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Development &
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Conference

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INTERNATIONAL CONCEPT DEVELOPMENT & EXPERIMENTATION CONFERENCE

2023





INTERNATIONAL CONCEPT DEVELOPMENT & EXPERIMENTATION CONFERENCE

31 OCTOBER – 2 NOVEMBER 2023

SYNOPSIS



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INTRODUCTION

NATO Allied Command Transformation (ACT) hosted the 23rd International Concept Development and Experimentation (ICD&E) Conference from 31 October to 2 November 2023 in Norfolk, Virginia, USA. The theme, "On the Path to a Multi-Domain Enabled Alliance," highlighted how ACT's Warfare Development Agenda supports one of the command's top priorities.

With 218 delegates across 30 nations, including representatives from NATO Command and Force Structure, NATO Centres of Excellence and Alliance nations, NATO partners, industry, and academia, the event provided a unique opportunity for the Concept Development and Experimentation (CD&E) community to reflect on contributions towards a future-oriented Alliance.

CD&E is a vital combination of methods and tools that are driving NATO's transformation. It enables the development of innovative ideas and experimenting turning them into viable solutions.

Over the course of three days the conference featured plenary sessions, industry leading speakers, workshops, and networking opportunities. Beyond topic focused impulses and panel discussions, the conference fostered relationships, facilitated information-sharing, and identified common areas of interest for innovation. It also enabled engagement with partners, educated on CD&E processes and interests, and disseminated best practices and lessons learned. Emulating the success of previous ICD&E conferences, all sessions were visually recorded using dynamic illustration by Chris Shipton.



CONFERENCE OPENING

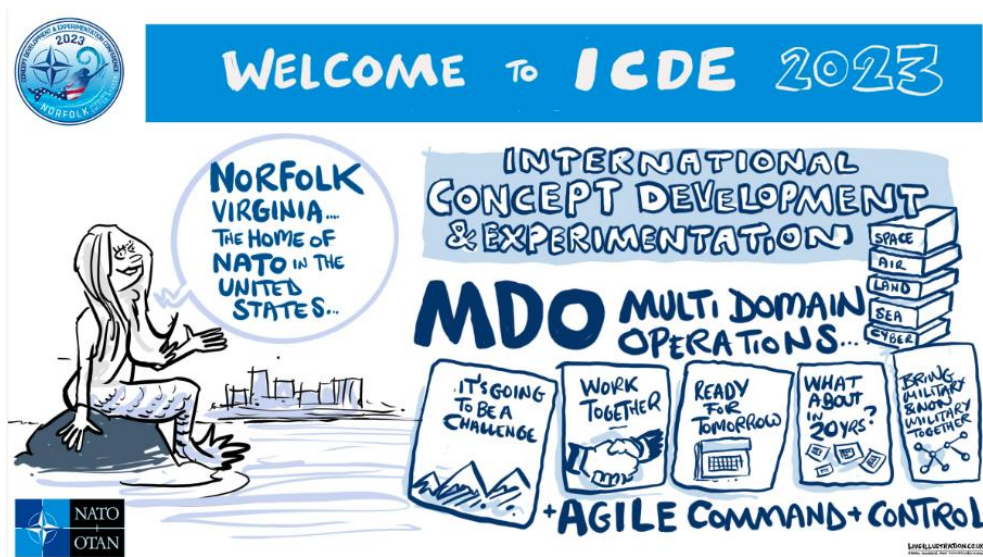
WELCOME AND OPENING REMARKS

MAJOR GENERAL JOSEPH D’COSTA, USA ARMY, NATO ACT, DEPUTY CHIEF OF STAFF FOR PLANS AND POLICY



Formally opening the 2023 CD&E Conference, Major General D’costa welcomed attendees and reaffirmed that “sharing experiences and expertise, will contribute to our collective effort in addressing the challenges ahead. These challenges include how to best employ new methods and other opportunities, which are essential to delivering and validating concepts and providing support to Alliance warfare development on the path to a Multi-Domain Operations (MDO) enabled Alliance.” He emphasized the importance of the conference in seeking innovative solutions through CD&E, which will prove beneficial in NATO’s ability to adapt in the

evolving security environment. Given the theme “on the path to an MDO-enabled Alliance”, he shared insights from the MDO conference in Copenhagen, underscoring the complexity of implementing MDO across the Alliance, the importance of collaboration between military and non-military entities, and the need for a shift towards agile cross-domain warfare. He also noted the successful completion of the 4 Square wargame at NATO ACT, which highlighted the need for a MDO mind-set for successful deterrence. He referenced the NATO Industry Forum as a best practice to achieve a key component of the 2040 MIOP: “out-partner”. In concluding, Major General D’costa stressed the importance of collaboration, security, and interconnectivity in achieving NATO’s goals as per the NATO Warfighting Capstone Concept (NWCC).



COLONEL STEPHAN PILLMEIER, GERMAN AIR FORCE, NATO ACT, BRANCH HEAD CONCEPT DEVELOPMENT

Colonel Pillmeier emphasized that the annual forum, first held in 2001, remains a practitioner-oriented event aimed at promoting the exchange of information, spotlighting best practices, and fostering relationships. The conference objectives were to discuss and evolve the latest ideas, in conjunction with the conference theme and with a special emphasis on the application of Artificial Intelligence (AI). Setting the context for the conference, Colonel Pillmeier, provided an overview of MDO, orchestrating military actions, and synchronising activities and capabilities of other actors in order to achieve military effects. He reflected on the guiding principles and highlighted the requirement for intensified collaboration as well as a change in mind-set and culture and introduced possible priorities that could help streamline and focus NATO’s efforts towards MDO.

