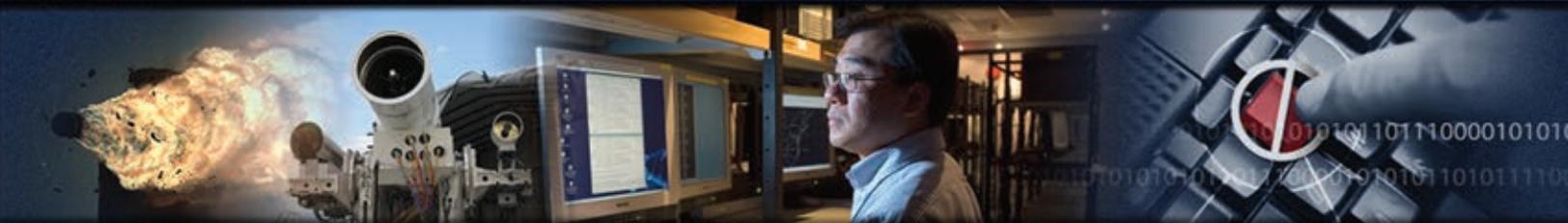




ELECTRIC WEAPONS

MISSION ENGINEERING & ANALYSIS

CYBER WARFARE



NAVAL SURFACE WARFARE CENTER, DAHLGREN DIVISION

# NSWCDD STRATEGIC PLAN

2015-2020



*The Leader in Warfare Systems Development and Integration*





**CAPT B. Durant**  
*Commander*



**Dennis M. McLaughlin**  
*Technical Director*

Since the first test shot was fired over the Potomac River Test Range in 1918, Dahlgren has answered the nation's call to support the warfighter. Today, Naval Surface Warfare Center Dahlgren Division personnel are impacting our national defense at home and abroad with technically relevant science and engineering expertise and unique facilities – at Dahlgren and Dam Neck laboratories – to meet the needs of the current and future Navy.

In keeping with our rich tradition, this Strategic Plan charts the course we are taking to ensure our organization remains the Navy's leader of warfare systems integration and the institution of choice for cutting-edge research and development support to the Department of Defense. It helps to raise our heads above the daily grind to take a good hard look at our strengths, weaknesses, opportunities and challenges. The plan was developed with careful attention to alignment with the Chief of Naval Operations' Navigation Plan and the Naval Sea Systems Command's Strategic Business Plan. It reinforces this guidance as it defines our unique goals as a warfare center division.

In addition to our core work, special emphasis is placed on technical opportunities in emerging warfare areas aligned with our core capability to deliver integrated solutions through innovation and systems engineering. The thrusts we are pursuing build off our science and engineering foundation and are envisioned to become an integral part of our core technical expertise in the future.

***Over the next five years, we will:***

- *Lead Electric Weapons Design, Development and Integration*
- *Institutionalize Mission Engineering and Analysis*
- *Incorporate Cyber Warfare Engineering in our Naval Systems*

We will carry out our mission guided by the Chief of Naval Operations' three tenets – warfighting first, operate forward, and be ready – to ensure the U.S. Navy can protect and defend America and our interests abroad. Being ready is key to our mission. We cultivate readiness by attracting and developing talented personnel engaged to deliver innovative, affordable solutions for emerging warfighting challenges. With a business model that enables our technical mission, NSWC Dahlgren Division is always ready to support timely mission execution of our Naval Warfare Systems Development and Integration capabilities.

We encourage you to read and refer to this plan as we prepare to meet the challenges ahead while articulating our value to audiences so they become well-informed advocates for NSWC Dahlgren Division.

A stylized signature of Capt. B. Durant in black ink.

**CAPT B. Durant**  
*Commander, NSWC Dahlgren Division*

A stylized signature of Dennis M. McLaughlin in black ink.

**Dennis M. McLaughlin**  
*Technical Director, NSWC Dahlgren Division*



## INTRODUCTION

Globally, the drawdown of forces in Iraq and Afghanistan, the proliferation of military technologies by other nations, and the continued threat of non-state actors are some of the many factors that drive the military rebalancing to the Asia-Pacific area, emphasize forward engagement in other key regions of the world, and highlight the importance of key alliances in Europe as means to ensure national security. Domestically, budget cuts are changing the way that the Services operate – and will continue to change – as the out-year budgets call for reductions in troop strength, termination of ineffective systems, and re-prioritization of investments in critical future technologies. Regardless of the changes facing the nation and the Department of Defense, the Navy looks to the Naval Surface Warfare Center, Dahlgren Division (NSWCDD) for timely, affordable, technically relevant science and engineering expertise to address the challenges facing today’s Navy, the next Navy, and the Navy after next.

