



# Working Group Prospectus

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# WG 01 – Homeland Security Analysis

**Overview:** Homeland Security Analysis fosters the use of analytic approaches, techniques, and methodologies to engage the Homeland Security enterprise and further their missions. Homeland security stakeholders exist within national, state, and local governments, NGOs, and the private sector. Their efforts overlap with defense, health, and other mission areas to solve large complex challenges including terrorism, cybersecurity, border security, modernizing ports of entry, optimizing our immigration system, responding to and recovering from disasters, responding to climate change, and combatting crime of all forms including: drugs, human trafficking, labor exploitation, and child exploitation.

**Seeking Submissions:** WG 01 seeks submissions related to the Homeland Security portfolio described above that focus on innovation, collaboration, and responding to evolving threats. With this focus, homeland security analysts can sharpen their analytic edge and help their community solve complex Homeland Security challenges. These could include techniques that enable personnel/systems to do “more with less” in relation to deterring cyber criminals, minimizing immigration bottlenecks, combatting human trafficking or analytic techniques to uncover these operations. All submissions should be tailored not only to the MORSS theme, but also to the Homeland Security portfolio.

**Past Submissions:** USCG International Engagement Efforts (methodology development), National Laboratory Partnerships for Homeland Security Solutions (engagement and partnerships), Analysis to Support the USBP National Prioritization Framework (strategic risk analysis), Southwest Border Migrant Encounter Projections (forecasting model), Determining USCG Enforcement Cutter Fleet (fleet optimization), Mobile Nuclear Power for Future DoD Needs (recovery, climate change), Network-of-Networks Framework for Analyzing Functions-based Critical Infrastructure Risk and Resilience (resilience), and The Aviation Security Screening Optimizer for Risk and Throughput (ASSORT, risk analysis).

WG 01 Leadership		
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# WG 02 – Chemical, Biological, Radiological, Nuclear, and Advanced Explosives (CBRNE) Defense

**Overview:** Chemical, Biological, Radiological, Nuclear, and Advanced Explosive (CBRNE) threats pose serious challenges to our national security, both at home and abroad. Threat areas specifically defined as: 1) Chemical threats are substances that are intentionally or unintentionally disseminated to affect an individual's health or operational performance; Biological threats are microorganisms that are modified or efficiently spread to increase disease and may include genetic editing technology; Radiological threats are materials machined and/or dispersed to induce ionization causing lipid oxidation or DNA damage; Nuclear threats are the immediate effects of detonation to include intense ionizing radiation, thermal radiation, and overpressure; and Advanced (high-yield) Explosive threats are those that produce a pressure shock wave. This year's theme is based on the goal of maintaining and sharpening our analytical edge by developing analysis techniques/materials to advance assessment, detection, proactive protections against or mitigation of CBRNE threats or hazards that present a risk to our national security.

**Seeking Submissions:** WG 02 seeks presentations on CBRNE analyses that tackle real-world analysis problems despite data shortfalls using analytical concepts/solutions to solve CBRNE challenges. All submissions should be tailored to the MORS theme of "Sharpening our Analytical Edge". Submission topics could include: CBRNE topics related to Assessment, Protection, Detection, and Decontamination systems as it pertains to National Security; CBRNE techniques/materiel/methods for managing of CBRNE attacks (ultimately our focus is to mitigate risks by designing equipment/doctrine/tactics to protect ourselves while recovering from CBRNE attacks); Sharpening Our Analytical Edge for the development and use of data collection, along with CBRNE unique test and evaluation methodologies to prioritize candidate systems and approaches to better inform decision-making for our Warfighters; Development and use of novel and/or multi-disciplinary methodologies to enhance or inform CBRNE decision making; Modeling and simulation development to predict CBRNE threats, enhance CBRNE system survivability, or predict CBRNE-affected mission outcomes; War-gaming of CBRNE scenario analysis tools with CBRNE awareness capabilities; Predictive tools using design of experiments (DOE) and/or AI/ML to efficiently conduct CBRNE research; and Epidemiological and/or toxicological research on short and long-term outcomes from CBRNE exposure and its effect on National Security.

**Past Submissions:** Decontamination of Fourth Generation Agents by Bleach: Product Analysis; Modeling Operational Impacts of Protective Measures; Calculating Health-Based Operational Impact and Toxicological Effects from System-Level Chemical Protective Ensemble Testing; Optimization of CBRNE Sensors and Decontamination Formulations using Design of Experiments (DOE) with Hybrid, Space-Filling, and I-Optimal Designs; Anomaly detection for biological and chemical intelligence; The Bioweapons Smart Book: An Informational Manual; Combining Adaptive Computer Agents, Human Wargamers and AI to Improve CBRNE Outcomes; A Model that Accurately Predicts the Absorption of Chemical Warfare Agents on Activated Carbon; RadPlot: Rapid Assessment of Nuclear Effects; and Analyzing a High-Altitude Electromagnetic Pulse's Effect on Air Force Operations.

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## WG 03 – Infrastructure Analyses, Protection, & Recovery

**Overview:** The analysis, protection, and recovery of critical infrastructure systems requires innovative decision support tools and analysts. These systems consist of diverse interdependent physical and social networks with varied operating and ownership models, in both physical space and cyberspace, with myriad stakeholders. Due to their interconnected nature, infrastructure systems face the potential for large-scale disruption resulting from both deliberate threats (e.g., attacks, sabotage) and non-deliberate hazards (e.g., accidents, failures, natural disasters, climate). Recent disasters reveal that decision makers often struggle to identify key components and interdependency relationships in infrastructure systems, optimal resource allocation to increase resilience or reduce risk, and optimal response plans.

**Seeking Submissions:** WG 03 welcomes analysis, research, applications, and techniques from all disciplines that highlight the use of operations research methods for critical infrastructure. We welcome discussions of infrastructure protection, resilience, and recovery in the face of both human and natural threats and hazards. Presentations should discuss the impacts to national security considerations and offer insights for future multi-disciplinary analyses.

**Past Submissions:** Network Shaping for Critical Infrastructure Exploitation and Protection (new approaches to attacker-defender scenario analysis); Climate Surprise and Military Response: A Case Study of Marine Corps Base Camp Lejeune and Hurricane Florence (analytic study results of emergency response and decisions); and Assessing the Perception and Comprehension of Adversarial Cyber Activity in Operational Technology Environments Using Bayesian Network (new approaches to cyber infrastructure risk assessment and defense).

### WG 03 Leadership

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## WG 04 – Analytical Capability Development

**Overview:** Analytical Capability Development acts as a construct to around which to build, develop, and enhance the analytical capability of organizations active in the national security domain. This working group evolves around the familiar ‘man, train, equip’ paradigm—with the goal of improving the analyst around each of these three themes. This covers a broad range of topics such as new training initiatives, acquisition of appropriate analytical based software, new cloud based platforms and workforce retention modeling.

**Seeking Submissions:** The ACD working group welcomes presentation submissions from active practitioners and professional development leaders that cover one of the three following main themes, all of which directly act as an analytical force multiplier:

- “Man” refers to the professional development of the analyst in terms of career path
- “Train” refers to the training and education opportunities available
- “Equip” enables the analyst, through the provision of hardware and cutting-edge software, to conduct the necessary and appropriate analysis—as well as advocacy for safe, analyst friendly IT policies

**Past Submissions:** How Much AI/ML do I need to Learn? (Man/Train); Air Force VAULT Platform: Enabling Distributed Analysis and Data Driven Decisions (Equip); Planning a Cloud Migration Effort: Cost Estimating Considerations (Equip); A Little Knowledge is a Dangerous Thing (Man); and Building Data Culture—a Blueprint (Man/Train/Equip).

### WG 04 Leadership

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## WG 05 – Cyber Operations Research

**Overview:** The transition of cyber operations from a support role into a distinct function of spectrum warfare has secured its place as a force multiplier, but also necessitates the use of Operations Research to integrate mature cyber tactics and technologies. Further, the progression toward decision centric warfare, distributed systems, and cross-domain kill webs is requiring more complex and nuanced analysis. The offensive and defensive technologies supporting cyber operations are continuously evolving and these technologies require reimagined policy, doctrine, and systems design to maximize the impact of cyber operations as a force multiplier.

