




annual REPORT



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**Joint Air Power
Competence Centre**

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Foreword

This edition of the Annual Report provides a comprehensive overview of the significant developments, projects, and research accomplished by the JAPCC in 2023. It also offers a glimpse into the exciting work we have planned for 2024 and beyond.

The studies and articles published over the past year serve as a testament to the JAPCC's exceptional performance. Despite facing staffing limitations, we made strategic choices in 2023. Some of these choices were urgent and crucial, such as our support for exercise Ramstein Ambition. Others, while equally important, were less time-sensitive, such as the numerous articles and studies we completed. However, as an organization, the JAPCC recognizes the importance of investing effort into endeavours that may not yield immediate results but are vital for future solutions. This is why we actively contribute to NATO's transformation through our involvement in the Warfare Development Agenda and AIRCOM's five priorities.

I would like to express my sincere gratitude to our Sponsoring Nations for their unwavering support over the years. If your nation is not yet a Sponsoring Nation, I encourage you to consider joining the JAPCC. Our doors are open to both NATO and Partner Nations. By becoming a part of the JAPCC, you gain access to a unique network of experts in the Air and Space domains. Moreover, your participation allows you to contribute to influential decision-making processes at the highest levels within our Alliance. Please do not hesitate to reach out to us with any questions, feedback, or requests for support. We are here to assist you at any time.

Good Reading!



Paul Herber

Air Commodore, NE AF
Assistant Director, JAPCC

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JAPCC Background

Vision

To be NATO's catalyst for the improvement and transformation of Joint Air and Space Power, delivering effective solutions through independent thought and analysis.

Mission

The JAPCC, as a team of multinational experts, is to provide key decision-makers effective solutions on Air and Space Power challenges, in order to safeguard NATO and the Nations' interests.

Contributions to Air & Space Power

To accomplish our mission, the JAPCC undertakes independent research and advocacy while also addressing the requirements of NATO and its member nations. Our Programme of Work (POW) consists of a range of dynamic projects, activities, and tasks that are adjusted monthly in response to approved Requests for Support (RfS). If you are interested in submitting an RfS to inquire about the possibility of JAPCC facilitating a study on your chosen topic, please reach out to us using the form provided on our website, www.japcc.org.

In addition to this, the JAPCC independently hosts a number of significant events throughout the year. These include the annual Joint A&S Power Conference, the Maritime Air Coordination Conference (MACC), one session of the biannual meeting of the Air-to-Air Refuelling Working Group (AAR WG), as well as the JAPCC Steering Committee (SC) meeting and the Senior Resource Committee (SRC) meeting.