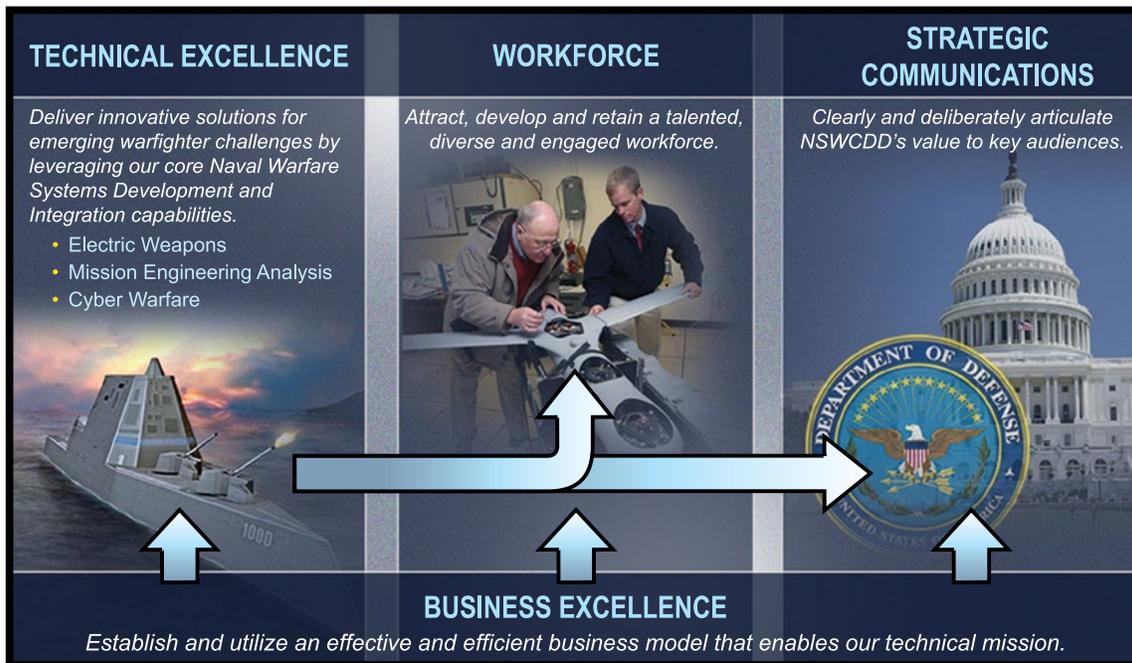
## OUR STRATEGIC VISION

To be the Department of the Navy’s leading warfare system architect and system engineer recognized as the technical leader in delivering innovative, affordable, and effective solutions for the Navy and in support of joint and national initiatives.

## OUR STRATEGIC GOALS

Our Strategic Plan was derived from the vision, strategies and priorities of the Chief of Naval Operations (CNO) and Commander, Naval Sea Systems Command (NAVSEA). The plan is aligned to the previously instituted mission of NSWCDD and establishes a clear framework for successfully navigating the challenging and dynamic future environment. The strength of NSWCDD is our technical acumen for weapons systems, control systems, and sensor systems for surface combat systems and our ability to integrate these components into warfare systems. The key to that strength lies within our technical workforce and the business processes that support and enable them. Moreover, our ability to communicate technical findings, associated risks, and alternative solutions to our sponsors and stakeholders is critical to our value as a Warfare Center Division. This plan establishes four strategic goals, each of which is supported by initiatives that incrementally move us closer to our desired end-state.

*The NSWCDD Strategic Goals are:*



## Technical Excellence Goal:

*Deliver innovative solutions for emerging warfighter challenges by leveraging our Naval Warfare Systems Development and Integration capabilities.*