**Seeking Submissions:** WG 05 seeks innovative applications of cyber technology, design, and doctrine that demonstrate force multiplying enhancement on military maneuver. Such submissions may incorporate cyber as an offensive capability or cyber systems integrated with other military operations. The working group emphasizes communications on game-changing technologies in development and preliminary deployment stages as well as studies on cyber modelling, analysis, doctrine, and policy stateside and abroad.

**Past Submissions:** Characterizing the Joint Distribution of Cyber Data and Generating Synthetic Training Examples; Meta-learning for Robust Intrusion Detection; An Analysis of C/C++ Datasets for Machine Learning-assisted Software Vulnerability Detection; Demonetizing Cyber Crime; Tracing Funds through Blockchain Analytics; Vulnerability Prioritization Based on OSINT and Scan Data; A Systematic Framework for Simulating Cyber Conflict; Applying Artificial Intelligence to Energy Monitoring Data for Cyber-attack Detection; Evolution of Defensive Cyber Operations; The Logistics of Data in the FutureG Fitness Landscape; and Tactical Network Optimization Using Algorithmic Slice Creation and Dynamic Resource Allocation.

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## WG 06 – Command and Control (C2)

**Overview:** The Command and Control (C2) Working Group fosters multi-disciplinary analysis of C2 capabilities that enable forces to respond dynamically to asymmetric threats; to deter nation-states from military aggression; to collaborate with joint, interagency, intergovernmental, and multinational entities; and to generally plan, employ, organize, direct, coordinate, control, and protect military forces. Operations Research analysts are uniquely equipped with the tools and methodologies to study the processes, networks, and systems comprising C2, aiding commanders in utilizing these networks to the fullest extent possible to enable and influence critical operational decision-making.

**Seeking Submissions:** For the 94<sup>th</sup> MORSS, WG 06 will provide an opportunity for military, government, and civilian operations research analysts to examine topics, methodologies, analyses, and innovations that sharpen our analytical edge through Command and Control (C2). WG 06 invites papers and discussions regarding the current and future analysis of C2 issues, systems, architectures, investment strategies, and processes, as well as educational programs, training programs, and tools that support the continued growth and development of the nation's C2 capabilities. Presentations may include completed studies or work-in-progress.

**Past Submissions:** Reinforcement Learning-based Wargaming Simulation Environment for Real-Time Command and Control Applications; Infobesity: Overcoming Information Overload in 21<sup>st</sup> Century Warfighting; Speed, Precision, Adaptability: The Future of Military Capability Assessment; Enhanced Terminal Defense with Kinetic / Non-Kinetic Engagement Coordination; Command Post Survivability: Using Simulation to Identify Trades between Situational Understanding and Network Requirements; Developing a Domain Specific Language for Complex Military Operational Analysis using Simulation; Analysis and Evaluation of Kill Webs via Graph Theoretic Methods; Cyber Resilience Analysis of Tactical Networks using Elastic and Reconfigurable Software-Defined Network Slices; Dreamcatcher: Integrating Distributed All-Domain Fires, Maneuver, and Logistics Planning; Machine Learning and Operations Research to Minimize the Risk of Detection by Adversarial Assets; Offensive Cyberspace Operations: Using Markov Kill Chains to Justify Tactical Delegation Authority; and Multi-Domain Multi-Objective Weapon-Target Assignment Problem.

### WG 06 Leadership

Position	Name	Email
Chair	Anthony Castañares	<a href="mailto:anthony.castanares.civ@army.mil">anthony.castanares.civ@army.mil</a>
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# WG 07 – Intelligence Surveillance and Reconnaissance (ISR)

**Overview:** ISR promotes the exchange of innovative analytical techniques, permits peer review of methods and results, and provides a means for continued growth of military operations research as applied to ISR analysis across the spectrum of peace, crisis, Stability and Support Operations, and Major Combat Operations. ISR seeks to provide a forum for analysts to present their work across all intelligence disciplines, focusing on optimizing ISR assets, demonstrating ISR modeling and simulation techniques and case studies, providing actionable intelligence to commanders and decision makers, and the use of operations research techniques in support of ISR planning or execution.

**Seeking Submissions:** WG 07 seeks submissions focused on the capabilities and processes described above that enable analytical leadership to solve ISR challenges. These may include techniques that will allow United States analysts new or novel approaches for “Sharpening Our Analytical Edge.” There may be, but not limited to, special emphasis on work that examines the benefits of information sharing and data analysis among multiple assets to conduct ISR missions. All submissions should be tailored to the MORS Symposium theme as well as provide information to improve and grow ISR analysis to best support current and future operations.

**Past Submissions:** Proliferated Radar – Using Cell Networks to Detect Aerial Targets (Novel Target Acquisition Methods); Quantitative Modeling of Text-Based Intelligence Source Uncertainty (Intelligence Processing); Pacific WINDS II: A Tabletop Intelligence Wargame Suitable for use in Maneuver Centric Wargames (ISR systems in Wargaming); and AFSIM Sensor Coverage Diagram Tool (ISR modeling and simulation techniques and analysis).

## WG 07 Leadership

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# WG 08 – Space Acquisition, Testing and Operations

**Overview:** Space Acquisition, Testing and Operations seeks to share OR techniques and analytical best practices to enable our military and intelligence communities to effectively acquire, test, and operate on a global scale. Given that our competitive advantages within the Space warfighting domain are rapidly eroding, WG 08 advocates analysis of technological challenges and solutions that do (or could) help maintain our unrestricted use of space and space-enabled assets.

**Seeking Submissions:** WG seeks presentations touching tactical, operational, and strategic contributions from space capabilities/systems, space families of systems, or space architectures, whether in the concept, R&D, acquisition, or operational phase(s). We welcome and encourage presentations that address innovative analytical processes, methodologies, use of models and simulations, or techniques as these are applied to space capabilities/systems acquisition, testing, or operations.

**Past Submissions:** Advanced Analytic Tools for Space Modeling & Simulation (a multi-year effort to integrate optimization, experimentation, and post-run analytics with the Synthetic Theater Operations Research Model, Advanced Framework for Simulation, Integration, and Modeling, and System Effectiveness Analysis Simulation tools); Space Kill Chain Time Line Study (analysis of how space assets will affect the MDTF's kill-chain and its timeline during competition, crisis, and conflict during the Army 2030 and 2040 timeframes); and Space Demand Study (creation of a tool to produce quantitative results for a Space Control Electronic Warfare capability that will be fielded by the Army).

## WG 08 Leadership

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## WG 09 – Air and Missile Defense

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**Overview:** WG 9 is dedicated to discussing all components of Air and Missile Defense (AMD). Air and missile threats continue to grow in complexity and quantity and are a mainstay in our adversaries' ability to project power. This necessitates leveraging new technologies, tools, and approaches to ensure we remain at the forefront of operations research. Our WG seeks to foster a culture of innovation by highlighting the community's efforts to continuously enhance our ability to provide accurate, relevant, and impactful analysis.

**Seeking Submissions:** WG 9 is seeking submissions from the AMD community for this year's symposium that demonstrate "Sharpening Our Analytic Edge". Submissions should relate to AMD operations research and demonstrate the National Security community's engagement such as informing research and development, providing data for acquisition strategies, analyzing defense planning, and assessing employment options. WG 9 provides a conduit to inform the broader missile defense community of AMD analysis techniques, efforts, and results at unclassified or classified levels.

**Past Submissions:** Counter UAS Defense Posture Analysis using AFSIM; Ground Based Air Defense; Airborne High Energy Laser Operational Effectiveness; Generating Sorties Under Attack Leaker Study; and Future Shipboard Coordination of Kinetic and Directed Energy Weapons.

### WG 09 Leadership

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# WG 10 – Joint Campaign Analysis

**Overview:** The Joint Campaign Analysis Working Group (WG 10) concentrates on the integration of land, sea, air, space, cyberspace, special operations, and interagency concerns related to all phases of campaign operations. The primary goal of WG 10 is improving the quality of all aspects of campaign analysis and thereby supporting better-informed decision making at all levels.

