

**Academic Year 2019 - 2020**  
**Marine Corps University Research Topic Nominations**

*\*Note: If you select one of the following research topics, please contact the POC identified for research resources and to coordinate the submission of your research.*

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## Aviation Research

\*CLASSIFICATION\*: UNCLASSIFIED

\*RESEARCH TOPIC TITLE\*: Given an increased requirement when Guam is established, what is the right mix of airplanes to connect these four areas on a daily basis?

\*TOPIC DESCRIPTION\*: This topic examines the current array of civilian aircraft and their ability to connect installations in the Pacific Ocean.

\*DATE SUBMITTED\*: 20 May 2019

\*EXTENDED TOPIC DESCRIPTION\*: What mix of aircraft is correct for supporting operational support airlift (OSA) in the Pacific AOR? In CONUS FEDEX, UPS, the USPS, and myriad regional and legacy air carriers connect USMC operations on a continent characterized by land mass. Further, the US road network facilitates operational support of CONUS based MAGTFs. In the Pacific there is no FEDEX, no UPS, no USPS, and US air carriers work through proxies. OSA aircraft at Iwakuni, Futenma, and Hawaii connect this AOR. Other terrain of interest is Australia, Vietnam, Thailand, the Philippines, Alaska, and Wake Island.

\*DESIRED OBJECTIVES OF THE RESEARCH\*: Define 21st century battlespace; Determine if 21st century battlespace incorporates installations, bases, and stations; propose a C2 structure to include Installation GO HQs aligned under MEF HQs; identify strengths and weaknesses of such an arrangement. What C2 structure best supports OSA, the MAW, MEF, or Installations? A fundamental capability upon which this study should be built is the ability to move a squad sized element from Hawaii to Korea in two legs. Under what circumstances should General Officer headquarters be in locations without OSA?

\*REQUESTING/ SPONSORING ORGANIZATION\*: MCAS Futenma

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DESIRED RESEARCH COMPLETION DATE: June 2020

AVAILABLE FUNDING, IF ANY: None

\*CLASSIFICATION: SECRET

\*RESEARCH TOPIC TITLE: MCWL Innovative Employment of the F35B in Contested Environments

\*TOPIC DESCRIPTION: Explore F35B employment options in contested environments by extending on station times and determining pilot density ratio

\*DATE SUBMITTED: 20 May, 2019

\*EXTENDED TOPIC DESCRIPTION: Discuss with sponsor.

\*DESIRED OBJECTIVES OF THE RESEARCH: Deliverables include: Deliberate TTPs to extend on station times, and troop to task analysis for pilot use. Discuss with sponsor.

\*REQUESTING/SPONSORING ORGANIZATION: Marine Corps Warfighting Lab

\*POINT OF CONTACT: Maj Dave Lemke

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DESIRED RESEARCH COMPLETION DATE: June, '20

AVAILABLE FUNDING, IF ANY: N/A

COMMENTS: N/A

## Command and Control

\*CLASSIFICATION: UNCLASS

\*RESEARCH TOPIC TITLE: Criticality of Interdependence for Human Machine C2

\*TOPIC DESCRIPTION: Interdependence is a design approach focused on maximizing human and machine performance on teams. Command and control is crucial element of team operations. This research explores how interdependence assists in this team C2 through collaborative visualization and exploration using Live, Virtual, Constructive (LVC) information streams.

\*DATE SUBMITTED: 20 May, 2019

\*EXTENDED TOPIC DESCRIPTION: The crux of this research is centered upon the sensitivity between human and machine information exchange requirements. IERs, the frequency of IERs, the causal factors or the IERs, and prioritization of the IERs are paramount.

\*DESIRED OBJECTIVES OF THE RESEARCH: Operational Marine Corps challenges for Human-Machine Teaming require an “all hands on deck” capabilities for readiness review, concept evaluation, consideration of innovative alternatives and comprehensible agility with Navy partners, looking together at realistic scenarios in real-world locations.

\*REQUESTING/SPONSORING ORGANIZATION: Marine Corps Warfighting Lab

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DESIRED RESEARCH COMPLETION DATE: June, '20

AVAILABLE FUNDING, IF ANY: N/A

COMMENTS: N/A

\*CLASSIFICATION: UNCLASSIFIED

\*RESEARCH TOPIC TITLE: Reinvalidate FMF and Navy – Marine Corps  
Component Command Relationship

\*TOPIC DESCRIPTION: In 1933, the establishment of FMF under the operational control of the fleet commanders generated great unity of effort, operational flexibility, and the integrated application of Navy and Marine capabilities throughout the maritime domain. The 1986 Goldwater-Nichols Act, however, removed the preponderance of the FMF from fleet operational control and disrupted the long-standing Navy-Marine Corps relationship by creating separate Navy and Marine Corps components within joint forces. Furthermore, Navy and Marine Corps officers developed a tendency to view their operational responsibilities as separate and distinct, rather than inextricably intertwined. With the rise of increasing land-based threats to the global commons, there is a need to re-establish a more integrated approach to operations in the maritime domain that can give the joint force commanders more cohesive naval solutions. Refining the component relationship, within the framework of Goldwater-Nichols, is a more complicated issue that must be explored in partnership with the Navy to develop courses of action and assess their pros and cons.

\*DATE SUBMITTED: 190524

\*EXTENDED TOPIC DESCRIPTION: In light of the NDS, DPG, the Navy Strategy, DMO, LOCE, and EABO, how should the Marine Corps be reshaping its input to the Navy with respect to the design and number of amphibious ships, maritime prepositioning ships, connectors, and craft?

\*DESIRED OBJECTIVES OF THE RESEARCH: Recommended options to reinvalidate the FMF, and to refine the Navy-Marine Corps component command relationship in order to better provide the JFCs integrated naval force options in support of the NDS, DPG, the Navy Strategy, DMO, LOCE, and EABO.

\*REQUESTING/SPONSORING ORGANIZATION: Marine Corps Warfighting  
Laboratory (MCWL)

\*POINT OF CONTACT: John Berry, Dir. Concepts, Concepts and Plans (CAP), MCWL

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AVAILABLE FUNDING, IF ANY: NONE

COMMENTS: This topic would be ideal for a collaborative effort between Navy and Marine officer students.