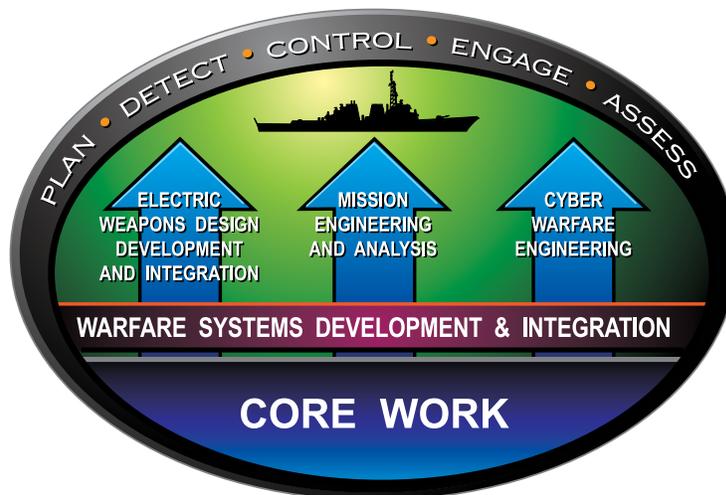


To remain relevant to the Navy as a preeminent research and development organization, NSWC Dahlgren Division must continue its focus on technical excellence and its foundation of rigorous science and engineering. We will support our core efforts in Warfare Systems Development and Integration while expanding our aperture to pursue new strategic thrusts that have the potential for significant impact on the Navy and the nation.

**Core** - Established in 1918 as a naval proving ground for testing gun weapons systems, the Division has evolved over the last century with the changing missions of the warfighter and advances in technology. The NSWCDD organization has developed and refined a unique set of capabilities that facilitate a core focus on Warfare Systems Development and Integration. These sustaining fundamental capabilities are grounded in electromagnetics, engineering, mechanics, physics, computation and analysis applied to the military Plan/Detect/Control/Engage/Assess functions. These capabilities and their associated equipment, facilities and, most importantly, their practitioners, are the elements that define us as an organization.

That core is viewed through the lens of a naval Research, Development, Test and Evaluation (RDT&E) institution founded in Naval Warfare, focused to meet the needs of the Department of Navy. Our research (R) is primarily applied; our development (D) is primarily front-end for systems and systems-of-systems; and our assessment (T&E) is primarily of new and emerging systems.

**Strategic Thrust** – As we navigate this uncertain environment, we will target technical opportunities in emerging warfare areas aligned with the Dahlgren Division mission that increase our relevance and visibility to the Department of the Navy and the Department of Defense over the next five to ten years. Special emphasis will be placed on these opportunities such that they are resourced and prioritized properly to ensure success. These thrusts build on our fundamental foundation and are envisioned to become an integral part of our Core in the future:



Lead *Electric Weapons* Design, Development and Integration

Institutionalize *Mission Engineering and Analysis*

Incorporate *Cyber Warfare Engineering* in our Naval Systems

## Technical Excellence Goal:

Deliver innovative solutions for emerging warfighter challenges by leveraging our Naval Warfare Systems Development and Integration capabilities.



### THRUST:

## Lead Electric Weapons Design, Development & Integration

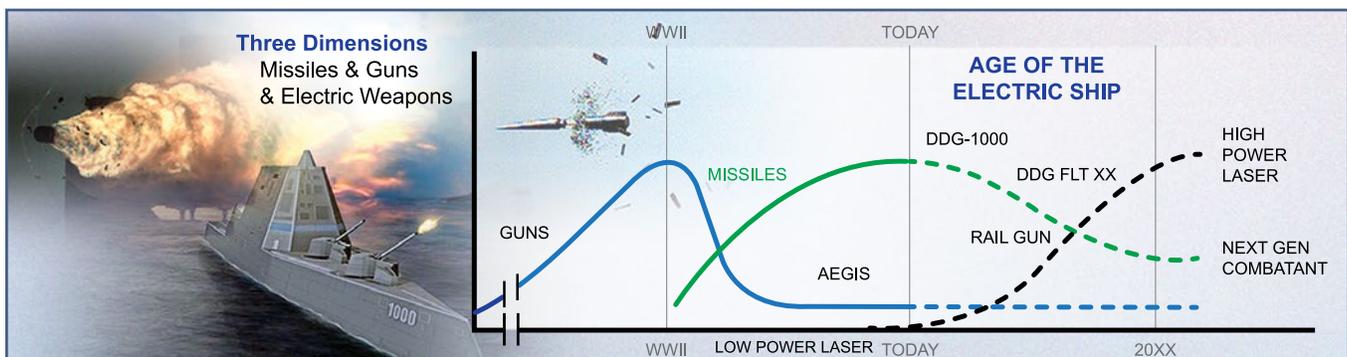
**Electric Weapons** — a new class of armament that derives their effectiveness from electricity instead of chemical energy — have the potential to revolutionize warfare. Electric Weapons can provide lethal effects at hypervelocity or at speeds approaching the speed of light. With this class of weapon, there is little delay between pulling the trigger and impacting a target at the horizon. Even more compelling, the “cost per shot” of electric weapons is orders of magnitude less expensive than the threats they will counter. In short, warfighters equipped with electric weapons will have the battlefield and cost advantage over their adversaries.