**Seeking Submissions:** WG 10 provides a forum for presentations and discussions that primarily relate to joint campaigns. Of special interest to WG 10 are models, analytical simulations, and automated tools supporting decision making based upon joint campaign analysis. Our working group seeks to highlight analysis tools and efforts that help clarify decision space for further analysis work, increase productivity using novel techniques and tools, or leverage inter-service/agency efforts to improve the quality or speed of analysis. Preference for classified slots will be given to work releasable to FVEYES or which utilizes the Defense Planning Scenarios and Analysis Working Group Control Case inputs.

**Past Submissions:** OPNAV N81's Approach to Analytic Robustness; Anti-Submarine Warfare (ASW) Weapon Procurement Mix Study Enhancements to Air and Missile Defense Analysis Using AFSIM; BEAM: Opening Doors for Campaign Analysis; Assessing Deterrence with Value Modeling and Campaign Analysis; and Peer Strike ISR Complex: The Need for Rational Fires Coordination.

## WG 10 Leadership

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# WG 11 – Land and Expeditionary Warfare

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**Overview:** The application of land and expeditionary warfare is essential to achieving strategic success, advancing national interests, deterring future conflict, and building partners. We face a dynamic environment with ever-changing threats. We are reminded of this by our uncertain relationships with North Korea, Russia, Iran, and China. Middle Eastern terrorist networks also continue to pose a threat. It is more crucial than ever to advance analytics to support national security by informing decisions about concept development, acquisition, force design, force mix, and tactics, techniques, and procedures.

**Seeking Submissions:** WG 11 is seeking presentations from the land and expeditionary warfare domain that enhance analysts' professional development in military operations, operations research techniques, methodologies, and models in the following areas: operations against peer and near-peer threats, operations in complex and urban environments, operations against non-state actors, interoperability between conventional and special operations forces, influence of social, cultural, political, and historical knowledge on land operations, combat and stability operations involving non-military and multinational partners, and future concepts in the analytical field as they relate to land and expeditionary warfare.

**Past Submissions:** Infantry Fighting Vehicle Modernization Options Assessment; Army Aviation Air Movement Automation for the Mission Planner; Operational Research is Deciding the Next Generation of Land Equipment; and Starting Conditions for Optimal Wargaming.

## WG 11 Leadership

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## WG 12 – Maritime Operations

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**Overview:** Maritime operations are actions performed by forces on, under or above the sea to either gain or exploit control of the sea, or to deny the use of the sea by an enemy. Operations research/systems analysis (OR/SA) has played a critical role supporting the maritime domain: providing operational commanders with tools to more effectively and efficiently employ their current forces, while influencing the design and acquisition of future ships, aircraft, sensors, networks and weapons.

**Seeking Submissions:** Working Group 12 (WG12) is seeking abstracts that exemplify OR/SA methods, processes, and approaches applicable to the operation, design and acquisition of naval forces. In keeping with the 93<sup>rd</sup> Symposium's theme "Sharpening Our Analytical Edge," abstracts are sought that show engagement, collaboration and synergy across multiple organizations.

**Past Submissions:** Surface, Undersea, Mine and Air Warfare; Maritime Logistics (particularly in contested environments); Maritime Security and Counter-piracy; Analysis of Real-world Operations; Force Structure/Force Design; Unmanned Maritime Systems; Wargaming in a Maritime Environment; Use of New Modeling and Simulation Techniques; Search Theory; and Mission Engineering and Model Based Systems Engineering.

### WG 12 Leadership

Position	Name	Email
Chair	Matthew Cosner	<a href="mailto:matthew.s.cosner.civ@us.navy.mil">matthew.s.cosner.civ@us.navy.mil</a>
Co-Chair	Dr. Mike Martinez	<a href="mailto:mamartinez@mitre.org">mamartinez@mitre.org</a>
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## WG 13 – Power Projection and Strike Warfare

**Overview:** The U.S. capability for global projection of power continues to be a crown jewel for the nation. This capability requires our military programs and analysts to discover new ways to apply precision force in support of national security objectives. It also requires us to examine the constraints that our adversaries invent to prevent strike weapons concepts from succeeding. Both of these areas challenge us in the uncertainty within both the operational and programmatic arenas.

**Seeking Submissions:** WG13 seeks presentations that focus on analysis, tools, and experiments in support of power projection and strike that align with “Sharpening our Analytical Edge”, this year’s MORSS theme. WG13 encourages submissions that cover the development and evaluation of concepts of operations; tactics, techniques, and procedures; systems engineering; and new technologies that utilize analytics to show projection and strike warfare as a force multiplier. This can include studies and analysis, test and evaluation, experimentation, training exercises, and real world operations.

**Past Submissions:** AFSIM Model Tuning and Regression Testing in a CI/CD Process and Pipeline; Air-to-Air Combat Modeling, Analysis, and Adjudication; Simulation of Contested Logistics in Indo-Pacific Environment; Supply Chain Warfare: Lessons Learned from Ukraine; Combining Adaptive Computer Agents, Human Wargamers, and AI to Improve Conflict Outcomes; Airborne Gremlin II: Analyzing Threat Kill-Chain Vulnerabilities via Simulation and Derivative-Free Optimization Methods; Simulating Airfield Operations with AD-ARM; OBELISK: Modeling, Simulation, and Analysis of Laser Power Beaming for Enhanced Military Operations; Modeling with Streamed Sensor Data – “What to do when your data is curve?”; Methodology and Process for a Modeling, Simulation, and Analysis (MS&A) Powered Analytical Wargame; and Representing Human Behavior and Decision-Making in Modeling and Simulation: The Agent Behavior Reference Framework.

### WG 13 Leadership

Position	Name	Email
Chair	Katherine McCartney	<a href="mailto:kmccartney@anyarinc.com">kmccartney@anyarinc.com</a>
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## WG 14 – Air Warfare

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**Overview:** The Air Warfare Working Group is focused on the employment of combat air power. Our focus includes the effective utilization of relevant sub-systems, operational employment concepts, and the integration of air assets during the conduct of joint and combined military operations that support national strategic and theater operational objectives. The primary focus of this working group is on conventional combat missions intended to destroy, degrade, defeat, or disrupt enemy forces. These missions include Counter-Air (Offensive and Defensive), Counter-Land (Close Air Support and Interdiction), Counter-Sea, and Strategic Attack.

**Seeking Submissions:** WG 14 strives to assist in developing capabilities to cope with emerging threats, new environments, and technological breakthroughs. In keeping with the 94<sup>th</sup> MORS Symposium theme, “Sharpening Our Analytical Edge”, this working group focuses on the development of new analytical tools, processes, applications, methodologies, and metrics to provide precise, impactful analysis to decision makers. We provide a forum for discussions and presentations relating to the unique challenges faced when attempting to conceptualize, model, simulate, analyze, and experiment with the employment of combat air power and improve our understanding of air warfare.

**Past Submissions:** Airborne Weapons Layer Analysis; Advanced Munitions Effectiveness Assessment within AFSIM Utilizing a System-of-Systems Methodology; Airborne Defense in AFSIM Including Zoned Battle Management; Fighter and Drone Ratios; Investigating Air Base Resiliency; and M&S Powered Wargames for Concept of Employment Experimentation.

### WG 14 Leadership

Position	Name	Email
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# WG 15 – Military Health, Casualty Estimation, and Human Performance

**Overview:** The Military Health System provides medical support for various peacetime and wartime operations to the Joint Force and the warfighter as the human weapon system. The analysis community has many opportunities to apply operations research and innovative analysis and technologies to advance Military Health, Casualty Estimation, and Human Performance. Military Health involves Health Service Support (including casualty care, operational medicine, medical logistics) and Force Health Protection (including casualty prevention, preventive medicine, and occupational and environmental health). Casualty estimation is the development and application of quantitative methods for estimating casualties due to combat or non-combat related causes and is an essential component of providing health service support and force health protection. Human Performance involves a holistic view of the warfighter as a human weapon system, including their wellbeing, fitness, readiness, and effectiveness as individuals and as teams. Together, these functions minimize the risk to the mission and warfighter by ensuring the force is healthy, fit, and well supported medically.