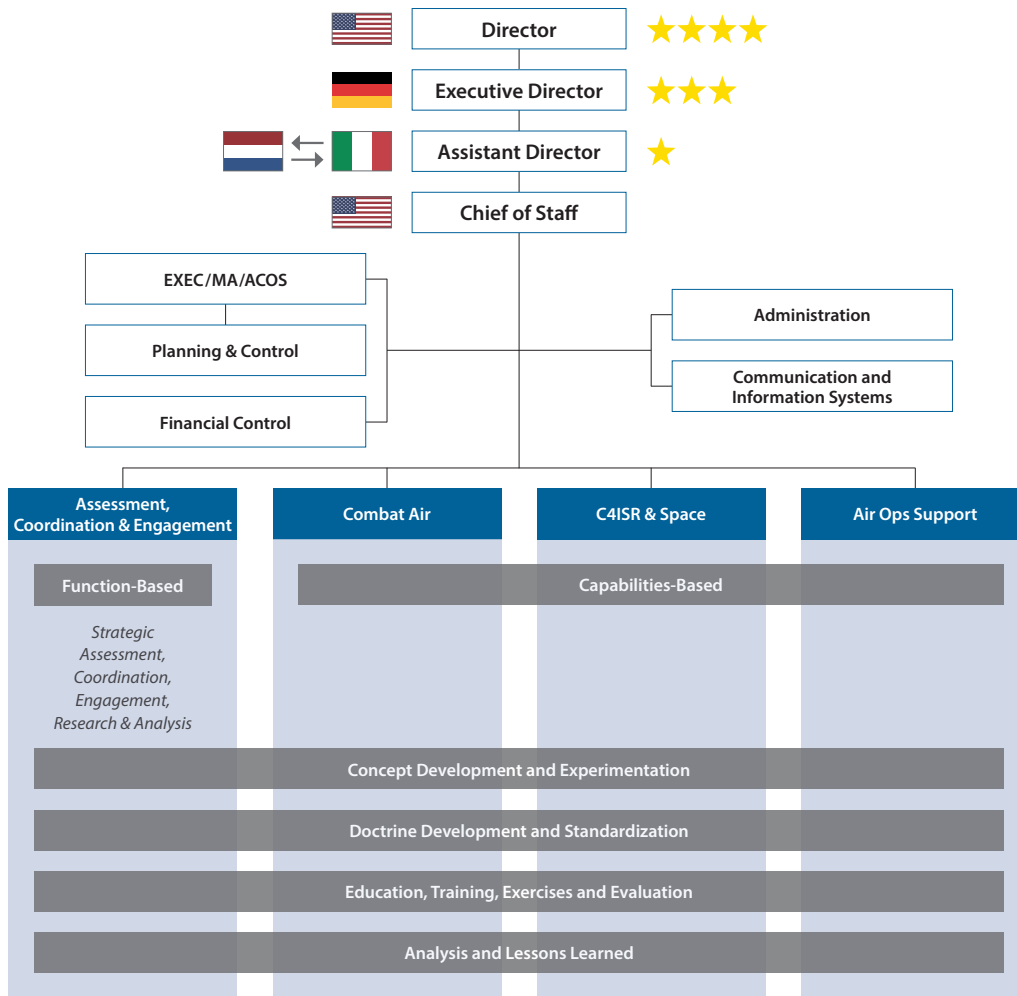
Leadership and Structure

The JAPCC is headed by the Director, General James B. Hecker (US AF), who has led the Centre since June 2022. General Hecker also serves as the Commander Allied Air Command (AIRCOM) and the Commander United States Air Forces in Europe and Air Forces in Africa (USAFE-AFAFRICA) at Ramstein Air Base.

The JAPCC's Executive Director, Lieutenant General Thorsten Poschwatta (GE AF), also commands the German Air Operations Command (AOC) and the German Joint Force Air Component Headquarters (GE JFAC HQ).

On-site, Air Commodore Paul Herber (NE AF) serves as the Assistant Director (AD), and together with the Chief of Staff (COS), Colonel Matthew Hanson (US AF), provides day-to-day leadership for the JAPCC team.

The JAPCC consists of four branches that form its core. One of these branches is the Assessment, Coordination, and Engagement (ACE) headed by Colonel Markus Müller (GE AF). This branch plays a crucial role in managing engagement planning, media outreach, and publishing. In essence, it acts as the guiding force behind our organization. The remaining three branches are categorized based on their capabilities. The Combat Air (CA) branch, headed by Colonel Tyler Niebuhr from the US Air Force, focuses on combat-related operations. Colonel Marco Kathmann from the Netherlands Air Force leads the Air Operations Support (AOS) branch, which provides support for air operations. Lastly, the Command, Control, Computer, Communication, Intelligence, Surveillance and Reconnaissance & Space (C4ISR&S), led by Colonel Maurizio De Angelis (IT AF). These four branches collectively form the backbone of the JAPCC, each contributing their unique expertise and skills to fulfill our mission.



The JAPCC Organizational Structure consists of four core branches that cover a broad spectrum of subject matter areas pertaining to Joint Air and Space Power.

Personnel

In 2023, just like in previous years, the JAPCC faced the challenge of efficiently utilizing its available resources. Unfortunately, due to only 50% of the Subject Matter Expert (SME) positions being filled, we were unable to support every project we had hoped to work on.

The JAPCC continues mitigating these shortfalls through cross-utilization, internal education and training, and creative technological solutions. However, to effectively address the wide range of subject matter areas in the field of A&S that are relevant to NATO, and to provide enhanced support to the Joint Warfare Centre (JWC) and major NATO

exercise programmes, it is imperative for the JAPCC to seek increased participation from Sponsoring Nations. Furthermore, it is crucial to encourage other nations to actively engage with the JAPCC, either as a Sponsoring or a Contributing Nation.

Stakeholders

The JAPCC's primary customers include NATO HQ, Allied Command Operations (ACO), Allied Command Transformation (ACT), NATO Joint Force Commands (JFC), Component Commands (CC) and Sponsoring Nations (SN). However, the JAPCC also accepts RfS from other sources as workload and staff availability permits. With a track record of successful products

JAPCC Areas of Interest and Focus Areas



Joint Air Power
Competence Centre

Areas of Interest (AoI) are intended to encompass the majority of all JAPCC work, provide vision and clarity in those efforts, and provide a means to articulate the whole of our efforts and accomplishments across JAPCC Branches and COE Pillars.

Focus Areas (FA) indicate areas of particular interest, typically within an AoI, for a period of time. Activities supporting the FA may receive prioritization of time and resources. FAs may apply across multiple AoIs or topics.