\*CLASSIFICATION: UNCLASS

\*RESEARCH TOPIC TITLE: Understanding Context Sensitive Situation Awareness Related C2 Issues in Human Machine Teams

\*TOPIC DESCRIPTION: Performance of a HMT depends on the interdependency between humans and machines. A 2019 report from the Center for Naval Analysis indicates that HMTs can outperform human or machine only teams. However, the same study specifies that depending on the decision step of the OODA loop, the outperforming member type varies.

\*DATE SUBMITTED: 20 May 2019

\*EXTENDED TOPIC DESCRIPTION: For example, machines dominate observe and act steps, and humans dominate the orient step. In the decision step, the dominating member type varies depending on risk tolerance as constrained by the perplexities of the environment. Col. Boyd contended that the orient step is the most critical step and literature indicates that it is part of the situation awareness (SA). In time compressed environments, the reliance on only the machine to process more information with the intent to improve SA may suppress contextual awareness that is pertaining to the operational environment. Thus, the interdependence between machine and human teammates becomes critical to identify and mitigate new C2 issues that can emerge in situations in which orient (or SA) constrains the team performance. For example, a captain has a machine teammate which starts to dominate his/her decision space. Although the information processing capability of the captain increases, the contextual SA can be suppressed. Hence, the decision comfort level of the captain may change, and the C2 related repercussion of this situation can affect shared awareness, mutual trust and prudent risk which are critical to C2.Research

\*DESIRED OBJECTIVES OF THE RESEARCH: Research questions: What are the new C2 issues that can arise in HMTs while the dominating decision maker varies? What are the new SA requirements to describe shared SA in HMTs? Research objective: To identify and mitigate the new C2 issues in HMTs. Research Method: Experimentation in decision-making paradigm with and without machine teammates.

Deliverables: Report, thesis, and presentation.

\*REQUESTING/SPONSORING ORGANIZATION: Marine Corps Warfighting Lab

\*POINT OF CONTACT: Maj Dave Lemke

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DESIRED RESEARCH COMPLETION DATE: June '20

AVAILABLE FUNDING, IF ANY: N/A

COMMENTS: N/A

## Force Structure

\*CLASSIFICATION\*: Unclassified

\*RESEARCH TOPIC TITLE\*: Aligning Service and MARFOR G-10/Force Preservation IOT improve pro-active decision-making

\*TOPIC DESCRIPTION\*: The time has come to standardize, codify, and establish (resource) G-10 structure from HQMC down through the OPFOR. Current HQMC Service-level Force Preservation (FP) and MARFOR G-10/FP efforts are not organizationally aligned. Only HQMC enjoys resourced G-10 structure; the MEFs and MARFORs have built them out of hide. Further, DOD and USMC FP information flow is predominantly upward and designed to support Service and/or DOD initiatives and analysis.

This work will develop what Marine Corps G-10s should look like and be and recommend ways to better align Service-level and MARFOR Force Preservation (FP) organizations/efforts and provide actionable means to improve the availability and utility of FP data to support proactive decision-making at all levels.

\*DATE SUBMITTED\*: June 14, 2020

\*EXTENDED TOPIC DESCRIPTION\*: The MARFORs and MEFs have established G-10s over the past few years. In general, the goal of these divisions is to centrally manage and create cross functional synergy among all FP areas including a variety of related areas (e.g., Safety, preventative behavioral health (suicide analysis), EO, sexual assault, and substance abuse prevention tracking). In December 2016, CMC established the Service level G-10 FP capability and office to provide him with objective analysis and policy solutions to inform FP initiatives and maximize total force readiness. At the Service-level, some FP functional areas fall under directorates outside of the G-10 (e.g., EO falls under MPE under Manpower Management; Behavioral health, sexual assault and substance abuse fall under Marine & Family Programs).

Current HQMC Service-level FP and MARFOR G-10/FP efforts are not organizationally aligned. Only HQMC enjoys resourced G-10 structure; the MEFs and MARFORs have built them out of hide. Further, information flow is only upward to support Service/DOD initiatives; these reporting requirements are significant with minimal feedback and data-sharing to/with the MARFORs and MEFs. This impedes the ability of the MARFOR to make proactive decisions i.e., see indications of potential risk areas and act beforehand), implement new command policies, and share successes (best practices) among their subordinates.

This work should recommend a way (COAs) to standardize, codify, and resource G-10 structure from HQMC down through operating forces and to align all G-10 FP efforts across the Service.

\*DESIRED OBJECTIVES OF THE RESEARCH\*:

1. What re the roles of a MARFOR G-10/FP? Service-level G-10/FP?

a. How should MARFOR-level G-10/FP directorates be organized and staffed to work best with Service-level efforts?

- b. What subject matter expertise is required at the MARFOR-level?
  - c. How can the Service better align HQMC G-10/FP efforts with the operating force efforts?
2. What data does the MARFOR commander need to make proactive decisions (i.e., to identify redflags, provide support to subordinate commands, and understand what is/isn't working)?
- a. How could Service-level FP programs provide better data/feedback and support to MARFOR commanders?
  - b. How can/should MARFORs use the data to evaluate unit culture and increase readiness?

\*REQUESTING/ SPONSORING ORGANIZATION\*: US Marine Forces Command

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DESIRED RESEARCH COMPLETION DATE: May 2020

AVAILABLE FUNDING, IF ANY: N/A

\*CLASSIFICATION: UNCLASSIFIED

\*RESEARCH TOPIC TITLE: Amphibs-MPS-Connectors-Craft Design and Numbers Research

\*TOPIC DESCRIPTION: Diversification would seek to increase capacity by developing smaller, specialized ships, as a complement to the existing family of large multipurpose ships, in order to improve resilience, dispersion, and the ability to operate in complex archipelagoes and contested littorals without incurring unacceptable risk. Resilience should be measured in terms of the force as a whole (such as gained by generating a greater number of less expensive ships), rather than solely on the resilience of individual platform designs.

\*DATE SUBMITTED: 190524

\*EXTENDED TOPIC DESCRIPTION: In light of the NDS, DPG, the Navy Strategy, DMO, LOCE, and EABO, how should the Marine Corps be reshaping its input to the Navy with respect to the design and number of amphibious ships, maritime prepositioning ships, connectors, and craft?

\*DESIRED OBJECTIVES OF THE RESEARCH: Recommended design and number of amphibious ships, maritime prepositioning ships, connectors, and craft to support the NDS, DPG, Navy Strategy, DMO, LOCE, and EABO.