NSWCDD will leverage its knowledge of electromagnetic launchers, hypervelocity projectiles, and directed energy weapons, as well as its established core capabilities in complex Warfare Systems Development and Integration, to become the nation’s premier Electric Weapons Research, Development, Test, Evaluation and System Integration Laboratory. We will lead the incorporation of electric weapons technology into existing and future fighting forces and platforms.

### INITIATIVES

- With an eye towards warfare system integration, lead successful shipboard Electromagnetic Railgun (EMRG) demonstrations.
- Drive the Navy’s development of the next generation High Energy Laser (HEL) weapon through the creation and execution of a Program of Record.
- Define and develop the Electric Weapon System Architecture to be integrated and interoperable with current and future ship classes.
- Author the Navy’s Electric Weapon System Technology Roadmap.
- Build and execute a robust portfolio of Science and Technology leading to the development of the next generation of electric weapons.
- Attract, develop and retain a superior workforce in the Electric Weapons thrust area.

NSWCDD, with its cadre of skilled scientists and engineers, will provide technical leadership in support of the Navy’s implementation of Electric Weapons into new and existing warfare systems. This will include the identification and development of prototypes, the maturation of those technologies into Programs of Record, and the integration of the resulting systems into warfare systems that augment the capabilities of naval platforms.



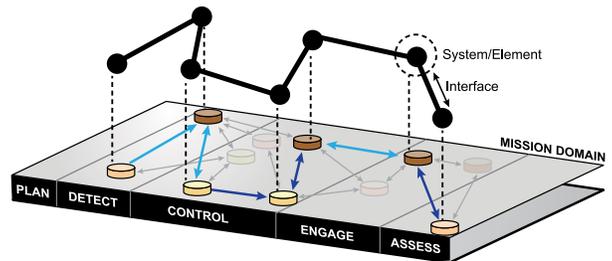
# Technical Excellence Goal:

Deliver innovative solutions for emerging warfighter challenges by leveraging our Naval Warfare Systems Development and Integration capabilities.



## THRUST: Institutionalize Mission Engineering and Analysis

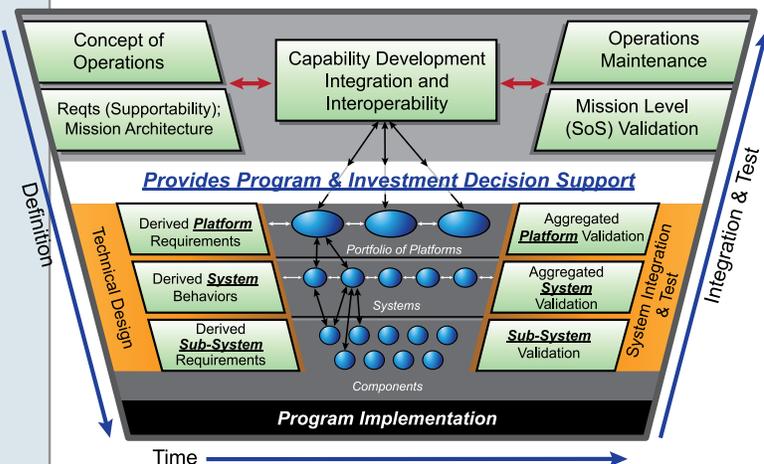
Mission Engineering is an emerging discipline in which system-of-systems engineering tools and practices are used to understand, model, analyze, architect, design and manage complex missions as end-to-end mission threads, across the entire doctrine, organization, training, materiel, leadership and education, personnel and facilities (DOTMLPF) spectrum. The adoption of Mission Engineering across Warfare Systems Development and Integration competencies will require scientists and engineers from all disciplines to understand and implement a mission engineering approach to all development and integration.



NSWCDD will lead the Navy's efforts for Surface Warfare Mission Engineering and Analysis to integrate naval and joint warfare system components and ensure interoperability across the warfighter domain.

### INITIATIVES

- Develop a framework for the execution of Mission Engineering and Analysis considering Operational Tempo and technical best practices for the integration of new warfighting capabilities.
- Develop toolsets for executing Mission Engineering and Analysis as a fundamental systems engineering discipline.
- Strengthen or initiate appropriate partnerships across Systems Commands (SYSCOMs) and Warfare Centers to include academia and federally funded research and development centers (FFRDCs) to enhance unique capabilities.
- Continue to attract, develop and retain a superior workforce in the Mission Engineering and Analysis thrust area.



