



**NAVAL RESEARCH PROGRAM**  
**NAVAL RESEARCH WORKING GROUP 19**  
**9-11 APRIL 2019**



**MY.NPS.EDU/NRP**



*“An **active academic research program** is vital to the quality of education provided to **students**, the attraction and retention of exceptional **faculty** members, and the provision of real-time, directly relevant deliverables to **government sponsors**.”*

- SECNAVINST 1524.2C

# NAVAL RESEARCH PROGRAM OFFICE

## Dean of Research

Dr. Jeffrey Paduan

## Military Associate

### Dean of Research

Col Todd Lyons, USMC

## Program Manager

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## Deputy Program Manager

LtCol David Forbell, USMC

## NRP National Capital Liaison

CAPT Bob Osterhoudt, USN (Ret.)

## Integration Lead

Ms. Lois Hazard

## Financial Management Analyst

Ms. Juli Alexander

## Operations Manager

Mrs. Cecelia Davis

## IT & Student

### Component Manager

Ms. Sadie Hastings

## PURPOSE

**Mission** - The Working Group Meeting is a forum for Research Topic Sponsors to communicate their research and analysis needs directly to NPS faculty and students. In-Progress Reviews (IPRs) are also conducted.

**Intent** - Provide a single, standard mechanism that allows the Navy and Marine Corps to interface and leverage a cost efficient organic research asset.

**End State** - A systematic, repeatable, and enduring partnership to support Navy and Marine Corps research objectives and make NPS research directly relevant to the Warfighter.

**Working Group Input** - Topic Sponsor and NPS faculty research needs.

### Working Group Output

- 🏆 Draft Initial Research Estimate Forms (IREFs)
- 🏆 Faculty and student relationships with Topic Sponsors
- 🏆 Partnerships for research work

## SESSION DESCRIPTIONS

**Topic Sponsor Sync Session:** The Naval Research Working Group 19 (NRWG) kicks off with the Topic Sponsor Sync Session. The Naval Research Program (NRP) staff will give an overview of the week's events to ensure that Topic Sponsors are prepared for a successful week.

**Breakout Sessions:** NPS faculty and students are invited to meet with Topic Sponsors during Breakout Sessions to discuss topics and begin scoping research. Breakout sessions provide settings where individual faculty or students can meet with Topic Sponsors to discuss topic requirements, begin writing IREFs, or stage IPRs of existing research. Session attendees are encouraged to sign up for a one-on-one session with the topic sponsors via the Whova App, email or a visit to their Research Tradeshow booth, to learn more about the problem, or even provide an initial solution if the researcher is already working on a similar problem. Topic Sponsors manage their own Breakout Session schedules.

**In-Progress Reviews (IPRs):** Faculty members and students currently conducting research for Topic Sponsors who are in attendance during NRWG 19 should coordinate IPRs in the McNitt Ballroom, laboratories and other relevant working spaces as they see fit.

**NPS Lab Tours:** Lab tours are opportunities for Topic Sponsors to gain a more in-depth understanding of the specific research capabilities at NPS. Lab tour attendance requires prior registration.

**Social and Research Poster Session:** Building on information gathered during the lab tours, the social and poster session is primarily an opportunity for our many Topic Sponsors to gain insight on the breadth and depth of the research taking place at NPS. Our world-class faculty study the cutting-edge developments of operational navies across the globe. Their research extends the reach of today's naval services, whether underwater, on the surface, in the air, or orbiting the earth. Come see their research projects, ask them to share their expertise, and enjoy refreshments generously provided by the NPS Foundation.

## SESSION DESCRIPTIONS

**Moderated Revolving Panels:** New this year are Moderated Panel Sessions for Topic Sponsors, faculty, and/or NPS students discuss key institutional priorities in the areas of Innovation, Human-Machine Teaming, Cyber, Artificial Intelligence, and Additive Manufacturing. Panel discussion will stimulate cross disciplinary interactions and collaboration within NPS and among Topic Sponsors.

