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12th Annual SMA Conference

21-22 May 2019; Joint Base Andrews

Jointly with DHS

The Evolving Anatomy of Conflict in a Dynamically Changing World

Conference Theme:

The actors, actions and arenas of the emerging global security environment are changing. To navigate these murky waters, the United States requires effective statecraft that relies in equal measure on: (1) resurgent diplomatic application of national will, (2) information and technological overmatch including through artificial intelligence, (3) multi-use conventional and irregular warfighting capabilities, and (4) economic growth fostering national interests across domestic and international private-public partnerships. Such a comprehensive and nuanced approach is needed to achieve strategic success in diverse contested spaces, and address the complex political, economic, social and ecological challenges that will face the nation.

DAY 1: ENDURING AND EMERGING CONFLICTS AND EVALUATING ATTEMPTS TO END THEM

Introduction: Ms. Gia Harrigan (DHS)

Keynote Speaker Day 1: TBD

Opening Session: Joint Staff and USD (R&E): Brig Gen Alexus Grynkewich (Joint Staff/J39) and Dr. Charles Perkins (ASD(R&E))

Conference Intro Roundtable: *State of the World – Opportunities and Threats on the Horizon*

- This opening discussion sets the stage for the conference by identifying several competing trends. First is renewed Great Power competition on a global scale. Rather than a revision of the Cold War, the emerging security environment features more complex challenges due to the rise of state power in some areas, contrasted by increased potency of non-state actors. Combining asymmetric strengths and inherent US strategic vulnerabilities, Russia and China are on paths to present growing threats to the interests of the US, its allies and partners. Yet opportunities exist in all arenas to contest state and non-state adversaries.
- As part of the broader elements of national power, cyber and population influence levers reside at the center of those contests. Evidenced in the emerging exponential development in AI and human-machine integration, competition and conflict in the initial decades of the 21st century reveals the necessity of whole-of-government, -industry and -society efforts. Yet

equally challenging are the vulnerabilities that integration presents through the profusion of actors and ungoverned spaces – both physical and virtual. Combined with increasingly accessible capabilities for malign influence, economic disruption and infrastructure damage, technological innovations should be seen as much as Pandora as Prometheus.

- Given the propensity of US peer competitors to exploit US democratic decision making processes, the DoD must be prepared to challenge adversaries in every domain and to counter their advantages relative to control of information.

Panelists: Drs. Allison Astorino-Courtois (NSI), Spencer Meredith (NDU), and Barnett Koven (Univ. of MD/START)

Panel 1: *Opportunities and Risks of Stabilization*

- The perilous nature of reconciliation: Work on divergent worldviews on peacebuilding, DDR, and stabilization illustrated how overlooking the cultural variation in the reconciliation phase of planning can be as perilous as during conflict. This panel will provide technical and socio-cultural perspectives on the rebuilding phase to discuss how the allocation and use of physical space plays a role in stabilization potentially supporting good governance or increasing insecurity. The rebuilding phase during reconciliation and stabilization illustrates how our advanced technological capabilities, including modeling and ML decision-making tools, must evolve to include sociotechnical dimensions that localize solutions or risk contributing to cyclic conflicts. How can the DoD best posture its forces to address these challenges to requirements found in the national defense and national military strategies?

Moderator: Dr. Gwyneth Sutherlin (NDU); Panelists: Dr. Laura Steckman (MITRE), Dr. Siobhan McEvoy-Levy (Butler University), Dr. Griffin Thompson (US State Department/Georgetown University), and Dr. Spencer Meredith (NDU)

Panel 2: *The Near Fight – USCENTCOM, USAFRICOM*

- Building on the previous discussion, this panel takes a "deep dive" into the ongoing conflicts in the Middle East and Africa as part of nearly twenty years of CT/COIN and stabilization efforts. Focusing on non-state actors and partner nations, while drawing attention to emerging regional and global competition spaces in the region, panelists will examine enduring challenges in ongoing battlefields, as well as assess pathways for potential reconciliation. Linkages between conflicts will also be assessed as leverage to provide effective approaches that extend beyond immediate conflict zones. Panelists will explore these issues in specific contexts, highlighting the commonalities and differences between them, and discuss how our adversaries exploit US involvement in these regional conflicts to conduct unabated operations in other areas of the world.

