

The Innovator's Guide



Navy Center for Innovation

The Innovator's Guide

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As the Navy Center for Innovation, Navy Warfare Development Command (NWDC) is spearheading a campaign to reinvigorate a culture of innovation within the Navy. To shape the future to our advantage, we must set the conditions that are conducive to innovation and create a channel that embraces and propels ideas from the deckplates to senior-level decision makers.

To apply the American spirit of ingenuity that is ingrained in all of us to this task, you must have a solid understanding of what innovation is and why it is essential to our Navy. It is also important that you become familiar with proven techniques that will help you to become a more innovative thinker.

This guide is intended to help innovators of all ages—especially junior leaders—to develop creative solutions and push them forward to become new warfighting capabilities. You own the future. As such, you have a professional obligation and vested personal interest in shaping the capabilities and the culture of tomorrow’s Fleet. To do this you must:

- Think deeply
- Question continuously
- Debate rigorously
- Read broadly
- Write boldly
- Never give up on a good idea

I ask for your full commitment in this important endeavor. Together, we will reinvigorate a spirit of creativity across the Fleet that will set the foundation for future success at sea.



Terry B. Kraft
Rear Admiral, United States Navy
Navy Warfare Development Command

Introduction

“Fostering an innovative culture — an environment in which everyone has an opportunity, regardless of position, to think critically and contribute to improving the way we do business — is imperative for our Navy to successfully overcome emerging and unanticipated challenges in our rapidly changing strategic, technological, and fiscal environment.”

- ADM John Harvey

The world is experiencing an explosion of new ideas. Social networks and Internet-enabled connections allow previously unconnected ideas to be fused and transformed into reality at an astonishing rate. The speed and reach of information systems have radically transformed the time and space dimensions of war. To exploit the era’s rich atmosphere of ideas and to prepare for new challenges, the Navy must energize and capitalize on the enterprising resourcefulness of professionals like you.

This Innovator’s Guide is designed to help you become more innovative and facilitate the transformation of good ideas into real capabilities that improve the Navy. This guide provides a background understanding of what innovation is and why it is important. It offers ways to become a more creative thinker and prepare you for the challenges associated with moving ideas into reality. And finally, it will introduce you to processes presently in existence within the Navy that can be used to develop your ideas into new concepts, technologies, or operating procedures.

“Victory smiles upon those who anticipate the changes in the character of war, not upon those who wait to adapt themselves after the changes occur.”
- General Giulio Douhet

This guide offers advice to innovators of all ranks but was written primarily with junior leaders in mind. Junior members of the Navy today are the key to success in the future. The future is yours. As such, you have a professional obligation to increase innovation in the culture you will lead and a vested interest in shaping the capabilities you will be operating.

Granted that the farther you attempt to look into the future the less you will see, one thing is certain; future maritime operating environments will be volatile and complex. To thrive in these conditions, we must prepare our forces now to become more innovative and adaptable. Within this

context, junior leaders are often uniquely positioned to recognize emerging problems and propose new ways to employ the latest technology.

The ability to adapt on short notice or, better yet, anticipate and shape the operating environment beforehand in our favor, will depend on the creative agility of our people. With contributions from individuals at all levels and a responsive process, the Navy will be better able to define and develop the capabilities to tackle near and far-term demands. To confront emerging challenges and exploit opportunities in the maritime operating environment, we must embrace a culture of innovation.

Cultures change continuously. Left to chance or the devices of others, Navy culture will evolve in reaction to environmental factors—following, not leading. In the absence of a vision and a driving force, the cultural conditions of the future will be at best unexpected and at worst undesirable. On the other hand, we can choose to shape and master our destiny by establishing and nurturing the cultural values and attributes we will need for success in the future. In concert with other initiatives underway at NWDC, the underlying purpose of this guide is to sow the seeds for a future Navy culture that is innovative and adaptable. By reawakening the creative spirit of our junior leaders today, we will ensure that our future Navy remains second to none.