Integration: Incorporates a broad range of activities with the common theme of integration – be it between nations, joint services/domains, whole-of-government, or industry/academia

Examples: MDO including C2, industry/academic, air-land, CIMIC, etc.

Enablers: Many enablers are necessary to project airpower and accomplish the mission. This includes physical, informational, and electronic activities as well as supporting domains.

Examples: resilience & sustainability, space/ cyber support to air ops, JISR, EMS, etc.

Defensive Air OPS

The traditional means of planning, C2ing, and conducting the air defence mission to protect civil/military targets and ensure the ability to survive and operate.

Examples: IAMD, hypersonic def, BMD, etc.

Offensive Air OPS

The traditional means of planning, command & controlling, and projecting Airpower to accomplish the joint mission.

Examples: C-A2/AD ops, aircraft/munitions, UAS, PGM, etc.

Support to NATO: Includes all activities and services that JAPCC delivers to directly support NATO training, planning, or operations.

Examples: exercise support, SME support, education & training, doctrine development, outreach, publications, annual conference, etc.

The JAPCC nations approved Areas of Interest and their predetermined Functional Areas.

and ever-increasing connections to industry and academia, the JAPCC continues to build upon its reputation as NATO's preeminent advocate for transforming Joint A&S Power.

Support to the 'Pillars of COE Work' for NATO

Given the extensive scope of A&S subject matter areas addressed by the JAPCC, adhering to NATO's traditional model of the four pillars of COE work is not feasible. Instead, the JAPCC has three branches that offer specialized expertise and resources, contributing to each of the pillars.¹ The ACE Branch assigns a minimum of two positions to support each pillar, ensuring seamless alignment between the JAPCC's Plan of Work (POW) and NATO's requirements.

1. The Pillars of COE work for NATO: 1. Education, Training, Exercise and Evaluation (ETEE), 2. Analysis and Lessons Learned (A&LL), 3. Doctrine Development and Standardization (DD&S) and 4. Concept Development and Experimentation (CD&E).

JAPCC COE Re-Accreditation

The JAPCC, under ACT's supervision, conducted a thorough self-assessment from March to August, followed by a comprehensive on-site evaluation in September. This extensive process highlighted the JAPCC's unwavering adherence to NATO's high quality and practice standards, culminating in an unconditional re-accreditation. The Centre's pivotal role in enhancing NATO capabilities – especially in doctrine development and exercise support – was particularly commended. This was the JAPCC's fourth successful assessment since inception and thus signifies its continued evolution as a mature, professional Centre of Excellence.

JAPCC Area of Interest and Focus Areas

JAPCC regularly reviews and transforms its 12 Focus Areas (FAs), POW, and organizational structure to ensure that it can continue to address current and future challenges and to provide key decision-makers with effective solutions to A&S Power challenges.

As the FAs have not always reflected JAPCC's true focus and weight of effort in the past, the introduction of so-called JAPCC Areas of Interest (AoI) was approved at this year's SC/SRC meeting. They are intended to capture most of JAPCC's work, provide vision and clarity, and provide a means to articulate our efforts and accomplishments. Whilst the FAs indicate a limited number of priorities, typically within an AoI, for a particular period. Activities supporting the FAs may receive prioritizations of time and resources and may apply across multiple AoI or topics.

The new AoI are:

- Integration: Incorporates a broad range of activities with the common theme of integration.
- Enablers: Those enablers necessary to project Air Power and accomplish the mission.
- Defensive Air Operations: The traditional means of planning, commanding, controlling, and conducting the air defence mission.
- Offensive Air Operations: The traditional means of planning, commanding, controlling, and projecting Air Power to accomplish the joint mission.
- Support to NATO: All activities and services that JAPCC delivers to support NATO training, planning, or operations directly.

Key Developments

The JAPCC is actively engaged in areas where it possesses SMEs. This section provides a concise overview of the organization's endeavours over the past year in support of NATO's Joint A&S Power. However, due to space limitations, this report presents high-level summaries of our activities. For more comprehensive information on any specific area, we encourage you to visit our website or reach out to us directly.

