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2023-09

September 2023 WIC Workshop Quick Look Report

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WARFARE INNOVATION CONTINUUM WORKSHOP

INTEGRATED NAVAL CAMPAIGNING

18-21 SEPTEMBER 2023

Workshop Quick Look



This rapid concept generation workshop was held 18-21 September 2023 and included 108 active participants, with just over 80 on the NPS campus in Monterey and the rest on the NPS “Virtual Campus” via ZoomGov.

2023 Design Challenge

How might the confluence of new technologies provide opportunities for new operational concepts in executing integrated naval campaigning across the full spectrum of conflict?

WIC 2023 Scenario: World War in the 21st Century

Event Description

Concept generation teams composed of NPS students and faculty, government scientists, and industry partners with diverse perspectives addressed amphibious, gray zone, and coalition operations; contested logistics; and future vertical take off and landing capabilities.

- Three U.S. only teams working on the NPS campus in Monterey in classified spaces on advanced mining, undersea operations, and long-range fires.
- Four Discovery Panels included speakers from the operating forces, NPS, Naval warfare centers, and industry – many of them recognized leaders in their fields.
- Equal in significance to the concept outcomes was the opportunity to build and grow a diverse and rich network of NPS students and faculty, fleet and fleet marine force warfighters, warfare center engineers, and industry partners.

Participants

This workshop engaged 108 active participants from NPS, industry, academia, Naval warfare centers, warfighting development centers, the Fleet, and systems commands in addition to 73 registered as observers. International participants from Australia, Taiwan, Brazil, Indonesia, Turkey, South Korea, Singapore, India, and Columbia ensured a global perspective.



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Selected Concepts



Eight **Concept Generation Teams** were facilitated through a three and a half-day rapid concept generation process and produced the following concepts in nine and a half hours:

TEAM	CONCEPT(S)	DESCRIPTION
Amphib Ops	HiDRA & UxVs	1) Highly distributable rapid assault (HiDRA) family of ship-to-shore connectors supporting transport and landing force defense; and 2) a network of autonomous surface, subsurface, and aerial vehicles (UxVs) to support amphibious operations in the year 2040
Coalition Ops	ACTOR	Advanced coalition training operations readiness (ACTOR)
Gray Zone Ops	Coordinated Influence	A coordinated and enduring influence campaign encompassing whole of government engagements with partners and allies
Contested Logistics	Data Advantage	Joint logistics data standards enable evolution of logistics necessary to fight a future integrated naval campaign across the spectrum of conflict
Future VTOL	Future VTOL+	A defined set of future VTOL missions and challenges, and human-machine teaming concepts and capabilities
Advanced Mining	RADE, BRAIN, Uncle REMUS, & CERBERUS	1) Rapid air-deployed effector (RADE); 2) buoy remote arming and intel network (BRAIN); 3) Uncrewed landing effector REMUS (UncLE REMUS); and 4) clandestine extended range balloon, effectors, and reconnaissance undersea submersible (CERBERUS)
Undersea Ops	MOCFFAP & DLCO	1) Modification and repurpose of civilian craft to help shape the surface and undersea theater; and 2) concept to deter, lure, and create opportunity
Long Range Fires	Concept Auditing	Evaluation of five external stakeholder concepts for operational and programmatic feasibility and risk

KEY TAKEAWAYS:

- 1) **Coalitions** – integrated, not just coordinated, coalition operations are essential for future success. Relationships with allies and partners must be developed today to operate successfully together in the future
- 2) **Data is Key** – data standardization is critical to realize the full potential of AI/ML supported future capabilities
- 3) **Human-Machine Teams** – clever human-machine teaming will be key to future operations.