What Is Innovation and Why Is It Important?

All manmade objects and human actions start with an idea. Creativity is the universal human ability to generate new ideas. Innovation is creativity applied to a purpose to realize value. In a naval context, the value of innovation is the fulfillment of a new or improved warfighting capability.

Naval innovation begins with ideas that originate from people like you. Ideation is the starting point of innovation. It is the practice of splicing together separate thoughts to generate new ideas. Once an idea takes shape and is applied to improve or solve a problem, the innovation game is on and the uphill climb begins. In a larger context, innovation is the practice of using ideas to realize a desired future.

The Navy needs innovation to maintain an advantage over competition in the field of arms. Fighting and winning the Nation's wars—our ultimate purpose—depends on innovating better or quicker than potential adversaries. Reflecting on the devastation and suffering that accompanies war, the importance of a first-rate military can never be overstated.

Building and sustaining a combat-capable force in the face of budgetary constraints and other headwinds requires new ideas created and forged into reality by relentless “Young Turk” innovators.

Creating an innovative force is top priority at the highest levels of Navy leadership. For example, the CNO’s recent *Sailing Directions* stress the importance of staying ahead of competitors in the arena of warfighting ideas. He states that:

We will innovate to:

- Use new technologies and operating concepts to sharpen our warfighting advantage.

We will evolve and remain the preeminent maritime force.

- Reach and effectiveness will be greatly expanded through new and updated weapons, unmanned systems, sensors, and increased power.
- Unmanned systems will employ greater autonomy and be fully integrated with their manned counterparts.

Our primary mission is warfighting. Efforts to improve capabilities, develop people, and structure our organizations effectively should be grounded in this fundamental responsibility.

For decades the Navy has held a comfortable advantage over adversaries. This advantage is at risk, due in part to the rising of peer nations and the proliferation of low-cost information technologies available to non-state actors. If the Navy is to hold operational advantages in future conflicts, it must be able to out-think and out-maneuver adversaries through effective innovation.



“Once a new technology rolls over you, if you’re not part of the steamroller, you’re part of the road.” - *Stewart Brand*

The Human Element of Innovation

Elements Conducive to Creative Thought

To become an innovator it is important to understand the characteristics of creative thought and what fuels it. New ideas cannot be forced, but can they be induced and captured by a prepared mind. Research shows that the skills that most lend themselves to the discovery of new ideas are:

1. *Free Association.* Connecting seemingly unrelated questions, problems, or ideas from different fields.
2. *Inquiry.* Asking questions to understand how things really are today, why they are that way, and how they might be changed or disrupted.
3. *Observation.* Carefully watching the world to help gain insights into and ideas for new ways of doing things.
4. *Experimentation.* Constantly visiting new places, trying new things, seeking new information, and experimenting to learn new things.
5. *Networking.* Going out of the way to meet people with widely different backgrounds and perspectives to extend your own knowledge.

Innovation is enabled by pluralism and the collision of diverse perspectives. The recombination of previous ideas in light of a new challenge can cause innovative connections. Exposure to broad, unrelated subjects, such as reading a variety of books simultaneously can generate new ideas. The movement of an idea from one context to another

"Insights, after all, come from the overlap between seemingly unrelated thoughts."

- Jonah Lehrer

allows for the tools of one discipline to solve the problems of another. However, to recognize the value of an idea emerging from the collision of thoughts from different fields, it must be seen against the backdrop of a preconceived inadequacy.

Innovation can even emerge from stifling conditions. To understand what causes bursts of innovation in oppressive settings, we need only to look to the past. In his book *Agents of Innovation*,

John Kuehn points out that innovation often occurs in the face of constraints. For example, German, American, and Japanese experiences in the period from 1919 to 1937 show how naval innovation was affected in a positive way by physical, strategic, and budgetary constraints. The curiosity and resolve of military leaders was piqued, rather than dulled, by limitations and disarmament. If the interwar era of Admirals Moffett and Reeves, the founding fathers of naval aviation, teach us anything, it is that constraints along with questions and debate inspire ideas.