Moderator: Ms. Sarah Canna (NSI); Panelists: Vern Liebl USMC CAOCL (Afghanistan); Dr. Sabrina Pagano NSI (Pathways Model), AMB Erica Barks-Ruggles NDU (Rwanda), LTC Mike Maloney USASOC G3 (Syria), Dr. Dana Eyre (SoSACorp)

Panel 3: *The Nearing Fight – USEUCOM, USINDOPACOM, USSOUTHCOM*

- Stepping into the emerging Great Power competition space, this panel looks at examples of ongoing and likely potentials for state-to-state conflict, as well as non-state actors as proxies for the same. Panelists will address rival interests and approaches, as well partner nation strategies seeking to balance, bandwagon, and bargain in the emerging conflict spaces. As the rapidly approaching frontier of emerging threats, this panel will grapple with historic rivalries, as well as new fault lines exacerbated by Great Power competition. The panel will also address how peer competitors employ proxies against USG interests and discuss opportunities to counter these activities.

Moderator: Dr. Barnett Koven Univ. of MD/START (Colombia); Panelists: Dr. David Dorondo WCU (Europe), Dr. Fabiana Perera CHDS (Venezuela), and Mr. Adam Fields CSO-NEA DOS (Philippines)

Invited Speaker: DHS (TBD)

Panel 4: *Bridging the Divides of How We Fight: Globally-Integrated, Multi-Domain Operations for Today and Tomorrow*

- Recently approved joint concepts such as the Joint Concept for Operations in the Information Environment (JCOIE), the Joint Concept - Human Aspects of Military Operations (JC-HAMO), and the Joint Concept for Integrated Campaigning (JCIC) all have implications for strategically effective application of the Joint Force. The foundational idea of the JCIC is to enable an expanded view of the operating environment by proposing the notion of a competition continuum. This competition continuum offers an alternative to the obsolete peace/war binary with a new model of cooperation, competition below armed conflict, and armed conflict. Recent history reveals limitations in US military thinking and how battle-centric thinking inhibits achieving enduring strategic outcomes. Just as Multi-Domain Operations pushes DoD to change the domain-centric application of military power, the recently approved family of joint concepts mandates clearer thinking about the centrality of the human mind and behavior in conflict, and thus the explicit, if non-obvious, linkage of information power and campaigning to achieve strategic goals. How do we reconcile and integrate these concepts to realize the full potential of each? How will intelligence, operational design, and operational art need to evolve?
- Of particular interest, the panel will address these questions in the context of US globally integrated ops and identify strategic opportunities for dynamic force employment.

Moderator: COL Scott Thomson (OUSDP); Panelists: Mr. Collin Agee (Army GEOINT Office), Dr. Robert Toguchi (USASOC), Mr. Randy Munch (TRADOC), and Ms. Liz Lyon (NGA)

Panel 5: *Pushing Boundaries of the Domain Concept: the Criticality of the Non-Kinetic Toolkit*

- Is the concept of "multi-domain" as currently articulated appropriate as we contemplate the future of conflict? How can these concepts be scoped/enlarged to include non-kinetic (GZ) dimensions as well (i.e. Information, Spectrum, Cognitive, Social, Financial, and Legal, etc.).

Would it be better to refer to these "non-kinetic" dimensions as environments, "inter-agency" domains, or perhaps some other terminology?

- How should multi-leveled professionals be educated and trained to work in national security, intelligence and defense (NSID) sector S/T (and its ethically informed policy guidance)? How do we involve human reasoning aptitudes and applications that will be necessary to accompany and guide the prudent operational use of requisite skills?
- How can we address critical gaps in DoD implementation of the NDS-directed AI/ML efforts, which lie in senior leader education? The lack of senior leader understanding in AI/ML significantly affects their ability to make adequate risk and resource decisions that are vital to operational readiness.
- How are we to identify and train people for these priorities, given that dealing with these technologies requires both STEM skills, and (more importantly) critical reasoning, calibration, and geopolitical, historical and cultural knowledge, insight and sensitivity?
- The DoD has the resources to develop the necessary training data, but needs to understand/engage methods to manage quality and production. With proper metrics, the DoD could make significant advances in the use of supervised data. What are the issues and possible solutions?
- How can we objectively assess multi-domain operations both for real-world operations and integration into training events with a focus on their contributions to global integrated ops?