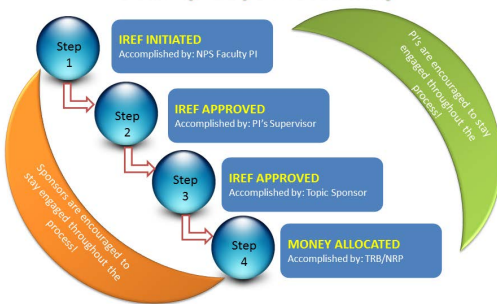
**Research Tradeshow:** During the main event Topic Sponsors will man tradeshow booths in the McNitt Ballroom to discuss research opportunities, the benefits to the Services, and expected research deliverables. Faculty and students are invited to meet with Topic Sponsors during the tradeshow to discuss topics and begin scoping research to form an Initial Research Estimate Form (IREF).

**Unmoderated Revolving Panels:** Concurrent with the Research Tradeshow, Topic Sponsors will brief their topics in a small audience format in the McNitt Ballroom during Revolving Panel Sessions. The intent is to provide opportunities for greater in-depth discussions of topic details.

**Topic Sponsor Outbriefs and Hotwash:** Topic Sponsors provide feedback and suggest improvements to the Dean of Research.

### SCOPE AN IREF TODAY!!

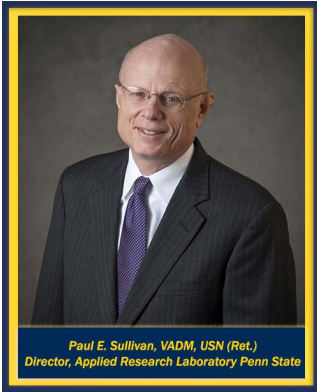
#### The Initial Research Estimate Form (IREF) Process Map



#### Important FY20 Dates:

- 🔔 **08 May:** Deadline for Faculty to Submit an IREF
- 🔔 **15 May:** Deadline for Dean/Supervisor to Approve/Disapprove IREFs
- 🔔 **22 May:** Deadline for Research Topic Sponsor to Approve/Disapprove IREFs

## KEYNOTE SPEAKER



Paul Sullivan is the Director of the Applied Research Laboratory, Pennsylvania State University (ARL Penn State).

As a DoD-designated, U.S. Navy UARC (University Affiliated Research Center), ARL Penn State maintains a long-term strategic relationship with the U.S. Navy and provides support for the other services.

Director Sullivan brings to ARL Penn State a long career with the U.S. Navy, having retired in the rank of Vice Admiral. Sullivan served on USS Detector (MSO 429) where he earned his Surface Warfare Qualification. After transferring to the Engineering Duty Officer Community, he served at the Norfolk Naval Shipyard, Naval Sea Systems Command, and Supervisor of Shipbuilding in Groton, Conn. and on the staff of the Assistant Secretary of the Navy (Research, Development and Acquisition). During his engineering duty assignments, Adm. Sullivan earned his Submarine Engineering Duty Officer Qualification. Sullivan holds dual degrees of Master of Science (Naval Architecture and Marine Engineering) and Ocean Engineer from Massachusetts Institute of Technology. Sullivan served as program manager of the Seawolf-class Submarine Program (PMS 350) and the Virginia-class Submarine Program (PMS 450). Upon selection to flag rank, Sullivan served as Deputy Commander for Ship Design Integration and Engineering, Naval Sea Systems Command from 2001 to 2005.

Sullivan became the 41st Commander, Naval Sea Systems Command in July 2005. After leaving the Navy, Sullivan joined USEC Inc.(now Centrus Energy), as Vice President, American Centrifuge Project, and Chief Engineer at USEC. During his tenure at USEC, he successfully led a Joint DOE/USEC project to build and operate a test demonstration cascade of 120 centrifuge machines.

Sullivan was appointed Director of Research Related Units and Director of the Pennsylvania State University Applied Research Laboratory in 2014. He holds the University rank of Senior Scientist.