\*REQUESTING/SPONSORING ORGANIZATION: Marine Corps Warfighting Laboratory (MCWL)

\*POINT OF CONTACT: John Berry, Dir. Concepts, Concepts and Plans (CAP), MCWL

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AVAILABLE FUNDING, IF ANY: NONE

\*CLASSIFICATION: UNCLASSIFIED

\*RESEARCH TOPIC TITLE: Integrating HQMC + OPNAV Staffs

\*TOPIC DESCRIPTION: The Navy and Marine Corps are separate Services within the Department of the Navy (DoN), yet we've evolved a different set of staff structures, titles, functions, and processes in pursuit of our Title 10 responsibilities. Frequently, these responsibilities overlap or intersect on key issues, particularly regarding naval aviation, amphibious shipping, other expeditionary warfare capabilities, and force development and budgetary activities in general. These activities, and associated responsibilities and authorities, often become confused and complicated by a lack of mutual familiarity with counterpart organizations.

\*DATE SUBMITTED: 190524

\*EXTENDED TOPIC DESCRIPTION: In light of the NDS, DPG, the Navy Strategy, DMO, LOCE, and EABO, how should Headquarters Marine Corps (HQMC) align with the Navy Staff (OPNAV) in order to promote integrated naval policies, force development activities, and POM investments?

\*DESIRED OBJECTIVES OF THE RESEARCH: Recommended reorganization/restructuring of the HQMC and OPNAV staffs in order to promote integrated naval policies, force development activities, and POM investments in support of the NDS, DPG, the Navy Strategy, DMO, LOCE, and EABO.

\*REQUESTING/SPONSORING ORGANIZATION: Marine Corps Warfighting Laboratory (MCWL)

\*POINT OF CONTACT: John Berry, Dir. Concepts, Concepts and Plans (CAP), MCWL

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AVAILABLE FUNDING, IF ANY: NONE

COMMENTS: This topic would be ideal for a collaborative effort between Navy and Marine officer students.

**\*CLASSIFICATION\*:** Unclassified

**\*RESEARCH TOPIC TITLE\*:** Joint Basing and Regionalization - The True Balancing Act in the Pacific

**\*TOPIC DESCRIPTION\*:** MCIPAC Regional HQ is underserving its wide array of bases and stations and these installations are not postured to fully leverage what the regional HQ can do. The MCIPAC CG and his staff are also tasked with running Marine Corps Base Butler on Okinawa and unless this dual-hatted, under-resourced model is modernized it will be increasingly difficult for the same HQ to improve the support, warfighting capability, and resiliency provided by individual installations and the regional network, while also providing long term vision for the ever growing list of USMC footprints across the expanse of the Pacific, e.g. Australia, Guam.

**\*EXTENDED TOPIC DESCRIPTION\*:** The MAGTF is a flexible/scalable naval expeditionary force in readiness; however, in the context of great power competition, is its fifth element - Marine Corps Installations – optimized to project power across the expanse of the Pacific?

**\*DATE SUBMITTED\*:** 21 May 2019

**\*DESIRED OBJECTIVES OF THE RESEARCH\*:**

- Determine whether our current combined Base/Region structure is sufficient to oversee installation business or would a bifurcated staff be more effective.
- Determine whether joint-basing in places like Okinawa could be a more effective way to support the warfighter, i.e. provide services to the joint force, while also setting the conditions for increased QoL for service members and families on island.
- Analyze the current plan set forth in the Joint Region Marianas model and provide recommendations on whether that framework is the right one for the USMC in the context of MCB Guam and/or MCIPAC.

**\*REQUESTING/ SPONSORING ORGANIZATION\*:** H&S Bn, MCIPAC-MCBB

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**DESIRED RESEARCH COMPLETION DATE:** March 2020

**AVAILABLE FUNDING, IF ANY:** N/A

COMMENTS:

N/A

## Logistics

\*CLASSIFICATION\*: UNCLASSIFIED

\*RESEARCH TOPIC TITLE\*: Are Installations the 5th Element of the MAGTF?

\*TOPIC DESCRIPTION\*: This topic examines the incorporation of Installations into the operating forces as an additional Major Subordinate Command for MEFs.

\*DATE SUBMITTED\*: 20 May 2019

\*EXTENDED TOPIC DESCRIPTION\*: CJCS Dunford's Defense strategy highlights the global nature of the DoD problem set. USMC installations project power globally, some in closer proximity to competitors than others. For instance, APOEs/APODs in Southern California will most certainly project power from with Marines from CONUS before they begin to move Marines in the "contact layer" because planes won't fly empty out of the US. Meanwhile, during contingency USMC installations in the western Pacific will become lodgments through which our forces will be deployed and sustained. These facts provide interesting operational implications for all Marine Corps Installations. Recently, MEFs have been examining the roles and responsibilities of Rear Area Commander – one hypothesis this topic explores is "Installations could efficiently become the RAC and effectively provide C2, Force Protection, Intelligence, sustainment, and logistics." Further study is required to understand the implications for fire and maneuver. But today Installations are not resourced to conduct these missions. This topic examines whether aligning Installations as a 5th MSC under the MEF would increase MEF warfighting capacity while expanding MEF Commanders' flexibility during contingency. This topic examines not only the effect on relationships at the Corps level and below, but would also examine the implications for MARFORPAC and MARFORLANT as both service headquarters and operational headquarters.

\*DESIRED OBJECTIVES OF THE RESEARCH\*: Define 21st century battlespace; Determine if 21st century battlespace incorporates installations, bases, and stations; propose a C2 structure to include Installation GO HQs aligned under MEF HQs; identify strengths and weaknesses of such an arrangement. What are the implications for service and operational three star commands (e.g. – PP&O, MFP, MFLANT, DC Aviation, MCICOM, DC I&L)? Identify problems with organizing Installations as a MEF MSC. Identify efficiencies with organizing Installations as a MEF MSC.

