Navy Warfare Development Command (NWDC)

Maritime Innovation Symposium
March 13-14, 2012

After Action Report

March 30, 2012

Contents

Executive Summary

The Navy Warfare Development Command (NWDC), the Navy lead for innovation, hosted the Maritime Innovation Symposium on 13-14 March with the theme: *Regaining the Innovation Advantage… Awakening our Creative DNA*. In the words of Admiral John Harvey, Commander US Fleet Forces, "This symposium is an integral part of a larger campaign plan now in development to reinvigorate the conditions for an innovative culture and overcome our internal barriers to innovation."

NWDC executed the symposium as planned and exceeded or met all objectives. In addition to incorporating the ideas presented by speakers and participants into potential concepts, ways to improved capabilities development processes, and ways to improve our current culture, NWDC has taken full advantage of the event's ripple effects with a robust strategic communications plan (Appendix E). NWDC is collecting and assessing observations and turning recommendations into actions that will give our warfighters advantages in conflicts (Key Insights and Action Plan).

The event focused on six objectives: (1) Identify conditions & processes conducive to innovation; (2) Chart the hazards of innovation & propose ways to remove impediments; (3) Describe challenges that need innovative solutions; (4) Germinate & harvest ideas that can be turned into action; (5) Educate & elevate awareness of innovation; and (6) Identify ways to instill a culture of innovation. These objectives framed the design of the symposium, selection of speakers, venues, and event execution. Appendix A details outcomes and participant feedback aligned with each of the six objectives.

The symposium was held at NWDC's Navy Center for Advanced Modeling and Simulation (NCAMS) facility and broadcast to remote Fleet participants on Defense Connect Online (DCO). On the first day an evening speaker event was hosted at the Norfolk Naval Station Vista Point Catering and Conference Center. The second day included a four member flag panel designed to articulate community leader perspectives on barriers in need of innovative solutions. Panelists discussions included:

- Describe a severe capability gap and obstacles to resolving it
- Describe an opportunity ripe for the taking that would yield a near term advantage
- What capability present in another Service or warfare area would you like to have
- How could capabilities you presently have be combined or used differently
- After Afghanistan, where should Navy focus innovative efforts

Approximately 250 U.S. service members, allies, U.S. government civil servants, and contractors attended the symposium in person or remotely. A detailed breakdown of the attendees is shown in Appendix B and F.

As part of a larger effort to regain the United States Navy's innovation advantage, the Maritime Innovation Symposium kicked off the Innovation Series 2012. An NWDC white paper entitled "Shaping Navy Culture: A Campaign Plan for 2025" describes ways to instill an institution with intellectual agility and support a culture of innovation. The campaign plan, included as Appendix G, charts a path to forge a human-centric force capable of rapidly adjusting to meet future challenges and continuously explore new ways to gain a decisive edge over potential adversaries. The document outlines an action plan for driving the United States Navy towards regaining an innovation advantage.

Key Insights

As anticipated, the speakers did an excellent job presenting and drawing out from the audience historical examples and perspectives, barriers and best practices, and steps that should be taken to set the conditions for an innovative culture within the Navy. In summary they are:

- Innovation and strategy must be closely linked
- Innovation is the new currency in global competition
- Innovation is an expression of an organization's culture
- Innovation requires a comprehensive approach
- Innovation needs a centralized location with broad connectivity
- The realization of a new capability requires vision and perseverance
- The evaluation and testing of ideas generates transformation momentum
- Questions, constraints, and debate inspire new ideas
- Innovation is enabled by pluralism and the collision of diverse perspectives
- New ideas often come from the fringes of an organization and need a facilitator to move it into the mainstream
- Ideation is the starting point of innovation
- Organizations must accept the fact that failure is the norm in ideation
- Leadership is the key to a vibrant culture of innovation
- The challenge of innovation is to narrow the effective range of surprise that opponents may present during conflicts to that which can be overcome by improvisation and adaptation
- Innovation and adaptation inevitably threaten and disrupt the prevailing dominant coalition, which tends to muster all weapons at its disposal to maintain the existing equilibrium

- Organizational change often comes from the pragmatic exploitation of possibilities not originally intended by the creation of new technologies
- Organizations are more likely to innovate if they protect idiosyncratic and iconoclastic individuals
- Actions based upon training, skills, and experiences that have been successfully applied in the past result in inappropriate responses under changed conditions.
- An organization's culture comprises the set of shared values and assumptions that guide interpretation and action in organizations by defining appropriate behavior for various situations.
- Thus, organizational culture is a matter of choice; it is how leaders shape their organizations.
- The human element is the most important of all elements in producing a successful, effective Navy.
- Mastering the extraordinarily complex technological systems that comprise the modern Navy remains essential, as are the tactical solutions to war at sea; neither, however, are sufficient unto themselves to produce successful leaders.
- Avoid the pleasant narcotic of wishful thinking. Increments of success can become self-limiting.
- Don't micro-manage. A central component of leadership is the exercise of restraint. Promote and reward initiative by your subordinates.
- Recognize that innovation and adaptation cannot be legislated, but they can be facilitated by leadership choices about organization.
- Leaders need to so arrange the system of incentives for individual members to contribute in adaptive and innovative ways
- Institutionalize effective organizational structures and processes for problem-solving
- The challenge is to identify what should remain the same and what should change and in what ways and directions; and then to mobilize support within and without the Navy to make those changes. Resistance to change is natural and inevitable and should not be considered pathological or something that can be eliminated.

The following are some of the best of the best ideas collected from participants during the symposium. Each is footnoted to reflect the symposium objective they best address. Additional comments and recommendations from symposium speakers and attendees are listed in Appendices A and C.

Conditions and process

Fast and frequent experimentation separate the bad ideas from the good. The Navy should use modeling, war gaming, and at sea events to quickly winnow ideas down to the most valuable new innovations. Using fast and frequent experimentation would also define and refine Fleet problems and requirements. ***(Objective 1: Identify conditions & processes conducive to innovation)***

Most ideas are worthless, but it is impossible to choose only the true gems at the beginning of the creative process. Creating the mountain of ideas necessary for innovative gems to found requires acceptance of failure, open exposure to opposing points of view, tolerance of diversity of opinion, and an incorporation of innovation in what we do every day. ***(Objective 1: Identify conditions & processes conducive to innovation)***

Innovation has natural enemies. Change lacks natural allies. The acquisition process thwarts the introduction of innovative ideas and technologies. Middle managers frequently fall prey to the 'not in my lane' syndrome and oppose ideas that could help the greater organization. Innovation is not in everyone's DNA. All this can be resolved by getting the big picture right. ***(Objective 2: Chart the hazards of innovation & propose ways to remove impediments)***

Challenges, solutions, and actions

In the near term, certain areas are ripe for innovative solutions. The proliferation of information technology, counter insurgency operations in urban areas, integration with coalition partners, and the evolvement of near-peer or peer competitors all demand attention. Decreasing budgets further pressurize the solution space. Adaptation to the immediate challenges is required. More use of computer-assisted war gaming can be used to develop informed solutions. ***(Objective 3: Describe challenges that need innovative solutions)***

To innovate, we cannot afford to be afraid to fail. The Navy's E-5s through O-3s could be a great source of ideas. Historically, younger sailors and marines have been significantly less risk adverse and thus more prone to attempt innovation. In recent years, various forms of urgent needs statements have been the only means to provide the warfighter a solution when he needed it. We need to go beyond urgent needs statements and use our younger service members to germinate and harvest ideas. The best fruits of those ideas are needed to renew USN and USMC unity of efforts. ***(Objective 4: Germinate & harvest ideas that can be turned into action)***

Awareness and culture

Technology does not always equal innovation. Other aspects of the DOTMLPFP spectrum beyond the materiel can be redesigned, reworked, reorganized, or entirely changed without building new technology. Especially with decreasing budgets, an awareness of the potential for innovative concepts to improve our capacity to fight and win our nations wars through a reimagining of the 'how' and not just the 'what' of warfighting is critical. ***(Objective 5: Educate & elevate awareness of innovation)***

Innovation stands on three legs: (1) historical perspective, (2) present realities, and (3) future needs. We need to build understanding of all three in warfighter curricula to enable the growth of an innovative culture. ***(Objective 5: Educate & elevate awareness of innovation)***

Service members must write and publish their ideas. Forums like the US Naval Institute Proceedings, Sailor Bob, and organizational blogs spread ideas and energize the intellectual debate required to fully mature warfighting ideas. ***(Objective 5: Educate & elevate awareness of innovation)***

Deliberate investment in service member intellectual development and organization concept development is needed to invigorate a culture of innovation. The Navy would be better off if it could in-source innovation by in-sourcing thinking and thinkers. That depth of change requires continuous senior leadership advocacy. Until the culture is rebuilt, it will be difficult to rebuild the processes. ***(Objective 6: Identify ways to instill a culture of innovation)***

Action Plan for Navy Innovation

The following three lines of operation (LOOs) emerged from the Maritime Innovation Symposium and will shape the way ahead for instilling innovation within the Navy:

Continue the discovery

- Coalesce and sustain a network of innovators
- Stand up an Innovation Collaboration Team
- Establish NWDC as the Navy Center of Innovation
- Develop a POAM of multi-service future events

Engage and educate

- Leadership is key. Push the topic of innovation into classrooms and training venues
- Increase the emphasis on innovation at Flag events and speaker venues, e.g., NFOSES, ceremonies, etc.
- Push recorded videos of speakers to wider audience and new venues
- Forward CUSFF speech to a wider audience
- Release messages to various audiences, e.g. ALNAV, All Flags, etc. that advocates embrace and proselytize

Assess substantive ideas and potential actions

- Widely communicate the process for collecting and developing innovative ideas
- Establish and invigorate web-based input (both NIPR and SIPR) for submission of concept ideas
- Implement a strategic communications plan
- Plan and execute a Junior Leader Innovation Symposium (Jun TBD)

The following near term actions are proposed to maintain the momentum gained from the symposium and energize the three LOOs described above:

Create conditions for effective innovation

- Establish a program to use newly commissioned officers and midshipmen awaiting orders, to propose creative solutions to future military challenges. Use a format similar to the Strategic Studies Group that stimulates innovative thinking in junior officers and diffuses across the Fleet.

- Formalize and broadcast the process for collecting innovative ideas; elevate and incorporate innovation into the Concept Generation Concept Development process
- Invigorate the use of web-based collection tools to harvest recommendations/ideas (both NIPR and SIPR) from the Fleet and beyond
- Implementation of a strategic communications plan to describe the importance of innovation in shaping future warfighting capabilities

Host and participate in collaborative forums

- 3 April 2012: Inaugural VTC to stand up Innovation Collaboration Team
- June 2012: Junior Leader Innovation Symposium
- Collaborate with the USMC to develop a comprehensive annual innovation POA&M
- Implement a series of lectures on innovation at NWDC and via DCO/chat

Appendix A: Attendee Insights Binned by Objective

All the Maritime Innovation Symposium remote and on-site attendees had the opportunity to discuss their ideas and insights during the speaker presentations and in the breaks between talks. These discussions were held on Defense Connect Online (DCO) using the chat feature. Since the discussion was intended to gather all ideas and encourage free communication it was intentionally not for attribution. To preserve that intent the log-in names used by the participants have been replaced with generic pseudonyms in the form of Writer##.