## TOPIC SPONSORS ORGANIZATIONS

There are over 40 Department of the Navy Topic Sponsor Organizations, representing over 270 topics at NRWG 19.

A comprehensive list of all available research topics and specific Topic Sponsor contact information can be found on the NRP Topic Portal at: <https://my.nps.edu/nrp>.

### NAVY

ASN - Research, Development, and Acquisition (ASN RDA)  
Commander, Destroyer Squadron 1 (COMDESRON ONE)  
Commander, Naval Surface Force (CNSF)  
Commander, Operational Test and Evaluation Force (COMOPTEVFOR)  
Commander, Submarine Force, U.S. Pacific Fleet (COMSUBPAC)  
DASN - Research, Development, & Acquisition (DASN RDA)  
N2/N6 - Information Warfare  
N4 - Material Readiness & Logistics  
N7 - Warfighting Development  
N9-Warfare Systems  
Naval Air Systems Command (NAVAIR)  
Naval Facilities Engineering Command (NAVFAC)  
Naval Information Warfare Develop Center (NIWDC)  
Naval Satellite Operations Center (NAVSOC)  
Naval Sea Systems Command (NAVSEA)  
Naval Special Warfare Command (NAVSPECWARCOM)  
Naval Surface Warfare Center (NSWC), Division Carderock  
Naval Surface Warfare Center (NSWC), Division Crane  
Naval Undersea Warfare Center (NUWC), Division Keyport  
Navy Analytics Office (NAO)  
Navy Warfare Development Command (NWDC)  
Office of Naval Research (ONR)  
Space and Naval Warfare Systems Command (SPAWAR)  
Strategic Systems Programs (SSP)  
U.S. Fleet Forces Command (USFF)  
U.S. Naval Observatory (USNO)

## TOPIC SPONSORS ORGANIZATIONS

### MARINES

HQMC Deputy Commandant for Information

HQMC Aviation (HQMC AVN)

HQMC Force Preservation Directorate (G-10)

HQMC Installations and Logistics (I&L)

HQMC Manpower and Reserve Affairs (M&RA)

HQMC P&R Technology Services Organization

HQMC Programs & Resources (P&R)

II Marine Expeditionary Forces (II MEF)

Marine Corps College of Distance Education & Training (CDET)

Marine Corps Combat Development Command (MCCDC)

Marine Corps Information Operations Center (MCIOC)

Marine Corps Logistic Command (LOGCOM)

Marine Corps Logistics Operations Group (MCLOG)

Marine Corps Modeling & Simulation Management Office (MCMSMO)

Marine Corps Modeling & Simulation Office (MCMSO)

Marine Corps Systems Command (MARCORSYSCOM)

Marine Corps Tactical Systems Support Activity (MCTSSA)

Marine Corps Warfighting Laboratory (MCWL)

### GUEST ORGANIZATIONS

Air Force Civil Engineering

Air Force Institute of Technology (AFIT)

National Counterintelligence and Security Center (NCSC)

National Security Agency (NSA)

Coast Guard Research and Development Center (CG RDC)