\*REQUESTING/ SPONSORING ORGANIZATION\*: MCAS Futenma

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DESIRED RESEARCH COMPLETION DATE:

None; request PDFs

June 2020

AVAILABLE FUNDING, IF ANY:

None

**\*CLASSIFICATION\*:** Unclassified

**\*RESEARCH TOPIC TITLE\*:** Joint Basing and Regionalization - The True Balancing Act in the Pacific

**\*TOPIC DESCRIPTION\*:** MCIPAC Regional HQ is underserving its wide array of bases and stations and these installations are not postured to fully leverage what the regional HQ can do. The MCIPAC CG and his staff are also tasked with running Marine Corps Base Butler on Okinawa and unless this dual-hatted, under-resourced model is modernized it will be increasingly difficult for the same HQ to improve the support, warfighting capability, and resiliency provided by individual installations and the regional network, while also providing long term vision for the ever growing list of USMC footprints across the expanse of the Pacific, e.g. Australia, Guam.

**\*EXTENDED TOPIC DESCRIPTION\*:** The MAGTF is a flexible/scalable naval expeditionary force in readiness; however, in the context of great power competition, is its fifth element - Marine Corps Installations – optimized to project power across the expanse of the Pacific?

**\*DATE SUBMITTED\*:** 21 May 2019

**\*DESIRED OBJECTIVES OF THE RESEARCH\*:**

- Determine whether our current combined Base/Region structure is sufficient to oversee installation business or would a bifurcated staff be more effective.
- Determine whether joint-basing in places like Okinawa could be a more effective way to support the warfighter, i.e. provide services to the joint force, while also setting the conditions for increased QoL for service members and families on island.
- Analyze the current plan set forth in the Joint Region Marianas model and provide recommendations on whether that framework is the right one for the USMC in the context of MCB Guam and/or MCIPAC.

**\*REQUESTING/ SPONSORING ORGANIZATION\*:** H&S Bn, MCIPAC-MCBB

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**DESIRED RESEARCH COMPLETION DATE:** March 2020

**AVAILABLE FUNDING, IF ANY:** N/A

\*CLASSIFICATION: UNCLASS

\*RESEARCH TOPIC TITLE: Sustaining MAGTF during DMO in contested environments

\*TOPIC DESCRIPTION: The new nature of warfighting requires a logistics web that is capable of maintaining a steady flow of key enablers to sustain a distributed marine forces throughout a theater. Sites, platforms and forces will have different logistic requirements and will be unable to maintain large stockpiles of supplies and remain nimble. In a contested environment traditional methods of push logistics will not be efficient enough, and a responsive distributed operations logistics will be required. This is further complicated by transitioning from open oceans to forward bases and to distributed forces employing multi-modal connectors, having a persistent reliable and secure LOG C2 network capable of processing requests for support throughout the battlespace. This analysis will consider setting the theater, prepositioning joint capabilities, and posture and deployment of forces for future USMC DMO scenarios.

\*DATE SUBMITTED: 20 May, 2019

\*EXTENDED TOPIC DESCRIPTION: The main questions are: How does a MEU sustain multiple Maritime Security Cooperation? What are the MAGTF logistics capabilities required for DMO? What are the capabilities required for distributed logistics and sustainment of the MAGTF? What are the implications for prepositioning, caches, CLS and MPS?

\*DESIRED OBJECTIVES OF THE RESEARCH:

Key Tasks:

- 1) Review the current posture during DMO
- 2) Look at current operational demand of deployed MAGTFs
- 3) Travel to a deployed MAGTF
- 4) Evaluate MAGTF demand during a likely scenario
- 5) Identify capability gaps
- 6) Formulate a new logistics concept for MAGTF DMO
- 7) Compile a report of the findings.

Project deliverables will include a project report (all project findings from the process review, including an analysis and conclusions regarding implications for Naval operations) and a formal presentation to the project sponsors.

\*REQUESTING/SPONSORING ORGANIZATION: Marine Corps Warfighting Lab

\*POINT OF CONTACT: Maj Dave Lemke

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DESIRED RESEARCH COMPLETION DATE: June, '20

AVAILABLE FUNDING, IF ANY: N/A

COMMENTS: N/A

## Policy

\*CLASSIFICATION: UNCLASSIFIED

\*RESEARCH TOPIC TITLE: Fostering a Naval Learning Organization

\*TOPIC DESCRIPTION: Between the fall of the Soviet Union and the recent rise and identification of new pacing threats, the Navy and Marine Corps were focused on capabilities-based force development. The Navy and Marine Corps are now focused on threat-based force development. In order to institutionalize that force development re-focusing, naval policies, practices, and professional development must keep pace in order to defeat an adversary's capabilities and deny the enemy's strategic objectives while advancing our own.

\*DATE SUBMITTED: 190524

\*EXTENDED TOPIC DESCRIPTION: In light of the NDS, DPG, the Navy Strategy, DMO, LOCE, and EABO, what policies, practices, and professional development methods should the Navy and Marine Corps adopt in order to foster a learning organization focused not just on defeating an adversary's capabilities, but on denying the enemy's strategic objectives while advancing our own?

\*DESIRED OBJECTIVES OF THE RESEARCH: Recommended policies, practices, and professional development methods for an integrated naval learning organization focused not just on defeating an adversary's capabilities, but on denying the enemy's strategic objectives while advancing our own.

\*REQUESTING/SPONSORING ORGANIZATION: Marine Corps Warfighting Laboratory (MCWL)

\*POINT OF CONTACT: John Berry, Dir. Concepts, Concepts and Plans (CAP), MCWL

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AVAILABLE FUNDING, IF ANY: NONE

**\*CLASSIFICATION\*:** UNCLASSIFIED

**\*RESEARCH TOPIC TITLE\*:** Implementing Controlled Unclassified Information (CUI) for Installation Geospatial Information and Services (IGI&S)

**\*TOPIC DESCRIPTION\*:** This study will evaluate the current guidance for Unclassified // For Official Use Only data security designations for geospatial data in the Energy, Installations and Environments domain in order to provide recommendations for transition to the Controlled Unclassified Information designation within the legal framework of the National Archives Records Administration, Freedom of Information Act, Paperwork Reduction Act (1995), eGovernment Act (2002), OPEN Government Data Act (2019), Geospatial Data Act (2018), DoD Directive 3020.40 Mission Assurance, DoDI 8130.01 Installation Geospatial Information and Services, DoD Directive 5205.02E DoD Operations Security Program, MCO 3070.2A The Marine Corps Operations Security Program, MCICOM Polity Letter 7-15 Operations Security, and Deputy Secretary of Defense letter dated 3 August 2018 “Use of Geolocation-Capable Devices, Applications, and Services.