Environments that expose us to a wide variety of preexisting spare parts—mechanical or conceptual—and encourage the recombination of parts in new ways are conducive to creativity. The most fertile zone of innovation is the seam between order and chaos, where allowance is granted for meandering and tinkering.¹

Negative factors such as crises or errors can also be conducive to innovation. Hostile or urgent conditions drive up the pressure to innovate due to new levels of risk tolerance. Wars in general unleash an avalanche of new ideas on the frontlines and in laboratories. Similarly, faulty assumptions or errors also accelerate innovation. As eloquently stated by author William James, “The error is needed to set off the truth, much as a dark background is required for exhibiting the brightness of a picture.”² Errors and mistakes tend to promote the pursuit of alternative paths beyond comfortable assumptions and force exploration.

Steps for Generating and Moving Ideas

Innovation begins with a problem and a question. The first step of the innovation process is problem framing. This means examining the subject to understand its composition, function, and the context in which it exists. Problem framing sets the stage for understanding the deficiency that needs to be addressed. After establishing a baseline understanding of the problem, the next step is to ask the right question. Once the right questions are uncovered, you can then move into the mental problem-solving phase.

With the problem defined and a question in hand to approach the problem, you can start the idea generation phase. Known as ideation, this step in the creative process is often associated with a flash of insight. However, many researchers consider the blinding insight phenomenon a myth. Rather, it is more aptly the result of a slow rumination around the problem's periphery that likely began with a hunch that something was not quite right and could be improved. Another myth researchers reject is that the ability to ideate is innate and rare. In fact, much can be done to develop an innovative mind.

New ideas are typically just a recombination of old ideas. One of the best ways to stimulate ideas is to read about a broad array of subjects from the arts to the sciences, and especially history and biographies. Reading with an eye toward seeing how experts from across the ages approach problems in different fields will shine new light onto current predicaments. Understanding how work is performed in different fields, even those seemingly unrelated, provides the mental grist for the ideation mill.

Gain awareness of the issues. Challenges that seem obvious may be just the tip of the iceberg of a more complex problem. You must have expertise within your field to understand the root of problems before you can pursue the right path of ideation. Learn what issues trouble your organization through all available means, including discussions with supervisors, peers, and subordinates. Seek out places where diverse groups gather to talk and tee-up thought-provoking discussions. LinkedIn® and other virtual forums are excellent places to cross-talk

"We cannot solve our problems with the same thinking we used when we created them."

- Albert Einstein

ideas with different personalities. Bounce hunches off other people. Seek different points of view, especially contrary ones. Attempt to understand opposing positions as well as the reasoning behind those positions. If the idea crumbles under the stress of peer review, do not be discouraged; move on. Remember this is part of the ideation vetting process. A broad awareness of issues will help you better understand the problem as well as arm you with more ideas to throw at the problem. What are your boss's issues? What are the challenges at the next echelon of your command? This line

of reasoning will expand your horizon beyond day-to-day activities. An understanding of higher objectives combined with the junior level, hands-on experience, forms a well-rounded perspective. A junior leader able to view the Navy from the nexus of the tactical and the operational perspective is uniquely positioned to propose solutions that address larger problems. This understanding is of great importance when the time comes to confront resistance to transformational ideas.

Ideas need time to germinate. Conduct thought experiments; mull over different variants of the idea to better refine it. Not every idea is worth pursuing. Conventional wisdom says that from thousands of good ideas, only a few useful innovations will emerge. False starts should be expected; formulate new ideas each week. Discard the weak ideas. Give time and energy to improving the best ones.

Mature your idea. What is often underappreciated is the difficulty of selling an idea to a large organization. Analyzing opposing viewpoints and developing mitigating arguments requires effort

Types of Innovation

Evolutionary — An innovation that improves warfighting ability in the existing operating environment in unexpected ways. Evolutionary innovators ask questions based on the limitations of existing solutions.