Publications

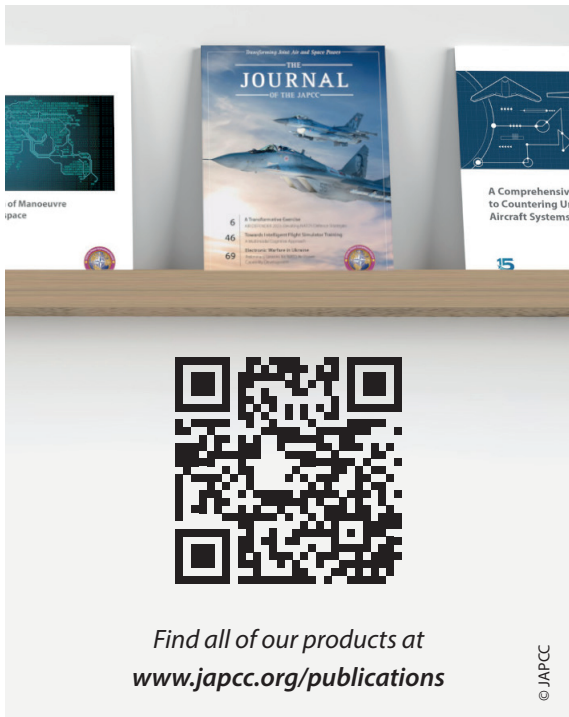
In the 2023 editions of the JAPCC Journal, a significant publication that promotes the development of Joint Air and Space Power, we proudly maintain our role as a strategic platform for dialogue. Our aim is to advance both theoretical and practical discourse across all command levels. Recent issues have been enriched with a plethora of valuable insights and innovative strategies, thanks to the integration of expertise from senior NATO figures, JAPCC personnel, and esteemed external con-

tributors. These forward-thinking articles play a vital role in shaping NATO's Joint Air and Space Power, equipping leaders with the necessary knowledge to navigate the complexities of future defence landscapes.

'Drone Drills' White Paper on Immediate Drone Response Measures. While established protocols exist for common emergencies, organizations often lack specific plans for drone incidents, which are becoming more prevalent due to increased drone usage. Responses to drone incidents require tailored plans covering threat assessment, protection measures, and implementation of immediate procedures. Effective response to drone incidents might be delayed as Counter-Unmanned Aircraft System (C-UAS) technology is not yet widely available. Therefore, immediate actions upon detection are crucial to minimizing harm, damage, and potential casualties. Regular drills are essential to ensure readiness and proficiency.

This White Paper will be finalized in early 2024 and aims to provide actionable drone response measures that one can quickly and easily implement to cover the timeframe from drone detection to the arrival of emergency responders or until a dedicated C-UAS system can intervene. Furthermore, examples of an immediate drone response warning sign, a preparatory measures info sheet, and a drone sighting report sheet are provided in the annexes. Customizable templates are also available as a digital download on the JAPCC website. Finally, this paper recommends preventive, cost-effective and easy-to-implement structural, organizational, and educational measures to complement and support the recommended immediate actions.

The White Paper 'Freedom of Manoeuvre (FoM) in Cyberspace'. The White Paper was published in April 2023. Cyberspace is a dynamic and constantly evolving domain. For the projection of A&S Power, the ability to continue to operate in Cyberspace in a contested environment is essential for the highly technical planning, C2, and execution of modern operations, as



well as future Multi-Domain Operations (MDO). Therefore, gaining and maintaining the requisite degree of FoM in Cyberspace is vital to achieving the commander's intent.

The project's aims were to introduce the readers to the fundamentals of Cyberspace operations in modern conflict. In battles where the adversary is not always known nor the threats readily apparent, the ability to secure this domain completely is unlikely, increasing the requirement for forces to be able to fight through and succeed in an ever-increasingly contested environment. Understanding and leveraging Cyberspace through successfully exploiting emerging trends and technologies is imperative. Now,



Freedom of Manoeuvre in Cyberspace



<https://www.japcc.org/white-papers/freedom-of-manoevure-in-cyberspace/>

more than ever, NATO and its partners require a comprehensive understanding of the highly contested cyberspace environment, both in the present and for the foreseeable future.

Concept Development

The JAPCC's support to Joint A&S Power concept development in 2023 included the following:

- Agile Combat Employment;
- NATO Joint Support & Enabling Command Reinforcement & Sustainment Network Force Protection Concept of Operations;
- NATO Multi-Domain Operations (MDO);
- NATO Science and Technology Organization (STO) study (AVT-359);
- Joint Personnel Recovery (JPR) in the Urban Environment.

Agile Combat Employment (ACE). ACE is 'a proactive and reactive operational scheme of manoeuvre executed within threat timelines to increase survivability while generating combat power throughout the integrated deterrence continuum and it must be considered "The new normal".' It is AIRCOM's intent to develop a flexible NATO ACE concept that encompasses dynamic dispersal, deployment and basing for tailored implementational cross-member nations to create targeting dilemmas for our adversary while enhancing survivability during uninterrupted combat operations.