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Next Steps

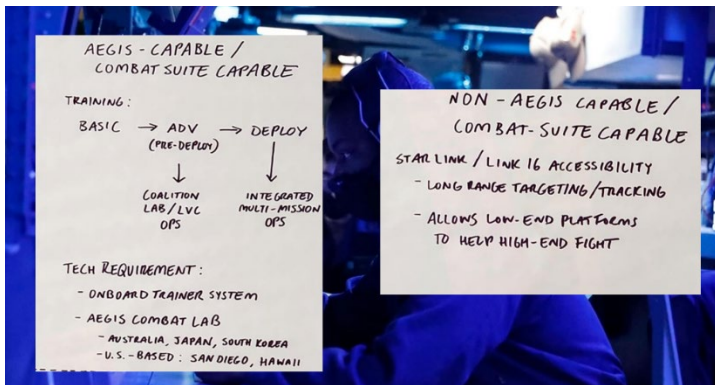
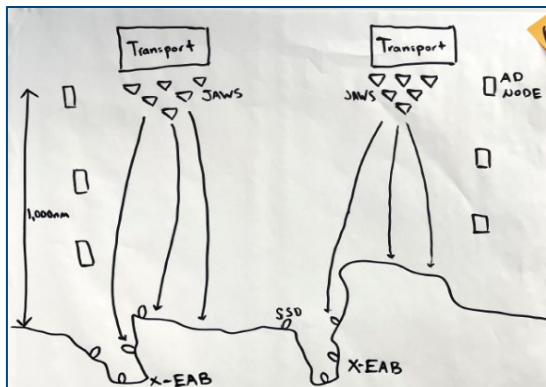
The immediate next step will be to synthesize all the concepts provided by the teams into a final report for distribution to our own researchers and NWSI stakeholders.

- The 2023 WIC Workshop results will inform and influence NPS capstone classes, research topics, experimentation, the NPS Systems Engineering and Analysis project, wargames, prototyping and these over the remaining months of the Warfare Innovation Continuum (WIC).
- We hope these presentations and the conversations they inspired will carry on well after the workshop experience – both at NPS and participants' organizations!



A full final report will be available by November 2023

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The concepts generated during this WIC Workshop will feed into the Naval Innovation Exchange (NIX) teams, Innovation Capstone Projects (ICP), and the Naval Innovation Center (NIC) at NPS.

- **Naval Innovation Exchange (NIX)** is multidisciplinary teams of NPS students and faculty focused on developing prototype research solutions
- **Innovation Capstone Projects (ICP)** led by NPS students will develop acquisition strategies and transition plans for Program Executive Offices to adopt.
- **Naval Innovation Center (NIC) at NPS** is the Secretary of the Navy's initiative to leverage the power of American innovation for national security.

All efforts will inform future force design efforts.

NAVAL POSTGRADUATE SCHOOL

IMMEDIATE IMPACT | FUTURE ADVANTAGE | ENDURING LEADERSHIP

Innovation Concept

Naval Innovation Center @ NPS

Curate

Ideate

Prototype

Experiment

Transition

Warfare Innovation Continuum

A campaign of analysis focused on an overarching warfighting challenge. Design teams develop minimum viable solutions.

Naval Innovation Exchange Teams

Starting student-faculty-industry teams refine minimum viable solutions, explore mature technologies and warfighting application to accelerate adoption Naval customers.

Field Experimentation (JIFX)

Identifies, influences, and accelerates early-stage technology development to enable rapid adaptation and adoption.

Innovation Capstone Projects

Integrates technical, acquisition, and operations to accelerate capability transition to Program Executive Offices.

With NIC

Key Operational Problem

Warfighting Solution

The NIC@NPS is focused on institutionally-led cross-disciplinary project teams with deep NR&DE and industry involvement throughout collaboration cycle that leverages in resident student experience, enhances the learning outcomes, and strengthens the work across the NR&DE by developing concepts and solutions that are fully informed.

RESPONSIVE | INTERDISCIPLINARY | APPLIED | INNOVATIVE | CLASSIFIED | SECURE

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Schedule



MON – 18 September

MAIN ROOM GL 102 and ZoomGov

0800	Welcome	VADM Ann Rondeau USN (ret), NPS President
0815	Warfare Innovation Continuum & Scenario	CAPT Jeff Kline USN (ret), NPS NWSI WIC Director
0845	Process & Resource Review	Ms. Lyla Englehorn, NPS NWSI Concepts Lead