Disruptive — An innovation that creates a new warfighting capability by applying a different set of values, which ultimately, and unexpectedly, overtakes an existing capability. Disruptive innovators ask questions no one else has thought of.

well beyond the initial ideation stage. You must be prepared to aggressively champion your idea. Not only must you clearly articulate the idea and paint a picture of how it will benefit the Navy, but you must also address constructive criticism. The failure of many ideas stems from a lack of conceptual development of how the idea will affect positive change. If you lack the willpower to rigorously mature your idea, don't expect anyone else to get onboard.

It is too easy to chalk up resistance to “old think” and risk

aversion. You must become empathetic to the problems and priorities of others to understand their resistance. If possible, provide data that refutes opposing opinions or, better yet, addresses the point of resistance by illustrating how the idea can improve the condition related to the resistance. Keep in mind that if an idea doesn't ruffle a few feathers, it probably does not have much value.

Take action. Once an idea is mature, it must be communicated to the right audience to create change. Creating change within a large organization involves convincing others that the benefits from your proposal will lead to individual and organizational advantages.

"An important scientific innovation rarely makes its way by gradually winning over and converting opponents; what does happen is that the opponents gradually die out."
- Max Planck

This means you must find advocates and build a constituency behind your idea that will enable it to proliferate beyond your initial sphere of influence.

A variety of mechanisms exist to communicate ideas. Although some are feedback mechanisms designed to capture and incorporate minor changes for existing systems, feedback is equally important for larger changes. Consider pushing your idea directly up your chain of command and asking your leadership for guidance and endorsement.

Another approach is to socialize your idea first with peers and subject matter experts. Informal blogs or other professional venues can offer valuable peer review. The Sailor Bob blog site (<http://www.sailorbob.com>) exemplifies this type of informal venue. Keep in mind that an idea that does not draw criticism is probably not worth pursuing.

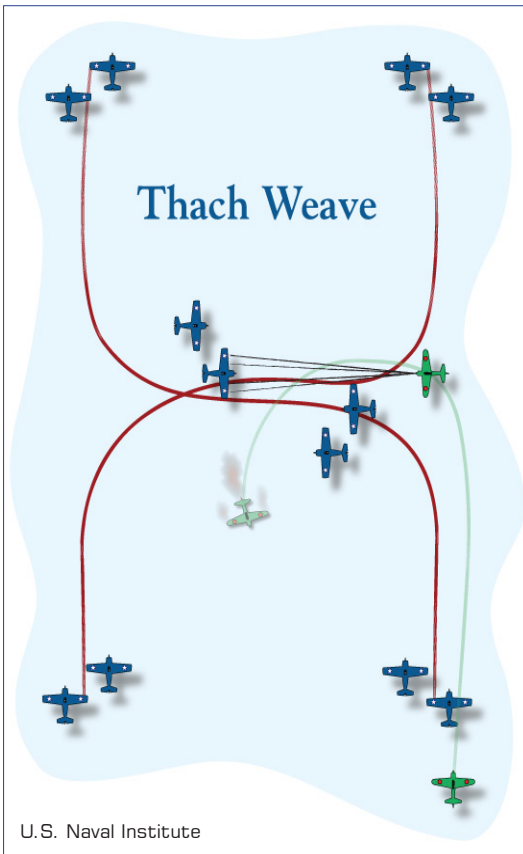
After you test the informal waters, consider publishing your idea in professional journals such as U.S. Naval Institute *Proceedings*, type commander or other warfare community-sponsored publications. If your idea has the potential to affect change beyond the unit or tactical level, you should contact NWDC through the Navy Center for Innovation at <https://www.nwdc.navy.mil/ncoi/default.aspx> for additional guidance.

Innovation in Naval Aviation

Carrier pilots in WWII flew the slow but durable Grumman F4F Wildcat. They were often outnumbered by the much more maneuverable Japanese A6M Zero.