JAPCC is currently working on several projects that support ACE:

- Resilient Basing;
- Aircraft Cross Servicing (ACS);
- Logistics – Definition of nations' role (framework, HN, SN, transit):
 - Peacetime vs wartime restrictions,
 - ACE logistic roles (JSEC, JLSG, ALCC),
 - Need for an airfield database,
 - Munitions requirements;
- FP Decision Support Tool.

Multinational Multi-Domain C2 (M2C2) Interoperability Project. The M2C2 Interoperability project team is defining national capabilities and development objectives of the NATO member and partner nations regarding the interoperability of command control architecture, education, and training. In addition to determining the current state, the team will provide recommendations on how nations can improve interoperability and move towards integrations and full implementation of the MDO concept as it is adopted into doctrine. The product will be a White Paper released in late 2024.

The Joint Personnel Recovery (JPR) in Urban Environment Project. This project will characterize the urban environment and identify new education and training requirements, promising current and future technologies, and operational concepts that can inform NATO and the nations about an understudied but genuine military challenge. The authors intend to encourage JPR stakeholders to significantly improve all four phases of the PR system (Preparation, Planning, Execution, and Adaptation). The product will be a White Paper to be released in 2024.

NATO Joint Support & Enabling Command Reinforcement & Sustainment Network Force Protection (FP) Concept of Operations. During the February 2023 iteration of the advanced FP course, the possibility of the JAPCC supporting the development of a strawman FP Concept of Operations (CONOPS) for the NATO Reinforcement and Sustainment Network (RSN) was raised. This approach was later backed up with an RfS from NATO's Joint Support and Enabling Command (JSEC) that asked the JAPCC to both support the development of thinking on this subject and to draft the initial paper on behalf of the JSEC. To accomplish the first part of the task, the JAPCC ran a one-day seminar on the subject as part of the JSEC's RSN FP development workshop at Ulm in July 2023. The information that this helped gather and coalesce has subsequently been used to develop the second product, the strawman FP CONOPS, which was delivered to JSEC in December 2023. The CONOPS proposes a way to address the FP challenges of the RSN and offers a way to generate and subsequently manage the task and its associated forces.

NATO Force Protection Decision Support Tool (FPDST) Development. On 8 December 2022, the JAPCC and Cuning Running Software Limited delivered a highly successful 'Proof of Concept' brief as the final event of the JAPCC's Force Protection Decision Support Tool (FPDST) project. This event marked the completion of work initiated by an RfS from NATO Air Command that required the JAPCC to explore the feasibility of automating the process by which the FP challenges facing the Air Component are analysed; this process is often referred to as 'The FP Estimate'. The Estimate is a structured way of working through a problem to derive a solution. However, it must be undertaken by individuals with training and experience and is time-consuming.

At the time of the request, an incident during a NATO exercise had brought FP into focus as NATO Air suffered a catastrophic (exercise) loss due to flawed FP decisions based on inadequate information. This incident not only highlighted the validity of early Air Power theory but refocused attention on real-world incidents such as the 2012 Taliban attack on Camp Bastion, where the subsequent incident report cited failings in FP decision-making as a major causal factor.

As demonstrated, the FPDST can capture Enemy capabilities, deduce Friendly force requirements, generate the FP Order of Battle, build an FP Estimate and create a report with a full supporting presentation. This is done by guiding the user through a standards-based process underpinned by fully configurable databases. The software can handle dependencies between Force Elements (FEs) and automatically identify support requirements for those FEs. Outputs are automatically generated in standard, editable formats (Word/PowerPoint).

For the first time, the FPDST will enable headquarters to task subordinate units to work with the software to understand better the FP challenge specific to their location and the FP capabilities necessary to mitigate them. In turn, headquarters will be able to build and maintain a comprehensive 'library' of individual locations that, once consolidated, will provide the FP overview necessary to allow proper senior-level FP decision-making.

The proof of concept was delivered in 2022; the next step is for interested nations, installations, or headquarters (NATO or national) to work with the software developer to operationalize the product. Ownership is at AIRCOM, and JAPCC will remain in an advisory capacity and can facilitate contact with Cunning Running for any interested parties who wish to take advantage of this opportunity to improve force protection while reducing the associated time and cost.

NATO STO-SCI-350 NATO Alliance Small Satellite Constellation Effort (ALLSAT). The JAPCC's Space SMEs support this activity to plan, design, and build the ALLSAT operational mission and test objectives for a proposed NATO Alliance S&T SmallSat (ALLSAT) three-satellite constellation. As part of the ALLSAT programme development, the objectives of this activity include but are not limited to, Evaluation and recommendation of potential scientific payloads, identification of mission-critical scientific objectives and requirements, evaluation of mission utility of selected payloads, definition of baseline mission concepts and test objectives, test plan definition and development, and test data analysis.