These comments below have been organized into bins for each of the six Maritime Innovation Symposium objectives. They are presented in the language original to the authors with editing restricted to correction of typographical errors.

Maritime Innovation Symposium Objectives:

1. Identify conditions and processes conducive to innovation
2. Chart the hazards of innovation and propose ways to remove impediments
3. Describe maritime challenges that need innovative solutions
4. Germinate and harvest ideas that can be turned in to action
5. Educate and elevate awareness of innovation
6. Identify ways to instill a culture of innovation

1. Identify conditions and processes conducive to innovation

Writer1: Fast and frequent experimentation (modeling, war gaming, at sea events) separate the bad ideas from the good. It also helps define and refine the Fleet problem and requirements.

Writer2: Italy has an Innovation Center of Excellence.

Writer3: It seems that there is a vetting process that is tied to readiness. Advancements in TTPs aren't codified until they are experimented at major training evolutions. The

best solutions that I've seen were implemented in real time, during the heat of the battle, over radios. Outpacing the enemy's OODA loop to achieve tempo.

Writer4: I'd assert the Marine Corps hasn't had a really big new idea since the 1930s (with amphib ops and small wars). Since then, we've just been adapting to each conflict as it comes along. Similar to the Carrier Strike Group, the elements of the MAGTF are largely unchanged in ratio, purpose or organization since the 1950s.

Writer5: Col, Innovation is often the ability to adapt old tools to new uses rather than to create new ones. The Marine Corp is arguably the best at doing that hands down

Writer6: How long does it take commercial shipping firms to get a new ship design out? Again our joint requirements process holds back our ability to innovate in a reasonable amount of time.

Writer7: during the WWII period, we were able to adapt and introduce new aircraft and ship designs measured in a matter of months from concept to manufacturing (with slide rulers). today we measure that cycle in decades

Writer2: Wars always come...at the wrong time... and sometimes the right piece of gear comes along at the wrong time. Complex problem. Adaption, innovation are required.

Writer6: Navy is notorious for not taking full advantage of its human capital. NPS graduate and PhDs are prime examples.

Writer8: absolutely concur with guest 16. We are going to operate in new and complex environments. Do our fighters have the tactical tool kit they need? Here at NWDC we have applied a more discriminating lens to post cruise debriefs. Some don't like that...

Writer9: Making the institution uncomfortable is when we know we're in about the right spot.

Writer1: My sense is that we as a community prefer to focus on the front end of innovation, the ideation phase. We generate lots of great ideas that die on the vine. A focus on the back end of innovation, the adoption or diffusion phase, could be a way to harvest low hanging fruit. Warfighter suitability is a key driver, as well as philosophical, social and cultural drivers.

Writer8: right - so how do we build a PROCESS that does not kill the IDEA?

Writer6: First, put a bullet in the head of the JCIDS process...

Writer4: (15:36) Looking at his network diagrams (mavens, etc.), in terms of concept development, the rise of a “professional concept development community” in the services means we would find certain people associated with multiple concepts over the

last 20 years. Unfortunately, this does not really mean they are successful. In fact association could imply that the concepts they get involved with aren't new, but rehashes of previous ideas, just packaged with the current bumper stickers.

Writer10: (09:45) I'd note that much of that new innovation is dependent on existing infrastructure (the internet, cellular networks, etc)

Writer2: (11:20) Joint National Training Capabilities JNTC after ten years has provided a framework for COCOM level exercises with live-virtual-constructive training and experiments can be incorporated into them with some hard work including multinational players replicating in size and scope a CJTF "battlespace". USSTRATCOM with cyber and space will be involved in everything so CJCS/JS J7 should direct an exercise/experimentation program and fund it towards achieving the synergy required to gain advantage required against Tier I-III threats.

2. Chart the hazards of innovation and propose ways to remove impediments

Writer11: RADM Kraft, one of the challenges I have experienced, having served in Afghanistan, was that some of us mid-grade officers repeatedly sent what we felt were creative ideas regarding all aspects of our involvement in Afghanistan and, unfortunately, would never receive any feedback from chains of command.

Writer12: Innovation and fear of failure are attached. We can't have it both ways.

Writer13: Where did Writer 11 send his creative ideas? Who should be the agent of new ideas?

Writer8: we can't be afraid to fail. I worry that all the great JO's coming out of real conflicts will get frustrated with overemphasis on structure and COA's, etc.

Writer34: NPR reported this morning that members of Congress are advising the Navy to abandon its Alternative Fuels Program and to "spend its money on building more ships". Even obvious needs for innovation will meet challenges that must be overcome.

Writer11: Guest 6, when physically in Afghanistan, we proposed ideas to an Army 3 star in country. I was told, as an O4, not to think outside "my lane". Since returning to the states, have written to dozens of senior officers I thought, through support of my CO, would have an interest in ideas for Afghanistan.
, thank you very much for the guidance, will send some of the ideas regarding Afghanistan to Navylessonslearned@navy.smil.mil. I greatly appreciate the help. A great friend of mine in the SPECWAR community and I have discussed and thought

about many of the issues we face for years now. Thank you again for the guidance. V/r Writer11

Writer7: WRT Navy innovation, I think there are two principle challenges. First is on the manpower front, second on the process. On the former, as alluded earlier, our personnel system does not reward innovation. In the absence of an [apparent] institutional mechanism to introduce new ideas from the Fleet, commanders must consider sending their best and brightest to 'innovation COE' at great risk to their subordinate's future in the organization. On the latter, the Enterprises' acquisition processes thwart the introduction of innovative ideas and technologies. There isn't a NSWDG or TSWG like inject for ideas 'not invented here' to find their way into serious consideration. The bureaucracy of our acquisition process is a tremendous obstacle to innovation because materiel must fit the strategy and vice versa. RDML(ret) Cohen's X-Craft is an example of having to get outside the loop to introduce a fresh concept.

Writer1: We're not the only community that is experiencing difficulties with adoption and diffusion. The health care community has been working this area for years. Their approach has been identifying the adoption networks and focusing on first adopters, forma/informal leaders and opinion setters. We could use existing capabilities in threat nodal analysis to determine the optimal way to diffuse innovation through the Navy.

Writer6: We have been making a mistake of confusing wargaming for training (war college of training simulators) and wargaming for innovation. They are not the same.

Writer14: COMMON denominator to innovation, experiments, TAC D&E, wargames are the OPLANs. Building an innovative warfighting culture requires careers to constantly alugn to the OPLAN problems

Writer4: The idea of wargaming has come up continually. I think we need to clearly define what we mean. Too much of what I have seen (at least at service level) that is called wargaming is really seminar discussions. Great education, but provide no real foundation for actual change. The other "wargame" is simulations and models. I think we need to do much more computer assisted wargaming (thinking enemy). We need to lower the cost for wargaming to occur at all levels (vice only in specialized venues, with certain systems, etc.). Wargaming should not always be a special occasion, but a routine part of operations (trying different ideas, techniques, failing at many/most of them).

Writer15: several times we have said that the fleet does not have the time to innovate-very true. we need to build the time into the regular deployment cycle of select units to innovate. As the units are out conducting the mission they are the best poised to generate new ideas, but they are rightfully focused on the job at hand, and without a break move to their next job. we need to bulid in post deployment innovation cycles

before these folks PCS out- more than just a trip report- but a few focused months on process review and innovation.

Writer4: Interesting that "what doesn't work" (conventional brainstorming, etc.) is what I have seen as the primary focus at most service-level wargames

Writer16: It also means spending some feed money. There was a lot fo talk 2002-2004 where ONR would work with VCs to bring technology to the organization. The CIA did it with Qinetic. The Army actually provided funds to VCs for some energy projects. the Navy copped out, and the ONR office tasked with this started working as a "coordinator," meaning that we really didn't take the idea seriously.

Writer6: (13:52) Army and USMC had to accept failure and find success because they were in actual combat. Navy has focused on weeding out failure as it has not been in a real war, except maybe aviation...

Writer4: (13:54) We are getting into interesting territory with mission command and culture. We can't divide off and have a certain cultural approach for warfighting, a different approach for training/preparation, and a different approach for innovation. Are the ways we have been fighting and preparing to fight over the last decade truly indicative of a culture of "mission command"—more decentralization and trust of subordinates? I sense that we have centralized a lot. We must take into account the overall culture as we look at innovation in isolation.

Writer6: (13:55) When fleet headquarters are asking for direct feed of sensors from ships, you know you are getting far too centralized...

Writer16: (13:56) Excellent question. Is Computer Network OPS/attacks/defenses not real war because no one is shooting a gun?

Writer3: (13:57) Does craving near perfect SA and communication usurpt decentralized decision making? I'd offer that it does. Commander's intent should trump our appetite for perfect SA and information.

Writer8: (13:58) a natural collision to be sure

Writer6: (14:12) Does the increasingly centralized decision process in our fleet HQs engender trust based relationships?

Writer8: (14:13) I have been thinking about that - the MOC in particular

Writer17: (14:14) No it does not, mainly because now the items we ask infrastructure to design has only military application. The budget crunch makes it difficult to not have a "stove pipe" view of problem resolution.

Writer9: (08:57) From what I've seen from civilians who actually DO cyber, we need to stop talking about cyber in terms of offense and defense when discussing cyber. The tools that are necessary are applicable to both and we're restricting our own progress by arbitrarily labeling things offensive or defensive.

Writer4: (10:47) Vision, mission, intent statements, etc. are worthless if all they do is exist on paper and the commander (or leader) never refers back to them on a continuous basis as he gives more detailed direction moving forward.

Writer18: (10:51) Too many vision statements are filled with superlatives and adjectives. They should describe a condition that is desired in the future, but it needs to be substantive. When I took command of my squadron we knew that we were getting night strike Hornets, but it was not clear we would get the FLIRs and NVGs needed to leverage the capability. I decided to go for it, so when I got to the microphone after assuming command, all I said was "In one year VFA-131 will own the night" and walked off. It worked.

Writer19: (10:51) I read a great book entitle "A New Kind of University" in which a new provost transformed a failing institution (University of Wisconsin - Milwaukee) through a clear vision of what was possible for the institution and the city of Milwaukee... the Provost called it the "Milwaukee Idea". I mention because many of the same hurdles the Navy faces for innovation face the layers and layers of bureaucracy within higher education institutions.

Writer18: (11:11) The left of the kill chain is not just about ISR, it's about changing our way of fighting such that there are no targets for the other guy to shoot at.