PLENARY SESSION (DAY 1)

THE CHANGING CHARACTER OF WARFARE: UXS USE IN RUSSO-UKRAINE WAR

MR. BRIAN IRELAND, ROBOTICS AND AUTONOMOUS SYSTEMS ENGINEER, THE MITRE CORPORATION



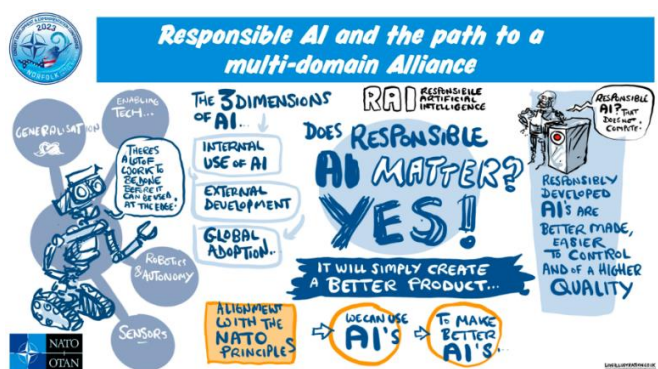
Mr. Ireland provided the foundations for an intriguing insight into Unmanned Systems (UXS) usage in the Russo-Ukraine War that can be applied to NATO ACT future development. He highlighted what is and is not working from both the Russian and Ukrainian perspectives with focus on several real-life scenarios. Ukraine currently leads the way in UXS use and innovation, having adopted its usage at

the start of hostilities. Russia took more time to recognize its effectiveness but is now actively encouraging UXS usage and developing tactics, techniques, and procedures. The employment of UXS has evolved during the Russo-Ukraine war with smaller off-the shelf systems, including loitering munitions, becoming the standard. This shift is attributed to their adaptability, low detectability, and rapid deployability, all of which contributes to their capacity for delivering fast and reliable Intelligence, Surveillance and Reconnaissance capabilities. To date Russia has demonstrated an inability to consistently implement counter-UXS measures giving Ukraine the edge. Both sides have experienced an increase in use of first-person view UXS, which underlines the necessity in being able to adapt to the operating environment. Ukraine has continued to successfully innovate with the use of Unmanned Surface Vehicles (USV), which enabled strategic damage to the Russian Black Sea Fleet. Mr. Ireland concluded that while the Russo-Ukraine war has not been centred on naval warfare, he stressed the importance of anticipating more impact from UXS/USVs in the Indo-Pacific area.

RESPONSIBLE AI AND THE PATH TO A MULTI-DOMAIN ALLIANCE

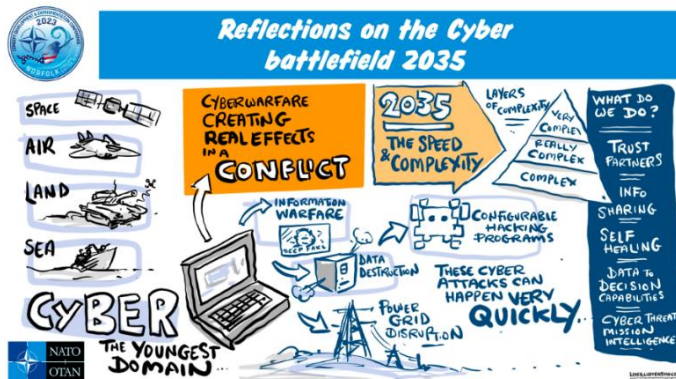
MS. RACHEL AZAFRANI, SENIOR PROGRAM MANAGER, RESPONSIBLE AI, MICROSOFT

Ms. Azafrani discussed how AI is transforming the operational picture and how it will be a key component to multi-domain efforts. She emphasised that NATO is going through three dimensions of AI transformation: (1) internal, meaning the adoption and development of generative AI; (2) external, how NATO adopts AI in conflict and how it is used operationally; (3) environmentally, how AI is being implemented by NATO and its adversaries to influence multi-domain advantage. Generalizability, enabling technologies, robotics and autonomy, and sensors will transition the Alliance to achieve multi-domain fusion. Re-affirming CD&E as a tool for foresight, Rachel highlighted that, together with AI, there is a realm of expanding possibilities that is enhanced by involving stakeholders early and enables the improvement of speed to market. However, CD&E will need to adapt for this new AI-centric world by using responsible AI (RAI) as a framework and achieving RAI certification. Collectively, CD&E and RAI must align on goals as well as critical considerations because RAI is a tool that will result in a better product that aligns with NATO's objectives.



REFLECTIONS ON THE CYBER BATTLEFIELD 2035

COMMANDER DR. DR. HABIL. ROBERT KOCH, GERMAN NAVY, NATO ACT, BRANCH HEAD CYBERSPACE



With Cyberspace considered one of the youngest domains, Commander Koch informed the conference that in 2016, NATO recognized Russia's effective use of cyber-attacks against Ukraine, but by 2022 Russia's cyber-attacks against the Ukrainian grid were less successful. The key lesson was that cyber operations were too slow, too weak or too volatile to be effective. However, it is difficult to compare the situation in Ukraine to many

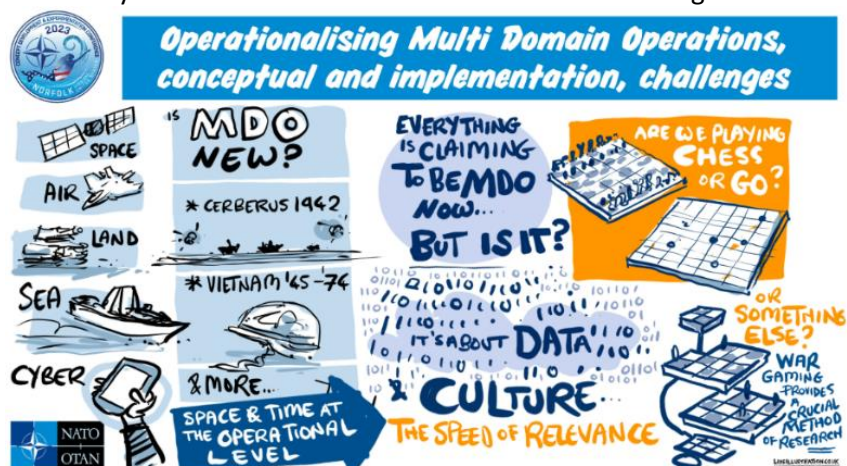
NATO countries. Ukraine has hundreds of service providers with small footprints, making a successful attack logistically difficult. For example, he explained that Germany had only 2-3 major service providers with a large national footprint and, thus, provided a more potent target. With 120 to 180 cyber groups targeting Ukraine, the capability to find and exploit new vulnerabilities is possible in an average of 15 minutes. Therefore, he highlighted the importance of industry in providing effective counters to cyber-attacks, which included self-healing capabilities, which used AI to prevent and repair attacks, as well as providing an effective and immediate smart response. He indicated that an effective NATO response should focus on sharing and trust, which provides the foundations and principles of the best defence posture. Specifically, he highlighted the fundamentals of preventing future attacks through a comprehensive and trustworthy network of information sharing. Future-gazing to 2035, he signified two key points of speed and complexity, which highlighted potential focus efforts when considering Cyberspace as an operational domain.