NATO STO SCI-SAS-351 Space Deterrence Framework. The Space Deterrence Framework was convened in 2019 to investigate what actions NATO could undertake to deter aggression in the Space Domain. Over four years, the Space SMEs have participated in multiple planning conferences and finally conducted the first-ever involvement of space in a war game. This was conducted at the strategic level by ten ambassador representatives to understand what NATO can do to deter aggression in the Space Domain. This was the first and only space exercise or wargame dedicated to Space in ALL of NATO. Its objective was to determine the complex nature of how Article 5 could and would be declared because of aggressions in the Space domain. At the 2021 Brussels Summit, the allies agreed that an attack in space would constitute an attack on all. However, they did not indicate what level of an attack would constitute the basis for an Article 5 response, hence the importance of this War game. ACT has published a final report at the NATO Secret level

for those interested in additional information. The JAPCC hosted the Mid-term planning conference for the '24 wargame. The JAPCC will assume a larger role in future wargames as the JAPCC Space SME was appointed the Red team lead for the '24 and '25 games. The wargame in '25 will be tied to the well-known Schriever Wargame in Colorado with a dedicated focus on NATO, the first time for a Schriever Wargame.

NATO SCI-SET-353 C-UAS Mission-Level Modelling & Simulation. JAPCC UAS/C-UAS SME co-chairs the SCI-SET-353 task group. With the ever-increasing capabilities of UAS, an enormous proliferation, and the widespread deployment of UA in recent conflicts, it is evident that C-UAS capabilities are relevant to NATO forces. Effective Modelling & Simulation (M&S) can identify shortfalls of existing C-UAS systems in specific scenarios and reveal where improvements are needed to deal with the threat effectively. The objective of the SCI-SET-353 task group is to develop a common M&S framework that can evaluate relevant scenarios at the mission level. The framework shall be able to model all relevant characteristics of the UA, the environment, detection methods, C2 systems and effectors. The modelling shall be performed at an effects-based level sufficient to capture the essential aspects of the C-UAS process. The framework shall subsequently be used to simulate specific scenarios, such as some of the vignettes derived in the SCI-301 task group. Ideally, the framework shall be verified by modelling scenarios that are executed at NATO trials, after which the results of the simulation and the real-life event can be compared.

NATO STO-359 Impact of Hypersonic Operational Threats on Military Operations and Technical High-level Requirements. With JAPCC as co-chair, this study focused on military applicability, with the OODA loop (Observe, Orient, Decide, Act) as the baseline reference. Phase 1 was published early in 2022, and Phase 2 is planned for completion in the first half of 2024. Although many facets of hypersonic threats and capabilities have been analysed in the past four years, aspects still need further scrutiny.

Exercise Support

Exercise support is a key mission area for the JAPCC. The JAPCC leads teams drawn from across NATO to provide Red Air, Space, and Cyber support to exercises and experiments, as such capability is not resident at the Joint Warfare Center (JWC), Stavanger.

The JAPCC supported the following exercises in 2023:

Ramstein Ambition 23. The JAPCC supported the exercise Ramstein Ambition 23 during the Strategy Workshop, the Incident Development Workshop, the MEL/MIL Scripting Workshop and the Execution at the DACC in Poggio Renatico (IT) with one SME. The execution provided a realistic air picture and complex scenarios, including a complete RED Air Task Order (ATO) to provide the Training Audience (TA) with an air picture. The ATO consisted of missions that provided the TA with the required training. Besides the support in Italy, preparatory work, like producing the ORBAT and maps, has been done at the JAPCC.

Steadfast Jupiter 23. Following the formal agreement with the Joint Warfare Centre (JWC), JAPCC supported the complete cycle of Steadfast Jupiter 23 at the JWC in Stavanger, Norway. Support was provided during the Strategy Workshop, the Incident Development Workshop, the MEL/MIL Scripting Workshop and the Execution. Knowledge of the Red Forces and the employment of those forces was provided. A complete RED ATO was built for three different Joint Operational Areas (JOAs) to give the TA an air picture. The ATO consisted of over 500 RED missions flown every day of the exercise. Besides the support in Norway, preparatory work at the JAPCC has been done. Red Space's involvement (2/3 JAPCC Space SMEs) in the exercise was ~15%, covering ~400 injects, and addressing 15 (~40%) storylines over three JOAs. The JAPCC conducted a Hand-Over Take-Over (HOTO) with the newly accredited NATO Space COE to assume the OPFOR role for future Steadfast exercises. The JAPCC anticipates the need for space SMEs to continue exercise support will remain high. However future support will be contingent upon formal RfS submissions.