0900	Discovery Panel I	Integrated Naval Campaigning
	Contested Logistics	RDML Kristin Acquavella USN, Director Logistics Fleet Supply & Ordnance N4 US Pacific Fleet
	Coalition Ops	RDML Michael Baker USN, Defense Attaché – India
	Maritime Gray Zone & Hybrid Warfare	CAPT Brent Sadler USN (ret), The Heritage Foundation
	Undersea Ops	RDML Richard Seif USN, Commander Submarine Force US Pacific Fleet
	MODERATOR	VADM Phil Sawyer USN (ret), NPS USW Chair

1030 **BREAK**

1045	Discovery Panel II	Naval Innovation Exchanges
	Intelligent Autonomous Systems	Dr. Sean Kragelund, NPS Mechanical & Aerospace Engineering
	Artificial Intelligence	Dr. Mathias Kolsch, NPS Computer Science
	Additive Manufacturing	Dr. Emre Gunduz, NPS Computer Science
	Innovation Capstone Project	Prof. Ray Jones, NPS Chair Department of Defense Management
	MODERATOR	Ms. Kaitie Penry, NPS Office of Research & Innovation

1300	Discovery Panel III	21st Century Amphibious Operations
	Current State of Play for Marine Corps Amphibious Forces: Challenges, Opportunities, Observations	Col Paul Merida USMC, II Marine Expeditionary Force (MEF)
	Operational Problems Facing the Future Amphibious Force (2040 and Beyond)	LtCol Caleb Reed USMC, Marine Corps Warfighting Lab
	Proposed Solution for Future Amphibious Forces	Mr. Matt Van Echo, Marine Corps Warfighting Lab
	MODERATOR	Col Jason Perry USMC, NPS Senior Marine

1430	Tasking	CAPT Jeff Kline USN (ret), NPS NWSI WIC Director
1445	Initial Team Meetings	BREAKOUT ROOMS
1600	Networking Social	Glasgow Plaza

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TUES – 19 September

MAIN ROOM GL 102 and ZoomGov

0800 Welcome – *NPS Field Experimentation* *Mr. Mara Orescanin, CRUSER Director & Dr. Mike Richardson, JIFX Director*

0830 **Perspectives on Integrated Naval Campaigning** **CAPT William Glenney USN (ret) – Principal Sr Military Analyst, Sonalysts Inc.**

0930 **BREAK**

0945 **Discovery Panel IV Emerging Tech for the Warfighter**

Expeditionary Col Jason Perry USMC, NPS Expeditionary Chair

Undersea VADM (ret) Phil Sawyer USN, NPS USW Chair

Surface CAPT Jeremy Gray, NPS Surface Warfare Chair

Hypersonics & Missile Defense CAPT (ret) John Hammerer, NPS IAMD Chair

MODERATOR Dr. Sheila Vaidya, NWSI Emerging Tech Branch Lead

1115 **BREAK**

1130 Discovery – **Data Gathering Mentor Interviews** **BREAKOUT ROOMS**

1300 Discovery & Framing – **Data Synthesis** **BREAKOUT ROOMS**
Special Project Work - Mentors

1330 Concept Generation – **Divergent** **BREAKOUT ROOMS**

1600 **BREAK for the day**



WED – 20 September

MAIN ROOM GL 102 and ZoomGov

0800 Naval Warfare Studies Institute *Col (ret) Randy Pugh USMC, NPS NWSI Director*

0830 **Innovation – An Australian Perspective** **Mr. Jamie Watson, BMNT Australia**

0930 **BREAK**

1000 Concept Generation – **Convergent** **BREAKOUT ROOMS**
Special Project Work - Mentors

1100 Prototype & Test – **Mentor Rotation** **BREAKOUT ROOMS**

1300 Concept Development – **Prototype** **BREAKOUT ROOMS**

1600 **BREAK for the day**



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THUR – 21 September

0800 Photos & Evaluation

0830 WIC Overview

0845 Final Briefs - **Test**



1200 **BREAK**

1300 Final Briefs (*classified*)

MAIN ROOM GL 102 and ZoomGov

CAPT Jeff Kline USN (ret), NPS NWSI WIC Director

Presentations by teams working unclassified

- Amphibious Operations
- Coalition Operations
- Contested Logistics
- Future VTOL
- Gray Zone Operations