**Seeking Submissions:** In alignment with the 94<sup>th</sup> MORS Symposium theme, “Sharpening Our Analytical Edge” the Military Health, Casualty Estimation, and Human Performance working group welcomes abstracts that demonstrate impactful analysis, address evolving threats, leverage new technology, and foster innovation and collaboration for military health and human performance decisions. Relevant topics include but are not limited to: casualty care; medical readiness; patient movement and evacuation; return to duty; medical personnel readiness management; force replacement personnel requirements; medical logistics; medical planning; blood products and logistics; medical treatment facility capabilities and functions; casualty prevention; preventive medicine; health surveillance; occupational and environmental health; combat stress control; suicide prevention; risk assessment; conventional and CBRNE casualty estimation; toxicity estimation; physiological resilience; high performance training; physical and cognitive sleep and fatigue; performance nutrition; and human-machine teaming.

**Past Submissions:** Joint Force Operations Scenario Casualties and Resourcing; Aeromedical Evacuation Human Performance and Medical Mission Model; Agent-based Simulation for Mass Casualty Operations and Planning; Using Large Language Models (LLMs) to Generate Large-scale Exercise Inputs; Casualty Evacuation Given Survivability Expected Values on the African Continent; Forecasting Limited Duty Burden on Navy Units; ICBM Community Cancer Registry Analysis: A Focus on Non-Hodgkin Lymphoma Cases in Missleers; Improving Training Risk Assessment for Heat Related Injuries; and Brain Health: Baseline, Diagnosis, and Recovery From Traumatic Brain Injuries of Varying Severity.

WG 15 Leadership		
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## WG 16 – Strategic Deployment and Distribution

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**Overview:** The strategic and efficient deployment of military cargo and personnel is paramount in ensuring a successful military campaign. Beyond deployment, the optimal distribution or placement of critical assets while in theater can greatly improve the overall readiness and sustainment of United States military forces and their allies. Given the many factors that can complicate the timely transportation and optimal placement of military assets, problems of this nature pose a challenging military logistics problem that lends itself well to operations research and analysis.

**Seeking Submissions:** Given the theme of the 94<sup>th</sup> MORS symposium, “Sharpening Our Analytical Edge,” there is particular interest in analytical efforts that determine efficient and effective movement, placement, and transportation of military cargo and personnel in contested environments and that involved the wider national security community.

**Past Submissions:** Optimization Modeling to Assess Sustainment in Theater; Stochastic Optimization for Military Transportation Logistics Under Uncertainty; Contested Sustainment Wargaming and Modeling; Enabler Force Demand Analysis for Total Army Analysis; Multi-Domain Task Force Sustainment Table-Top Exercise; Modeling Adaptive Basing and Resiliency in a Contested Environment; Determining Optimal Resource Requirements and Locations for Logistics Support; and Strategic Distribution.

### WG 16 Leadership

Position	Name	Email
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# WG 17 – Logistics, Reliability and Maintainability

**Overview:** Working Group 17 provides a forum for discussing a wide variety of logistics analyses, including but not limited to support to deployed forces, logistics impact on readiness, supply chain management, system reliability, designing for improved system maintainability, operational effectiveness, support for joint and coalition operations, inter-agency support, and reverse logistics. Important insights in solving problems in other areas of logistics are also valued.

**Seeking Submissions:** With this year's theme of "Sharpening Our Analytical Edge", we are especially interested in how you are employing analytics methods and techniques that are giving the war fighter greater benefits to accomplish their mission more effectively. In addition to existing analytical techniques including mathematical modeling, statistical analyses, optimization, forecasting, and simulation, we want to hear about approaches that take full advantage of diverse analytical backgrounds and specialized skill sets to explore multidisciplinary alternatives and analytical processes.

**Past Submissions:** Using Model Based Systems Engineering (MBSE) Tools to Represent Sustainment Architecture to Support Digital Transformation for Major Acquisition Programs; Digital Twin Approach to System Reliability-driven Demand Forecasting; A Probabilistic Approach to Monitor Supervised Machine Learning Models with Natural Language Processing in Production; Stochastic Optimization for Military Transportation Logistics Under Uncertainty; and Probabilistic Isolation of Faults Using Analytical, Predictive and Historical Data-driven Algorithms.

## WG 17 Leadership

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## WG 18 – Manpower and Personnel

**Overview:** National security hinges on effectively recruiting, retaining, developing, and employing a highly ready and agile workforce. However, complex challenges, such as evolving skill requirements, talent shortages, and ethical considerations related to data-driven decision-making, threaten to undermine this critical pillar. The Manpower and Personnel Working Group (WG18) at the 94<sup>th</sup> MORS is the forum for addressing these challenges head-on. WG18 connects leading researchers, analysts, and practitioners to share insights, develop innovative solutions, and drive impactful change in manpower and personnel policies and practices. By leveraging cutting-edge methodologies and fostering cross-disciplinary collaboration, we empower decision-makers to optimize, modernize, and address the challenges of our future workforce.

**Seeking Submissions:** WG18 invites submissions that explore how innovative analytical approaches transform the workforce, improve customer experience, and empower strategic workforce planning. We encourage contributions from across all sectors, focusing on practical applications, emerging methodologies, and critical discussions within the following areas:

- **New Technologies & Methods:** How can new technologies and computational methods be used to improve manpower and personnel research and practice? Focus areas include agentic artificial intelligence, machine learning, and natural language processing. WG18 focuses on how these technologies can improve workforce planning, talent acquisition, performance management, employee engagement, and customer experience.
- **Data-Driven Organizational Transformation for Efficiency:** How is data-informed decision-making streamlining organizational processes and enhancing efficiency to sharpen your organizational edge? Consider how robotic process automation, machine learning, and other technologies can impact HR practices, decision-making, and employee roles to improve resource allocation, reduce operational costs, and optimize performance.
- **Advanced Analytics for People Insights:** How can advanced analytics extract meaningful insights from people data to sharpen and enhance workforce performance? Focus areas include techniques for analyzing employee performance, providing optimal feedback, or recruiting data to improve engagement, reduce turnover, and attract top talent.
- **Human-Machine Teaming:** How can we design human-machine interfaces and workflows to empower leadership with faster decision-making, enhance the customer experience, and improve organizational effectiveness? Submissions should explore new approaches to design intuitive interfaces, provide personalized feedback, and create seamless user experiences that promote trust, collaboration, and optimal performance across the human-machine spectrum.
- **Building Analytical Capacity & Data Literacy.** How are you developing the data analysis skills of your personnel to sharpen their analytical edge? We seek submissions that demonstrate novel training programs, mentorship initiatives, or tools designed to enhance critical thinking, data visualization, and statistical proficiency in the workforce.

**Past Submissions:** Automating the Army's Centralized Selection Board; Department of the Army Career Engagement Survey: What are Soldiers Telling us about Army Life; Utilizing Natural Language to Optimize Occupational Descriptions; Understanding Suicidal Behaviors in the Marine Corps; Navy Military Operations Analyst Community: Health and Initiatives; Optimal Matching and Job Distribution in DAF Recruiting; and Retrieving the Answers: A Novel Approach to Automated SJT Item Generation.

### WG 18 Leadership

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Chair	COL Thomas Malejko	<a href="mailto:thomas.p.malejko.mil@army.mil">thomas.p.malejko.mil@army.mil</a>
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## WG 19 – Readiness

**Overview:** The 2025 National Defense Strategy (NDS), developed under the Trump administration, prioritizes defense of the U.S. homeland including America's skies and borders while maintaining a strong deterrence posture against China. Reflecting the "America First" and "Peace Through Strength" agenda, the strategy calls for increased burden sharing with allies and a more focused investment in domestic defense capabilities. It emphasizes building a more lethal, resilient, sustainable, agile, and responsive Joint Force to secure the homeland and confront adversaries abroad. In support of these critical efforts, WG 19 looks to advance the body of knowledge associated with readiness analysis by focusing on the theme of "Sharpening our Analytic Edge." This theme emphasizes the need for advanced, high-fidelity analytical techniques to drive measurable improvements in defense readiness.

**Seeking Submissions:** This Working Group specifically focuses on readiness analytics and how leveraging data, and modern analysis transforms readiness into a true force multiplier. We are seeking submissions on analytic techniques and tools that allow for real and measurable improvements in how we plan, manage, and assess the readiness of our organizations and individuals to meet real-world missions. It is also important to note that submissions should be capable of transitioning from unclassified to the highest classification as necessary. The questions of readiness can focus on the component parts—personnel, supply, and training—and the force management/force generation processes that expertly combine those parts into a ready, dominant Joint force.