The institutionalization of Mission Engineering and Analysis enables NSWCDD scientists and engineers to explore system performance and interdependence from new perspectives. We must think beyond the boundaries of individual system performance and examine the relationship of all systems that constitute the force package in the mission area. The concepts of mission essential tasks, mission areas, effects/kill chains and operational planning to relate system performance to mission operational effectiveness are critical to delivering integrated warfighting capabilities to the Fleet. This structured approach will challenge every requirement and exploit the “knee in the curve” with respect to the balance between technical performance and affordability.

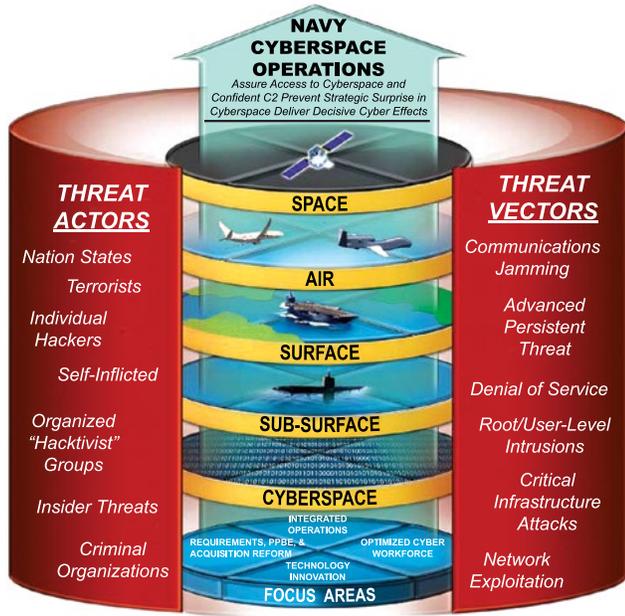
## Technical Excellence Goal:

Deliver innovative solutions for emerging warfighter challenges by leveraging our Naval Warfare Systems Development and Integration capabilities.



### THRUST:

## Incorporate Cyber Warfare Engineering in our Naval Systems



The execution of military operations in the cyber domain presents a range of challenges for the U.S. Navy and the nation. In today's interconnected world, anyone with the inclination, a little knowledge and a computer can pose a threat to U.S. infrastructure, warfighting capabilities and national interests. The sophisticated nation-state threat is real and increasing every day.

In support of the Navy Information Dominance construct, NSWC Dahlgren Division will effectively innovate, engineer and integrate cyber warfare technical solutions into naval and joint systems across the warfighter domain by leveraging our core competencies in warfare systems research, development, analysis, test and evaluation.

Our efforts will enable the Navy to **defend** its networks and make its combat and weapons systems more resilient against intrusion, disruption, or degradation by an adversary while maintaining our capability to execute the

mission. This thrust also includes providing **support for offensive** cyber operations through the experimentation, development, test and evaluation, training, integration and certification of combat and weapon systems that will allow the naval commander to project power by the application of force in or through cyberspace and provide **cyber situational awareness** through the correlation, assessment, and integration of timely and operationally relevant cyber information into the common operational picture of the naval commander.

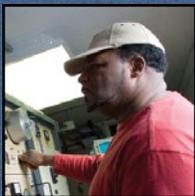
### INITIATIVES

- Provide Cybersecurity Engineering for Defensive Cyber Operations in a Defense-in-Depth architecture for Navy afloat real-time tactical combat systems.
- Lead the engineering and integration of cyber operations aboard naval platforms.
- Attract, develop and retain a superior workforce in the Cyber Warfare Engineering Thrust Area.
- Develop, build and maintain secure, remotely accessible RDT&E facilities for supporting Cyber Warfare Engineering efforts for current and future Combat and Weapon Systems Programs of Record.