STBL B06/07 & SCIF by invitation only – no remote

- Advanced Mining
- Undersea Operations
- Long Range Fires

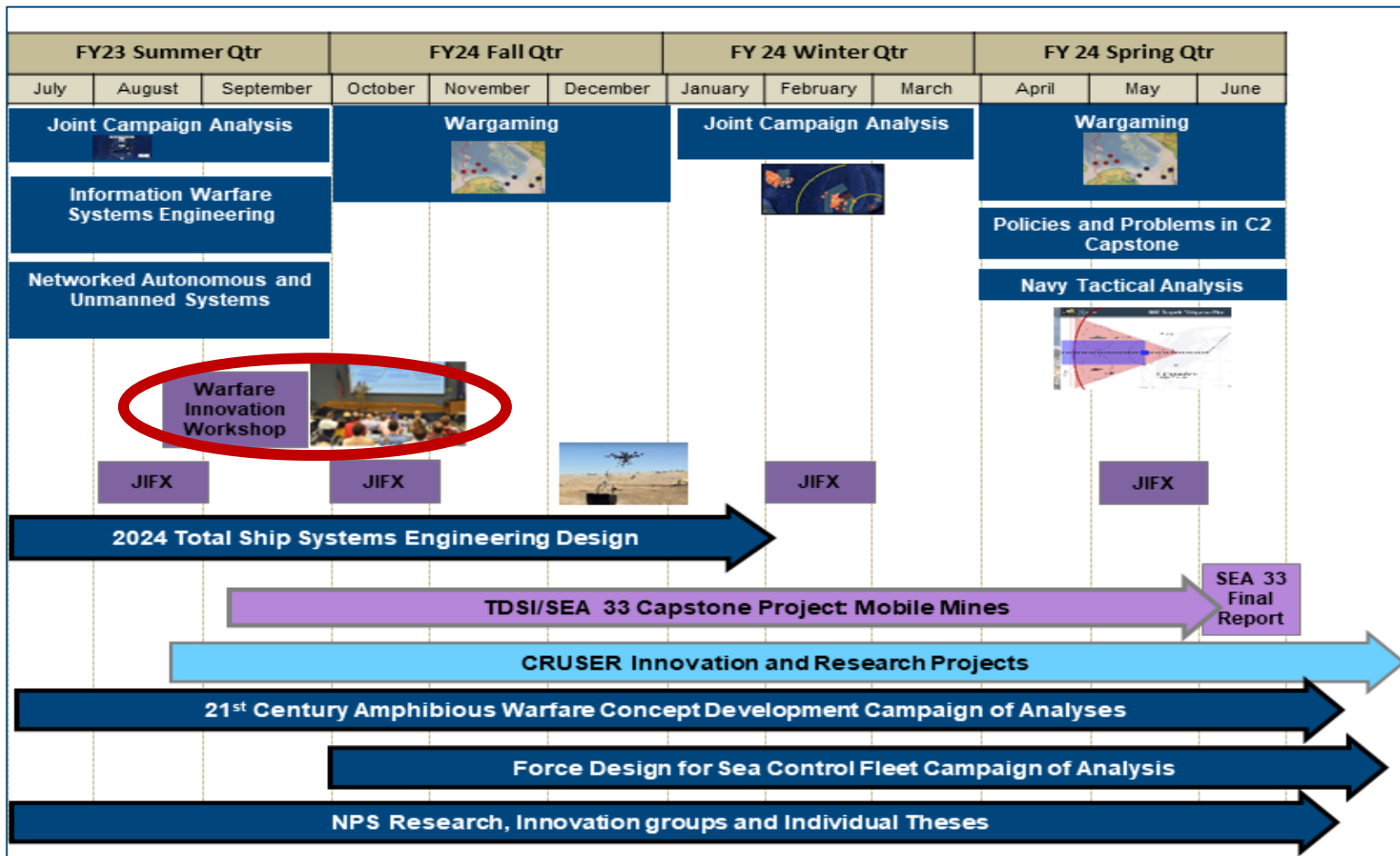


See you next year!