Write20: (11:11) Instead we'll micro-manage from the MOC.

Write20: (11:11) Until we discover the chat fucntion and the network no longer is operating...

Writer8: (11:12) concur with Barney Rubel - we have to change how we operate and think about our own signatures. an entire generation has moved away from that.

Writer21: (11:34) Part of the problem is that ORSA cannot get decent simulation tools on NMCI. You can barely give any simulation capability to the Halsey group because of the restrictions placed on COTS on any Navy network (NWC is an .edu domain), much less NMCI.

Writer20: (11:49) How do we replace JCIDS or change it where there is no incentive to pile on requirements.

Writer34: (11:51) JCIDS is just a symptom of the larger problem of Jointness

Writer35: (12:21) InQtel has worked well for CIA because they have better success leveraging the commercial world than Navy - not necessarily a fault of Navy, but CIA's technology needs are holistically more aligned to the commercial "IT" sector.

Writer18: (12:22) When we think about leveraging the commercial world, let's not forget Maersk Lines. They actually have 1000 ships and are more than willing to collaborate and help the Navy.

Writer20: (13:03) My experience is based on Hillmeyers Law: Percieved need will fill existing bandwidth. This results in Predator Porn, etc. Because a commander can use Cyber, et al to reach down and become a super tactical second guesser. We need to decentralize to increase decision cycles and prepare for the day network goes down permanently.

Writer22: (13:03) Cyber will be irrelevant - at least on the friendly side -- unless we bring it down to the warfighters level and take it out of compartmentalized channels

3. Describe maritime challenges that need innovative solutions

Writer4: It seems that adaptation is about the current war. I think most of the real change we see in operating forces is adaptation—ideas or requirements come from the combatant commanders and are incorporated into the training and preparation of forces. In a sense, readiness is measured by the integration of adaptation. However, I think that adaptation can be competitive with innovation—preparing for the next of future conflicts. Even with a withdrawal from Afghanistan, our forward/TSC-based strategy is forcing us to prioritize adaptation to the immediate challenges. Its not just budget, but time and effort that are required for innovation to occur (exercises, wargaming, etc.).

Writer18: (08:57) Doctrines such as the Powell-Weinberger Doctrine do not have a good track record of influencing US policy. In my view, it's posture that counts. Both Roughead and Greenert have asserted that the Navy/Marine Corps team can provide the nation with "offshore options." This is something we need to explore in depth. We need to establish a global strategic posture that combines force positioning, relationships, logistics, and information operations to provide a future NCA with strategic depth in terms of time and space, options for action and an infrastructure of relationships to generate legitimacy.

Writer9: (09:24) Inertial nav MUST comeback. PNT is built upon both an internal capability, updated by an external capability. We've become so dependent upon GPS that we've missed opportunities for inertial nav progress

Writer1: (11:38) RDML Wears makes a good point, the Fleet has to be a willing customer and ready to receive the innovation... because the innovations is in response to their articulated need.

Writer23: (11:41) Why does the Fleet resist change? They consider it a 'new'' requirement vice a response to their need. A mind set that will be very difficult to change.

4. Germinate and harvest ideas that can be turned in to action

Writer12: RADM Kraft, completely agree that to innovate we can't be afraid to fail. I hope we can protect those young risk-takers and not allow them to be carved out. They are the innovation fuel.

Writer3: One innovation to combat development was the Urgent Universal Needs Statement (UUNS). UUNS delivered solutions to the warfighter in pace with the warfighter needs. The question that follows is, will the UUNS process die on the vine when SASO ends? Will peace time eliminate real time warfighter needs? I'd offer that UUNS was the only means to provide the warfighter a solution when he needed it.

Writer22: (13:51) Navy participates in SBIR programs. I don't think we need the Navy to necessarily seed tech start ups. But we need to learn to recognize tech that is already out there with naval applications

Writer16: (14:02) ''If the feeds fail, the missions go on, because subordinates are trained to think and act independently'' - Has this ever been tested/experimented with during an exercise or experiment? have we ever cut out higher headquarters to see you subordinate units would function?

Writer3: (14:07) Lessons from OIF and OEF are infinite wrt drops in feeds, RF networks, data networks. Training warriors to communicate via radio, chat, and satellite will create the agility necessary when ''feeds'' go down.

Writer24: (09:58) Indigenous innovation is timely. China is being rebuked for withholding rare minerals from export. This could give them a serious edge in some high tech arenas.

Writer20: (11:25) Concept development and experimentation needs to be done where failure has small cost, synthetically/virtually. Concept validation and evaluation for feasibility can be employed against the leading ideas first in fleet HQ exercises and then at sea.

Writer10: (13:10) I make the case for ''brilliant'' nodes (individual platforms, small units, etc) that can maintain a relatively high bandwidth and secure local ''cloud'' and ''talk''

high bandwidth and secure to other LOS units/nodes with longer range comm usually constrained due to denial, HHQs priorities, etc

Writer22: (13:10) EWCT - That works as long as those nodes are free to operate autonomously, no different than a platoon in the field or boarding party.

5. Educate and elevate awareness of innovation

Writer17: Not all failure is created equal. Innovation doesn't have to be associated with extreme failures. I think you can have an innovative culture and still control risk by keeping in mind the effect of a potential failure.

Writer5: Innovation has three legs to stand on HISTORICAL PERSPECTIVE/PRESENT REALITIES/FUTURE NEEDS. If either leg is weakened or is not strong enough, the process becomes unbalanced and fails

Writer17: (14:10) The military is a snapshot of the "Infrastructures" we protect. Innovation in those areas should drive innovation in the military, particularly in the energy and communications sectors. When we go too far away from the directions they travel, costs increase. This is of course a much different place in time from where we stood when the military led innovations fueled growth.

Writer25: (09:49) Facebook is a great mechanism to spread an idea - good and bad. If it is its own "country" - think of the possibilities

Writer2: (10:37) Provisioning is a code word for taxes? Innovation rarely comes from Government projects. The free market stimulates ideas and if they're good--they sell. Must have a vision and balance.

6. Identify ways to instill a culture of innovation

Writer2: Innovation is not in everyones DNA. It comes from a natural curiosity, need, by nurturing and in some cases for survival. Are we growing innovative leaders lilke ADM Harvey? We must insource -- thinking and thinkers.

Writer8: great point that we need to READ...plenty of info out there, including doctrine.

Writer1: Two ways to tackle the organization. One is through focused organization change. The other is through corporate judo. Emphasizing what ADM Harvey said about read-think-debate and leveraging the existing organization structure against itself for innovation.

Writer4: I believe it is a question of institutional priorities as exemplified by senior leaders. In the Marine Corps I can count many directives and command attention to physical fitness (tests, etc.). however, there is very little apparent emphasis on

intellectual development--outside of a reading list which receives attention once a year when published.

Writer13: ADM Harvey's right - we need a forum to debate!

Writer26: NWDC is investigating the concept of placing a Discussion Forum in its Lessons Learned System to offer a place for all who have access to the system to discuss ideas, openly. The key idea is to avoid the dampening affect ADM Harvey discussed.

Writer2: Red Teaming in operational design in operations could/should transition to daily work and a small group of thinkers to question things for the Commander may be useful.

Writer13: How about giving peers and subordinates 40% vote on a person's fitrep?

Writer13: I continue to see fitreps that don't help boards select the best qualified.

Writer27: guest 6> You're referring to the 360 review process we've kicked around for years in the service.

Writer11: RDML Carodine, thank you very much for the initiative. One area I studied through my doctoral research in education for "transformative educational partnerships" was the importance of "white space" for innovation. Some of my friends in SPECWAR have incredible ideas through our discussions however, they are constantly moving... it may be extremely beneficial to allow for similar space for some of our warfighters.

Writer28: One way to cultivate innovative behavior is to team. Horizontally structured organizations are better suited to adapt/change than vertically structured organizations. Teams can be formed by competent individuals of all ranks in a horizontally structured organization to solve challenges. Conceptually, teams of this nature are better postured to innovate, collaborate, and act.

Writer14: Innovation must be allowed to tap into the those operating and training in the maritime environment. By tapping into that environment many ideas will become "the idea." NWDC having limited acquisition authority to research and then apply research with appropriate partners such as NWC, UARCs and FFRDCs is an enabler to shake up the establishment.

Writer14: A strategy that understands that the future will require the Fleet tp operate in a complex and uncertain environment is needed. CSG work-ups and NWC "thinker" need to collaborate frequently before, during and after deployments.

Writer5: Until the culture is rebuilt, it will be difficult to build the processes. As with any seed, ideas need the soil, sunlight and nourishment. Most of the time in the present culture these are not always available in sufficient quantity.

Writer14: NWDC building a "lab" mindset where all DOTMLPF owners can incubate ideas -- tactical or operational is a model worth investigating. Pro-active engagement with officers and enlisted that have deployed should be part of ''lab'' outside the walls of NWDC. innovation requires extensive matrixing to be relevant.

Writer9: I believe creating a new process is not the right vector. We should specify time as the primary requirement (ie, "IOC in 2015"), make that requirement drive the process, and hold people accountable for making it happen (as opposed to attempting to hold enterprises accountable).

Writer29: Innovation a peacetime phenomenon, Adaptability a wartime phenomenon. USN was at war with US Army Air Corps. A nuclear weapons capable navy had more to do with adaptability than innovation.

Writer30: Are we unable to understand what is really going on? See this article: http://opinionator.blogs.nytimes.com/2010/06/20/the-anosognosics-dilemma-1/

Writer4: “Innovation a peacetime phenomenon, Adaptability a wartime phenomenon.” This is our dilemma. Goldwater-Nichols created a combatant commander-centric military that prioritizes adaptation for the current and near term challenge, leaving innovation to the services with what they had “left over.” Unless we change the idea of being continually “at war”, we will only adapt to the what is directly in front of us, rather than innovate for what is farther out, or less immediately probable.

Writer2: We must operate at the speed of change and in a fiscally austere environment we must seek non-material solutions. Time to think-- not buy our way out of problems.

NWDC should champion the IdeaFactory (online tool) for CFFC and CNO.

Writer1- guest 3: (15:42) Looking at the ''ideation'' networks are valuable. We also need to look at the innovation networks, i.e., the networks that take us from ideation to militarization to final adoption by the warfighter. It's a different network.

Writer31: (15:45) there would be a lot less pressure on an individual submitting an ''idea'' to the Idea Factory website than an ''observation/recommendation'' LL to JLLIS via 3-4 layers of Navy command

Writer18: (08:38) ''Day after'' gaming is useful. Start by assuming some kind of failure of our arms and game from there. It can be very revealing.

Writer2: (09:58) Operational Art, Operational design is art and science. Architecture is closer to operational design than engineering. Must expand our thinking and incorporate design theory into our innovative operational design to achieve new ways to solve complex problems.