Zero pilots used speed and maneuver to loop behind and shoot down the Wildcat. The naval innovators John Thach, Butch O'Hare, and Jimmy Flatley sought a better way to keep Zeros off their tails, kill the enemy, and survive the war. Naval aviation had defined tactics, but they weren't working well enough. The common practice was to send aircraft out in teams of three. Thach and O'Hare discovered that if they instead worked in pairs, each

pair could cross back and forth and check behind the other for Zeros approaching from the rear. When Flatley wrote the after-action report for that tactic's use in the Battle of the Santa Cruz Islands, he named it the Thach Weave and pushed its adoption throughout U.S. carrier aviation. The change in tactics saved American lives and greatly increased the effective use of the Wildcat in the war effort.



At the time of that innovation, John Thach was a lieutenant commander and Butch O'Hare was an ensign. O'Hare later received

the Medal of Honor and was killed in combat. Thach retired as an Admiral. Flatley retired as a Vice Admiral.

The Organizational Element

Conditions and Processes of Innovative Organizations

In addition to understanding individual creativity, innovators must be aware of how conditions and processes within a large organization affect the generation of ideas and how the organization responds to new ideas. The stereotypical view of an innovative organization is an abundantly financed establishment that is staffed with well connected, creative people. Yet research shows that slack resources, independent lines of analysis and development, and creative frictions are important drivers of innovation within many organizations.

Large organizations are inherently status quo oriented, so any change automatically faces systemic resistance. An understanding of how the Navy fields new capabilities will help you see shoals that must be circumnavigated. Fielding a new Navy capability is complicated, first and foremost by the fact that funds must be budgeted and approved by Congress years in advance. Aside from politics and lobbying, the Navy must make hard decisions to balance the allocation of funds between near-term operating costs and longer-term investments. Last, and certainly not least, is the time and effort associated with testing, integrating, and procuring new solutions as programs of record.

Some organizations welcome fresh ideas and recognize the innovator's dilemma. They know that ideas often come from the fringes and need a facilitator to move into the mainstream. As a result, these organizations offer avenues and processes to help cut through the bureaucratic friction associated with change. You should also bear in mind when dealing with Navy bureaucracy that the value of your idea is only as good as the written word that conveys it. Clearly written proposals that show a linkage with the organization's strategic goals will resonate with senior leaders and embolden them to mobilize support for your idea.

Anticipate real and imagined risk. Organizations, like organisms, seek self-preservation. This is done by managing risks. Ideas that offer change are viewed as new risks. Many will perceive that if your idea is successful, the change will be disruptive, cause additional work, and divert resources from other protected areas. On the other hand,

given that most ideas fail, organizations by default will assume that your recommendation is just another wasteful distraction from the fringe that will hopefully soon fade away.

Gain organizational support. For an idea to catch on within an organization, it must be embraced by key stakeholders. Identify who stands to gain the most from your idea and then shape your idea to gain their support. To convince a decision maker, you need to show the idea's value in terms of warfare effectiveness. Naval innovations can realize value in several ways:³

1. As a force multiplier (i.e., enhancing a current capability).
2. As a way to disrupt or degrade the capabilities of a current or potential military adversary.
3. As an enabler of warfare domain superiority.

Share your idea widely and refine it through feedback. Illustrate its value against adversaries. Mobilize support for your idea by building a network of advocates and allies. The bottom line is that your idea must be seen by others within the Navy as benefiting warfighting effectiveness.

Author John Kotter does an excellent job outlining eight essential steps for creating organizational change. Figure 1 shows these key steps.



Figure 1. Kotter's Eight Steps of Change

“Nothing is more dangerous than a dogmatic worldview—nothing more constraining, more blinding to innovation, more destructive of openness to novelty.”

- Stephen Jay Gould

Authors Tom Keller and Jonathan Littman describe six personas that innovators can take on to move their ideas through an organization.⁴ The first three are learning roles that take advantage of the fact that organizations continuously need new sources of information to grow.