## AGENDA OVERVIEW

| NPS NAVAL RESEARCH PROGRAM - NAVAL RESEARCH WORKING GROUP 19 AGENDA OVERVIEW   |   |   |   |   |  |   |   |  |
|--|---|---|---|---|--|---|---|--|
|  | Mon, 8 Apr<br>Day 1   | Tue, 9 Apr<br>Day 2   | Wed, 10 Apr<br>Day 3  | Thurs, 11 Apr<br>Day 4  | Fri, 12 Apr<br>Day 5                       |   |   |  |
| 0700   | <p><i>Topic Sponsor<br/>Travel Day and<br/>Tradeshow Set<br/>Up Day</i></p> | <p><i>Topic Sponsor<br/>Sync Session<br/>(Herrmann Hall - EBC)</i></p>  | <p><i>Research Trade Show,<br/>Mod/Unmoderated<br/>Revolving Panels and<br/>Breakout Sessions<br/>(Herrmann Hall -<br/>McNitt Ballroom)</i></p> | <p><i>Lab Tours, Breakout<br/>Sessions and IPRs<br/>(Various Locations)</i></p> | <p><i>Topic Sponsor<br/>Travel Day</i></p> |   |   |  |
| 0730   |   |   |   |   |  |   |   |  |
| 0800   |   | <p><i>Lab Tours<br/>(Various Locations);<br/>Moderated Revolving<br/>Panels, Breakout<br/>Sessions and IPRs<br/>(Herrmann Hall -<br/>McNitt Ballroom)</i></p> | <p><i>Keynote Speaker<br/>(All hands in King Hall)</i></p>  | <p><i>Topic Sponsor<br/>Hotwash/Outbrief<br/>(Herrmann Hall - EBC)</i></p>      |  |   |   |  |
| 0830   |   |   |   |   |  |   |   |  |
| 0900   |   |   |   |   |  |   |   |  |
| 0930   |   |   |   |   |  |   |   |  |
| 1000   |   |   |   |   |  |   |   |  |
| 1030   |   |   |   |   |  |   |   |  |
| 1100   |   |   |   |   |  |   |   |  |
| 1130   |   |   |   |   |  |   |   |  |
| 1200   |   |   |   |   |  |   |   |  |
| 1230   |   |   |   |   |  |   |   |  |
| 1300   |   |   |   |   |  |   |   |  |
| 1330   |   |   |   |   |  |   |   |  |
| 1400   |   |   |   |   |  |   |   |  |
| 1430   |   |   |   |   |  |   |   |  |
| 1500   |   |   |   |   |  | <p><i>Poster Session &amp; Social<br/>(Herrmann Hall -<br/>McNitt Ballroom)</i></p> | <p><i>No-host Social<br/>(Herrmann Hall -<br/>Trident Room)</i></p> | <p><i>Topic Sponsor<br/>Travel Day</i></p> |
| 1530   |   |   |   |   |  |   |   |  |
| 1600   |   |   |   |   |  |   |   |  |
| 1630   |   |   |   |   |  |   |   |  |
| 1700   |   |   |   |   |  |   |   |  |
| 1730   |   |   |   |   |  |   |   |  |
| 1800   |   |   |   |   |  |   |   |  |
| 1830   |   |   |   |   |  |   |   |  |
| 1900   |   |   |   |   |  |   |   |  |
| 1930   |   |   |   |   |  |   |   |  |
| <p><b>Breakout Sessions and In-Progress Reviews (IPRs) scheduled as necessary between Topic Sponsors, faculty, and students</b></p> <p><b>Tradeshow booths will be available for Topic Sponsors beginning at 0900 on April 9</b></p> |   |   |   |   |  |   |   |  |