OPERATIONALIZING MDO-CONCEPTUAL AND IMPLEMENTATION CHALLENGES

MR. ERICO DE GAETANO, NATO ACO, DEPUTY HEAD OF INNOVATION MANAGEMENT BRANCH

Mr. De Gaetano presented on the viability of MDO at the operational and strategic levels of war utilising a modern historical perspective. He specified the distinction between consequent effects occurring by chance and the potential to leverage MDO for effects by design. The synchronisation of those effects across forces, space, and time will require the management of enormous amounts of data, the technical ability to quickly filter relevance, and comprehensive presentation for decision-making and immediate tasking. This heightened level of complexity requires improved technology, but the necessary resources are unlikely to be committed without a clear understanding of the value and the path to implementation.

Accordingly, overcoming cultural inertia is likely a more challenging hurdle than technical capability. Thus, wargaming and exercises will be critical to illustrating the extent to which MDO can help achieve operational dominance through information superiority.



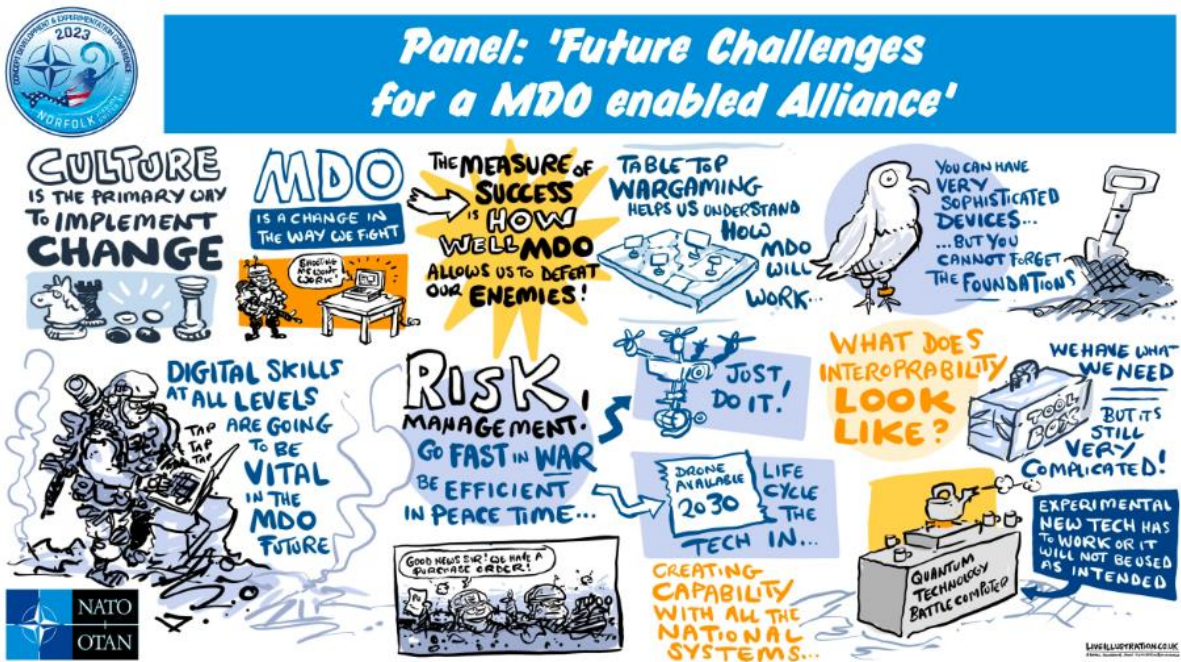
PANEL DISCUSSION: FUTURE CHALLENGES FOR AN MDO-ENABLED ALLIANCE

Moderated by Ms. Ryan Fitzgerald, the panel addressed multiple questions related to MDO within the context of NATO interoperability. In particular, the delegation of some decision-making to technology, such as AI, will require notable leadership buy-in and an uncomfortable assumption of risk. Accordingly, metrics for success based on the advantage gained over adversaries must be identified through modelling and wargaming. This will assist in quantifying the benefits and enable comparison



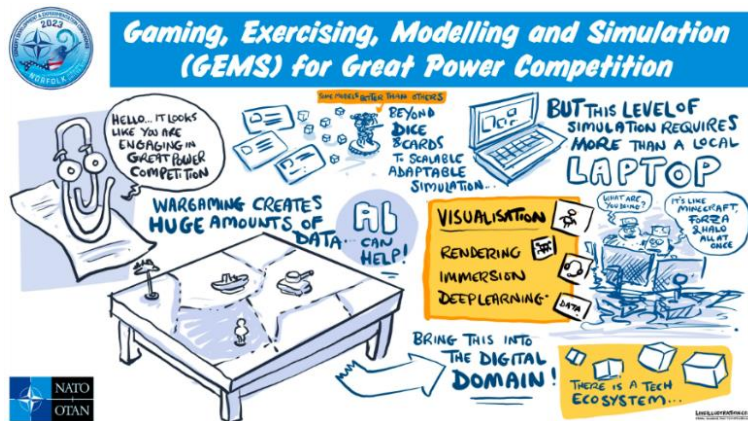
to traditional means of decision-making to prove advantage. The panel reinforced the fact that specialised staff must be trained, developed, and incorporated into existing force structures to accept the operationalization of the MDO concept. The key starting point is to bring the Alliance and industry stakeholders together, ensuring decision-makers and end-users are included to proactively draw out input and secure buy-in.