**Past Submissions:** Past submissions have come from U.S. and Allies with examples being the Advancing Unit Commanders' Ability to Monitor and Maintain Equipment Through Visualizations; Future Attack Reconnaissance Aircraft Analysis of Alternatives Trades Analysis; Real-Time Analysis for the Army's Fleet of Apache Attack Helicopters; USAFRICOM's Successful Assessments Taxonomy; Integrated Air and Missile Defense (IAMD) Mix Study Phase 1 Overview; Readiness Decision Impact Model; ReARMMing for Success: Phasing Out Friction Points; USAF Warfare Center "SAVAGE" Data Driven Debrief Project; Army Future Force Strategy Options; Assessment of Engineer Tank Variant Readiness; Endurance Supply Analysis for Naval Aviation Weapon Systems; Operator Training Pipeline Simulator; Stochastic Integrated Military Aircraft Fleet Management; The Delphi fleet planning tool; How Good is Good Enough: Mapping Model Quality to Equipment Readiness; Simulation of Army Readiness; Dynamic Ordnance Load Mix Probabilistic Risk Model; Enhancing Decision-Making and Strategic Planning through Advanced Analytics: A Case Study; and Bulk Fuel Feasibility Assessment.

### WG 19 Leadership

Position	Name	Email
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## WG 20 – Analytical Support to Training and Education

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**Overview:** The primary deterrence challenge facing the United States today is preventing aggression and escalation in limited conventional conflicts with a nuclear-armed adversary. Data analytics, measurement, and other evaluation-related training and education methodologies are critical for DoD to address it. The Training and Education Working Group will provide a forum to exchange ideas, lessons learned, and best practices using a mix of advanced data analytics, commercial-off-the-shelf tools, and simpler approaches in support of Integrated Deterrence.

**Seeking Submissions:** The 94<sup>th</sup> MORS Symposium offers an opportunity to review recent work, training evaluation and assessment concepts, and new training and education developments. Taking a different approach to the decision-making process and emphasizing training and education will provide commanders and DoD civilians efficacy using limited resources leveraging data analytics. We seek analytical presentations addressing any of the mission priorities and concerns outlined above. Both completed work and works-in-progress are welcome.

**Past Submissions:** Application of Network Flow Optimization to Accession Planning Challenges at Submarine Learning Center; Forging the Future at the National Training Center; Structured Analytic Techniques (SATs) improves Decision Making Capabilities for Intelligence, Surveillance, and Reconnaissance (ISR) Mission Environments; The Impact of Losing a Single Instructor on Undergraduate Pilot Training Production; and Virtual Reality Enhancement of Geospatial Military Intelligence Training.

### WG 20 Leadership

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## WG 21 – Energy

**Overview:** Energy is a fundamental enabler for the US defense enterprise which includes Operational Energy (OE) and Installation Energy (IE). Title 10 U.S.C. defines OE as the energy required for training, moving, and sustaining military forces and weapons platforms for military operations. IE typically involves that energy required to operate more permanent DoD bases, facilities, and non-tactical vehicles. The nation's security depends on the assured delivery of secure and resilient power to operations on the battlefield and to the supporting installations. Working Group 21 analytically supports the DoD OE and IE Strategies by providing energy practitioners a forum for discussing analytical tools and a wide range of applications from the assessment of cutting-edge new technologies to critical foundational energy issues, such as the logistical supportability of military operations.

**Seeking Submissions:** In concert with the 94th MORSS theme, “Sharpening our Analytical Edge”, WG 21 is seeking topics within, but not limited to, the four DoD Energy Strategy lines of effort: 1) Energy Demand Reduction (i.e., improve efficiency and enhance supportability); 2) Energy Substitution and Diversification (e.g., explore alternative energy resources); 3) Supply Chain Resilience (e.g., improve survivability and reduce risk); and 4) Enterprise-wide Energy Visibility (e.g., C2 Common Operational Picture of supply and demand with wargaming and predictive analytics in support of force development and operations). Each line of effort challenges the analysis community to develop techniques that lead to reducing fuel demand while improving operational effectiveness and installation energy resilience to achieve tactical, operational, and strategic objectives.

**Past Submissions:** DoD Operational Energy Overview; Air Force Operational Energy Overview; Simulating Future Battlefield Hybridized Power; M&S Framework for Vehicle Electrification Representation within Combat Simulations; Integrated Modeling of Fuel-Constrained Operations in Contested Environments; Cost Engineering an MVDC Power & Energy Design for Navy Surface Combatants; Evaluating Biogas Potential for U.S. Army Installations; Requirements Analysis for Liquid Air Energy Storage Prototype on a Military Microgrid; and Atmospheric Impacts on Future Hybridized Tactical Power, Using Machine Learning and Artificial Intelligence to Quantify Uncertainty.

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## WG 22 – Military Assessment

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**Overview:** The purpose of military assessment, as an activity, is to study the operations of a military organization in the context of its environment and determine what it needs to do next to make the organization more effective at accomplishing its goals. Assessment is a continuous activity that looks at empirical evidence, determines its meaning in terms of the operating environment, and recommends ways in which the organization can adapt to its environment, and choose operations that will accomplish its goals most effectively.

**Seeking Submissions:** Since a proper understanding of an operating environment is reached by harnessing analytics to make best sense of empirical observations made, which in turn, makes future operations more effective, the working group seeks presentations on how to do this AND examples of analysts doing this right—we want presentations on solving assessment problems, innovations in techniques to understand operating environments, and in learning lessons quickly and at as low a cost as possible. That is why we share, so that we can learn from others' experiences. We are interested in what has worked, and also in what did not—and what you learned from that experience.

**Past Submissions:** The Effectiveness Paradigm and Most Common Errors in Assessment; Establishing a Standards-Based Assessments Approach; Providing a Framework and Data Science Solutions to Support U.S. Special Operations Command Decisions; Strategically Aligned Analysis at a COCOM: A Blueprint for Informed and Resourced Decision-Making; Ukrainian 2022 and 2023 Counteroffensives: A Comparative Analysis; USAFRICOM Campaign Assessment and the Standards-Based Process; USAFRICOM's Successful Assessments Taxonomy.

### WG 22 Leadership

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# WG 23 – Process & Performance Improvement

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**Overview:** The Process & Performance Improvement Focus Group fosters the use of measurement, process mapping and documentation, root cause analysis, statistical analysis, other graphical and analytical techniques, predictive analytics, and performance monitoring solutions to enhance mission-relevant decisions and outcomes for defense and security programs and organizations. Process & Performance Improvement encompasses a broad range of quality management, process management, and organizational performance management topics, including techniques from Lean, Six Sigma, Business Process Reengineering, Theory of Constraints, Value Engineering, Robotic Process Automation, benchmarking, business intelligence, and artificial intelligence / machine learning, plus human-focused insights from decision science and behavioral public administration research.

**Seeking Submissions:** WG 23 seeks submissions that demonstrate and promote the use of process- and performance-focused analytics to overcome program or organizational performance challenges and enhance decision-making. Submissions could include case studies, best practices, and novel techniques for enhancing performance planning, performance monitoring, identifying improvement opportunities, implementing improvements (such as DMAIC, A3, DFSS, BPR, VE, and RPA projects), and ensuring that improvements have the desired performance and workforce effects. Of particular interest are presentations that demonstrate the synergistic integration of process improvement techniques with the organization's performance management processes, including strategic planning, performance measurement, auditing, Agency Priority Goals, and program evaluation.

**Past Submissions:** Establishing a Strategic Management and Performance Improvement Framework for the Department of Defense's Enterprise: Challenges and Opportunities; Performance Measurement Case Study: From Strategy, to Metrics, to Dashboards for a Defense Research & Development Center; The Negative Effects of Defense Financial Obligation and Expenditure Benchmarks; Generating Value Through Process Automation; Maximizing Financial Benefit of Lean Six Sigma Projects through Optimized Selection Criteria; and Orchestrating Inspiration: A Framework for Enabling Better Decisions from Information Theory and Live Performance.