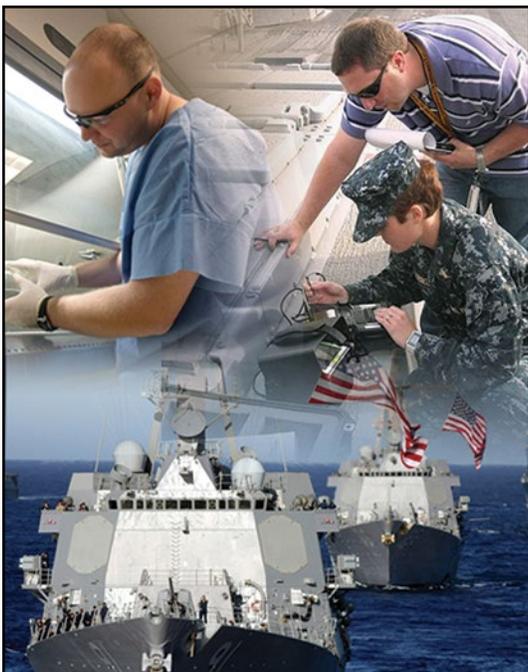
NSWCDD will prepare the U.S. Navy to successfully operate in the challenging cyber combat domain by providing technical leadership in the design, development, integration and certification of combat and weapons systems that integrate required Cyber Warfare (defensive, offensive and situational awareness) capabilities across the full range of military operations. We will leverage our cadre of cyber professionals, facilities and external partnerships/relationships to support the investigation of promising new cyber technologies, the development and integration of those technologies into existing Programs of Record, and the testing and certification of weapon, combat and warfare systems that support missions across all warfighting domains.

## Workforce Goal:

*Attract, develop and retain a talented, diverse and engaged workforce*



## Our Workforce



The composition of the federal government workforce is changing. Baby Boomers are retiring in increasing numbers and Millennials are poised to become the majority age demographic early in the next decade. Hiring and end-strength constraints, furloughs, and pay freezes threaten our ability to attract and retain top technical talent. The dynamic economic landscape and the evolving national labor market are significant external influences affecting the stewardship of our current and future workforce capabilities.

NSWC Dahlgren Division is a technical leader within the Navy due in a large part to the talent and capability of its workforce. A workplace climate and culture that provides challenging work and fosters innovation will be paramount as we consider the future. An integrated, unified human capital strategy that aligns employee development to mission priorities is required. Talent management will be a priority. NSWCDD must focus its workforce efforts on effective stewardship of personnel capable of adjusting to a rapidly changing technical environment as aligned with our strategic direction.

### INITIATIVES

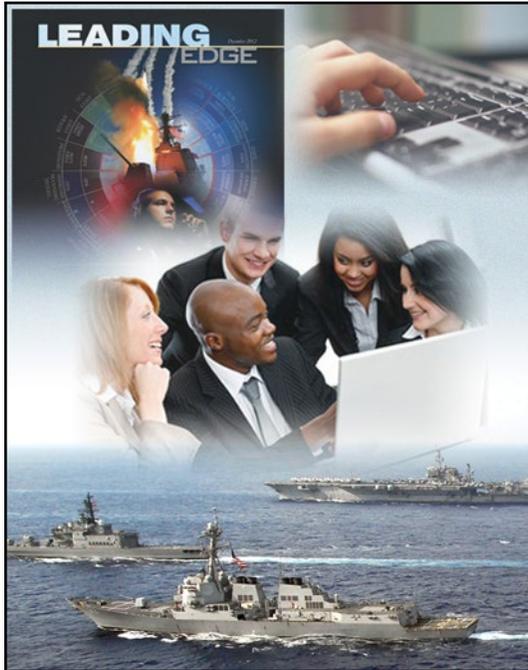
- *Develop and implement an integrated human capital strategy that aligns recruiting, development, recognition and retention with Dahlgren Division mission priorities and critical talent needs.*
- *Establish/evolve training, academic education, and apprenticeship programs that are aligned to NSWCDD strategic thrusts and core work areas and that sustain our technical capabilities and organizational values.*
- *Develop strategies and initiatives that foster a workplace environment and employee experience that make NSWCDD an employer of choice throughout government and industry.*

The approach is built upon the workforce life cycle elements of attracting, developing and retaining top talent that are embraced by leadership. Key to achieving the Division workforce goal is execution of a comprehensive plan that encompasses organizational branding, gap analysis, diversity, academic opportunities and real-time training in collaboration with technical leadership.

**Strategic Communications Goal:**  
*Clearly and deliberately articulate NSWCCD's value to key audiences.*



## Strategic Communications



The ability of the Dahlgren Division to communicate its vision, capability and relevance to the Navy is more important than ever before. As the nation steps away from more than a decade of wars in Iraq and Afghanistan, national leadership is rethinking the size, structure, composition and capability of the nation's armed forces and the infrastructure supporting it. Downward pressure on the DoD budget will force Navy leadership to make hard choices on investments, footprint and organizational constructs. Communicating the attributes and capability of Dahlgren Division is critical to shaping opinion and behavior of both external and internal stakeholders.