1. The Anthropologist brings new learning and insights by observing human behavior and developing a deep understanding of how people interact physically and emotionally with capabilities.
2. The Experimenter prototypes new ideas continuously, learning by a process of enlightened trial and error.
3. The Cross-pollinator explores other fields of expertise and then translates those findings and revelations to fit the unique needs of the Navy.

The next three personas are organizing roles, played by individuals who are savvy about how the Navy moves ideas forward. Even the best ideas must continually compete for time, attention, and resources. Those who adopt these organizing roles exploit the rules of the game and play to win.

4. The Hurdler knows that the path to innovation is strewn with obstacles and develops a knack for overcoming or outsmarting those roadblocks.
5. The Collaborator helps bring eclectic groups together and often leads from the middle of the pack to create new combinations and multidisciplinary solutions.
6. The Director not only gathers together a talented cast and crew but also helps to spark their creative talents.

“Vision without execution is hallucination.”

- Thomas Edison

"Innovation is not a discrete event or individual action, but a process. As a process, it demands that leaders understand multiple complex systems. Innovation thus includes building consensus and preventing interference or sabotage from risk-averse or hostile players." "What exists, and is familiar, has an advantage because it has proven acceptable to a majority. People approve of what they understand, and they will passionately defend what they have learned and are familiar with."⁵

- Colonel T.M. Williams

Navigate obstacles and naysayers. As much as we glorify innovation, let's remember some cold, hard facts. The implementation of a new idea is extremely difficult within large organizations. Ideas are necessary for innovation but not sufficient; they also need to be developed and adopted. Rigorous trial and error is required to refine your idea. The first thing you must accept is the fact that the adoption of an innovation into the mainstream of an organization as large as the Navy takes years to complete. Next, expect opposition at every turn. As managers of the Navy's resources, decision makers will rightly challenge ideas to validate their value. Ideas will face unbelievers and foes from the start. Know who the decision makers are and who the noisemakers are. Stay upbeat. Don't give up at the first "no." When you hear the words "you can't," smile and redouble your resolve to succeed.

"In a volatile ambiguous environment the preeminent advantage that should be pursued is to be superior in the art of learning and adaptation. We must create a culture of innovation where everyone is invested in the organization's success and feels a responsibility to implement better ways to achieve organizational objectives. Where people are encouraged to try alternative paths, test ideas to the point of failure, and learn from the experience. Where experimentation and prudent risk taking are admired and encouraged."

- BG David Fastabend

The Navy Innovation Process

The Navy has a Concept Generation Concept Development (CGCD) program, led by NWDC and designed to provide a collaborative approach for harvesting and transforming ideas into new capabilities.⁶ The intent of the process is to create a channel for innovation that spurs creativity and input from the deckplates as well as informing and responding to top-down demands for new capabilities. It is intended to energize creativity and convert ideas into doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) solutions. It should be noted that the CGCD program is not the only vehicle for moving ideas forward and that you should use the method that best matches the type of recommendation you are pushing.