## WG 23 Leadership

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## WG 24 – Test and Evaluation (T&E) and Experimentation

**Overview:** The Test, Experimentation, and Evaluation Working Group (WG 24) provides an opportunity for operations research analysts to examine topics pertinent to all aspects of test and experimentation supporting the Department of Defense, industry, and other government departments and agencies. Test and experimentation are processes that produce knowledge about the true capability of a system by analyzing empirical observations obtained from stimulating a system to requirements and standards. The goal is to transform knowledge gained from testing into “decision-quality information” to inform key acquisition and national security decisions.

**Seeking Submissions:** WG 24 seeks submission from government, academia, industry, and military operations research analysts to share lessons learned and state-of-the-art methods and techniques that address the theme for this year’s symposium, “Sharpening Our Analytical Edge,” particularly in the following subject areas: Statistical Engineering in T&E, design of experiments in T&E, reliability and reliability growth, cybersecurity T&E, software T&E, modeling and Simulation (M&S) in T&E, interoperability T&E, capability Based T&E, T&E in Model Based System Engineering, T&E of autonomous systems, T&E for hypersonic systems, T&E for directed energy system, T&E policy, guidance, and facilities.

**Past Submissions:** In past years, WG 24 has welcomed briefs from all aspects of experimentation, particularly the following: Designing Credible Experiments with Limited Resources; Developing Coherent Strategies for Campaigns of Experimentation; Developing Meaningful Measures of Merit/Measures of Effectiveness; Conducting Experiments in Training Exercises or Field Tests; Effectively Visualizing and Presenting Test Results; Survey Development; M&S Verification, Validation, and Accreditation (VV&A); and Automated Software Testing.

### WG 24 Leadership

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# WG 25 – AoAs and Capability Development

**Overview:** Analysis of Alternatives (AoAs) and Capability Development are processes used by stakeholders to identify, evaluate, develop, field, and sustain capabilities in an environment of limited resources. Capability Development encompasses three major activities: 1) capability gap identification, 2) risk assessment, and 3) solution development. Additionally, WG 25 examines innovative ways to define Measures of Merit (MOMs). MOMs quantitatively assess the effectiveness of future combat capabilities or plans in the face of dynamic and emerging threats.

**Seeking Submissions:** Topics of interest include innovative study methodologies and impactful analyses that help decision makers determine which future capabilities to invest in. Specific types of analyses include, but are not limited to, Capability Based Assessments (CBAs), AoAs, pre-Materiel Development Decision (MDD), capability gap identification and prioritization, trade space exploration, risk assessment, science and technology initiatives, and experimentation/rapid prototyping. WG 25 seeks innovative methods for conducting analyses and emerging approaches that aim to identify value, mitigate capability gaps, and rapidly transition leading-edge capabilities into operational use in order to sharpen our analytical edge.

**Past Submissions:** Using Digital Engineering to Inform Research Investment Decisions; Acquisition Readiness Assessment for Pre-Program of Record; Using Modeling & Simulation to Inform Experimentation & Acquisition Decisions; Building Threads to Identify and Analyze Cross-Portfolio Capabilities; Combat Modeling in Support of Optionally Manned Fighting Vehicle Analysis (identifying technology trades to inform capability requirements); and Early Lifecycle Prediction of Reliability (developing models to estimate reliability Pre-Milestone A and assess the impact on performance and cost models).

## WG 25 Leadership

Position	Name	Email
Chair	Alex Dessanti	<a href="mailto:adessan@sandia.gov">adessan@sandia.gov</a>
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Co-Chair	Garrett Dranichak	<a href="mailto:gdranic@sandia.gov">gdranic@sandia.gov</a>
Co-Chair	Dave Goodwin	<a href="mailto:alistair.goodwin.3@us.af.mil">alistair.goodwin.3@us.af.mil</a>
Co-Chair	Natalie Van Osch	<a href="mailto:natalie.w.vanosch.civ@us.navy.mil">natalie.w.vanosch.civ@us.navy.mil</a>
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## WG 26 – Cost Analysis

**Overview:** The Cost Analysis Working Group provides a forum within MORS to discuss better ways to provide credible cost and economic analyses in support of projects and programs. Detailed cost, affordability, and uncertainty analyses have far-reaching impacts on informing decisions regarding the development, procurement, operation, and sustainment of modern programs and on effective resource decisions made across organizations. Additionally, providing realistic cost estimates in support of trade-off decisions, at all program stages, presents a significant OR challenge. Armed with the latest analytical tools, techniques, and best practices, analysts can generate accurate estimates to ensure resources are available to support warfighter requirements.

**Seeking Submissions:** Submissions or proposals relating to military cost analysis, resource analysis, economic analysis, cost risk and uncertainty analysis, and related disciplines are welcome. Preference will be given to study results that incorporate creative uses of OR tools to develop improved cost estimates and analysis to support better decisions, especially studies that support the theme of “Sharpening Our Analytical Edge”. Effective methods for presenting the results of complex operational analysis in a clear, concise manner are always of interest. Presentations may be completed works or works-in-progress.

**Past Submissions:** An Analysis of Hardware Modification Cost: A Test of a 1:1 Ratio Heuristic; Enterprise Visibility and Management of Operation and Support Cost (EVAMOSC); My Dog Ate My Engineering – Empowering Excuse Free Digital Transformation; Artificial Intelligence Powered Coding: How Large Language Models Help Cost Analysts Build Custom Tools; Software Modernization: A Real-World Example; GAO Presents: Ten Years of GAO Cost Guide Best Practice Assessments; Using Technology Readiness Levels to Predict the Future of Nuclear Weapons; Finding the Story in Your Data; Well, That Escalated Quickly - A Novel Approach to Forecasting Escalation; Multivariable Consideration on Cost Estimates and Optimization for Security Systems; Rate Effects in Aircraft Learning Curves; and Cost Estimator Accuracy over Time and Program Characteristics that May Affect Accuracy.

WG 26 Leadership		
Position	Name	Email
Chair	Rainey Southworth	<a href="mailto:rainey.southworth.ctr@us.navy.mil">rainey.southworth.ctr@us.navy.mil</a>
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# WG 27 – Decision Analysis

**Overview:** Decision Analysis (DA) provides the philosophies, theories, and methodologies needed to address challenging and complex decision situations in a formal manner. It encompasses the many procedures, methods, and tools leveraged by analysts to assist decision makers in making the best-informed decisions within the constraints of the problem space and time. DA methods are incorporated as components of multi-disciplined approaches that combine techniques such as data visualization, mathematical programming, simulation, Bayesian networks, Markov decision processes, artificial intelligence and machine learning.

**Seeking Submissions:** WG27 is seeking submissions in relation to the MORSS theme “Sharpening Our Analytical Edge” having emphasis on four general categories of practice: 1) assessment of the decision maker’s biases and preferences in the evaluation of alternatives, 2) incorporation of uncertainty associated with the outcomes and the information used in the decision, 3) scaling the collection and synthesis of data for decision making, and 4) effectively communicating the trade-space to the decision maker. The theme aims to foster a culture of innovation and collaboration to ensure delivery of impactful analyses that adapt to evolving threats and new technologies.

**Past Submissions:** Papers describing completed work or work in progress that makes use of DA methods or models, and/or case studies in the application of DA showcasing Innovations in Practice and Theory; Application of Soft Skills; Modeling Risk and Uncertainty in Decisions; Acquisition Applications and Risk Management; Portfolio Analysis; Modeling Human Decision Processes; Large Data, Business Analytics; and Decision Analysis for Product Development & Acquisition using Set-Based Design.

WG 27 Leadership		
Position	Name	Email
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# WG 28 – Advances in Modeling and Simulation Techniques

**Overview:** WG 28 discusses advances and highlights in the application of modeling and simulation (M&S) techniques from systems engineering to the joint strategic level. Our focus is unique and innovative approaches to M&S development through: application, verification, validation, and simulation tools.

**Seeking Submissions:** WG28 seeks abstracts overviewing advances in modeling and simulation and that highlight this year's theme of "Sharpening Our Analytical Edge." Briefings should provide insights to strategy, force structure, weapon systems, autonomous systems, and system requirements. We welcome in-depth discussions of M&S techniques, such as agent-based simulation, design of experiments, Bayesian methods, discrete event simulation, and machine learning. Presentations should emphasize modeling tools (R, Python, etc.) and utilized software (AFSIM, COMBATXXI, STK, etc.), more so than specific study results.