WARFARE INNOVATION CONTINUUM WORKSHOP

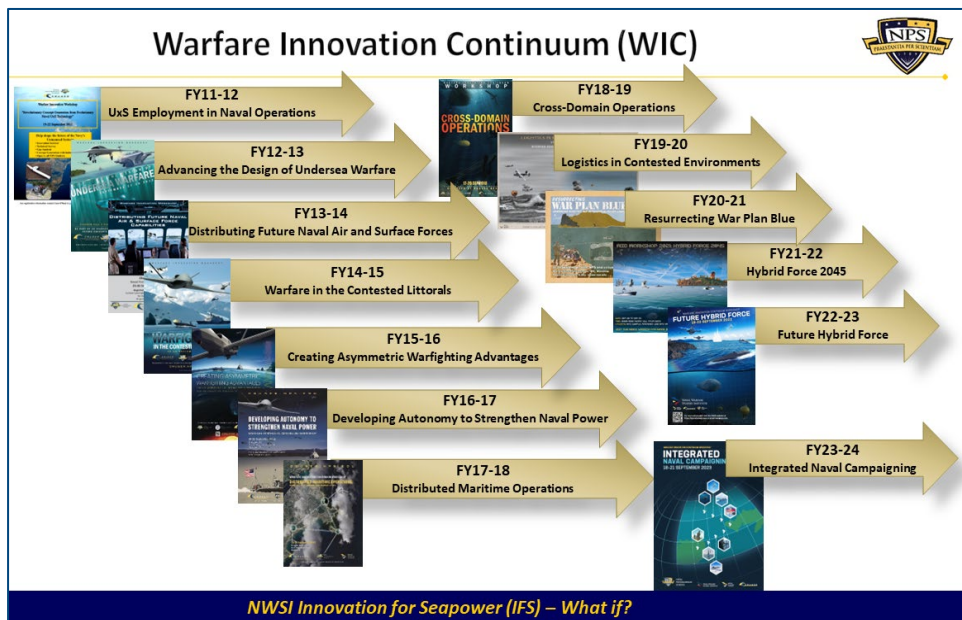
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The year-long NPS Warfare Innovation Continuum (WIC) leverages classroom work in wargaming, modeling, simulation, red teaming, capstone projects and NPS research to advance naval concepts, assess new technologies, and develop tactics while enhancing NPS students' educational experience and sharpening their combat skills.

Join us!



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About Us

NPS provides a defense-focused graduate education, including classified studies and interdisciplinary research, to advance the operational effectiveness, technological leadership and warfighting advantage of the Naval service.



NAVAL
POSTGRADUATE
SCHOOL



NAVAL WARFARE
STUDIES INSTITUTE

NWSI accelerates & enhances warfare concept & capability development via interdisciplinary research & education.



W I C Warfare Innovation Continuum

An Interdisciplinary Exploration Into Future Conflict Solutions

WIC uses classroom projects, theses, and research to advance naval concepts, assess technologies and develop tactics while enhancing our students' educational, research, and combat skills.



CRUSER

Consortium for Robotics and Unmanned
Systems Education and Research

CRUSER aligns academic coursework, military research and institutional focus around robotics and unmanned systems through operational experimentation, educational ventures, technical symposia and concept-generation workshops.



OFFICE OF RESEARCH
& INNOVATION

OR&I enables excellence in defense-focused, basic and applied research and innovation, including classified and interdisciplinary research, ensuring future technological and operational advantage for the warfighter

The Naval Postgraduate School's annual Warfare Innovation Continuum (WIC) Workshop acts as an innovation engine, leveraging operationally-focused students and defense-oriented faculty at the Naval Postgraduate School (NPS) to address complex fleet issues – from technical to ethical issues and from concept-generation to experimentation. Small teams of early career professionals from the fleet, Navy labs, industry, and academia with diverse experience levels and perspectives spend three and a half days rapidly generating concepts of employment and evaluate risk within a future conflict scenario. Government, military, industry, and academic leaders vet these ideas before disseminating results back to Naval leadership.

WIC Workshops are coordinated by the NWSI Concepts Branch, which is responsible for warfighting concept generation and development activities across the named NWSI Research Group and Task Force topic areas, and across the NPS campus. This workshop was co-sponsored by CRUSER and supported by OR&I.