Odin Strike 23. The JAPCC supported the wargame Odin Strike 23 at the JWC with one SME. The wargame focuses on the degradation of A2AD in Kaliningrad. During this game, both Blue and Red Forces play cards that representing five campaign days. The CAX system at the JWC then adjudicates the cards played. The goal of Odin Strike is to show how complicated it is to degrade an A2AD bubble, how long it takes and at what costs.

Joint Project Optic Windmill 23. The Joint Project Optic Windmill (JPOW) 23 (NE-GE lead) was held from 06 to 30 March. JPOW is a biannual Integrated Air and Missile Defence (IAMD) exercise that includes NATO exercises Ramstein Century and Steadfast Armour in a single scenario. JPOW is the largest IAMD initiative in the European theatre. JAPCC supports the exercise planning with Surface Based Air and Missile Defence (SBAMD) expertise in the Operations Control Group by providing for the JPOW Academics Day of the exercise and is the custodian for the Blue Weapon System Handbook. During the exercise, JAPCC takes part in the HICON/EXCON cell.

Ramstein Legacy 2024. Ramstein Legacy 2024 is the AIRCOM IAMD exercise that takes place biannually. JAPCC SBAMD SME supports AIRCOM during the planning of the exercise, including the Education and Training (E&T) of the participants. During the execution the AOC / JFAC was the leading AIR C2 element.

Loyal Leda 24. The JAPCC supported the Joint Force Training Centre (JFTC) in Bydgoszcz, Poland, with 2 SMEs throughout the Incident Developing Workshop (OPFOR Air Ops and Cyber storyline development).

Ramstein Flag. Ramstein Flag (RAFL) is a new, tactical-level, live air exercise (LIVEX). HQ AIRCOM's vision for RAFL24 is to provide participants with high-end training opportunities, including realistic problem sets in a complex operational environment. The first iteration, RAFL24, will be conducted in Greece from 30 September - 11 October 2024. Several JAPCC SMEs are involved in developing tactics, exercise planning and coordination.

Mare Aperto. Mare Aperto is an Italian Navy high-end joint, combined, multi-domain and multi-threat exercise which takes place twice a year. Throughout the three-week exercise, 41 naval units (including submarines), aircraft, helicopters, amphibious forces, and special forces from 13 NATO countries and 10 partner countries operated in the Mediterranean Sea, including the coastal areas. JAPCC participated with two SMEs to support the development of MDO scenarios, specifically related to Air Power.

Nimble Titan 24. Nimble Titan (NT) is a two-year global missile defence campaign of experimentation providing a forum for policymakers and military leaders to examine regional and global cooperative missile defence challenges. It is the only venue that brings together multinational policymakers and military leaders to discuss and explore missile defence issues. NT is a US Strategic Command (USSTRATCOM)-sponsored event executed by USSTRATCOM's Joint Functional Component Command (JFCC) for Integrated Missile Defence (IMD). They included military and policy personnel from different nations and military staffs.

The JAPCC supports this series of experimentation by providing the Deputy of the Wargame Control Group (WCG). The WCG creates a scenario from the member's desired learning objectives. JAPCC also provides subject matter expertise in the Design, Analysis and Reporting Team.

Education and Training

In 2023, the JAPCC supported NATO Education and Training in the following areas:

Air Force Protection (FP) partnership with the European Air Group (EAG). JAPCC continues collaborating closely with the European Air Group (EAG) on FP subjects. Areas of mutual interest in 2023 included continued work to incorporate the EAG's work on Air Mobile (Force) Protection (AMPT) Teams into future NATO Air FP Doctrine, the development of the Force Protection Decision Support Tool (FPDST) as

well as development of a Letter of Intent (LoI) to capture EAG support in the delivery of FP Courses at NATO School.

NATO School FP Courses. This year has again seen the delivery of four FP courses at the NATO School (three times the 'Introduction to FP in NATO' courses and one time the 'NATO Advanced FP (Practitioners)' course. Since 2008, the JAPCC has acted as the Office with Principal Responsibility (OPR) providing an Action Officer (AO) for these courses on behalf of SHAPE as the Requirements Authority (RA). The 'Introduction to FP in NATO' course continues to be one of the premier courses run by the NATO school regarding student satisfaction, student numbers attending and revenue generation.

At the request of the nations in the forum of the NATO FP Working Group (FPWG), the JAPCC was asked in 2012 to develop an advanced FP course, and JAPCC delivered a pilot course in 2019. The course is highly regarded and well attended and almost exclusively run by the JAPCC. With recent changes in resource availability, this course has unfortunately had to be 'paused' despite a substantial demand and associated student waiting list.