**Past Submissions:** AFSIM Innovations for Modeling, Simulation and Analysis of Anti-Surface Warfare; Application of the Adaptive Kill Web Framework to Cyber and Non-Kinetic M&S; Ballistic Missile Discrimination Simulation and Analysis; High-Value Target (HVT) Tracking in a Mixed Urban-Rural Environment; Scripts and Sims: Delivering Tactical Insights with SimPy; Simulating a Stochastic Approach on Maintenance for Future Vertical Lift Aircraft; and Using Machine Learning to Train Threat Kill-Chains Models for Warfighter Support.

## WG 28 Leadership

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Chair	Steven Heinlein	<a href="mailto:steven.heinlein@usmc.mil">steven.heinlein@usmc.mil</a>
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# WG 29 – Emerging and Adapting Computational Solutions within OR

**Overview:** The Emerging and Adapting Computational Solutions in Operations Research Working Group is focused on aiding analysts and equipping decisionmakers with new ways to handle complex decision-making. This group provides a forum for the discussion of emerging mathematical, statistical, and computational techniques which improve analysis capabilities, fidelities, and/or workflows. This encompasses a broad range of topics including multi-domain analysis, especially inclusion of cyber; high-dimensional data analysis; rapid design space exploration; uncertainty quantification; addressing computationally challenging problems; cluster optimization; and techniques for reusable and/or highly adaptable analytic solutions.

**Seeking Submissions:** WG 29 solicits presentations that delve into the creation and application of innovative algorithms, methodologies, or computational advances that enable “Sharpening Our Analytical Edge.” Presentations should focus on the motivation, implementation, and resulting benefits of advances with regard to overcoming challenging problems within the OR domain. We welcome presentations on work currently under development or fully completed.

**Past Submissions:** Large-scale Parallelized Simulation on Heterogenous Clusters; Achieving Multi-Resolution Campaign Modelling In AFSIM; Enabling Course-of-Action Analysis in Wargames with Reinforcement Learning; Combining Machine Learning and Traditional Optimization Approaches to Solve Reconnaissance Mission Planning Problem; Remembering the Operator in Partially-Automated System Analysis; Safe Machine Learning Prediction and Optimization via Extrapolation Control; and Efficient Response Surface Estimation through Adaptive Sampling.

## WG 29 Leadership

Position	Name	Email
Chair	Dr. John Robinson	<a href="mailto:jrobinson47@gatech.edu">jrobinson47@gatech.edu</a>
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Co-Chair	Jonah Sonnenschein	<a href="mailto:sonnen@ca.metsci.com">sonnen@ca.metsci.com</a>

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## WG 30 – Wargaming

**Overview:** A wargame is a dynamic representation of conflict or competition shaped by human decision-making and the responses or unforeseen consequences of those decisions. Wargaming provides valuable insights to senior leaders in their decision-making process and is a critical ingredient in the cycle of research and learning which integrates operational analysis, warfare simulation, and doctrine development. The spectrum of wargaming covers a wide range of methodologies, from rigid-Kriegsspiel to seminar wargames. Determining the most appropriate wargame methodology is one of the most important and challenging tasks for a wargame designer and event execution team. Applied correctly, wargames help sharpen our warfighter's analytic edge and keep us one step ahead of our competition.

**Seeking Submissions:** WG30 seeks submissions that span the breadth and width of the wargaming spectrum and provide examples of currently planned or previously executed wargames. Emphasis is desired on game design, event shaping, wargame execution, and adjudication methodologies. We are interested in hearing about the recursive relationship between wargaming and analysis along with wargaming impacts on stakeholder decision-making.

**Past Submissions:** In the past we have heard results on historical tactical and regional battles, as well as modern and postulated future conflicts. Recent presentations have included: The Global Strategic Competition to Crisis Game (G-SC2), TTCP Scrum Event and Polar Operations TTX, Wargaming within the Nuclear Environment, Incorporating Logistics Impact into the Center for Army Analysis Accelerated Wargame System (CAAAWS).

### WG 30 Leadership

Position	Name	Email
Chair	Sandro Teixeira	<a href="mailto:steixeira@groupw.com">steixeira@groupw.com</a>
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Advisor	Trey Smith	<a href="mailto:tsmith@groupw.com">tsmith@groupw.com</a>

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# WG 31 – Operational Environments

**Overview:** The Operational Environments working group features discussions about the operational environment's role in the full spectrum of military operations from high end great power warfighting to humanitarian assistance and disaster relief. There are four major aspects of the operational environment: natural environment (terrain, ocean, atmosphere, weather trends, pathogens, nuclear or chemical contamination), human constructs (infrastructure, hardware, and software), human populations (the various demographic characteristics of the local residents), and social science factors (political, social, cultural, informational, and economic). These aspects often interact in complex ways to impact U.S. military operations around the world and pose significant challenges to American military commanders in the field. By understanding these aspects in more depth the national security community can sharpen its analytical edge and better prepare the U.S. military to operate in complex environments.

**Seeking Submissions:** WG 31 focuses on identifying and describing key operational environment subsets in new and innovative ways and then developing analytical methods and tools that can be used as a force multiplier in complex environments to better support and inform US military operations around the world and also to advance American analytical leadership in the field of military operational environments analysis. WG 31 is interested in innovative approaches to assessing operational environments, including advanced remote surveillance capabilities, improved sociocultural and economic analysis, political and demographic shifts forecasting, data analysis and visualization tools, methods for assessing various types of urban terrain, new modeling techniques for assessing the operational effects of different geographic configurations of U.S. Air Force bases in overseas theaters, and improved natural environment data. We are also soliciting studies and experiments that describe the operational capabilities that will be required for the joint force to succeed across a full range of operational environments.

**Past Submissions:** Effects of Disruptions in CONUS Natural Gas Pipelines; Demography and Security in Ukraine and Belarus; Military Operations in a Nuclear Environment; Simulations of Covid-19 Transmission and Response in a Synthetic Population; Robotics for Engineer Operations; Numerical Weather Prediction Modeling for Decision Support at Smart Military Installations; Understanding the Urban Operational Environment through Urban Morphometric Analysis; and ICBM Community Cancer Registry Analysis.

WG 31 Leadership		
Position	Name	Email
Chair	Dr. Brian Nichiporuk	<a href="mailto:briann@rand.org">briann@rand.org</a>
Co-Chair	Leah Talaber	<a href="mailto:ltalaber@anl.gov">ltalaber@anl.gov</a>

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## WG 32 – Special Operations and Irregular Warfare

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**Overview:** Special Operations and Irregular Warfare (IW) is a warfighting modality that stretches from pre-conflict to post conflict operations which seeks to achieve strategic objectives through the deployment of low density tactical teams primarily by nontraditional, indirect, or asymmetric means and is characterized by some of the following operations: counterterrorism, unconventional warfare (UW), counter UW, partisan force building, counterinsurgency, intelligence activities, computer network operations, foreign internal defense, and stability operations, military information support operations (formerly psychological operations), information operations, counter proliferation of WMD. The panoply of operations covers the gamut of asymmetric, gray zone and hybrid warfighting and is agnostic to the linear nature of larger conventional conflict.

**Seeking Submissions:** Organizations and stakeholders with interests in the SOF/IW arena will benefit from the analytical community in the areas of strategic and operational decision-making, campaign planning and analysis and policy determination using mission planning tools and analytical aids, modeling and simulations and analysis, and by systemic collection and dissemination of data and lessons learned from previous IW operations and interagency activities. These analytical capabilities include contributions from STEM and soft disciplines, as well as from traditional national security operations research.

**Past Submissions:** Developing a Country Level CBRN Readiness Metric; The Impossibility of Successful Western Counterinsurgency; Markov Model of Nuclear latency; Sensemaking-Decision-making Via Systems Thinking; and Antifragility and Counterinsurgency.