**\*DATE SUBMITTED\*:** 6/14/2019

**\*EXTENDED TOPIC DESCRIPTION\*:** DoD has transitioning from Unclassified, FOUO handing caveats since 2008. Draft CUI implementation guidance is being circulated to services which will have an impact on data storage, transmission, and release of geospatial data. In the past, DoD organizations have applied a blanket FOUO caveat to unclassified geospatial data holdings supporting Energy, Installation, and Environment (EI&E) business areas. This was challenged in the Supreme Court of the United States (SCOTUS) in *Milner v. Navy* (2009) disputing the applicability of exemptions from disclosure cited by the Department of the Navy.

The OPEN Government Data Act includes language for Federal Agencies to make data open by default to facilitate collaboration with non-Government entities (including businesses), researchers, and the public. Installation Geospatial Information and Services data covers the full spectrum of installation activities which include critical infrastructure supporting DoD operational mission areas as well as functions that fit into various FOIA exemption or other areas that will potentially impact data dissemination and public disclosure although still within the unclassified data category. The final draft of DoDI 5200.FG, Controlled Unclassified Information is currently being coordinated across services to align CUI policy with the National Archives Records Administration (NARA).

The Defense Installation Spatial Data Infrastructure Group (DISDI-G) published a copy of the DoD Military Installation Range and Training Area (MIRTA) data to Data.Gov in compliance with the Geospatial Data Act and the National Defense Authorization Act. Due to unclear release guidance, the review process required in excess of 2 years for various service and installation organizations to provide comments on data release. Installation boundary data has been in the public domain from various US Government sources such as USGS topographic maps and US Census Bureau TIGER line files for decades. Although some areas of concern such as public-private venture housing areas were ultimately removed from the CONUS DoD

MIRTA data released to the public through data.gov, some entire installation boundaries were proposed for removal citing non-defendable rationales such as the lack of a contiguous fence line.

Marine Corps Installations Command seeks a study to evaluate the impact of the OPEN Government Data Act and Geospatial Data Act to provide recommendations on implementing CUI as it pertains to geospatial data.

**\*DESIRED OBJECTIVES OF THE RESEARCH\*:**

- Update to the GEOFidelis Data Management Guide Appendix E (List of GEOFidelis Data Model feature classes and their CUI category/markings, FOIA exemptions if applicable, and subsequent dissemination authority)
- Identify supporting policy and legal documents for each feature class CUI category/markings.
- Research paper to include topic background, literary review, implications for IGI&S, and recommendations (GEOFidelis Data Management Guide Appendix E) for implementation with supporting evidence.
- Review and provide recommendations on a draft OPSEC and Public Affairs Review workflow for public release of data.

**\*REQUESTING/ SPONSORING ORGANIZATION\*:** Marine Corps Installations Command / GF Facilities

**\*POINT OF CONTACT\*:** Mr. Justin Goering / Installation Geospatial Information and Services Program Manager

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Real Estate and Asset Utilization Section (GF-6)  
3000 Marine Corps Pentagon Rm 2D153A  
Washington, DC 20350-3000

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**\*TELEPHONE NUMBER\* (Commercial and DSN)** 571-256-2816

**DESIRED RESEARCH COMPLETION DATE:** 30 SEP 2020

**AVAILABLE FUNDING, IF ANY:** Reasonable travel funds are available

**COMMENTS:** Recommend review of the following documents / sources

RAND Monograph: "What Should Be Classified?"

RAND Monograph: "Installation Mapping Enables Many Missions: The Benefits of and Barriers to Sharing Geospatial Data Assets"

RAND Monograph: “Mapping the Risks: Assessing the Homeland Security Implications of Publicly Available Geospatial Information”

RAND Monograph: “America’s Publicly Available Geospatial Information: Does It Pose a Homeland Security Risk?”

Center for Development of Security Excellence Derivative Classification Training

\*CLASSIFICATION: CLASSIFIED

\*RESEARCH TOPIC TITLE: In light of the NDS, DPG, the Navy Strategy, DMO, LOCE, and EABO, in a crisis or conflict with a peer adversary, how might naval forces be employed to put the enemy's global interests at risk? What are the pros and cons of this type of horizontal escalation?

\*TOPIC DESCRIPTION: Competing with, and if necessary, confronting peer and near-peer adversary activities below the threshold of conflict may eventually lead to an escalation to crisis or conflict. As a supporting effort to the regional crisis or conflict, other available naval forces can apply additional pressures to put the enemy's global interests at risk.

\*DATE SUBMITTED: 190524

\*EXTENDED TOPIC DESCRIPTION: Not applicable

\*DESIRED OBJECTIVES OF THE RESEARCH: Recommended options for naval forces to put the enemy's global interests at risk in times of crisis and conflict, and detailed analysis of the pros and cons of this type of horizontal escalation, in support of the NDS, DPG, the Navy Strategy, DMO, LOCE, and EABO.

\*REQUESTING/SPONSORING ORGANIZATION: Marine Corps Warfighting Laboratory (MCWL)

\*POINT OF CONTACT: John Berry, Dir. Concepts, Concepts and Plans (CAP), MCWL

\*MAILING ADDRESS: 3300 Russell Road, 3rd Deck, Marine Corps Concepts and Plans, Quantico, VA, 22134

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\*TELEPHONE NUMBER (Commercial and DSN) 703-432-8141 (DSN 378)

AVAILABLE FUNDING, IF ANY: NONE

COMMENTS: This topic would be ideal for a collaborative effort between Navy and Marine officer students.

\*CLASSIFICATION: UNCLASSIFIED

\*RESEARCH TOPIC TITLE: Is Loyalty in the MAGTF Preventing Better Options

\*TOPIC DESCRIPTION: Marines have been, and continue to be, indoctrinated in the virtues, wisdom, and capabilities of the MAGTF. Given the evolving future operating environment and the repeated senior leadership emphasis on greater naval integration, some are wondering whether the USMC faith in the primacy of the MAGTF is warranted, and if it is limiting the USMC's effectiveness and relevance in naval and joint operations.

\*DATE SUBMITTED: 190524

\*EXTENDED TOPIC DESCRIPTION: The MAGTF construct has served the Marine Corps well—first as an informal and later as a doctrinally sacrosanct formation—but In light of the NDS, DPG, the Navy Strategy, DMO, LOCE, and EABO, is the MAGTF construct the best solution for emerging operational requirements? Are we turning a blind eye to other possibilities? Is our faith in the MAGTF preventing us from identifying and developing better options?