Additionally, the panel stated that MDO aims to combine military activities across all environments, combining political, civilian, and military efforts that maintain security and stability. It was emphasised that MDO takes place at all levels of planning; strategic, tactical, and operational. Effective utilisation of MDO will create an advantage that will help impede adversaries and foster strong collaboration among NATO and its partners. The challenge for MDO is whether or not to proactively use emerging technologies such as AI. The panel also questioned whether AI should play a part to assist the leadership in decision-making. However, it was recognized that reducing vulnerabilities and risks can be achieved through education and showcasing tools to close warfighter skills gaps. The panel agreed that AI is a tool that should not be dismissed easily as it can enhance readiness and mission capabilities to make cohesive decisions without sacrificing resources.



GAMING, EXERCISING, MODELLING AND SIMULATION FOR GREAT POWER COMPETITION

MR. MARK GOMBO, DIRECTOR MISSION SPECIALIST, MICROSOFT FEDERAL



In his address, Mr. Gombo underscored the imperative to innovate with Gaming, Exercising, Modelling, and Simulation (GEMS) capabilities for great power competition. He accentuated the significance of technological progress and industry collaborations in this pursuit. Mr. Gombo identified that breakthroughs in AI, modelling and simulation, big data, data analytics,

and contemporary cloud computing could accelerate the development of GEMS tools and augment their effectiveness. He highlighted the necessity for superior data analytics to produce large-scale after-action reports and foster trust among various stakeholders. Expressing concern over the stagnation in confronting great power competitors, he emphasized the urgency to modernize GEMS for the 21st century. He suggested a scalable gaming environment equipped with real-time tracking and analytics would provide the basis for modernization. In concluding, he envisioned the future of GEMS as large-scale intricate models and simulations facilitated by hyper-scale cloud.

EXPERIMENTATION AND WARGAMING-UPDATE

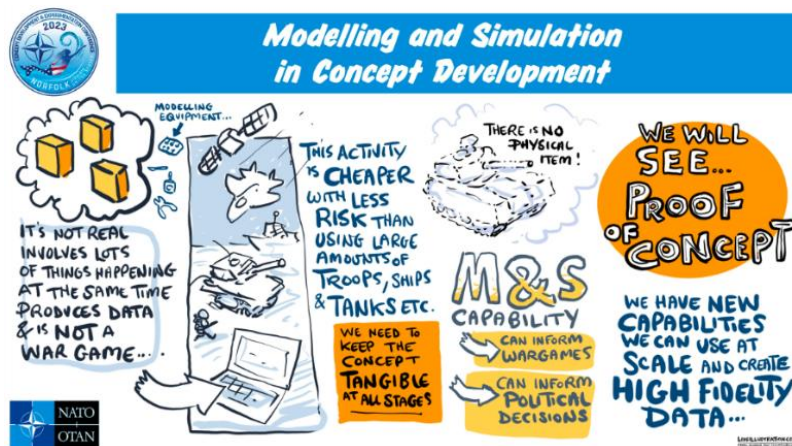
COLONEL NICHOLAS WALDRON, USA MARINES, NATO ACT, BRANCH HEAD EXPERIMENTATION AND WARGAMING

Colonel Waldron discussed the historical and emerging trends in NATO related to experimentation and wargaming. He specified that the rapid rate of technological change and increased engagement with industry combined with the urgency to quickly deliver capabilities to operators has shifted the goals of experimentation. Historically the focus was more heavily placed on validating experiments whereas now it is toward tests, trials, and free play. These changes were the impetus behind the transition from the CD&E Programme of Work to the Experimentation and Wargaming Programme of Work. The Experimentation and Wargaming Programme of Work focuses on quarterly wargaming synchronization meetings, an annual experimentation hub, the development of a quick guide for experimentation, and building a stronger relationship with Allied Command Operations (ACO). NATO ACT introduced the Operational Experimentation Emerging Disruptive Technologies Task Force (OPEX EDT TF) with the goal of working with industry to provide immediate operational effects for ACO. The OPEX EDT TF will incorporate a continuous, agile approach to executing persistent experimentation in operational contexts while navigating the dichotomy of immediate needs versus being future oriented.



MODELLING AND SIMULATION FOR CD&E

COLONEL STEPHEN BANKS, USA ARMY, NATO ACT, BRANCH HEAD MODELLING AND SIMULATION LEARNING TECHNOLOGY



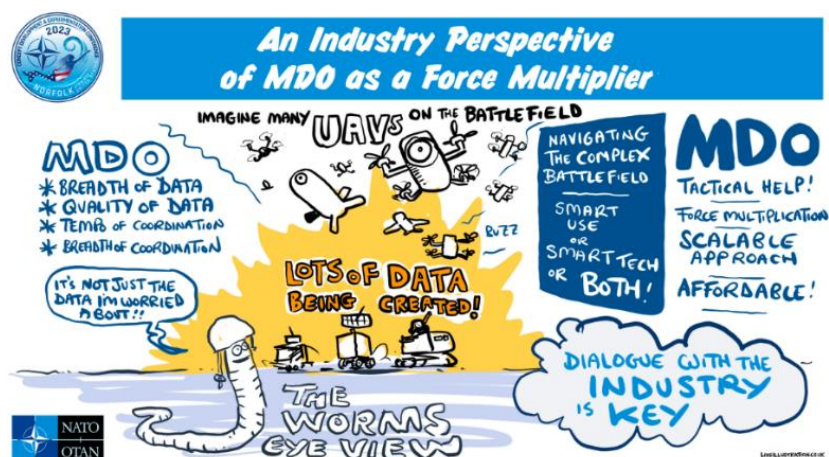
Colonel Banks provided an overview of the benefits of Modelling and Simulation (M&S) with focus on its role within concept development. He discussed how models could be used or engaged with as part of the implementation, research, development and validation phases. In addition, he outlined the progress of NATO Next Generation M&S, describing it as the “common