Our communications goal requires clear, effective communications of NSWCCD's value, tailored to resonate with each constituent group. It is our responsibility to ensure external stakeholders are educated on the differences between mission-funded and working capital-funded organizations, the positive contributions of NSWCCD Dahlgren Division to the local and regional economies, and the employment opportunities available to maintain a qualified workforce. Equally important are internal

stakeholders — the Dahlgren Division workforce — who benefit from clearly communicating the organization's goals, challenges, and opportunities from technical and corporate perspectives.

### INITIATIVES

- *Develop and implement a strategic engagement plan.*
- *Construct and execute a process that ensures all VIP visits are focused and effective.*
- *Establish and implement a strategy that prepares and positions NSWCCD to support any future naval challenges.*
- *Increase workforce awareness of NSWCCD values, focus areas and strategic direction.*

Strategic communications are necessary for the Dahlgren Division organization to connect with people in and out of government, technical and non-technical, and from all walks of life. Communications help shape opinion and motivate audiences to behave in ways favorable to the strategic aims of the Division. It is imperative that all employees and representatives of the Dahlgren Division speak with one voice as we communicate and interact with our sponsors and stakeholders. A concise and clear message will allow others to understand Dahlgren Division's value to the community, the warfighters, the Navy, the DoD and the nation.

## Business Goal:

Establish and utilize an effective and efficient business model that enables our technical mission



## Our Business



NSWCDD's business operations enable the success of the Division's technical efforts. Many challenges, including top-down compliance obligations and constraints on hiring, contracts and procurement, are among the time-intensive obstacles to the Division's progress. Compliance obligations are taking a larger share of the employee's workload, resulting in less time available for technical staff to focus on mission-critical tasking. Contracting processes have become complex, further impacting the Division's ability to respond rapidly to changing market demands.

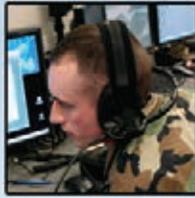
While many of these constraints are externally imposed, NSWCDD needs to be proactive, adopting best practices across the enterprise to enable technical success. Recognizing the diversity of the Division's business, we have employed local models that are sub-optimized for corporate execution. Our adoption of applicable "best-in-class" business policies, functions, and processes will assure better alignment of operations by allowing seamless resource migration across the Division and the Warfare Center Enterprise.

Business processes can be enabled by clearly defined and transparent governance structures. Governance within the Division must be more transparent and facilitate accountability among leaders. Consistent technical, business and organizational processes rely on accurate and timely information to facilitate well-informed decisions to difficult issues. These will enable the corporation to perform more effectively and strategically.

### INITIATIVES

- *Develop a framework that aligns and integrates collaborative functions that cross technical and support departments, including roles/responsibilities, processes and organization structure.*
- *Identify and document decision-making responsibilities, processes, communication and accountability mechanisms.*
- *Establish a Make/Buy strategy that aligns business and technical departments to support timely mission execution.*
- *Identify and document methods to improve contracts cycle time while still maintaining the integrity of the contracting process.*

The unified business model is a key enabler to timely mission execution by maximizing commonality across Dahlgren Division. Technical and support departments leveraging common business processes, governance structures, metrics and accountability mechanisms run their business sectors while maintaining their entrepreneurial spirit. In all business practices, Dahlgren Division is ever conscious of its responsibility to be a good steward of its resources and the taxpayer's money.



## OUR MISSION

Provide research, development, test and evaluation, analysis, systems engineering, integration and certification of complex naval warfare systems related to surface warfare, strategic systems, combat and weapons systems associated with surface warfare. Provide system integration and certification for weapons, combat systems and warfare systems. Execute other responsibilities as assigned by the Commander, Naval Surface Warfare Center.

## OUR GUIDING PRINCIPLES

*Our decisions and actions are guided by the following principles:*

- We are a unified Naval Warfare Center that is part of the larger DoD team.
- Our people and their competence are fundamental to our success.
- Quality and affordable products and services are the foundation for customer satisfaction.
- Our processes and products are developed from a systems perspective.
- We are responsible stewards of personnel, information and environmental resources.

## SUMMARY

The 2015-2020 NSWCDD Strategic Plan charts our course for the next five years and serves as a guidepost for our workforce, our customers and our community. It builds on the long history of the organization and the “Core” capabilities that have sustained us as a premier naval RDT&E Warfare Center Division over the last century. The three technical thrusts are extensions of and build on our Core, but more importantly, point us to the future of the offensive and defensive capabilities required by the warfighter.

Each of our strategic goals will be championed by a senior leader who will be responsible for the goal’s successful implementation and execution. Changing the direction of the organization requires vision and courage. To be successful, every member of NSWC Dahlgren Division must embrace these goals, initiatives and thrusts.