### WG 32 Leadership

Position	Name	Email
Chair	Mr. Bill Buppert	<a href="mailto:wiliam.e.buppert@rtx.com">william.e.buppert@rtx.com</a>
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Co-Chair	Mr. Carl J. Unis	<a href="mailto:cjunis1@comcast.net">cjunis1@comcast.net</a>

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# WG 33 – Social Science Methods and Applications

**Overview:** Working Group (WG) 33 explores multidisciplinary methodologies for understanding human, social, cultural, and behavioral dynamics, using both social science methods and quantitative techniques. The group supports research that leverages both traditional social science methodologies and quantitative approaches—such as mathematical modeling, computational simulations, and statistical analyses—to address complex social phenomena. The group also supports research on how computational and mathematical techniques can improve social science methodologies. Relevant fields include traditional social science disciplines like anthropology, economics, history, political science, psychology, and sociology, as well as computational fields like mathematical modeling, network analysis, data science, and societal computing. Presentations should highlight how qualitative and quantitative techniques can enhance decision-making, particularly in national security contexts and emerging security challenges.

**Seeking Submissions:** WG 33 welcomes submissions from researchers applying a range of methods, including anthropological case studies, economic analysis, data science, and computational modeling, to understand complex social behaviors such as online disinformation, economic markets and supply chains, and demographic and population modeling. This working group invites discussions on methods, models, and analytical tools that support decision-making across domains, fostering a dialogue on how both social science and quantitative techniques can effectively address contemporary security issues.

**Past Submissions:** Development of Workforce Analysis Tool to Support COVID-19 Response Efforts; Corona Virus Disease 2019 (COVID-19) Support to 9th Hospital; Developing a large-scale synthetic population of persons for simulating COVID-19 transmission and response; The Market Dynamics of Rare Earth Extraction from Unconventional Sources in the U.S.; Selecting performance measures for a defense process improvement program via consensus-based action research; Human-Centric AI-Driven Decision Intelligence: Descriptive, Predictive, and Prescriptive Analytics; Unpacking Deterrence: AI-Enabled Semantic Analysis of a Large Chinese Dataset; Improving Government Effectiveness, Efficiency, & Affordability: Accounting for the Human Domain in the Market of Public Goods; Weaponization of Language in Online Information Environment: Use of Metaphors in Disinformation Campaigns; and Demography and Security in Saudi Arabia.

## WG 33 Leadership

Position	Name	Email
Chair	LTC Christine (Chris) Krueger	<a href="mailto:christine.c.krueger.mil@army.mil">christine.c.krueger.mil@army.mil</a>
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Advisor	Dr. Brandon Shapiro	<a href="mailto:bshapiro@ida.org">bshapiro@ida.org</a>

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## WG 34 - Data Science and Analytics

**Overview:** The Data Science and Analytics Working Group brings together practitioners of data mining, text analytics/natural language processing, machine learning, and social network analysis that solve a wide variety of problems. In this data and results focused discipline, this working group collaboratively enables decision-makers with descriptive, diagnostic, predictive and prescriptive analytics. We combine and tailor emerging tools and newly available data to the unique problems of the Department of Defense (DoD) and Intelligence Community (IC) domains. Above all, we remove barriers between practitioners, allowing them to benefit from the collaboration and cooperation that is necessary to sustain an effective data science and analytics community.

**Seeking Submissions:** We welcome presentations from data scientists, operations research analysts, statisticians, and machine learning practitioners that showcase how data science and analytics are driving success in Sharpening our Analytical Edge. Abstracts should describe how our ability to deliver precise and impactful analysis is enhanced or how we have adapted to evolving threats and leveraging new technologies. Analysis and results should:

- Demonstrate data science approaches and technologies including: open-source software, cloud environments & methods, parallel computing strategies, high-performance computing enabled analytics, streaming data, multi-media and multi-structured data, link and graph mining, semantic-based data mining, recommendation systems, and social web-mining.
- Have applied methods in any part of the data science pipeline (acquire/store data, munging, wrangling, modeling, visualization, human/computer interaction).

**Past Submissions:** Vision Language Model-based Video Captioning for US Coast Guard Use Cases; Visualizing World News for Information Advantage; Machine Speed Insights in Generative AI Wargaming; and Mapping Ever Larger Data with PostGIS, DuckDB, GeoArrow and deck.gl.

WG 34 Leadership		
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# WG 35 - Artificial Intelligence and Autonomous Systems

**Overview:** AI and Autonomous Systems encompass the spectrum of operational issues associated with AI-enabled autonomous military systems to 1) deconstruct the profound complexities posed by such systems and 2) develop new operations research methods and tools to analyze these problems in support of national security.

**Seeking Submissions:** WG 35 seeks submissions that showcase novel applications of AI and autonomous systems as well as rigorous analytical methods. Topics include but are not limited to wargaming, Test & Evaluation/Verification & Validation (T&E/V&V), applications to cybersecurity, spectrum operations, maintenance, safety and security, Governance and Trust, unmanned autonomous vehicles (UAV) and systems (UAS) across all domains, real-time tactical applications, system deployment considerations, application of large language models (LLMs) to augment operational workflows, and Modeling & Simulation (M&S).

**Past Submissions:** Combining Adaptive Computer Agents, Human Wargamers, and AI to Improve Conflict Outcomes; Biologically Inspired Swarm Intelligence for Military Applications; Enhancing Decision-Making in Digital Wargames & Simulation: Integrating Reinforcement Learning with Multimodal Models; Adopting Retrieval Augmented Generation (RAG) Large Language Models (LLMs) to enable Army Multi-Domain Operations; and Ethical AI: Some Practical Practices.

## WG 35 Leadership

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# DWG 01 – Emerging Operations Research

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**Overview:** DWG 01 benefits MORS constituents by helping them keep pace with rapidly changing methodologies. As innovative analysts create new methodologies to keep our analysis relevant, there may not be an area within the traditional MORS focus areas that is appropriate for a given presentation.

**Seeking Submissions:** DWG 01 seeks submissions that are targeted to Emerging OR that use analytical concepts and solutions as a force multiplier to solve unique National Security challenges. These include solutions, techniques, and methodologies that do “more with less” in relation to unique National Security challenges that do not fall in a traditional MORS focus areas or Working Groups. All submissions should be tailored to the MORSS theme.

**Past Submissions:** Assessing the United States Foreign Military Aid Impact on Conflict; Space Sensitivity Assessments Using Multi-Domain Kill Webs in AFSIM; An Adaptive Kill Web Framework for Mission Engineering and Concept Explorations Analysis.

## DWG 01 Leadership

Position	Name	Email
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Advisor	Dr. June “JRod” Rodriguez	<a href="mailto:juner@mitre.org">juner@mitre.org</a>

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## DWG 02 – Unmanned Systems

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**Overview:** The Unmanned Systems distributed working group is focused on research and analysis of remotely operated, autonomous, and hybrid unmanned platforms in all warfighting domains including air, surface, undersea, and space. Unmanned systems continue to see rapid increases in capability and proliferation, and DWG 2 explores both potential threats and opportunities enabled by these improvements in sensing, maneuverability/endurance, cost, command and control, and deployment concepts and techniques.

**Seeking Submissions:** DWG 2 is seeking submissions describing efforts such as mission effectiveness or cost analyses, data collection/curation techniques, and modelling and simulation advancements related to this year's MORSS theme: "Sharpening Our Analytical Edge." Both completed and ongoing work that highlights the role of analysis in contributing to the real or potential increased impact of unmanned systems in operationally relevant scenarios and challenges are welcome.

**Past Submissions:** Assessing Counter-UAS Detection and Defeat Capabilities in Arctic Environments (Applied methodology to integrate C-UAS detection and defeat analysis into a geospecific scenario environment informing the development and employment of Counter-UAS capabilities); Soldier Lethality and the Emergence of small Unmanned Aircraft Systems (sUAS) on the Modern Battlefield; and Unmanned Aerial System (UAS) Launch and Retrieval System (LaRS) with Autonomous Operations Performance Analysis.

### DWG 02 Leadership

Position	Name	Email
Chair	Bob Chalmers	<a href="mailto:Robert.Chalmers@jhuapl.edu">Robert.Chalmers@jhuapl.edu</a>
Co-Chair	Tom Karnezos	<a href="mailto:Tck143@arl.psu.edu">Tck143@arl.psu.edu</a>

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