synthetic environment.” Highlighting that NATO Next Generation M&S was moving from general to detailed planning over the next year and is considered a key enabler of audacious wargaming, political-military assisted decision making (PM ADM), and education training exercise and evaluation functional services (ETEE FS). He confirmed that the capability program plan workshops were being conducted and that NATO ACT will be looking for feedback across the enterprise in the coming months. In concluding, Colonel Banks clarified that M&S was not a wargame, but a useful tool and, in some cases, could augment an experiment or wargame to test and validate outcomes.

AN INDUSTRY PERSPECTIVE OF MDO AS A FORCE MULTIPLIER

DR. CRAIG SMITH, TECHNICAL ADVISOR FOR FUTURE SYSTEMS, MBDA SYSTEMS

In giving an industry perspective of MDO, Dr. Smith highlighted the benefits as a force multiplier. In particular, he focused on the use of weapon systems through a tactical view point in considering force multiplier advantage when consider MDO effects. By exploiting breadth and quality of data, it was possible to exploit vulnerabilities in an enemy's OODA loop to achieve rapid and decisive effect. Dr. Smith explained that systems should have a collaboration of effects that are globally informed but locally managed. He highlighted that the vision of MDO includes humans selecting the targets and setting the goals with the system executing the mission. However, he stressed that there must be a seamless partnership between the elements of the system to get the best outcomes in a high-tempo and contested environment. In doing so, these systems can provide better and more affordable combat mass by way of fewer materials and faster turnaround time, which could be considered ideal for smaller forces. Highlighting dialogue across systems of systems as a key requirement for success, Dr. Smith concluded that the agile communication and engagement between industry and NATO was paramount in achieving a truly MDO-enable Alliance.



CWIX AS OPPORTUNITY FOR DISCOVERY, HYPOTHESIS AND VALIDATION EXPERIMENTING, AND DE-RISKING OPEX

LIEUTENANT COLONEL PETER HARTMANN, GERMAN AIR FORCE, NATO ACT, REQUIREMENTS MANAGER (BUSINESS PROCESS VALIDATION), FEDERATED INTEROPERABILITY BRANCH



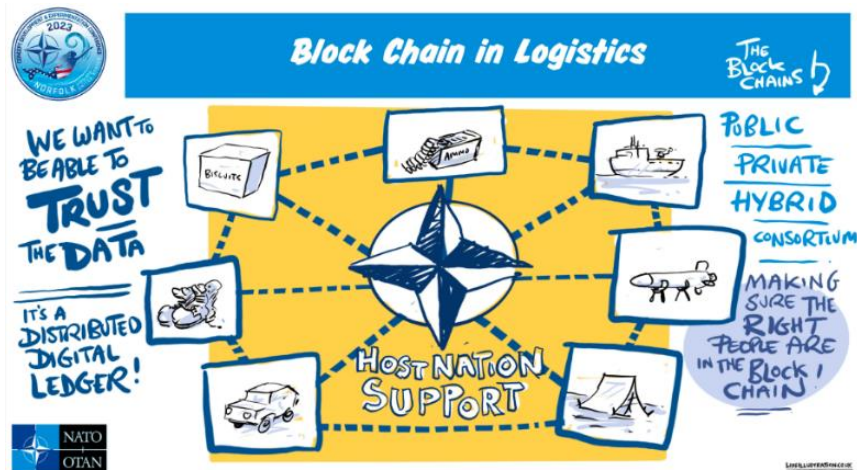
Lieutenant Colonel Hartmann provided an overview of the Coalition Warrior Interoperability Exercise (CWIX), which is the SACT's primary interoperability event to enhance the Alliance force and capability cohesion. He highlighted that success of MDO will require an increased pace for decision-making. Therefore, through effective data exchange, common processes, and well-

trained staff, situational awareness can improve with command and control (C2) being de-risked towards 'Zero Day' interoperability. In closing, he highlighted the benefits of utilising a four-step process (known as the 4X's: Explore, Experiment, Examine, and Exercise) and pursuing capability maturity that enables CWIX as an opportunity platform for experimentation whilst supporting the guiding principles of employing effective MDO.