Writer4: (10:05) We need a culture of wargaming, from small to large scale. That means we need to give lower levels the capability to conduct wargames for their problems. A culture of wargaming provides innovation, but also enhances the idea of mission command by increasing mutual understanding between commanders. We've made it too difficult to wargame.

Writer1: (10:06) Kao's comments on practicing one hundred times a day ties into the need for the Navy's experimentation to be "fast" and "frequent." There's a twofold purpose. First, the fast and frequent experimentation helps cultivate the culture of innovation. Second, fast and frequent will help identify the good ideas because you are on the nonlinear part of the S curve. There is also an added benefit from "defining" and "refining" the Navy problem, similar to what ADM Harvey talked about regarding the use of "Navy Problems" during the interwar years.

Writer2: (10:09) Some of the best wargaming may be occurring in living rooms with Black Ops, Call of Duty, etc... our young military folks play these games linking through the internet as well and then come to work and see our senior officers conduct "Table Top Wargames" which often become BOGSATS and result in repetitive LL's and no implementation. Must have some interactive wargames with force on force free play and M&S to capture it. Leverage what works and apply it to our needs.

Writer3: (10:11) Before 9/11, my leaders gave me Tactical Decision Games specific to Air Command and Control. These games were designed to get me and my SNCOs engaged on big picture C2 and airspace challenges. Once the TDGs were completed, the entire unit would create a sand table exercise (STEX) with the CO. These STEX allowed top down guidance with bottom up feedback. As the GWOT closes, returning to practical wargaming using TDGs and STEXs are cheap, effective, and efficient means of cultivating future leaders.

Writer4: (10:20) The basis of successful wargaming is the trust the players have in the assumptions, rules, parameters, models, etc. being used—the ways that "win-lose", hit-miss, see-no see, etc. are determined. These can either be automated or "low tech"—umpires or civilian wargame rules. When wargame results are rejected, it is usually because of the combination of two factors—the results are counter to what someone wants to believe and that someone also does not trust the rules/assumption underlying the game. I believe this is a huge issue in computer modeling/wargaming. We feed input (move/countermove, etc.) into the "black box" computer program, then are told results

without really understanding why and how those results were calculated. I think this is the issue with Halsey Group. OPNAV N81 runs “models” and comes up with different results. Who to believe? A culture of wargaming requires close understanding of how things work (or should work) in reality.

Writer4: (11:40) One the the great things about focusing on wargaming is that it promotes serious and detailed discussion about warfighting. All those algorithms, etc., are based on data collected—for large-scale missile warfare, its data that is probably untested in real conflicts. For land warfare, no models can ever completely capture or replicate the human dimension (proficiency, creativity). However, in having the discussion about creating wargames and then conducting them, we educate ourselves in these complex, yet fundamental issues.

Writer32: (11:43) Probably a good idea to check out the "serious games" community. Reality is Broken by Jane McGonigal is a good introduction to the literature.

Writer1: (10:12) Not talking about iterating the same experiment over and over. It's about experimenting different options on a small scale to see if there is a nonlinear benefit kicking in. This approach is similar to Warren Buffet's approach to investing which is based on Kelly game theory.

Writer20: (10:14) Experimenting different options requires learning. Does not occur if you are retraining a new crop of people on how to do wargames every year and not building up the body of knowledge.

Writer1: (10:32) Good to allow failure, but not focus on it. Why not use "appreciative inquiry" to put the spotlight on the innovation success stories in the Navy. In this way we can identify how innovation works in the unique Navy environment and see if we can use what we learned to innovate successfully the next time around.

Writer33: (11:47) To the current question: EXACTLY, private companies must control for time or become extinct... we should use the same approach

Appendix B: Attendee Demographic Information

The Maritime Innovation Symposium was held on March 13 and 14, 2012. Participants had the option of attending in person or logging on via Defense Connect Online (DCO). NWDC required advance registration for those who attended in person to facilitate security coordination. An estimated 250 people attended in person or remotely over the course of the symposium.

Demographics Overview

Demographic Group	Total
Flag, Senior Executive Service (SES), and VIP Registrants	26
NWDC Members who Registered in Advance	63
Physical non NWDC Attendees from NWDC Security Logs	94
Remote DCO Attendees based on maximum DCO counter	110
All Participants Registered for In Person Attendance	186

Flag, SES, and VIPs Registrants

CAPT Vic Addison (Ret.) (Speaker)
BGen John Bullard, USMC DCG MCCDC (Panelist)
Mr. Dennis Bushnell (Speaker)
Mr. Steven C Cade, SES USFF, N5/N8/N9 (Attendee)
RDML Ken Carodine, DCNWDC
CDRE Steve Chick FORNATL-UK USFF, CJOS COE (Attendee)
Professor Don Chisholm (Speaker)
RADM Kevin Cook, USCG, Deputy Commander Coast Guard Atlantic Area (Speaker)
Mr. Art Corbett (Speaker)
RDML Scott T Craig, USFF, N5/N8/N9 (Attendee)
RDML Dennis E. FitzPatrick, CSFTL (Panelist)
CAPT Mark Hagerott, USNA (Moderator for Flag Panel)
ADM John C. Harvey Jr., CUSFFC (Speaker)
RDML Gretchen Herbert, Commander Navy Cyber Forces (Panelist)
Mr. John Kao (Speaker)
Mr. Gregory F Knapp, Vice Assistant Dep. Dir. for Joint Development, JS J7 JCW (SES-2)
RDML Terry Kraft, NWDC (Host)
RDML Jon Matheson, USFF N03R
Dr. Williamson Murray (Speaker)

Professor Robert Rubel, NWC (Speaker)
RADM (sel) Gordon Russell, Commander, Navy Intel Reserve Command (Attendee)
BGEN Steven Salazar, JS J7 (Attendee)
Dr. Lawrence Schuette, Dir of Innovation ONR (Speaker)
RDML Thomas G. Wears, NUWC (Panelist)
Mr. Chuck Werchado, SES Deputy COMSUBFOR (Attendee)
Mr. Peter Wilson, RAND Corporation (Speaker)

Appendix C: Symposium Agenda and Speaker Briefings

The agenda which follows lists the speakers who presented at NWDC's Maritime Innovation Symposium on March 13-14 and the titles of their presentations. Speakers' notes and accompanying slides are posted on the public Maritime Innovation Symposium portal: https://www.nwdc.navy.mil/Pages/InnovationSyposium.aspx.

March 13, 2012		
0730-0830	**Check In**	Security Check In
0830-0900	**RADM(sel) Kraft**	CNWDC Opening Remarks
0900-0930	**ADM Harvey**	Opening Remarks
0930-1015	**Dr. Murray**	Historical Perspectives on Navy Innovation
1030-1115	**Dean Rubel**	Sociology of Innovation in the Navy
1230-1315	**Dr. Bushnell**	Innovation Barriers and Opportunities
1330-1415	**Col(ret) Corbett**	USMC Perspective: The Benefits of Mission Command
1430-1515	**RDML Lee**	Coast Guard Innovation
1530-1615	**Dr. Schuette**	Increasing the Navy's Capacity for Innovation
1730-2030	**CAPT(ret) Addison**	Evening speaker: Innovation is Really Annoying

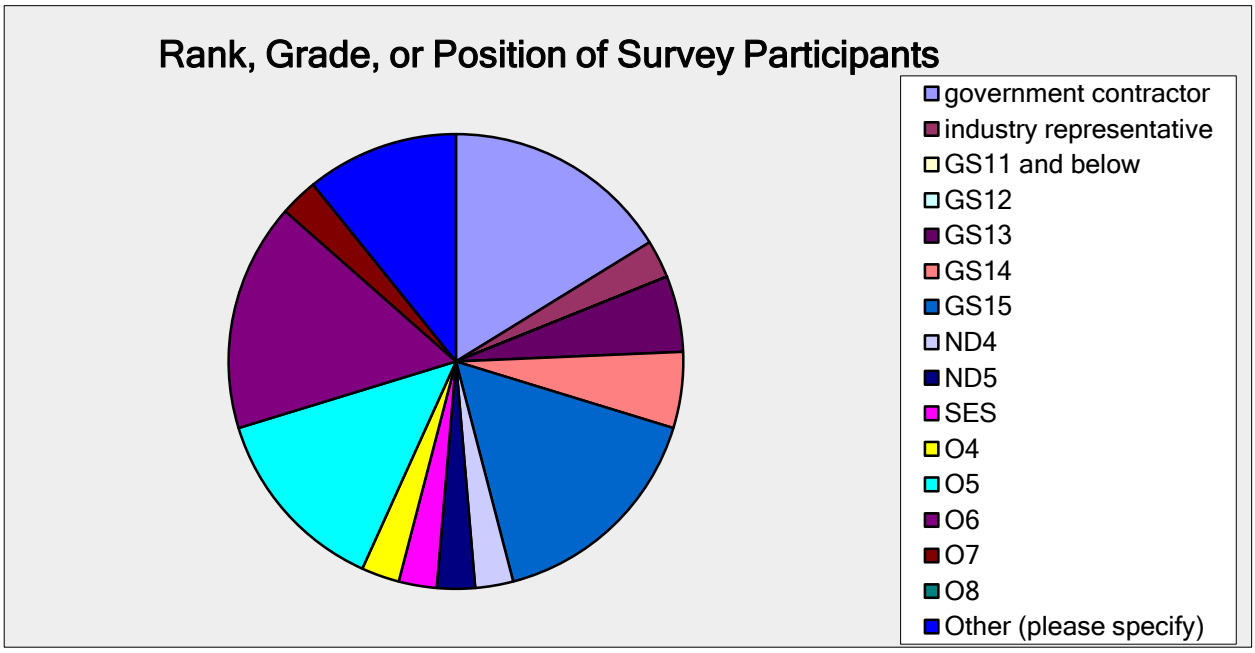
March 14, 2012		
0800-0900	**Mr. Wilson**	Relationships of Military Innovation across 4 Generations of Warfare
0915-1015	**Mr. Kao**	Corporate Perspectives on the Harnessing Innovative Practices
1030-1130	**Flag Panel:** **BGen Bullard** **RDML Herbert** **RDML FitzPatrick** **RDML Wears** **Moderator:** **CAPT Hagerott**	Articulating Demand: Community challenges in need of innovative solutions
1145-1230	**Dr. Chisholm**	Setting the Conditions for an Innovative Culture
1230-1300	**RADM(sel) Kraft**	Closing Remarks