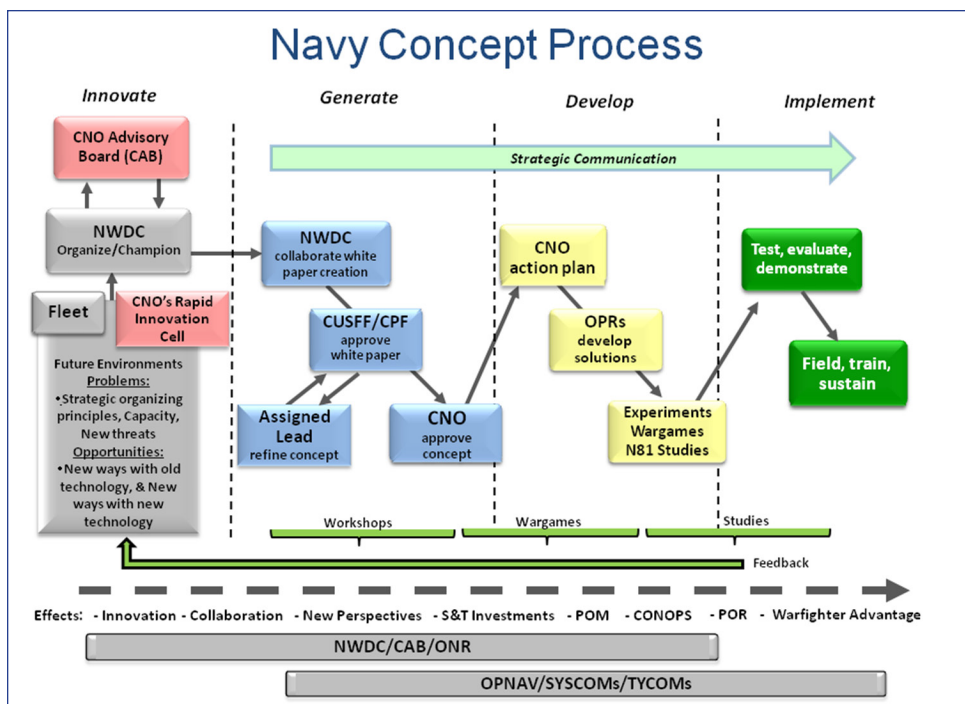


Figure 2. Navy CGCD Program Process (pre-decisional draft)

As the Navy's Center for Innovation, NWDC is the entry point for ideas and manager of the CGCD process. In addition to elevating awareness of the importance of innovation, NWDC can help innovators generate and propel ideas through the Navy process.

Through the Navy Center for Innovation Web site you can submit an idea, see examples, and monitor your idea as it is adjudicated for action by the appropriate organization, merged into other documents, or developed into a concept.

Additionally, NWDC periodically conducts live and online forums to expand the understanding of innovation, harvest new ideas, and advance the campaign to instill a culture of innovation. Information on upcoming (and previous) events can be found at: <https://www.nwdc.navy.mil/ncoi/default.aspx>.

Submit ideas, view examples, track progress or watch videos of speakers from NWDC-hosted innovation events at the Navy Center for Innovation Web site: <https://www.nwdc.navy.mil/ncoi/default.aspx>.

NAVY WARFARE DEVELOPMENT COMMAND
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 ★ FORWARD...FOR THE FLEET ★

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Navy Center for Innovation

The next defining capability in the evolution of warfare, and arguably the highest plane of strategic competition, will be that of the warrior's mind. To renew a spirit of creativity within the Fleet will require the focused resolve and sustained effort of dedicated individuals. To fully participate in the rich atmosphere of new ideas and global technological advancements, the Navy must create the conditions conducive to a culture of innovation. This website serves as the focal point for collaboration that will transform Navy culture into a competitive advantage in future conflicts.

Submit Proposal

As the Navy's executive agent for Concept Development and Concept Generation, NWDC harvests concept proposals and innovative ideas. To submit a proposal or idea, please click here for our template and return the completed form to one of the contacts listed below.

Innovation Links and Resources

- U.S. Naval Institute blog post on the Junior Leader Innovation Symposium by LCDR Benjamin Armstrong
- Junior Leader Innovation Symposium post on the Information Dissemination blog by LT Jon Paris (Scroll down to the 09 June post)
- "Disruption, Disfunction and Leadership" on Blog Talk Radio - MIDRATS Episode 127 (US Naval Institute)
- Gaadiator vs. Ninja, or The Innovation Discourse (LT Kurt Albaugh, CIMSEC.org)
- Scroll down to "The Tao of Sims" (Mon, 11 June) for discussion of a post by 2012 speaker LCDR B3 Armstrong
- The FEMA Think Tank: Great example of a government crowd-sourcing effort, this one from the Federal Emergency Management Agency
- Crowd Sourcing Fleet Tactics to Spur Naval Innovation by LT Rob McFall
- How Can the Concepts Articulated in Writing by Transformers/Innovators Get Translated to Action? by ADM James Stevings, COM BUCOM