BLOCKCHAIN IN LOGISTICS

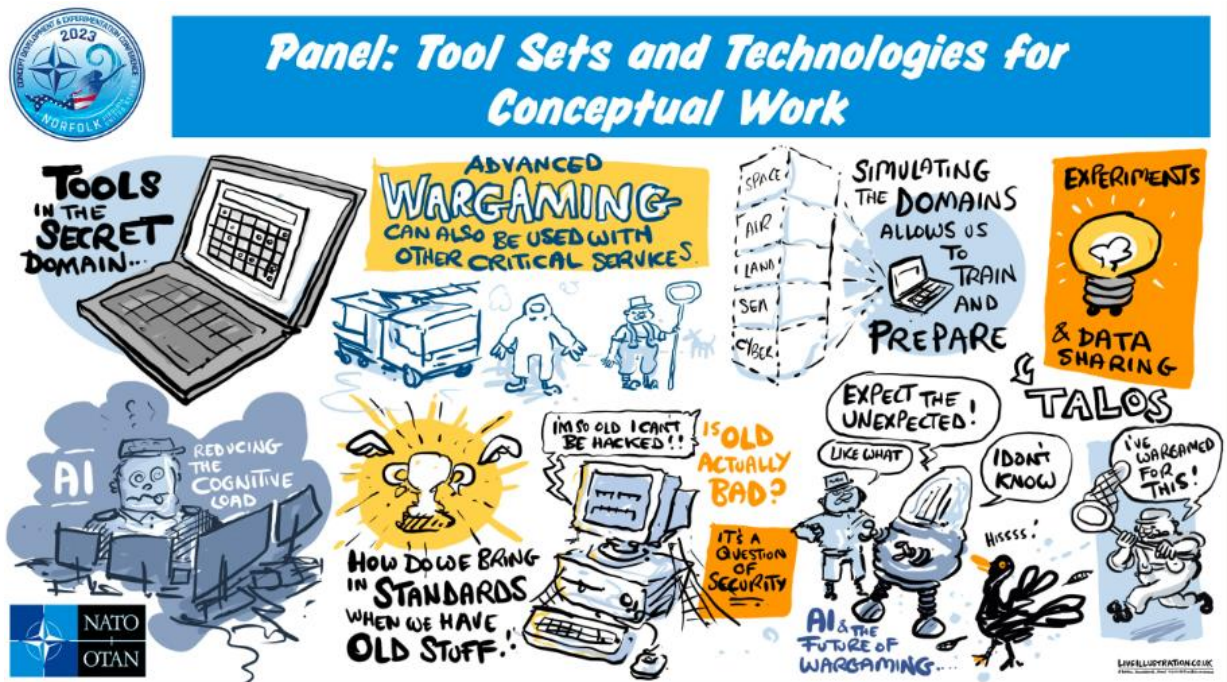
MR. TUNG PHAM, NATO ACT, CONTRACTOR

Whilst blockchain in Logistics may not be directly linked to CD&E, Mr. Pham provided an overview of how it was pertinent to NATO and, in particular when considering a future MDO-enabled Alliance. He described how NATO is implementing blockchain as a distributed digital edge to securely and transparently record transactions across a network of computers. This technology is considered crucial for NATO's large scalability and efficient logistics information sharing between nations and NATO partners. To ensure trust and integrity, NATO nations must maintain control over who edits and modifies data. Various types of blockchains are being explored, including public, private, hybrid, and consortium. The future of blockchain demonstrates a concept for communicating efforts, testing, and evaluating, with plans to develop new processes in 2024. He also noted that quantum encryption remained a crucial aspect of ensuring data security because it used complex algorithms and advanced computing to structure data. However, he concluded that human error will always be the weak point if not following proper procedures and safeguards should be considered where possible.



PANEL DISCUSSION – TOOL SETS AND TECHNOLOGIES FOR CONCEPTUAL WORK

The second panel further discussed tool sets and technologies as the Concept Developer's toolbox. It also further explored 'Project TALOS', a prototype built on a current framework for data analysis in support of NATO nations as well as the deployment of common tool sets used in collaboration with other government agencies. It is intended that these tools would be capable of handling Controlled Unclassified Information through an encrypted bridge. GEMS was clarified to extend beyond the Department of Defence to entities like the Federal Emergency Management Agency and local police departments. The panel also acknowledged limitations regarding policy standards and discussed the need for cross-security domain operations. Wargaming was likened to Chat-GPT models that can generate scenarios based on specific inputs. Open standards and AI networks were covered, with an acknowledgment that M&S standards have evolved. The discussion concluded with the panel members sharing points of concern, which included the idea that tools or technology alone are not the solution and that human ingenuity should be the focus.



WORKSHOPS (DAY 2)

WORKSHOP 1 – CONCEPT DEVELOPMENT COLLABORATION PLATFORM AND APEX-NET

LIEUTENANT COLONEL ZDZISLAW DAROSZ, NATO ACT, NATIONAL DIRECTOR, EXPERIMENTATION AND WARGAMING BRANCH

CAPTAIN LUKAS MUELLER, NATO ACT, CONCEPT DEVELOPMENT STAFF OFFICER (MILITARY RESEARCH)

MR. KARL BOGGS, CHIEF, INTEGRATED LEARNING BRANCH, JOINT WARGAMING AND EXPERIMENTATION

The workshop created a space to educate and set the groundwork between all members to answer what APEX-NET is. APEX-NET aims to connect and share information in a singular domain, enhancing productivity and collaboration among NATO and extended partners outside of NATO. The members explored the different areas of policies. Additionally, they discussed and determined that Apex-NET focuses on flexibility and is tailored to finding solutions whilst sharing information from experiments and wargaming activities in one singular domain. This discussion further explored what terminology was commonly understood internationally and whether there were terms considered too abstract with the potential to confuse users. APEX-NET capabilities allow new nations and partners with limited knowledge to integrate effortlessly and be autonomous. It also assisted in closing the gap on fragmented data and inconsistency of knowledge among nations, which ensures a simplistic user interface. APEX-NET acts as a tool to offer concise information to partners working in their own infrastructure. This further reduces frustration, creating redundancy, and allowing partners to satisfy their own aims and objectives. However, it was emphasized that APEX-NET is not used to make decisions for the sovereign country but, through an enhanced database, offers considerations for policies.

WORKSHOP 2 – NATO COGNITIVE WARFARE CONCEPT - AN INTRODUCTION TO THE CONCEPT AND DEVELOPMENT PROCESS

COMMANDER PAUL GROESTAD, NORWEGIAN NAVY, NATO ACT, CONCEPT DEVELOPMENT DEPUTY BRANCH HEAD

PROFESSOR JAN HODICKY, NATO ACT, MODELLING AND SIMULATION TRAINING BRANCH

RICHARD SHERBURNE, NATO ACT, CONCEPT DEVELOPMENT SENIOR STRATEGIC ANALYST

The NATO Cognitive Warfare Concept is a complex and multifaceted topic, and the workshop served as a comprehensive guide to understanding its intricacies. The basis of this concept is centred on the pursuit of cognitive superiority, which is a state of possessing and applying faster, deeper and broader understanding for more effective decision-making than adversaries. The discussion was structured around a series of insightful presentations that delved into various aspects of the concept. These included its development process, the role of modelling and simulation in supporting the concept, gender aspects of cognitive warfare, and a demonstration of a scenario utilising the Tilt Inject and DROG Mastodon platforms. The workshop also provided an opportunity for data collection through a facilitated feedback session using concept validation methodology. This enriching experience not only expanded the attendees' understanding but also ignited thought-provoking discussions, setting the stage for future progress in this field.