\*DESIRED OBJECTIVES OF THE RESEARCH: Detailed analysis of the continuing effectiveness and relevance of the MAGTF in the evolving future operating environment, in naval and joint operations.

\*REQUESTING/SPONSORING ORGANIZATION: Marine Corps Warfighting Laboratory (MCWL)

\*POINT OF CONTACT: John Berry, Dir. Concepts, Concepts and Plans (CAP), MCWL

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**\*CLASSIFICATION\*:** Unclassified (likely)

**\*RESEARCH TOPIC TITLE\*:** Lessons Learned from the Cold War and 2 MTW strategies and Implications for implementing the NDS

**\*TOPIC DESCRIPTION\*:** The work should identify lessons learned from the strategies used during the Cold War and the 2 Major Theater War/regional conflict era and apply them to the Marine Corps' implementation of the new National Defense Strategy. It will look for parallels as well as differences.

**\*DATE SUBMITTED\*:** June 14, 2019

**\*EXTENDED TOPIC DESCRIPTION\*:** History does not repeat itself, but it often rhymes (Twain). During the Cold War, our focus was global power competition. Concepts such as containment, AirLand Battle, flexible response, and détente defined strategy. Our pursuit of technology as an equalizer/force multiplier reaped huge rewards in the 1990s, and became key to our way of waging war. The modernized capabilities we developed revolutionized conventional warfare and assured our dominance in large-scale ground combat that drove adversaries to a new way of fighting (asymmetric warfare).

After the Cold War came the period of 2 MTW and regional conflict. The goal of this strategy was to deter and defeat armed aggression. The perceived threat was from rogue states waging Soviet-style conventional war. Our strategy was not only "Don't attack us," but "Don't even think of attacking us. Don't even think of attacking our allies. We'll be all over you." We sought/expected a quick resolution to a conflict.

The current strategic environment combines elements of both eras. We face the same strategic challenges as then - great power competition with China and Russia and destabilizing rogue regimes in Iran and N. Korea. Our strategy needs to build a capability to compete short of conflict and transition to conflict in a global (peer/near peer) or regional fight.

**\*DESIRED OBJECTIVES OF THE RESEARCH\*:**

1. What lessons learned from the Cold War and MTW strategies apply to the current and projected strategic environment?
  - a. What are the parallels between then and now?
  - b. What capabilities were key to success across the range of military operations?
2. How can we apply what we learned to the modernization or development of Marine and Naval capabilities required to implement today's NDS in both competition and conflict?
  - a. What should we do?
  - b. What shouldn't we do?

**\*REQUESTING/ SPONSORING ORGANIZATION\*:** US Marine Forces Command

\*POINT OF CONTACT\*: Mr. Pat McCarthy

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Norfolk VA 23551

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DESIRED RESEARCH COMPLETION DATE: May 2020

AVAILABLE FUNDING, IF ANY: N/A

\*CLASSIFICATION: UNCLASSIFIED

\*RESEARCH TOPIC TITLE: Reinvigorate FMF and Navy – Marine Corps  
Component Command Relationship

\*TOPIC DESCRIPTION: In 1933, the establishment of FMF under the operational control of the fleet commanders generated great unity of effort, operational flexibility, and the integrated application of Navy and Marine capabilities throughout the maritime domain. The 1986 Goldwater-Nichols Act, however, removed the preponderance of the FMF from fleet operational control and disrupted the long-standing Navy-Marine Corps relationship by creating separate Navy and Marine Corps components within joint forces. Furthermore, Navy and Marine Corps officers developed a tendency to view their operational responsibilities as separate and distinct, rather than inextricably intertwined. With the rise of increasing land-based threats to the global commons, there is a need to re-establish a more integrated approach to operations in the maritime domain that can give the joint force commanders more cohesive naval solutions. Refining the component relationship, within the framework of Goldwater-Nichols, is a more complicated issue that must be explored in partnership with the Navy to develop courses of action and assess their pros and cons.

\*DATE SUBMITTED: 190524

\*EXTENDED TOPIC DESCRIPTION: In light of the NDS, DPG, the Navy Strategy, DMO, LOCE, and EABO, how should the Marine Corps be reshaping its input to the Navy with respect to the design and number of amphibious ships, maritime prepositioning ships, connectors, and craft?

\*DESIRED OBJECTIVES OF THE RESEARCH: Recommended options to reinvigorate the FMF, and to refine the Navy-Marine Corps component command relationship in order to better provide the JFCs integrated naval force options in support of the NDS, DPG, the Navy Strategy, DMO, LOCE, and EABO.

\*REQUESTING/SPONSORING ORGANIZATION: Marine Corps Warfighting  
Laboratory (MCWL)

\*POINT OF CONTACT: John Berry, Dir. Concepts, Concepts and Plans (CAP), MCWL

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AVAILABLE FUNDING, IF ANY: NONE

COMMENTS: This topic would be ideal for a collaborative effort between Navy and Marine officer students.

**\*CLASSIFICATION\*:** UNCLASSIFIED

**\*RESEARCH TOPIC TITLE\*:** Time to readdress the Defense Policy Review Initiative? Strategies to confront challenges while preserving Marine Corps relevance on Okinawa, Japan.

**\*TOPIC DESCRIPTION\*:** This topic examines the 1996 SACO agreement made at the end of the cold war era that fail to meet the security challenges we are faced with today. It also explores the Marine Corps' relevance as it plans to retract its forces from Okinawa to Guam and Hawaii under DPRI.

**\*DATE SUBMITTED\*:** 4 June 2019

**\*EXTENDED TOPIC DESCRIPTION\*:** Recent policies, including the December 2017 National Strategic Strategy identifies China as our greatest threat, "challenging our power, influence, and interest, attempting to erode American security and prosperity". Based on these current conditions, it is time to readdress our bilateral agreements in order to remain competitive in the region and win the Great Power Competition that has recently emerged.

