strategy, the Naval STEM Coordination Office will facilitate a crowdsourcing campaign, specifically a crowd-based campaign, to engage the internal and external community in the development of an implementation plan for this strategy. This process will leverage the creative energy and perspectives of the diverse community and will help to develop, refine, select and execute initiatives that support this strategy. The result of this crowd-based campaign will be combined with this Naval STEM Strategy and will result in the basis for the Naval STEM Strategic Plan.

It is proposed that this campaign include a phased approach to promote engagement from the internal and external communities. Phase I will focus on internal DoN engagement and Phase II will focus on external community engagement.

During both phases, participants will propose goals for each of the strategic priorities, vote on goals individuals like most, and refine these goals through comments and active discussion. This engagement will focus on goals related to the five strategic priorities and the collaboration strategy in this Naval STEM Strategy. At the culmination of this campaign, multiple goals will be identified for each strategic priority and each goal will include actions, outcomes and metrics to measure and evaluate success.

By engaging the broad community in the development of the Naval STEM Strategic Plan we hope to develop a plan that addresses the concerns and interests of our current and potential Naval STEM constituents so we can provide world-class STEM programs that support the current and future naval workforce.

APPENDIX A

NAVAL STEM ORGANIZATION STRUCTURE

NAVAL STEM EXECUTIVE BOARD

Assistant Secretary of the Navy
(Research, Development & Acquisition)
Chair

Assistant Secretary of the Navy
(Manpower & Reserve Affairs)
Member

Chief of Naval Personnel
Member

**Commander, Marine Corps Combat
Development Command**
Member

**Superintendent,
United States Naval Academy**
Member

Chief of Naval Research, Office of Naval Research
Executive Secretary & Naval STEM Executive

NAVAL STEM COORDINATION OFFICE

Located at the Office of Naval Research

NAVAL STEM STAKEHOLDER ORGANIZATIONS

Office of the Assistant Secretary of the Navy
(Research, Development & Acquisition)

Office of the Assistant Secretary of the Navy
(Manpower & Reserve Affairs)

Office of the Deputy Chief of Naval Operations
(Manpower, Personnel, Training & Education)

Office of the DoN Chief Information Officer

Bureau of Medicine and Surgery

Naval Systems Commands

Navy Installations Command

Marine Corps Education Command

Office of Naval Research

Naval Research Laboratory

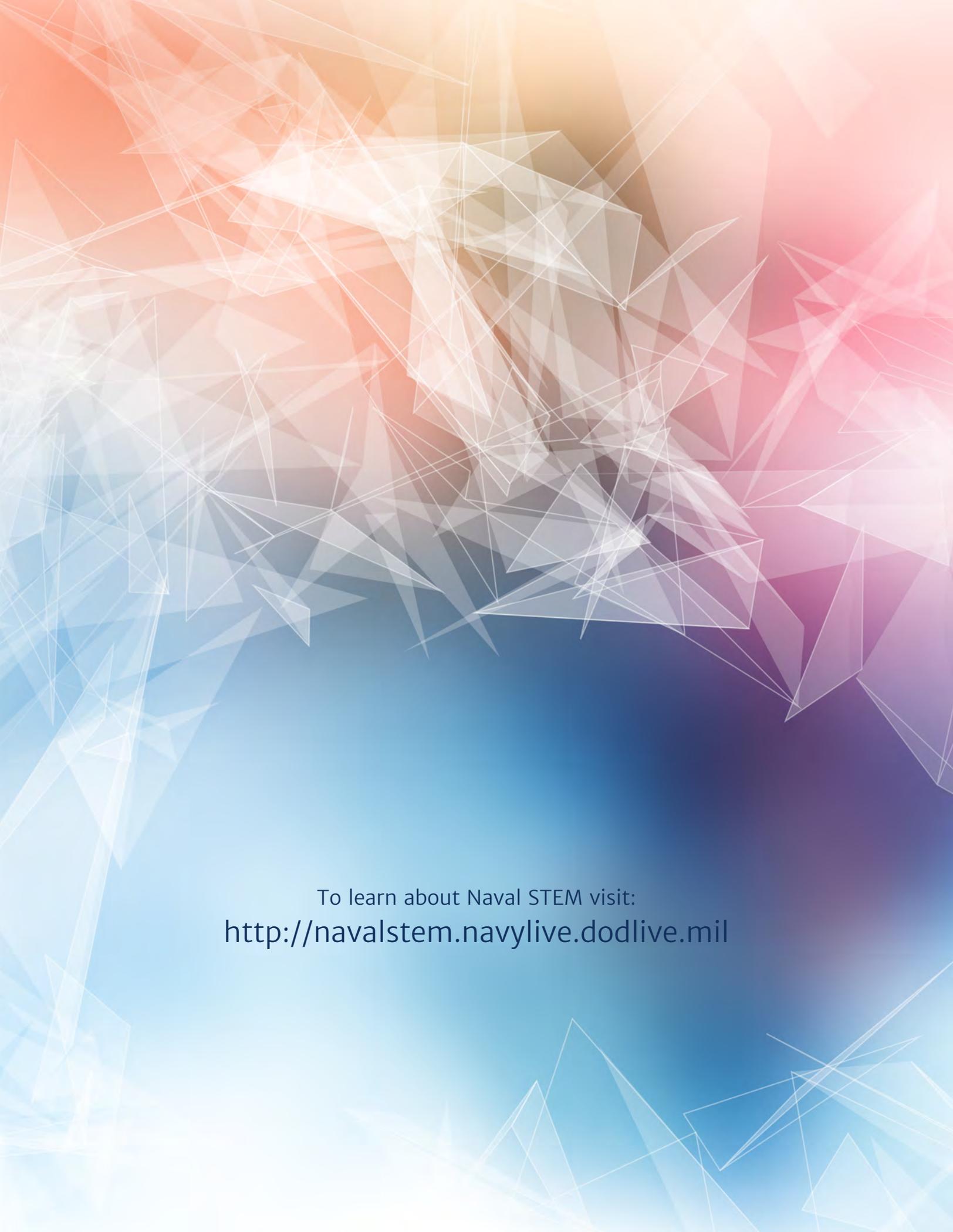
Office of the Director, Innovation,
Technology Requirements, and Test
and Evaluation
(OPNAV N84)

Marine Corps University

Naval Postgraduate School

United States Naval Academy

Naval Operational Type Commands



To learn about Naval STEM visit:
<http://navalstem.navylive.dodlive.mil>