Innovation 2012 Series

Civil War 150 Year Commemoration Series

Junior Leader Innovation Symposium Videos

Conclusion

To become a permanent feature of Navy culture, innovation must be woven into the daily fabric of the organization through a renewed emphasis on individual creativity. For the Navy to maintain an edge in rapidly changing information-dependent operating environments, we must exploit the uniquely American traits of ingenuity and initiative. We must start now to set the conditions for a culture of innovation. You are the Navy's source for innovative ideas. Your creativity, your advocacy, and your hard work are required to ensure our future Navy will prevail in future conflicts.

Study the broader issues. Continuously question why and how things are done. Look for different ways to solve old problems. Seek out like-minded idea hunters. Engage your leadership and give them alternatives to outdated practices. Learn to use the power of the written word to express your thoughts. Be bold and don't take no for an answer.

Now get out there and innovate!

There is a tide in the affairs of men, which taken at the flood, leads on to fortune. Omitted, all the voyage of their life is bound in shallows and in miseries. On such a full sea are we now afloat. And we must take the current when it serves, or lose our ventures.

- *William Shakespeare*

Innovator's Reading List

- *Agents of Innovation: The General Board and the Design of the Fleet that Defeated the Japanese Navy*, John T. Kuehn
- *The Other Side of Innovation: Solving the Execution Challenge*, Vijay Govindarajan and Chris Trimble
- *Where Good Ideas Come From: The Natural History of Innovation*, Steven Johnson
- *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*, Clayton M. Christensen
- *The Innovator's Solution: Creating and Sustaining Successful Growth*, Clayton M. Christensen
- *The Innovator's DNA: Mastering the Five Skills of Disruptive Innovators*, Jeff Dyer, Hal Gregersen, Clayton M. Christensen
- *The Medici Effect: What Elephants and Epidemics Can Teach Us About Innovation*, Frans Johansson
- *Leading Change: An Action Plan from the World's Foremost Expert on Business Leadership*, John P. Kotter

- *Creating Innovators: The Making of Young People Who Will Change the World*, Tony Wagner
- *Innovation to the Core: A Blueprint for Transforming the Way Your Company Innovates*, Peter Skarzynski and Rowan Gibson
- *The Art of Innovation: Lessons in Creativity from IDEO, America's Leading Design Firm*, Tom Kelley and Jonathan Littman
- *The Ten Faces of Innovation: IDEO's Strategy for Beating the Devil's Advocate & Driving Creativity Throughout Your Organization*, Tom Kelley and Jonathan Littman
- *The New Realities*, Peter F. Drucker
- *The Innovator's Way: Essential Practices for Successful Innovation*, Peter Denning and Robert Dunham
- *The Social Life of Information*, John Seely Brown and Paul Duguid
- *The Myths of Innovation*, Scott Berkun
- *Imagine: How Creativity Works*, Jonah Lehrer

Endnotes

1. Steven Johnson, *Where Good Ideas Come From: The Natural History of Innovation* (Riverhead Trade, 2010)
2. Ibid.
3. Derived from the article "[Selling Innovation to Your Boss](http://innovateonpurpose.blogspot.com/2010_03_01_archive.html)" by Jeffrey Phillips, posted March 1, 2010, *Innovate on Purpose* (blog), http://innovateonpurpose.blogspot.com/2010_03_01_archive.html. Paraphrased and translated into a military context.
4. The personas are adapted to a military context from *The Ten Faces of Innovation*, by Tom Kelley and Jonathan Littman (New York, Currency/Doubleday, 2005).
5. *Understanding Innovation*, by Colonel Thomas M. Williams, USAR (Military Review, July-August 2009)
6. CNO Decision Memorandum, 27 June 2008.

Notes

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<https://www.nwdc.navy.mil/ncoi/default.aspx>