**\*DESIRED OBJECTIVES OF THE RESEARCH\*:** While the 1996 Special Action Committee on Okinawa (SACO) agreed decisions to return MCAS Futenma and transfer the preponderance of ground and aviation forces does relieve local political and encroachment pressure, it generates three problems that further complicate the mutual defense treaty and strategic objectives for the United States and Japan. First, the re-distribution plan erodes INDOPACOM's positional advantage within the first island chain by reducing the number of Areal Ports of Debarkation (APOD) options within the competitive region. Secondly, it threatens the Marine Corps future service specific relevance through the implied reliance of Kadena Air Force Base as its sole provider for fixed wing operations, along with combat and logistical TPFDD throughput on Okinawa. Finally, by failing to make updates and revisit proposed theater force laydown models previously agreed upon during the SACO agreements, it sends a clear signal to China that there is stagnation and limitations within the United States and Japanese alliance agreements that can be exploited to further advantage. In this paper, address the complexity of the DPRI problem as it relates to national security and/or the future service (USMC) relevance in the First Island Chain and INDOPACOM AOR.

**\*REQUESTING/ SPONSORING ORGANIZATION\*:** MCAS Futenma

**\*POINT OF CONTACT\*:** Col D.M. Steele

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**FAX NUMBER (Commercial and DSN)** None; request PDFs

**DESIRED RESEARCH COMPLETION DATE:** June 2020

AVAILABLE FUNDING, IF ANY:

None

\*CLASSIFICATION\*: Unclassified

\*RESEARCH TOPIC TITLE\*: Women, Peace and Security (WPS)

\*TOPIC DESCRIPTION\*: Implementation of the Women, Peace & Security Act.

Research is needed to refine existing understanding of: 1. How a WPS perspective can be integrated into U.S. military training and education 2. Connections between WPS and operational effectiveness 3. Best practices from partner nations for implementing the WPS Act.

\*DATE SUBMITTED\*: 18 June 2019

\*EXTENDED TOPIC DESCRIPTION\*: WPS is based on the fundamental acknowledgement that women and security are inextricably linked throughout the conflict spectrum. Women and girls bear the disproportionate impact during crisis and conflict, therefore, they have disproportionate equities in security.

The U.S. recognizes the value of diverse perspective in conflict prevention and resolution, as evidenced by the signing and enactment of The Women, Peace, and Security Act of 2017. The Act was created to “ensure that the United States promotes the meaningful participation of women in mediation and negotiation processes seeking to prevent, mitigate, or resolve violent conflict.” By increasing women’s participation in negotiation and mediation processes, this Act seeks to bolster efforts to prevent and resolve conflict. The U.S. WPS strategy was recently signed (11 June 2019) and can be viewed here: <https://www.whitehouse.gov/briefings-statements/statement-press-secretary-regarding-united-states-strategy-women-peace-security/>

\*DESIRED OBJECTIVES OF THE RESEARCH\*: Building on existing research, new projects should: 1. Further our understanding of how a WPS perspective can be integrated into U.S. military training and education, and/or 2. Examine connections between WPS and operational effectiveness, and/or 3. Highlight best practices from partner nations that should be considered as the WPS Act is implemented.

\*REQUESTING/ SPONSORING ORGANIZATION\*: Center for Advanced Operational Culture Learning, Marine Corps University

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AVAILABLE FUNDING, IF ANY: none

## Technology

\*CLASSIFICATION: UNCLASS

\*RESEARCH TOPIC TITLE: Classification of UAV+Video Compromise Impact and Investigation of Security Solutions for Improving COTS UAV Compromise Detection/Security Assurance

\*TOPIC DESCRIPTION: This research will focus on video-based COTS UAV intel at the strategic level. In order to enable such use, it is essential to understand the security provided by a given UAV. In the case of integrated control and video, compromise (e.g. take-over) of the UAV may immediately result in data loss. Meanwhile, in the case of separated capabilities between the UAV and video transmitter (e.g. UAV-mounted video device), compromise of the UAV may not lead to immediate data loss. Conversely, and in both cases, it is possible that the data itself is compromised during the transmission, avoiding detection but identified through video leakage.

\*DATE SUBMITTED: 20 May, 2019

\*EXTENDED TOPIC DESCRIPTION: In order to address the above compromise categories, this work will undertake a cross-comparison of selected current COTS UAV technology: application security, link security, separation and integration of control messages and data, etc. For solutions that have any level of claimed COTS security, a qualitative analysis of the algorithms and protocols will be done to identify the actual security guarantees offered. This information will be subsequently used to build a classification matrix for COTS UAV options and use weaknesses effects for both the UAV and video data.

COTS UAVs may offer limited data protection or may not meet claimed goals. Thus, it is important to identify potential means of adding a security layer to the UAV with minimal overhead. Potential solutions that may be considered may include controller authentication, cryptographic traitor-tracing enabled encryption, or controller-command event logging with blockchain, etc. This research will not undertake an in-depth analysis of these potential solutions, but rather investigate what, if any, security guarantees may be efficiently offered for COTS UAVs. Namely, it will determine if further research should pursue such solutions to improve COTS UAV use/data.

\*DESIRED OBJECTIVES OF THE RESEARCH: This research will be performed as a student thesis, with thesis and PowerPoint brief deliverables.

\*REQUESTING/SPONSORING ORGANIZATION: Marine Corps Warfighting Lab

\*POINT OF CONTACT: Maj Dave Lemke

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DESIRED RESEARCH COMPLETION DATE: June, '20

AVAILABLE FUNDING, IF ANY:

N/A

COMMENTS:

N/A

\*CLASSIFICATION: UNCLASS

\*RESEARCH TOPIC TITLE: Cybersecurity Risk Management Process for Unmanned Aerial Systems (UASs) at the Strategic Level

\*TOPIC DESCRIPTION: The objective of the proposed study is to analyze the effectiveness of implementing a Cybersecurity Risk Management Process Framework (ie decision matrix) at the strategic level, or similar Cybersecurity framework strategies, to determine what benefit such a framework will have on UAS operations at the strategic level. Such processes will focus not solely on technical knowledge, but on the application of information security executive management principles, from a strategic perspective, and its impact on UAS cybersecurity operations.

\*DATE SUBMITTED: 20 May 2019

\*EXTENDED TOPIC DESCRIPTION: Analyze Cybersecurity process framework effectiveness from the strategic level. Goals include determining what strategic and operational threat information are required to complete the framework efficiently and effectively, and how that data could be safely and securely channeled to the appropriate UAS system personnel so that data can be utilized at its given classification level to populate the Cybersecurity framework and decision matrix.