Appendix D: Pre-Event and Post-Event Survey Results

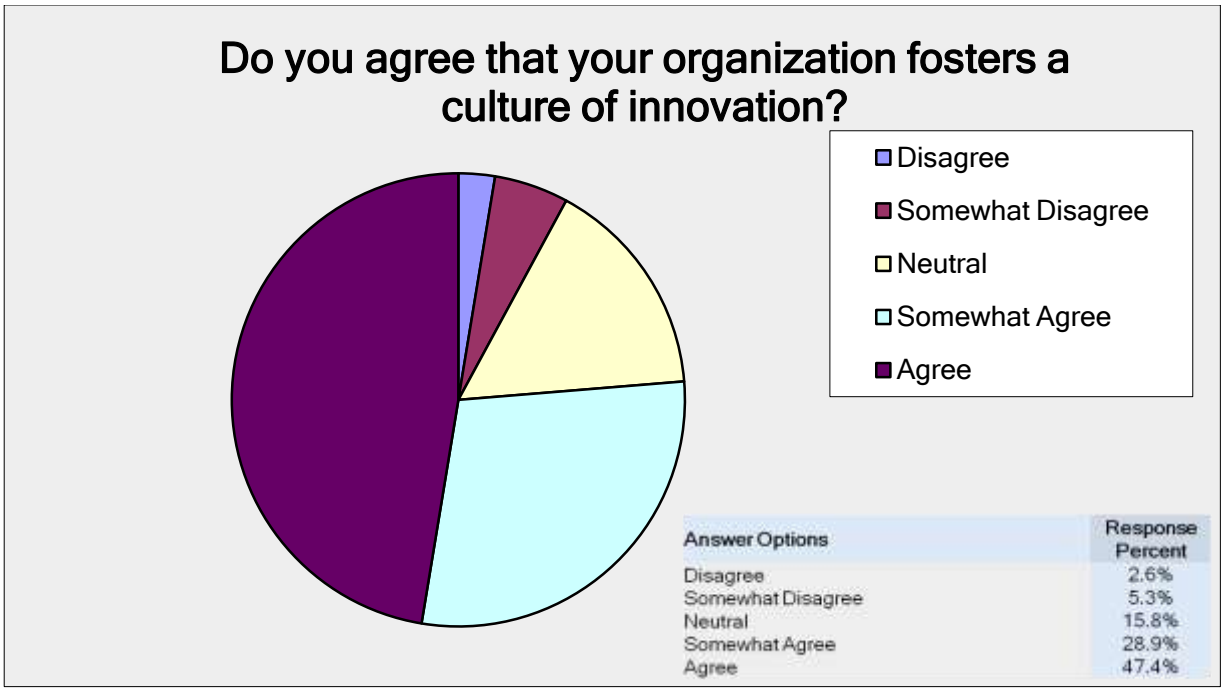
Maritime Innovation Symposium participants were asked to complete short surveys before and after attending the symposium. These questions gathered demographic information about the attendees and further solicited their insights and feedback on symposium execution and innovation in the Naval Services.

Pre-Event Survey

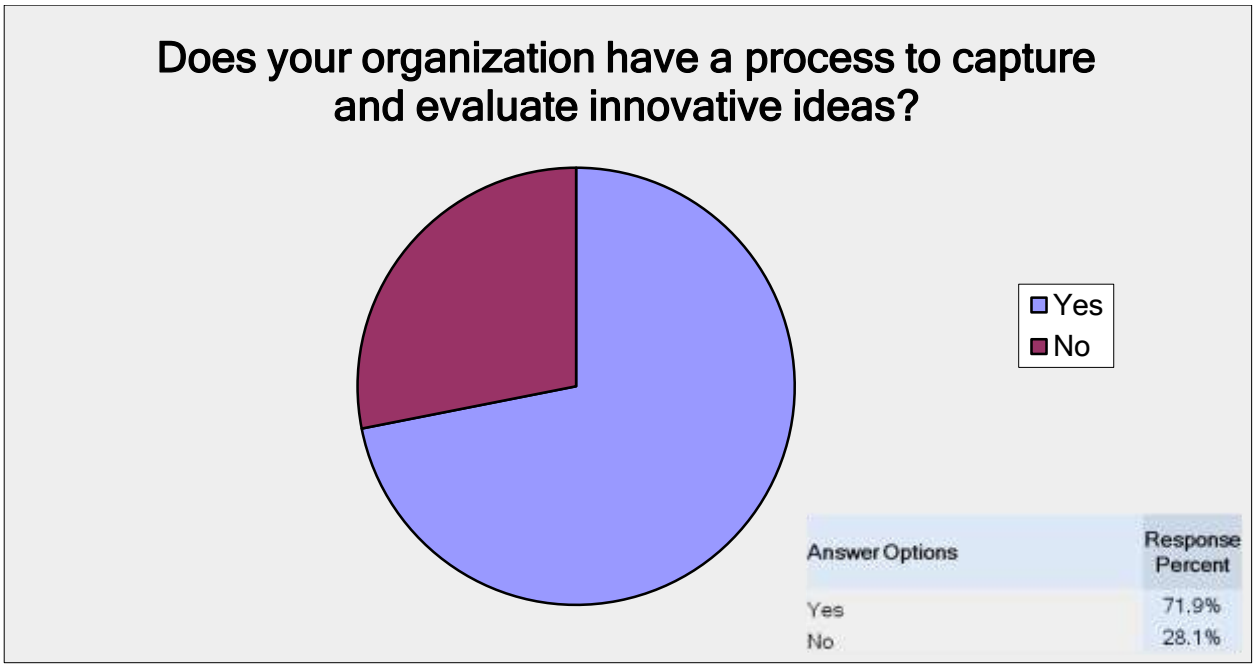
Fifty-one participants responded to the Pre-Event Survey.



As can be seen by the graph, the majority of participants were comprised of government contractors, government civilians, and O-6's. There was representation from industry and other government organizations.



76.3% of survey participants believed their organizations foster a culture of innovation.



71.9% believed their organizations had a process to capture and evaluate innovative ideas.

In the open-ended question section of the Pre-Event Survey, common hindrances to innovation included NMCI resources, the PPBE process, short-term tasking, stovepipes, and conservative attitudes.

Issues that positively impact innovation at the represented commands included organization alignment, openness to new thoughts or ideas, team work, communication, and different cultures.

Finally, website development, doctrine, training, CONOPs, theater security, and knowledge management were listed as areas that could be benefited by innovative thought.

Post-Event Survey

Thirteen participants responded to the Post-Event Survey. Almost all questions required open-ended responses.

Twelve participants were satisfied with the administrative aspects of the Innovation Symposium.

A large emphasis on education, especially in leadership pipelines, was thought to be required to make the force more innovative.

After attending the Symposium, participants believed OPLAN planning, gap analysis, culture, non-materiel solutions, and creating new procedures or uses for existing systems could be impacted most by innovative thought.

Warfare Improvement Programs, support communications, the personnel system, unmanned systems, rewards for innovative thought, and lessons learned were areas participants thought could be used differently to produce new solutions.

Participants listed various ways NWDC could assist with innovation in their organizations. These included hosting a blog and website describing new technology and innovations, using commercial online gaming to test weapons and tactics, spreading the “innovation gospel” to a wider audience, and providing leadership and venues to socialize and collaborate about innovation.

Appendix E: Strategic Communications Plan

NWDC kicked off the Innovation Series 2012 with the Maritime Innovation Symposium. The strategic communications plan for the Maritime Innovation Symposium laid out communication objectives for the event along with the audiences, communications tactics, and key themes and messages. The Innovations Series 2012 matches NWDC core competencies with its facilities to brand NWDC as a leader and a convener of innovation thought leaders. This strategic communications plan below was executed as the first step in the Innovation Series 2012.

Maritime Innovation Symposium 2012
Strategic Communication Plan

Purpose: To outline the Strategic Communications/Public Affairs approach to communicating Navy Warfare Development Command's (NWDC) "Maritime Innovation Symposium."

Public Affairs Posture: Active

Background: NWDC is hosting a Maritime Innovation Symposium under the theme "Regaining the Innovation Advantage…Awakening Our Creative DNA." The symposium will feature speakers from military, academia and industry to exchange ideas, identify opportunities and challenges, propose ways to move maritime innovation forward, and educate and elevate awareness of innovation across the Fleet.

Objectives:

- Increase awareness of the event to stimulate attendance
- Demonstrate NWDC's core competencies that make it "innovative"
- Position NWDC as the forward-leaning command for Navy innovation and a convener of dialogue around "innovation" for the maritime community
- Set the stage for follow-on events of NWDC's "Innovation Series 2012"

Audiences:

- Internal (maritime services)
- Academicians
- Industry

Communication Tactics:

Tactic	Description	Release Date
Pre-event press release	Announce the Symposium	Complete
Rear Admiral Kraft direct mail invitations	Send special invitations from RDML Kraft to select invitees via DoD “evite” program	Complete
Pre-event press release with speakers	Follow on press release announcing Symposium Speakers	13 FEB 12
Admiral Harvey “Blog”	“Pitch” for one of Admiral Harvey’s upcoming blogs to focus on “Innovation” and include the Symposium	9 MAR 12
INsight Article	Feature Symposium in Winter edition of In Sight	Winter ed.
Direct Mail Campaign	Develop a direct mail piece for distribution to target attendees by Navy, Marine and Coast Guard stakeholders/organizers	17 FEB
NWDC Web site	Create a special Symposium portal on NWDC website with related communications products (news releases, photos, videos) THIS IS PLACE FOR THE “RECEIVE” PIECE AND IDEA DEBATE FORUM (PROBABLY ON A MIRROR SIPR SITE)	15 FEB and ongoing
NWDC Facebook page	Drum beat announcements prior-to and following Symposium on NWDC Facebook page	Ongoing
Rhumb Lines	Pitch Rhumblines on Navy Innovation	17 FEB
“Sailor Bob”	Post on Sailor Bob	17 FEB
Post-event press release	Summarizes the content from the Symposium	14 MAR 12
Post-event In Sight	Article in Spring edition of In Sight	Spring ed.

Article	summarizes the content from the Symposium	

Key Themes and Messages:

- Navy Warfare Development Command's core competencies make it uniquely positioned to be a catalyst for dialogue that supports "innovation" in the maritime services.
- NWDC's "Innovation Symposium" will feature speakers from military, academia and industry to exchange ideas, identify opportunities and challenges, propose ways to move maritime innovation forward, and educate and elevate awareness of innovation across the Fleet.
- The Navy has a unique history of creativity and adaptability. The challenge now, in a changing world with decreasing budget realities, is to regain our innovation advantage. NWDC's "Innovation Series 2012" is designed to stimulate ideas and turn them into concepts and realities to regain the innovation advantage.
- The focus of the symposium and NWDC's overall 'Innovation Series 2012' campaign is to awaken the Navy's culture of innovation in direct support of the warfighter.
- The Navy Warfare Development Command is the Navy's conduit between the Fleet and its leaders, directed to develop coherent, creative and timely solutions to operational capability challenges and help move the Fleet forward through the 21st Century. Its core competencies – concepts, experimentation, modeling and simulation, information dominance, lessons learned and doctrine – make the command the solutions hub to meet the needs of the maritime warfighter in a challenging global environment.