WORKSHOP 3 –MULTINATIONAL WARGAMING

MR. PIERRE COASSIN, NATO ACT, STAFF OFFICER (EXPERIMENTATION)

The Multinational Wargaming workshop met to continue development of supplementary material to the NATO Wargaming Handbook in support of the Multinational Wargaming Project. The Multinational Wargaming Project is a broader effort under the Multinational Capability Development Campaign (MCDC), led by the US Joint Staff J7, to replace the current Wargaming course at the US Naval Postgraduate School. Pre-conference efforts included review of the NATO Wargaming Handbook to consider new content that provides more detailed requirements for MCDC nation use and for development of the next iteration of the NATO Wargaming course. A separate Supplement to the NATO Wargaming Handbook was determined to be the best avenue to improve the future students' ability to "think like a designer". A review of development aids for the Supplement would define a particular wargaming intent, scenario, system, adjudication methods, etc., within the original design and purpose. Open source wargaming simulators, tools, and scholarly articles and books were discussed as additional resources for external wargaming experts. The next event for the Multinational Wargaming Project is a virtual adjustment workshop to finalise the Supplement for use by MCDC nations and in developing the NATO Wargaming course. The course would, at a minimum, be taught annually in Oberammergau, Germany, with opportunities to expand where necessary.

WORKSHOP 4 – WARGAMING MULTI-DOMAIN OPERATIONS

MR. ERRICO DE GAETANO, NATO ACO, DEPUTY HEAD OF INNOVATION MANAGEMENT BRANCH

Mr. De Gaetano provided a half-day workshop for attendees with the intention of gathering input and advice from participants on the best approaches to understanding MDO through a structured research effort based on bespoke wargames. Some topics discussed by Mr. De Gaetano and the participants were ideal C4I constructs for MDO, discovery into associated material and non-material requirements of MDO, and the different levels at which MDO can be executed; tactical, operational or strategic. Other elements discussed during the workshop were how MDO impacts force planning, how it provides an advantage to NATO forces and how NATO might improve educational wargaming through preparation and understanding. One key takeaway from the workshop was to break down the complexity of modelling MDO by leveraging multiple games in exploring different aspects versus one larger game. Participants also wanted to prioritise the focus on C2 processes as well as the importance of information or data flows above other aspects. Future thoughts to consider for game mechanics proposed by the group were decision-making and connectivity costs as well as a higher reliance on assumptions for cyberspace and space effects, which were necessary considering the vision to operationalize those domains.

WORKSHOP 5 – IMPLEMENTATION OF AI FROM INDUSTRIAL PERSPECTIVES

MS. RACHEL AZAFRANI, SENIOR PROGRAM MANAGER, RESPONSIBLE AI, MICROSOFT

MR. MARK GOMBO, DIRECTOR MISSION SPECIALIST, MICROSOFT FEDERAL

The workshop explored the ability to modernize concept development through the use of AI. These included personnel support, enhanced search and analysis, and enhanced infrastructure security. The CD&E RAI journey needs to maintain stakeholder inclusion as well as be prepared for testing and validation in a data rich future. A fundamental goal should be to de-risk concept development rather than blocking innovation. This needs to be balanced with ethical use by following the principles required for RAI. Breakout sessions explored challenging questions in real-world scenarios with a view of providing the Data & AI Review Board (DARB) with concrete feedback on the path towards a

Certification Standard. These scenarios looked at the planning stage with specific focus on operational concerns, ethical dilemmas, and the speed of relevance. The group generated several inputs to the guidelines for RAI development, including the need for transparency, lifecycle management, and scalability. Another recommendation was to contextualise metrics to ensure that AI continues to adhere to system purpose. Furthermore, it was determined that there needs to be a place for human intervention to mitigate harm and maintain trust with a controllable system.

WORKSHOP 6 – DAY ZERO INTEGRATION: DAY ZERO IS TODAY

CAPTAIN JOHN BENFIELD, USA NAVY, NATO ACT, SALT BRANCH LEAD

MR. IAN BIRDWELL, NATO ACT, DAY ZERO INTEGRATION ANALYST

MS. ANA ICAYAN, NATO ACT, CIVIL-MILITARY RESILIENCE ANALYST

MR. TONY ICAYAN, NATO ACT

Day Zero Integration (DZI) is the approach described in this workshop as the “vehicle to achieve” the goal. The purpose of this workshop was to familiarize attendees with the DZI concept and framework while also soliciting feedback on the recommended lines of effort and initial structural priorities. The facilitators also looked to build buy-in and expand the community of interest with an intent, and need, to enhance cooperation across a diverse spectrum of collaborators and partners to include industry, Intergovernmental Organizations, Non-Governmental Organizations, academia, civilian actors, and strategic partners. The DZI workshop attendees discussed barriers and areas for improvement to enhance engagement within NATO’s Broad Partner Network.

WORKSHOP 7 – CWIX - IMPLICATIONS ON MDO/DT IN CWIX CYCLE

LIEUTENANT COLONEL PETER HARTMANN, GERMAN AIR FORCE, NATO ACT, REQUIREMENTS MANAGER (BUSINESS PROCESS VALIDATION), FEDERATED INTEROPERABILITY BRANCH

With his team, Lieutenant Colonel Hartmann provided a half-day workshop for attendees with the intention of explaining the purpose behind the CWIX 4X’s and to improve opportunity for testing and experimenting. CWIX is NATO’s premier technical interoperability event focused on improving nations’ situational awareness and the exchange of operational information, de-risking C2 before OPEX or NATO missions. It is also intended to design interoperability into C2 capabilities for ‘Day Zero’ interoperable forces. MDO can provide better effects in the various dimensions but interoperability challenges will have to be overcome. The goal of interoperability stems directly from Article 3 of the North Atlantic Treaty Declaration. However, interoperability does not require common military capabilities, and importantly nations must be able to exchange data and services, agree on common processes, and train their militaries. This requires shaping the problem, exploring potential solutions, and testing any viable solutions in an international context in conjunction with community SMEs across NATO and its partners. The workshop provided two practical relevant examples: (1) Federated Mission Networking (FMN) exploration and experimentation at CWIX; (2) How to further Logistic-Medical ambitions using the CWIX Framework. The key takeaways from the workshop centred on better alignment, communication, and incorporation of the CD&E community into CWIX. Every nation has a CWIX national lead who can help synthesize efforts into the overall CWIX network. The workshop noted that the initial planning conference for CWIX24 was to be held from 14 to 17 November 2023.