Examples of several COTS Cybersecurity frameworks and management processes have been effective in providing similar solutions. Review previously proposed solutions, identify potential future data flows from UAS Cybersecurity systems, and evaluate their utility for Navy surface warfare operations at the strategic level, which will allow for strategic level commanders to properly conduct cybersecurity risk management.

\*DESIRED OBJECTIVES OF THE RESEARCH: Deliverables include: Report summarizing findings and recommendations regarding integration of Cybersecurity framework process effectiveness in the creation of and strategic and operational risk management decision matrix with Naval Surface Warfare forces, and systems and quarterly IPRs. The intent is to have a thesis student work on part of this project.

\*REQUESTING/SPONSORING ORGANIZATION: Marine Corps Warfighting Lab

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\*CLASSIFICATION: UNCLASS

\*RESEARCH TOPIC TITLE: Tactical Cybersecurity Decision Matrix for COTS UAS

\*TOPIC DESCRIPTION: In 2018, the Undersecretary of Defense issued a decision memo enacting moratorium on COTS UAS across DoD. OSD stood up a board to assess COTS UAS on a case by case basis to exempt the COTS UAS from the policy and decision-making authority has further been devolved to the service branches. However, operators on the ground need the ability to assess if a COTS UAS can still complete its mission while posing an acceptable risk even when potentially compromised by an adversary.

\*DATE SUBMITTED: 20 May, 2019

\*EXTENDED TOPIC DESCRIPTION: For instance, a COTS UAS with an encrypted and secure control link but an unencrypted video feed can be vulnerable to video feed intercept. Additionally, there is a risk of the adversary being alerted to the presence of opposing forces via video feed detection. We will conduct a survey of DoD COTS UAS. We will identify technology used on each COTS UAS including transmitter security types, data download link technology and security, separation and integration of control messages and data, etc. A qualitative analysis of security algorithms and protocols used in COTS UAS will be performed to understand the level of security provided. This information will be used to develop the cybersecurity operational risk management decision matrix. We will investigate bolstering the matrix by analysis of different potential outcomes from generic cyber-attacks. It is expected that some scenarios will be identified where a tactical operator may choose to continue operating in spite of the COTS UAS being compromised because the risk is sufficiently low compared to the benefit to the mission. The matrix will be verified using a NIST cybersecurity framework and/or DoD guidance, and/or other methods. Guidance will be provided on how to rapidly assess if a UAS may have compromised cybersecurity at the tactical operator level and how to continue to operate with degraded capability during a compromise.

\*DESIRED OBJECTIVES OF THE RESEARCH: This research will produce student theses, IPRs and final project briefs, and a research summary.

\*REQUESTING/SPONSORING ORGANIZATION: Marine Corps Warfighting Lab

\*POINT OF CONTACT: Maj Dave Lemke

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DESIRED RESEARCH COMPLETION DATE: June, '20

AVAILABLE FUNDING, IF ANY: N/A

COMMENTS:

N/A

\*CLASSIFICATION: UNCLASS

\*RESEARCH TOPIC TITLE: Unmanned Aerial System Cybersecurity Risk Management Decision Matrix for Tactical Operators

\*TOPIC DESCRIPTION: The objective of the proposed study is to analyze the effectiveness of implementing a Cybersecurity Risk Management Program (RMP) framework, or similar Cybersecurity framework strategies, to determine what benefit such a framework will have on reduced decision response to RF and IP threats to UAS operations at the tactical level of UAS operations.

\*DATE SUBMITTED: 20 May, 2019

\*EXTENDED TOPIC DESCRIPTION: We will analyze Cybersecurity framework effectiveness from the perspective of the Surface Warrior. Goals include determining what RF and IP threat information are required to complete the framework efficiently and effectively, and how that data could be safely and securely channeled to the appropriate UAS system personnel so that data can be utilized at its given classification level to populate the Cybersecurity framework and decision matrix. Examples of several COTS Cybersecurity frameworks have been effective in providing similar solutions. We will review previously proposed solutions, identify potential future data flows and optimal data inputs from UAS systems, and evaluate their utility for Navy surface warfare Cybersecurity framework applications, focusing on producing a Cybersecurity operational risk management decision matrix. A Total-Ownership Cost (CBA) will be conducted by NPS SME (Dr. Johnathan Mun) in the implementation and integration of several Cybersecurity frameworks.

\*DESIRED OBJECTIVES OF THE RESEARCH: Deliverables include: Report summarizing findings and recommendations regarding integration of Cybersecurity framework effectiveness in the creation of an operational risk management decision matrix with Naval Surface Warfare forces and systems and quarterly IPRs. The intent is to have a thesis student work on part of this project.

\*REQUESTING/SPONSORING ORGANIZATION: Marine Corps Warfighting Lab

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DESIRED RESEARCH COMPLETION DATE: June, '20

AVAILABLE FUNDING, IF ANY: N/A

COMMENTS: N/A

## Training

\*CLASSIFICATION\*: Unclassified

\*RESEARCH TOPIC TITLE\*: Cognitive, intercultural, and LREC preparation for great powers competition and operations in the information environment

\*TOPIC DESCRIPTION\*: The current NDS and other recent guidance focus on competition among great powers and place emphasis on operations in the information environment. Research is needed to refine existing understanding of: 1. which cognitive and metacognitive skills are most needed for likely missions, 2. which inter-cultural skills are most needed for likely missions, and/or 3. which types of language, regional, and cultural (LREC) capabilities are most needed for likely missions.

\*DATE SUBMITTED\*: 6/19/2019

\*EXTENDED TOPIC DESCRIPTION\*: The current NDS and other recent guidance focus on competition among great powers and place emphasis on operations in the information environment. Some research has been done to identify the most useful knowledge and skills in the following areas to prepare Marines in the general purpose force (GPF) and specific MOS categories for likely missions and assignments:

1. broad cognitive and metacognitive preparation for planning, analysis, and operations,
2. inter-cultural skills
3. language, regional, and cultural knowledge.

However, existing research needs to be refined and advanced to allow PME and training to closely target the most useful learning outcomes for the security environments described in current guidance.

\*DESIRED OBJECTIVES OF THE RESEARCH\*: Building on existing research, identify key skills and/or types of knowledge for GPF or an MOS category in one of the three categories described above.

\*REQUESTING/ SPONSORING ORGANIZATION\*: Center for Advanced Operational Culture Learning, Marine Corps University

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AVAILABLE FUNDING, IF ANY: none