# SESSION SCHEDULE AT-A-GLANCE

| NPS NAVAL RESEARCH PROGRAM - NAVAL RESEARCH WORKING GROUP 19<br>Lab Tour and Moderated Revolving Panel Schedule-at-a-Glance  |  |   |  |
|--|--|---|--|
| TUESDAY 9, APRIL   |  | WEDNESDAY 10, APRIL   | THURSDAY 11, APRIL                                     |
| 0700   |  |   |  |
| 0730   |  |   |  |
| 0800   | Topic-Sponsor Sync Session (Herrmann Hall - EBC)                 | Revolving Panel Sessions (0800-1700) (Herrmann Hall - McMillitt Ballroom) |  |
| 0830   | Break  |   |  |
| 0900   | Offensive Cyber Operations (OCO) Lab [55]                        | Renewable Energy Lab [55]   | Engineering Enclave for Maritime Security (EEMS) [25]  |
| 0930   | Innovation [55] (McMillitt Ballroom - East)                      |   | Security Operations Center [25]                        |
| 1000   | Small Satellite Lab [25]   | Propulsion Lab [55]   | Advanced Warfighter Technologies [55]                  |
| 1030   | NPS Warfare Innovation Continuum [25]                            |   | NPS Warfare Innovation Continuum [25]                  |
| 1100   | Big Data Machine Learning and AI for Military Applications [55]  | Security Operations Center [25]   | MOVES Additive Manufacturing Lab [25]                  |
| 1130   | Center for Network Innovation and Experimentation (CENETIX) [55] | Coalition for Open-Source Defense Analysis (CODA) Lab [25]                | MOVES Simulation and Mixed Reality Brief [55]          |
| 1200   | Common Operational Research Environment (CORE) Lab [25]          | CAWR Lab Tour and Capability Brief [55]                                   |  |
| 1230   | Robo Dojo  | Human-Machine Teaming [55] (Herrmann Hall - EBC)                          | Break  |
| 1300   | Undersea Sensing Systems Lab [55]                                | NPS Religion Lab [55]   | Topic Sponsor Outbrief & Hotwash (Herrmann Hall - EBC) |
| 1330   | Cognitive Sensing, Radio, and Radar Lab [55]                     | MOVES Additive Manufacturing Lab [25]                                     |  |
| 1400   |  |   |  |
| 1430   |  |   |  |
| 1500   | Keynote Speakers (All hands in King Hall)                        |   |  |
| 1530   |  |   |  |
| 1600   |  |   |  |
| 1630   |  |   |  |
| 1700   |  |   |  |
| 1730   |  |   |  |
| 1800   |  |   |  |
| 1830   |  |   |  |
| 1900   |  |   |  |
| 1930   |  |   |  |
| Breakout Sessions and In-Progress Reviews (IPRS) scheduled as necessary between Topic Sponsors, faculty, and students<br>Trade-show booths will be available for Topic Sponsors beginning at 0900 on April 9 |  |   |  |

**BUILDING COLOR KEY:**

|                   |
|-------------------|
| Bullard Hall      |
| Glasgow Hall      |
| Glasgow Hall EAST |
| Golf Course Annex |
| Herrmann Hall     |
| Innovation Hall   |
| King Hall         |
| Recort Hall       |
| Spangier Hall     |
| Watkins Hall      |

**Lab Tour and Moderated Revolving Panel attendance requires prior registration with the exception of the RoboDojo. The RoboDojo has drop-in tours available anytime between 1200-1430.**

**For more information and to register visit: <https://my.nps.edu/nrp/nrwg-19>**  
 Note: Most sessions are 25 or 55 minutes in length. In order to sign-up for individual event sessions and to most effectively collaborate with other attendees, you must download the Whoova event app

## OFFICIAL EVENT APP - WHOVA

# WhoVA

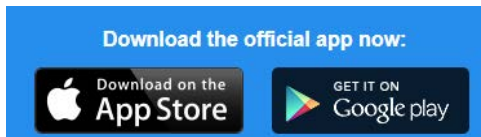
**NAVIGATE** the event agenda and logistics, even without Wi-Fi or data!

**NETWORK** effectively. Plan whom to meet by exploring attendee profiles and sending out messages.

**PARTICIPATE** in event activities through session likes, comments, ratings, live polling, tweeting, and more.

- 📱 View the event agenda
- 📱 Plan your schedule
- 📱 Sign up for available sessions
- 📱 Explore the professional profiles of event speakers and attendees
- 📱 Send in-app messages
- 📱 Exchange contact info
- 📱 Network and find attendees with common affiliations, educations, and shared networks
- 📱 Have GPS guidance, maps, and parking directions at your fingertips
- 📱 Receive updates such as last minute room changes from the organizers, and much more

Please sign up for the app with your official email when possible.  
Event invitation code: navqv



Mobile view ONLY, for Blackberry and Windows phones:  
[https://whova.com/webapp/e/naval\\_201904/](https://whova.com/webapp/e/naval_201904/)