Appendix F: All Registrants for In Person Attendance

#	Last Name	Full Name	Title	Command/ Organization	Rank/ Title
1	Addison	Vic Addison	Guest Speaker	Retired	CAPT (Ret)
2	Amick	Jeffrey Amick	ACOS ID	NWDC	CAPT
3	Anderson	Sharon Anderson	CHIPS Senior Editor	SPAWARSYSCEN Atlantic	Mrs.
4	Anderson	Dennis Anderson	Concepts	NWDC	Mr.
5	Armstrong	Floyd Armstrong	Lessons Learned	NWDC	Mr.
6	Baker	Stephen Baker	N92 - Fleet Experimentation	USFF	Mr.
7	Barber	Keith Barber	Experimentation	NWDC	Mr.
8	Barnard	Timothy Barnard	CNO Executive Panel	CNO OPNAV	Mr.
9	Barrett	Danelle Barrett	NCTAMS Lant	CNCTAMSLANT	CAPT
10	Bauer	Geoff Bauer	US Fleet Forces N921	USFF	Mr.
11	Bock	James Bock	INTEL	NWDC	CAPT
12	Brackin	William L. Brackin	C6F Navy Lessons Learned	C6F	Mr.
13	Brazas	Tony Brazas	Doctrine	NWDC	CAPT
14	Brown	Brad Brown	Doctrine	NWDC	CAPT
15	Brown	David Brown	Doctrine	NWDC	Mr.
16	Buchanan	Jamie Buchanan	Concepts	NWDC	Mr.
17	Bulkeley	Peter Bulkeley	Director Maritime Programs	Lockheed Martin Corp.	Mr.
18	Bullard	John Bullard	DCG MCCDC (Panelist)	MCCDC	BGen
19	Burns	Bruce S. Burns	Information Officer	SSG	Mr.
20	Bushnell	Dennis Bushnell	Guest Speaker	NASA Langley Research Center	Mr.
21	Cade	Steven Cade	N5/N8/N9	USFF	SES
22	Caine	Misty Caine	Lessons Learned	NWDC	Ms.

#	Last Name	Full Name	Title	Command/ Organization	Rank/ Title
23	Canty	Jeremiah D. Canty	Research Fellow	Center for Emerging Threats and Opportunities	Mr.
24	Carmickle	Bobby Carmickle	NCTAMS Lant Det OIC	NCTAMS Lant	LCDR
25	Carodine	Ken Carodine	Deputy Commander	NWDC	RDML
26	Casper	Brian Casper	Doctrine	NWDC	CDR
27	Chick	Steve Chick (UK)	CJOS COE	USFF	CDRE
28	Chisholm	Don Chisholm	Guest Speaker	Naval War College	Prof.
29	Cho	C. Peter Cho	ONRG Director, International Liaison Office	ONR Global	Mr.
30	Choinski	Thomas C Choinski	Deputy Director for Undersea Warfare	NUWC	Mr.
31	Church	Gregory A. Church	Chief, Exp. Branch (AFC2IC/C2XE)	AF Command & Control Innovation Ctr	Mr.
32	Confalonieri	Claudio Confalonieri (IT)	Italian Liason Officer	JS Deputy Directorate J7 JCW	CAPT
33	Corbett	Art Corbett	Guest Speaker	MCCDC	
34	Coston	William T Coston	JFTOCWO	NCTAMS LANT	ITC
35	Craig	Scott T Craig	N5/N8/N9	USFF	RDML
36	Curth	Gregory Curth	Ops and Plans	NWDC	CAPT
37	D'Angelo	William R. D'Angelo	S&T Advisor Navy Irregular Warfare Ofc	OPNAV 53	Dr.
38	Danko	Dennis Danko	Combatant Craft Division	Naval Surface Warfare Center Carderock	Mr.
39	Dearborn	Thomas Dearborn	N/NC LNO to USFF (JFMCC-N)	USFF	CAPT
40	DeGeus	Stan DeGeus	Senior Business Solutions Director	AAI Corporation	Mr.

#	Last Name	Full Name	Title	Command/ Organization	Rank/ Title
41	Dickey	Stuart Dickey	ACWG Transition Team / Ellis Group	USMC	Col
42	Doane	Chris Doane	Staff of Dep. Commander USCG Atlantic Area CMD	USCG Atlantic Area Command	Mr.
43	Donegan	Don Donegan	Concepts (N00X Staff)	NWDC	CDR
44	Drake	Mark Drake	Advanced Solutions	BAE Systems	Mr.
45	Dunn	Grady Dunn	INTEL	NWDC	Mr.
46	Estepa	Linda Estepa	Division Head	CDSA Dam Neck	Ms.
47	Faggert	Steve Faggert	COS	NWDC	CAPT
48	Ferguson	CAPT Ferguson	Lessons Learned	NWDC	CAPT
49	FitzPatrick	Dennis FitzPatrick	CSFTL	CSFTL	RDML
50	Gabor	Jim Gabor	Experimentation	NWDC	Mr.
51	Gallagher	Thomas Gallagher	MARFORCOM Science Advisor	MARFORCOM	Mr.
52	Gillespie	Wardell "Gill" Gillespie	COMUSNAVCENT/5th FLT Navy LL	C5F	Mr.
53	Glenney	William Glenney	SSG	SSG	Mr.
54	Golden	Gerry Golden	USFF/CTF20 Management Site Representative	USFF/CTF20	Mr.
55	Gough	John "Jack" Gough	Lessons Learned	NWDC	Mr.
56	Grandfield	Phil Grandfield	Dir, Whitney Bradley & Brown, CNAL N80	Whitney Bradley & Brown	Mr.
57	Gray	Rip Gray	ASW Doctrine/Tactical Development Manager	NMAWC, Det Norfolk	Mr.
58	Grigorian	Gary Grigorian	Dir. of Innovation and Experimentation	AF Command & Control Innovation Ctr	Mr.
59	Guckin	Matt Guckin	M&S	NWDC	Mr.
60	Hagerott	Mark Hagerott	USNA (Moderator)	USNA	CAPT
61	Harvey	John C Harvey, Jr	CUSFFC (Speaker)	USFF	ADM

#	Last Name	Full Name	Title	Command/ Organization	Rank/ Title
62	Hayes	Christopher Hayes	Military Fellow, International Security Program CSIS	CSIS	Mr.
63	Hencke	Richard Hencke	Concepts	NWDC	CDR
64	Henning	Mark Henning	Lessons Learned	NWDC	Mr.
65	Heo	Taekeun Heo (KOR)	Korean LNO to JCW	JS J7 JCW	Col
66	Herbert	Gretchen Herbert	Commander Navy Cyber Forces (Panelist)	Navy Cyber Forces	RDML
67	Hodges	Shannon Hodges	Lessons Learned	NWDC	Ms.
68	Hofheinz	Damen Hofheinz	CIO	NWDC	CDR
69	Holzer	Rob Holzer	Principal Analyst Team Blue N53 Future Concepts	OPNAV N53	Mr.
70	Horres	Edward J Horres	ARCIC - CDLD-JICD	US Army (Army Capabilities Center)	Mr.
71	Horton	Jerry Horton	Analysis	NWDC	Mr.
72	Huber	Ron Huber	C7F Navy Lessons Learned	C7F	Mr.
73	Hughes	Craig Hughes	ONR Deputy Director of Innovation	ONR	Mr.
74	Hughes	Jason J Hughes	JFTOC Director Command Readiness Officer	NCTAMS LANT	LT
75	Ignacio	Colleen Ignacio	Lessons Learned	NWDC	Mr.
76	Irvine	Marty Irvine	NECC Science Advisor	NECC	Dr.
77	Jacobs	Jill Jacobs	Experimentation	NWDC	Ms.
78	Jimenez	Greg Jimenez	Govt GS	COMNAVMETOCCOM	Mr.
79	Johnson	Brent Johnson	COMSUBFOR N823 (CONOPS OFFICER)	COMSUBFOR	LCDR
80	Johnson	Robert Johnson	INTEL	NWDC	LCDR
81	Kao	John Kao	Guest Speaker		Mr.
82	Kennedy	Ken Kennedy	CNA Rep	NWDC	Mr.

#	Last Name	Full Name	Title	Command/ Organization	Rank/ Title
83	Kim	Ji-Hoon Kim (KOR)	Korea FLO, JCW, J7, Joint Staff	JS J7 JCW	CDR
84	Knapp	Greg Knapp	Vice Assistant Dep. Dir. for Joint Development, J7	JS J7 JCW	Mr.
85	Kordyjak	Bill Kordyjak	Plans	NWDC	CDR
86	Kozloski	Robert Kozloski	Senior Program Analyst (GS-15)	DUSN/DCMO	Mr.
87	Kraft	Terry Kraft	CNWDC	NWDC	RDML
88	Lappe	Dana Lappe	Analysis	NWDC	Ms.
89	Lee	RDML Dean Lee	USCG - 5th District	USCG Atlantic Area Command	RDML
90	Lee	Eui Lee	Deputy, NAWCAD Strategic Operations	NAVAIR	Mr.
91	Lemke	Dave Lemke	G-3/5 CD&I / MCCDC	MCCDC	MAJ
92	Lenk	Brian Lenk	Plans	NWDC	CDR
93	Leporati	Joe Leporati	INTEL	NWDC	CDR
94	Lepson	Michael D. Lepson	N83 (Maritime Operations Center/OLW)	USFF	Mr.
95	Light	Ryan Light	Aide de Camp to Deputy MCCDC	MCCDC	Capt
96	Livezey	Scott Livezey	Govt GS	COMNAVMETOCCOM	Mr.
97	Looney	John Looney	Dir, NPS Distance Learning Program Norfolk VA	NPS Dept of Information Sciences	CDR
98	Lowell	Robert L. Lowell, Jr.	Washington Operations	General Dynamics Electric Boat	Mr.
99	Macfarlane	Peter Macfarlane, (UK)	UK (PJHQ) LO to DD J7 JCW	JS J7 JCW	Lt Col
100	Mangum	Kate Mangum	Asst S&T (N00K9) ONR Science Advisor CNO Exec Panel	N00K	Ms.
101	Marko	Michael R. Marko	ACWG Transition Team / Ellis Group	USMC	MAJ.