Moderator: Lt Gen (Ret) Dr. Bob Elder (GMU); Panelists: Mr. Mark Hoffman (LM), Ms. Regina Joseph (Pytho), Dr. James Giordano (Georgetown U. Med Ctr.), and Dr. Ian McCulloh (Accenture Federal Services)

Panel 6: *The UK Understanding of the Future Strategic/Operational Environment*

- The panel will address the UK approach to global integrated operations and contrast its approach with that of the US.

Moderator: Mr. Fergus Anderson (DSTL); Panelists: Dr. Nick Wright (Intelligent Biology), and Ms. Louise Barton (DSTL)

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Introduction: LTC Anthony Gibbs (Joint Staff/J39)

Key Note Speaker Day 2: Vice Chairman of the Joint Chief of Staff, Gen Paul J. Selva

Panel 1: *Integrated Operations in a Dynamic Environment*

- The panel will discuss the challenges of conducting integrated operations in a globally connected and dynamic environment. In today's operational environment it is no longer enough to orient on a geographic area of operations, adversaries are globally connected and conducting operations to compete with the U.S. across multiple Combatant Commanders' geographic areas of responsibility. To effectively meet this challenge the Joint Force must think, organize, and operate in an integrated and reinforcing manner that makes use of all the tools available to the DoD. The panelists will discuss these challenges and take questions from the audience on the subject.

Moderator: COL Paul T. Brooks (Joint Staff/J39); Panelists: Mr. Bob Jones (USSOCOM), Col Manlee Herrington (USINDOPACOM), Lt Col "Sloppy' Forrest (CHECKMATE), Mr. Jason Werchan (USEUCOM), CAPT Geoffrey Gage (OPNAV N3N5 Strategy Branch), Col Shawn Budd (USCENTCOM)

Panel 2: *Strategic AI: Predictive Analytics, I&W, Counter AI/ML Alternatives*

- How can AI and Machine Learning help the U.S. to "See Deep" into the micro and macro trends within regions to anticipate future Great Power conflicts? "Seeing Deep" with virtual and cognitive capabilities, far beyond our ability today, will be within range of potential capabilities. The U.S. Military should be aware of this trend and work towards exploitation of predictive analytics into hostile regions of the world. But while AI and MLAs have revolutionized the exploitation of unstructured or semi-structured data, there are still serious limitations. How does a computer know what data is erroneous and should be removed? Do we lose nuance that a SME could provide in how we interpret data when the analysis is fully automated?
- Moreover, in the growing bandwagon around AI for the DoD it is often defined as being limited to robotic control and machine learning. This also belies the fact that other aspects of AI/ML can be quite fragile. While it is good to point to where it is of growing value, there is growing evidence of features of information spaces where it is of less value in its common current form. Indeed, many are starting to talk about intelligence augmentation - which is identify sets of tasks that are routine, repetitive, with high volumes of data and those are the ones to apply current technologies to. Even if ML handled just those, the savings to the analyst could be immense.
- Of particular interest, the panel will address how this understanding will lead to better, more timely, and risk-informed senior decision making.

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Moderator: Dr. Kathleen M. Carley (CMU); Panelists: Dr. William Casebeer (Beyond Conflict), Dr. Rebecca Goolsby (ONR), Dr. RE Burnett (NDU), and LTC David Beskow (West Point)

Panel 3: *Human Threats versus Machine Threats in Cyber Security*

- The impact of an ever ubiquitous social media, etc…with special focus on social cyber security. Is the primary problem the ubiquity of social media and thus a higher priority need for social cyber security (since that ubiquity may change), or is that a subset of the larger problem of cognitive security? For the AI/ social media space, the influence and economic drivers are not so geographically constrained. Not only are there some quite lucrative spaces for individuals helping to create deception in online spaces, it is an increasing struggle to differentiate human vs bot or cyborg generated content. As computational propaganda is becoming increasingly machine-driven - we have to understand and develop strategy and maneuver in the info space not just against people but also against machines.
- How should this information inform US senior leader decision making?

Moderator: Dr. Gina Ligon (UNO); Panelists: Drs. Val Sitterle (GTRI), Douglas C. Derrick (UNO – The Center for Collaboration Science), and Kathleen M. Carley (CMU)

Panel 4: *Dealing with Surprise in Complex Systems*

- This panel is focused on socio-technical systems and ROC (Receiver Operating Characteristics) curves, or how can we leverage big data and technology against infrequent risks? ROC curves were first leveraged to examine how to discriminate meaningful indicators in the presence of noise in the 1940s, following the attack on Pearl Harbor. Today, Big Data affords similar challenges; how can we combine both human capital and technological advancements to anticipate and detect rare but critical threats to National Security?
- How can the US maintain global awareness, and even understanding of events and operations worldwide to inform senior leader decision making?