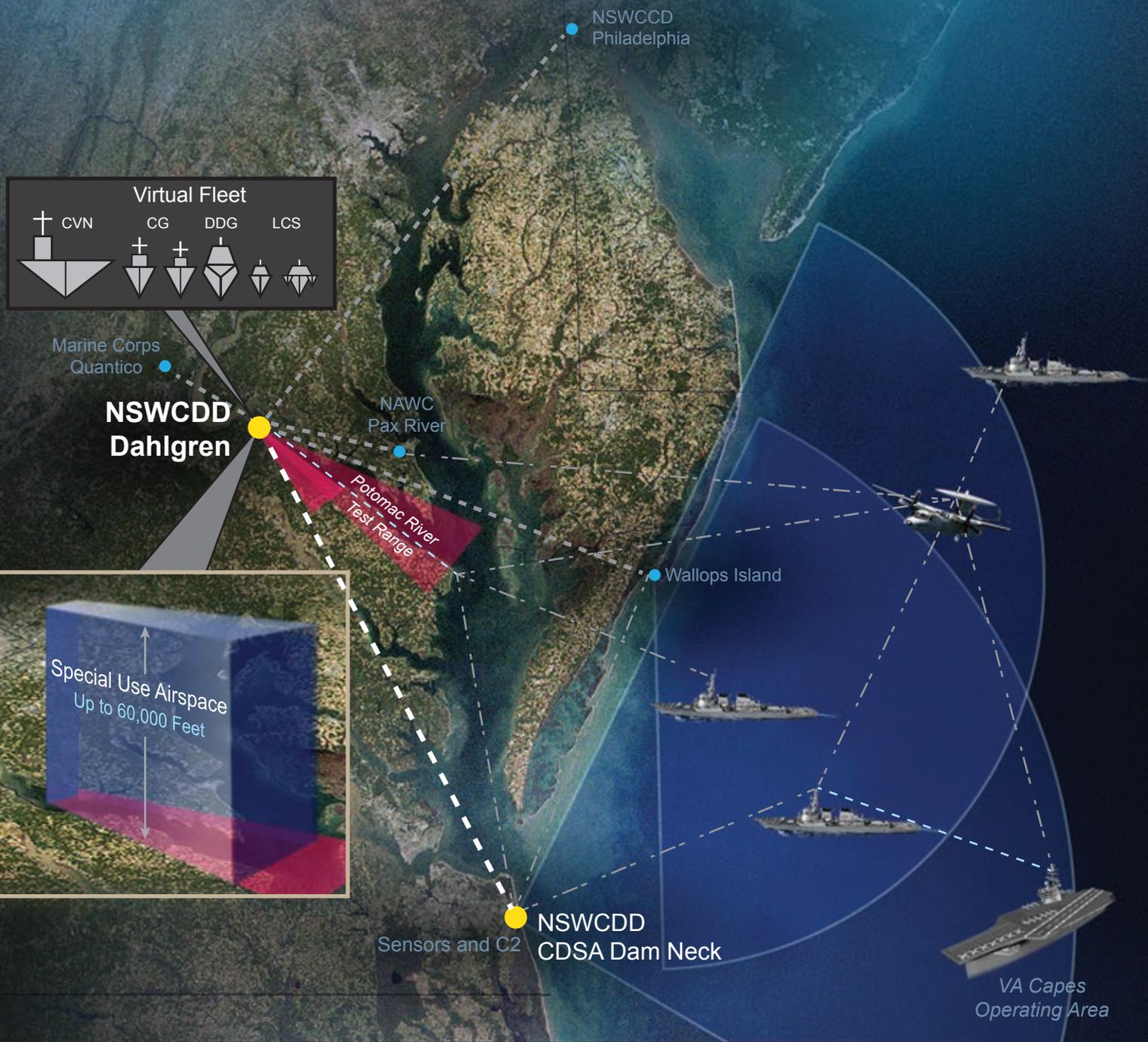
The strategic plan is a living document and will be reviewed bi-annually by our Division leadership to compare our progress with the intent of the plan and assess environmental changes that may influence our direction.

---

*Turning Ships into WARSHIPS*

---

# Potomac River Test Range A Littoral Operational Area and the Gateway to the Fleet



## NSWCDD **STRATEGIC PLAN** 2015-2020

*The Leader in Warfare Systems Development and Integration*



NSWCDD-MP-14-00273

Distribution A: Approved for public release; distribution unlimited.