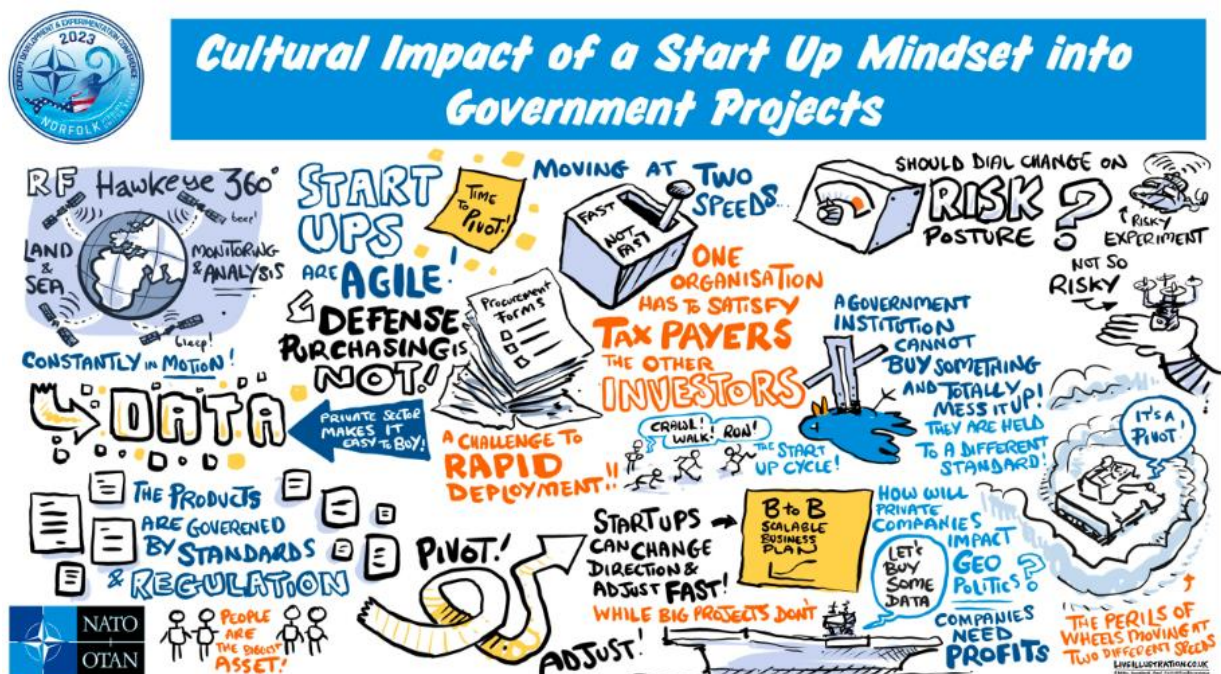
PANEL: CULTURAL IMPACT OF A START-UP MINDSET INTO GOVERNMENTAL PROJECTS

ROB PALM, SENIOR DIRECTOR, INTERNATIONAL BUSINESS DEVELOPMENT, HAWKEYE360

EJ KREINAR, PRINCIPAL DIRECTOR, PRODUCTS AND TECHNOLOGY, HAWKEYE360

NICOLE HILLIARD, VICE PRESIDENT FOR MISSION MANAGEMENT, HAWKEYE360

Whilst the critical role of experimentation and wargaming in supporting all levels of warfare was explored throughout, the implications of achieving an MDO-enabled Alliance through a mind-set and cultural change was an underlying theme of the conference. The “cultural” panel, moderated by Ms. Fitzgerald, explored a HawkEye360 perspective on how culture must change inside a start-up as it works to adapt to governmental projects. With the panel discussion centred on HawkEye360 as a trailblazer in the commercial radio frequency (RF) satellite systems since 2018, discussions on their challenges were explored. The venture-backed start-up, already equipped with a pre-existing system, is uniquely positioned to respond to customer needs swiftly. Unlike the rigidity of government acquisition, the panel explained that HawkEye360 can plan asset deployment on a 1-2-year roadmap while simultaneously pivoting to real-time changes in customer needs. The panellists stressed that the journey is not without its challenges and indicated that it demonstrated alignment with the challenges faced by NATO that were discussed during Day one of the conference. They also explained that indirect competition presents a balancing act between the cost of the product and traditional intelligence gathering options. A fundamental aspect to successfully navigating this landscape is aligned to outcomes with incentives, which embodies the true spirit of a start-up. The panel discussion emphasized the potential cultural shift that could be brought about in governmental projects by adopting a start-up mind-set. However, the most important factor always came back to people; without people in the organization delivering the means necessary to achieve objectives it would not be successful.



2024 INTERNATIONAL CONCEPT DEVELOPMENT & EXPERIMENTATION CONFERENCE

The 2024 ICD&E Conference does not yet have a Host Nation identified. The organization and conduct of the conference is coordinated mostly by NATO ACT, with a relatively small burden on the Host Nation. It provides enormous opportunities for showcasing a Host Nation's country, culture, and contribution to CD&E. NATO ACT welcomes the opportunity to discuss details further with interested Host Nations and looks forward to welcoming the CD&E community next year.

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