Moderator: Ms. Gia Harrigan (DHS): Panelists: Molly Jahn (Univ. of WI), Lt Col Jennifer Snow (USSOCOM, Donovan Group), TBD

Panel 5: *Risks and Opportunities associated with Human Biotech Engagement*

Panel 5 Invited Speaker: CAPT. R. Bremseth, USN, SEAL (ret): *Emerging threats and the need for military and governmental preparedness.*

- What is – and will be the roles of emerging technologies such as neuroscience and technology, robotics, autonomous machines, VR/AR, holography, IoT, and what will be their impact on DoD uses of, and responses to current and future human-machine systems and programs? How can – and should – we engage emerging techniques and technologies to reciprocally optimize humans and machine systems?
- Advanced biotechnology is increasingly engaging wireless connectivity; this prompts both technical as well as ethico-legal (and national security) issues and questions about "brain hacking" and "biohacking", and the capacity of individual actors and states to remotely

assess and affect thought, emotion and behaviors. How might such technologies be employed to enhance and/or degrade human experience and functions? What benefits, risks and threats do these developments pose; and how can such threats be identified, evaluated, prevented or mitigated?

- How can our peer competitors use these technologies against the US and its partners, and how can these technologies help the DoD achieve its NDS/NMS requirements?

Moderator: Dr. James Giordano (Georgetown U. Med Ctr.); Panelists: Dr. Diane DiEuliis (NDU), Dr. William Casebeer (Beyond Conflict), Richard McKinley (USAFOR), and Dr. Vincent Clark (Mind Research Network, UNM).

Panel 6: *Artificial Intelligence for Situational Understanding and Decision Support for Strategic Planning in the Cognitive Space*

- How can AI and Machine Learning help U.S. strategic decision makers visualize and understand the complexities of strategic competitions and conflicts facing the US, where the cognitive space interacts with and often dominates the physical space?   Commercial enterprises have created exceptional capabilities to see narratives and micro-narratives and their impact on economic flows. Can these or similar capabilities be harnessed to allow the U.S. to successfully compete with our adversaries in the cognitive space as well as the physical?
- With the increasing use of AI/ML techniques to support decision makers, it is important to assess the how trust develops among and impacts human/machine teams, whether it is humans offloading repetitive, time-intensive tasks to their automated "partner", or humans making critical decisions based on information provided by an automated system. It is one thing to understand the capabilities of ML and AI, it is another (from an implementation standpoint) to understand how the human-aid/partner will respond to it.
- The panel will address these questions in the context of globally integrated operations.

Moderator: Mr. Steve Jameson (BAE); Panelists: Ms. Regina Joseph (Pytho), LTC (Ret.) Dave Johnson (C4ADS), Dr. Anna Skinner (Black Moon), *Nathan Schurr to be confirmed (Aptima Corp.), Dr. Elizabeth Bowman to be confirmed (ARL),* Others (TBD)

Panel 7: *Future Global Competition between AI-Shaped Political Systems*

- AI and big data promise to reshape the global order. By allowing governments to monitor, understand, and control their citizens far more closely than ever before, AI will offer authoritarian countries a plausible alternative to liberal democracy, the first since the end of the Cold War. That will spark renewed international competition between social systems. For decades, most political theorists have believed that liberal democracy offers the only path to sustained economic success. AI offers a plausible way for big, economically advanced countries to make their citizens rich while maintaining control over them. China has begun constructing a digital authoritarian state. Several like-minded countries have begun to buy or emulate Chinese systems. Just as competition between liberal democratic, fascist, and communist social systems defined much of the twentieth century, how may the struggle between liberal democracy and digital authoritarianism define and shape the twenty-first?

- Rather than seeing AI as a *threat*, could it be used to improve US situational understanding and/or improve the USG ability to address NDS/NMS requirements, particularly in the information sphere?

Moderator: Dr. Nick Wright (Intelligent Biology); Panelists: Ms. Elsa Kania (CNAS), Dr. James Lewis (CSIS), Others (TBD)

Graduate Student Poster Session

Moderators: Ms. Sarah Canna (NSI) and Dr. Amy Pate (Univ. of MD/START)