#	Last Name	Full Name	Title	Command/ Organization	Rank/ Title
102	Marshall	Bill Marshall	Lessons Learned	NWDC	Mr.
103	Martin	Charles Martin	USAF ACC AFC2IC/C2XI	AF Command Control Integration Ctr	Mr.
104	Martin	Joel L. Martin	Div. Chief, Innovation and Experimentation	AF Command Control Integration Ctr	Col.
105	Matheson	Jon Matheson	USFF N03R	USFF	RDML
106	Matuskowitz	Monique Matuskowitz	Health Manager - Houston	Shell Health	Ms.
107	McCauley	Howard McCauley	COMNAVAIRFOR Science Advisor (N01X)	COMNAVAIRFOR	Mr.
108	McClain	John McClain	Plans	NWDC	Mr.
109	McElhaney	Art McElhaney	PACFLT/C3F Navy Lessons Learned Manager	C3F / PACFLT	Mr.
110	McKenzie	Mathew McKenzie	VFA-37 INTEL O	VFA-37	LT
111	McNeese	Susan McNeese	Futures Analyst/N83	CNSL/P	Mrs.
112	Mills	Nelson Mills	Engagement Sys Dept Capabilities Development Manager	Naval Surface Warfare Center Dahlgren	Mr.
113	Mirano	David Mirano	Chief of Staff	NUWC	CDR
114	Momma	Masahito Momma (JPN)	Japan FLO, JCW, J7, Joint Staff	JS J7 JCW	Col.
115	Montes	Dylan Montes	Plans	NWDC	CDR
116	Moore	Shannon L Moore	CNO Executive Panel	OPNAV N00K2	LCDR
117	Morben	Darrel Morben	M&S	NWDC	Mr.
118	Morgan	Todd Morgan	ACOS MSE	NWDC	Mr.
119	Moss	John Moss	N8 CSL	CSL	Mr.
120	Murphy	Colette Murphy	STRATCOM	NWDC	Ms.

#	Last Name	Full Name	Title	Command/ Organization	Rank/ Title
121	Murphy	Dan Murphy	Command Svcs Spt	NWDC	Mr.
122	Murray	Williamson Murray	Guest Speaker	Naval War College	Dr.
123	Neilan	Lourdes Neilan	Cyberspace Ops	NWDC	CAPT
124	O'Donnell	Jerry O'Donnell	Concepts	NWDC	Mr.
125	Oyler	Dean Oyler	N921A1 Future Fleet Experimentation	USFF N91	Mr.
126	Park	Chil Ho Park (KOR)	Korea LNO MN/ACT Integration Div	JS J7 JCW	Col
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144	Rubel	Robert Rubel	Guest Speaker	NWC	Prof.
145	Russell	Gordon Russell	Commander, Navy Intel Reserve Command	NAVCYBERFOR	RDML
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Appendix G: NWDC White Paper on Shaping Navy Culture

The following white paper was written by CAPT David Tyler, Assistant Chief of Staff for Concepts N9 at Navy Warfare Development Command, on 14 February 2012.

NWDC White Paper
Shaping Navy Culture: A Campaign Plan for 2025

As wars are fought by men the human element is a basic factor in naval warfare. [i]

1. Purpose

This white paper introduces a concept to change Navy organizational culture into an innovative, intellectually agile institution. This paper examines current conditions, introduces an approach, identifies themes, and proposes actions to build momentum for the concept.

To reap the benefits of new ideas and leverage developments in new technology the Navy must transform existing processes, adopt new problem-solving techniques, and cultivate "art of the possible" thinking. This paper proposes a departure from linear thinking compatible with attrition style warfare toward a culture founded on innovative professionals that thrive in an information rich environment and are capable of exploiting the high ground they hold in the cognitive domain. To achieve this it is necessary to understand the complexities of military culture and why culture is important.

This concept seeks ways to succeed in future conflicts by fostering human problem-solving and decision-making skills that will prevail in rapidly evolving battlespace conditions. It is intended to set the stage for more detailed products, such as, functional and enabling concepts, concepts of operation (CONOPS), and doctrine. This concept will help decision makers see the effects of culture on capabilities and provide options to improve it. It is intended to assist resource sponsors, program managers, and acquisition professionals to make well-informed programmatic decisions across the doctrine, organization, training, materiel, leadership & education, personnel, facilities (DOTMLPF) spectrum that link strategic objectives with advanced capabilities.

2. Organizational Culture Defined

Organizational culture is defined as a pattern of shared basic assumptions invented, discovered, or developed by a group as it learns to cope with problems of external adaptation and internal integration that have worked well enough to be considered valid and are therefore taught to new members as the correct way to approach those problems.[ii] Said differently, it is the collection of values and norms that are shared by people and groups in an organization and that control the way they interact with each other and with stakeholders outside the organization.[iii] In short, organizational culture is the shared attitudes, values, goals, and practices that characterize the larger institution. It consists of deeply embedded beliefs, philosophies, attitudes, and operation norms.

Culture is different from climate. Culture refers to the environment of the institution and of major elements or communities within it; whereas, climate refers to the environment of units and organizations. The primary responsibility for culture rests with strategic leaders, whereas leaders at lower levels are responsible for the organizational climate of their units or organizations. Organizational leaders set the climate for the organization by what they focus on and what they regard as important. Climate is generally short-term: it depends on a network of the personalities in a small organization. Climates change with personalities, cultures outlast personalities.

3. Scope

The sociological character of a large organization is shaped by many factors, including the distinct traditions and heritage of its internal communities. To understand the overall culture, this concept examines peculiarities, strengths, and weaknesses of the Navy's major communities. It looks at communities in the Navy in two categories, warfighting and non-warfighting; where platform operators through combatant command staffs are in the warfighting category and remaining organizations fall into the non-warfighter category. It also assesses the cultural characteristics across the hierarchy of personnel by subdividing them into junior enlisted (E1-E7), junior leaders (E8-O4), and senior leaders (O5-O10). A similar hierarchical approach will be used to examine Navy civilian government employee characteristics.

"Culture is not something that you manipulate easily. Attempts to grab it and twist it into a new shape never work because you can't grab it. Culture changes only after you have successfully altered people's actions, after the new behavior produces some group benefit for a period of time." - John Kotter

Cultural change is normally a slow process. For this reason the timeline chosen for this concept is an incremental campaign leading up to the year

2025. Acknowledging the importance of current requirements and budgetary constraints, this concept will focus first and foremost on near term enhancements that can have a growing impact on long term results that give us a competitive edge over adversaries. Thus, the scope of this concept will describe in broad terms, ways and means to upgrade the Navy's workforce to more effectively meet strategic objectives. It seeks to build a fundamental understanding of the general characteristics of an innovative organization and how to capitalize on the creation of new ideas with specific application to the Navy.

4. The Military Problem

Mankind is in the midst of explosive leaps in the formulation of new ideas. The speed and reach of information systems have radically transformed the temporal and spatial dimensions of war. Enabled by the internet and social networks, previously unconnected ideas are being fused and transformed into reality at an astonishing rate. Despite this dynamic environment many areas within the Navy evince a certain lethargy of mind, cynicism, and risk aversive behavior. To exploit the era's rich atmosphere of innovation and prepare for challenges in future conflicts, Navy must energize and leverage the ingenuity of it's workforce. It must transform and refocus the perception of uniformed members from a response-oriented labor pool into a cadre of idea generating, dedicated professionals.

Confusion induced by information saturation is a daunting challenge. Yet despite the unique attributes of military problems in modern warfare, in many ways they are age old problems. As Carl Von Clausewitz noted long ago:

> *"War is the realm of uncertainty; three quarters of the factors on which action in war is based are wrapped in a fog of greater or lesser uncertainty. A sensitive and discriminating judgment is called for; a skilled intelligence to scent out the truth."*

Clausewitz further proclaims, *"During an operation decisions have usually to made at once: there may be not time to review the situation or even think it through."*[iv]

To cut through this enduring problem requires enhanced intellectual faculties. Clausewitz suggests that for a mind to emerge triumphant from the relentless struggle with the unforeseen requires *coup d'oeil*, determination, and presence of mind.[1] A linear-oriented, unimaginative mentality makes it especially difficult to anticipate and adjust to environmental changes. Bound by this state of mind, significant deviations

1 Clausewitz defines *coup* d'oeil as "the rapid discovery of a truth which to the ordinary mind is either not visible at all or only becomes so after long examination and reflection."

from normal conditions or “black swan” events can have a dangerous, cascading effect on decision making acuity.[2] Hence, Navy must break free from over-reliance upon technical processes and structures and nurture the spark of genius in individuals so that they may rise above minimum acceptable standards and confront complexity with élan.

"One reason is that the problems themselves are so immense that their solution will require all of the organizations' competitive energies; another is that the face of the competitive "enemy" has changed: It is the problem itself, rather than, in the first instance, another company or industry."- Robert Merton

To tackle this problem its important to acknowledge the intransigent nature of the problem. Even when circumstances change systems tend to remain. Mankind is more inclined to create new systems than change or eliminating existing ones. Sociologist Robert K. Merton coined the term “goal displacement” to describe what happens when complying with bureaucratic processes becomes the objective rather than big-picture organizational goals. Slavish compliance to rules and procedures soon stifle innovation and free spirits and open the door for cynicism. The only way to break free from a descent into lethargy is through the application of decisive leadership.[v]

In this light, this concept establishes lanes, guideposts, and propellants that will set in motion the conditions for a new Navy culture. Markers and shoals that lay ahead include:

- Focus on the purpose for which a system was created over the processes and procedures of the system.
- Simple cause-and-effect relationships are insufficient to understand or explain a complex social system. Patterns over time and feedback loops are a better way to think about the dynamics of complex systems.
- Think in terms of synthesis over analysis; the whole over the parts.
- Busyness and excessive focus on short term gains interferes with our ability to use a systems approach.[vi]

The U.S. military confronted a similar challenge in the early 1800s when it became entrapped in a culture of technical learning at the expense of other military characteristics. Samuel Huntington describes the effects of technicism: “The Army officer was frequently more engineering-minded than military-minded, and the naval officer more seamanship-minded than naval-minded.”[vii] In the words of Williamson Murray what makes “techno-craze so dangerous is that it flies in the face of 2,500 years of history, not to mention modern science. Friction, ambiguity, chance, and uncertainty

2 A “black swan” is an event that is unexpected, has an extreme impact, yet seems predictable by explanations after the fact.

are not merely manifestations of inadequate communications and technology that U.S. military organizations in the next century may overcome, but rather manifestations of the fundamental nature of the world, where if something can go wrong, it will. Another apparent weakness in the current military cultural climate—and one that certainly did not obtain in the interwar period—is the decline of professional military education."[viii]

To pursue a more innovative culture it is necessary to understand the characteristics of innovation and what fuels it. The ultimate example of innovativeness is the evolution of life. Where, as Charles Darwin theorized, the natural selection of species is due to continual exploration of adjacent possibilities. This then helps understand what environments are most conducive to innovation. Environments that expose a wide variety of pre-existing spare parts - mechanical or conceptual - and encourage the recombination of spare parts in new ways. The most fertile zone of innovation is the seam between order and chaos; where allowance is granted for meandering and tinkering. Furthermore, after the right conditions are in place a system is needed that captures hunches, but doesn't bin them into categories which can create barriers between disparate ideas and allows time to nurture and shake out hunches.[ix]

New ideas cannot be forced, but can be induced and caught by a prepared mind. Serendipity thrives on random collisions, but must be anchored on a preconceived inadequacy. Exposure to broad unrelated subjects, such as reading a variety of books simultaneously can generate new ideas. The recombination of previous ideas in light of a new challenge can cause innovative connections. The movement of an idea from one context to another allows for the tools of one discipline to solve the problems of another discipline. "The secret to organizational inspiration is to build information networks that allow hunches to persist and disperse and recombine."[x]

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. World War II unleashed 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, *"Error is needed to set off the truth, much as a dark background is required for exhibiting the brightness of a picture."*[xi] Hence, errors or mistakes tend to promote the pursuit of alternative paths that lead beyond comfortable assumptions and force exploration.

5. Central Idea

To energize a spirit of creativity and innovation the Navy needs top-down advocacy that sets expectations and unfolds new charts for future Sea Warriors. Viewed as one of the Nation's most formidable "weapons", the enterprising nature and resourcefulness of the American people must be sharpened and fully exploited in the information era. This concept aims to establish a culture of innovative professionals, an environment conducive to the creation of agile leaders who can anticipate and thrive in chaotic conditions. This is to be accomplished by encouraging a culture of pragmatic innovation

that leverages the American spirit of ingenuity and forges it into a sharp-edged sword that can be wielded to maintain security or win battles. The concept proposes that Navy must reshape itself into a continuous learning organization. It provides structural and procedural reforms to facilitate the growth of those human qualities vital for success in the information age. It also proposes ways to incentivize and reward exceptional innovative performance. This reformation also addresses ways to break free from the constraints of the current culture. It recommends ways to stimulate and support rigorous debate, scorn mediocrity, and marginalize risk-averse behavior. Most significantly, it breaks the paradigm of innovation as an institutional process, and instead characterizes it as an implied task of leadership.

In the volatile and ambiguous environment we are likely to face for the foreseeable future, the preeminent advantage that should be pursued is to be superior in the art of learning and adaptation. A culture of innovation is typified by an organizational context within which every single person in the organization is invested in the organization's success and feels a responsibility to implement new and better ways to achieve organizational objectives. People are encouraged to try alternative paths, test ideas to the point of failure, and learn from the experience. Experimentation and prudent risk taking are admired and encouraged.[xii]

To succeed in future wars where information is exchanged around the globe virtually instantaneously Navy leaders will need rapid decision making capabilities. Speed of decision is essential to gaining and maintaining the initiative. Initiative enables the force that holds it to dictate the context of battle on terms it deems most favorable to itself and its ends. By generating a higher operational tempo through superior speed of decision, a smaller and quantitatively inferior force can wrest the initiative from an otherwise dominant adversary and dictate the terms of engagement. Speed in war is relative to that of the enemy, so to disrupt enemy cohesion a tempo is needed that is faster than the adversary can cope. Decentralized decision making at the tactical edge is inherently faster and more dexterous than that of remote centralized decision authorities, especially in geographically dispersed and complex environments.

The predominant enabling characteristic of decision making in the face of uncertainty is mental agility. Mental agility has two supporting attributes: the ability to learn rapidly and *coup d'oeil*. Agile leaders are "critical thinkers who examine problems carefully and make fresh connections with relative ease. A strategic military leader must therefore have the "mental and emotional capacity to cope with the stress and strain of war." Crucial decisions have to be made under "conditions of enormous stress, when noise, fatigue, lack of sleep, poor food, and grinding responsibility add their quotas to the ever-present threat of total annihilation." Leaders must be able to cope effectively with adversity and pressure, and retain concentration in the face of many potential

distractions. It is that calm courage in the midst of tumult, that serenity of soul in danger, which is the greatest gift of nature for command.[xiii]

To cultivate the benefits of innovative leaders in the art of war requires a compatible command and control process. A command and control method that has proven to be effective for rapid decision making is mission command. Mission command is decentralized decision makers acting in accord with commander intent. Marine Corps Doctrinal Publication 6 summarizes:

> *Mission command and control offers the flexibility to deal with rapidly changing situations and to exploit fleeting windows of opportunity. It provides for the degree of cooperation necessary to achieve harmony of effort yet gives commanders at all levels the latitude to act with initiative and boldness.*[xiv]

Through the exercise of mission command, commanders give subordinates wide latitude to accomplish missions, enabling them to creatively adapt capabilities and talents to meet the task. Within this construct subordinates are expected to exercise dutiful initiative and tailor the actions of their unit to conform with and assist in achieving the senior's wider purpose.[xv]

The **desired end state** of this concept is a professional force honed and forged in the art of war; a human-centric force capable of rapidly adjusting to meet future challenges and continuously exploring new ways to gain a decisive edge over potential adversaries. To do this the Navy must educate, better yet, arm its leaders with intellectual methods to deal with new realities, and compel them to breakout from their acclimatized low-risk comfort zones.

6. Supporting Ideas

Leadership is the key to implementing cultural change. The Navy defines leadership as "the art of influencing people to progress towards the accomplishment of a specific goal." [3] Leadership is the ability to move an individual or group toward an objective. With its unique role in armed conflict, military organizational leadership can be divided into two categories, warfighting and non-warfighting. In the context of warfighting, the ability to inspire and guide individuals is a critical leadership skill. In the context of a large non-warfighting organization leaders are often characterized by how effectively they interact with bureaucracies and other organizations. Common to all types of leadership is the responsibility for decision making. Decision making founded on knowledge is optimum, yet in chaotic environments experience-based intuition has an important role. To alter

3 The Navy Leadership Competency Model consists of five core competencies: Accomplishing Mission, Leading People, Leading Change, Working with People, and Resource Stewardship.

the culture will require enhanced leadership competencies at all levels. Senior leaders must set expectations and empower subordinates to promote conditions favorable for cultural change to take root.

Navy bureaucracy is entangled in a fastidious pursuit of solutions to an expansive list of problems. Sociologist Robert Merton asserts that all organizations are governed by "the iron law."[4] That is, they are susceptible to the natural migration toward rule by oligarchy. It may be time to step back and see the panorama of challenges as an opportunity to enlist the spirit of American ingenuity to gain advantages on a grander scale. Merton goes on to smartly capture the role of leadership in a complex organizational landscape:

> *"[L]eadership is not so much an attribute of individuals as it is a social transaction between leader and led… Leaders assist their associates in achieving personal goal by contributing to organizational goals. In exchange they receive the basic coin of effective leadership: trust, confidence, and respect." "[W]hat instills confidence between superior and subordinate is joint commitment: commitment to one another and to agreed-upon organizational goals."*[xvi]

"By training, discipline and consideration of the men's welfare, the commander obtains fighting strength – a strength so great that it will take its toll against an opposing force superior in numbers or equipment." – War Instructions, CINCUSFLEET 1944

Realizing the desired end state will take years of consistent influence and commitment. Thus a campaign is required to guide and focus activities and to sustain efforts that lead to an environment of innovation across the Navy. It will include a series of events with realistic objectives and measures of effect that enable senior leadership to track progress and implement adjustments. Conducted to facilitate the free exchange ideas among experts from communities within and beyond the Navy, the campaign will stimulate and align innovation to improve mission effectiveness. In addition to forums, the plan will use new ways to facilitate collaboration through social media virtual networks. Finally, the plan will coordinate a strategic communication plan that broadly exposes current events and an awareness of roles and expertise resident in organizations across the Navy.

Methods for harvesting and harnessing good ideas must be available and visible to innovators and their organizations. Submitting new ideas for evaluation and transforming them into real capabilities must be simple and swift. It should include ways to develop ideas into concepts through collaboration among people with diverse perspectives and skills. Methods for vetting innovative solutions should include venues

4 The iron law was introduced by Robert Michels in 1915

that expose the idea to subject matter experts, and practitioners who can test a theory through workshops, wargames, laboratory experiments, prototyping, and testing in the Fleet to determine its validity.

Determinations must be made on the appropriate curricula throughout the Navy education continuum to ensure innovation is understood and effective techniques are taught to channel it. This should include enlisted technical training, leadership training, the Naval Academy, ROTC, officer entry level education and throughout their career progression, Naval War College, Naval Postgraduate School, and others.

Industrial age culture continues to permeate Navy training and education. Locked into a self-perpetuating cycle Navy is remiss to develop adaptive leaders and institutions. Change must begin with the application of a new leader development model that produces rugged adaptive thinkers. This will require a range of continuous education that prepares leaders to embrace change and shape the future force, namely:

- Strategic leaders must change counterproductive long-established beliefs including regulations and policies based on out-of-date assumptions.
- Leaders must drive and sustain a cultural evolution through effective education and training of the next generation of leaders in a system flexible enough to evolve with changes in, and lessons from, war, society and technology.
- Senior leaders must nurture and protect younger leaders as they explore and put into practice new ways and means of operating.[xvii]

An integral component of any culture is its promotion system. The current Navy career system is skewed in favor of conformists and against innovators. It rewards short term success, is intolerant of mistakes, and lacks advancement paths for bold thinkers. Any attempt to create a more innovative workforce must include modifications to career metrics and milestones - such as fitness reports and selection boards - so that the Navy of the future is headed by leaders that have been promoted, in part, due to their agile-minded, innovative qualities.

7. Conclusion and Way Ahead

In order for Navy to become a “learning organization” where leaders practice innovation it will have to change its culture, particularly its leader development paradigm. A concept, fuelled by a robust strategic communication plan and progressive actions, is needed to clarify the way forward for leveraging the intellectual capital of Navy personnel. It should seek to:

- Elevate initiative and innovation as a core leadership attribute
- Deeply ingrain the Navy ethos and an indomitable spirit in all members

- Promote mental agility and develop rapid decision making skills

As Navy lead for innovation, concepts, and doctrine NWDC is well positioned to spark the implementation of cultural improvements by ensuring concepts and doctrine include language to guide the change. Moreover, NWDC can spearhead a revision of the concept generation concept development process to include a flag officer general board that provides advocacy and aligns initiatives that set the conditions for innovation. NWDC should press ahead with plans for an innovation campaign that will link and build upon related activities. It will include a series of forums to pull together experts within and without the naval community to exchange ideas, and describe and prioritize desired capabilities. Forums in 2012 that will be led or supported by NWDC include:

- March: Maritime Innovation Symposium, Norfolk
- May: Joint Coalition Warfighter Conference, Virginia Beach
- August: Maritime Industry Day, Norfolk

In addition to Navy forums, NWDC should participate in other Service, Joint, and Coalition innovation events, such as:

- Academia workshops (NPS, NWC, NDU, JFSC, etc)
- Army TRADOC Unified Quest campaign
- US Coast Guard Innovation summits
- US Marine Corps, MCCDC events
- NATO, Supreme Allied Command Transformation concept & experiment events
- Joint Staff, JCW CD&E events
- NASA Research Centers, and other Government Departments and Agencies

This white paper outlines challenges that summon broad organizational changes. It serves as a clarion to raise awareness and rally support to address challenges holistically. The follow-on concept will provide detailed analyses of problems and propose solutions across the DOTMLPF spectrum to achieve the desired end state.

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