Air FP Support to the Baltic States. This activity is an annual follow-on from the highly successful extended regional visits in 2015 and 2016. These initial and highly successful engagements, leading to structural changes in the region, have now evolved into delivering an in-depth and intellectually demanding FP package for the three Baltic Air Forces officers at the Command and Staff College in Vilnius, Lithuania.

The package is a development of the JAPCC-authored and run Advanced FP (Practitioners) Course; however, it is tailored to be both Air FP specific and Baltic Region focused. Given events in Ukraine and the renewed attention to reassurance, this package remains exceptionally well received, and a request to repeat the package in 2024 is imminent. Furthermore, it is a practical example of the JAPCC's contribution to broader, more operationally focused NATO activity. Finally, the Air element of the Military Academy of

Lithuania is seeking closer ties with the JAPCC-facilitated Think Tank Forum.

JPR Education and Training. JAPCC continued to support both NATO and EDA JPR Staff courses and the NATO Air Centric Personnel Recovery Operatives Course, held at TLP (Spain). JAPCC also supported the AirC2 courses held in Kalkar by delivering a specific lecture on JPR.

NATO CIMIC COE Course support. The JAPCC supported the NATO CIMIC COE in European Deployment Preparation Course 23 with multiple lectures and instructor support in Kielce, Poland.

NATO Common Education & Training Programme. The JAPCC supports the IAMD COE CET-P courses with SME expertise.

NATO School SBAMD Course. SBAMD SME supported AIRCOM in executing of the 'Introduction to SBAMD' course with SME briefings and leading the course's syndicate work.

Active Engagements

The JAPCC continues actively engaging with various air power stakeholders through working groups and other face-to-face meetings. These engagements included but were not limited to:

- ACT Multinational Solutions Synchronization Conference;
- Aerospace Capability Group 2;
- Air Operations Working Group;
- Association of Old Crows 2023 EW Conference Europe;
- Central Eastern Helicopter Technology Conference;
- Cross Domain Command Concept development;
- European Safety & Security Professionals Network;
- Helicopter Inter-Service Working Group;
- HQ AIRCOM NATO Weapons and Tactics Conference;
- International Concept Development & Experimentation Conference;

- Maritime Unmanned Systems Innovation Cell Working Group;
- Multinational Capability Development Campaign/ Multinational Multidomain Command and Control Working Group;
- NATO BiSCSWG (Space);
- NATO Lessons Learned Spring Week (NLLSW23) at CMDR COE;
- NATO Space Center Users Group;
- NRDC-ITA MDO Seminar;
- Personnel Recovery/Search and Rescue Working Group;
- NATO ESSM Capability Working Group.

Annual Joint Air and Space Power Conference. The 2023 iteration of the Joint Air Power Competence Centre Conference, held from 10th to 12th October, was a watershed event in the calendar of NATO's strategic air and space discourse, focusing on 'Enhancing Deterrence and Defence through Joint Air Power'. Esteemed keynote speakers, such as General James B. Hecker and Admiral Rob Bauer, set the stage with opening remarks, underlining the imperative of robust joint air and space capabilities for the alliance's deterrence and defence. Deliberations commenced with a compelling panel that dissected the evolving security landscape and the role of credible, capable, and ready joint air and space power in bolstering the Allies' deterrence across all domains. The conversation deepened with an exploration of readiness and resilience challenges, preparing for high-intensity, multi-domain operations.

A highlight was General Cavoli's video message, emphasizing the 'Importance of Airpower to the Alliance', adding significant weight to the discourse. The following day, General James H. Dickinson's keynote further expanded the dialogue into the realm of space, an increasingly critical domain for collective defence. Panels continued to break new ground, discussing future capabilities, the role of emerging technologies, and the nuances of industrial cooperation. The strategic importance of logistics, industrial capacity, and cross-border supply chain integrity in conflict situations received due consideration, thanks to insightful debates. The conference concluded with a collective

acknowledgement of the invaluable insights provided by the speakers, panellists, and the audience, all contributing to a richer understanding of joint air and space power's role in enhancing NATO's deterrence and defence. With anticipation already building, the JAPCC looks forward to the next conference, slated for October/November 2024, at the Congress Centre Essen in Germany.

Think Tank Forum. In March 2023, the JAPCC's Think Tank Forum (TTF) again proved its vital role as a groundbreaking symposium for the Air and Space Power community. Gathering a myriad of national entities and academic thought leaders in Kalkar, the Forum facilitated a fertile exchange of insights, setting the scene for pioneering discussions on the future trajectory of Joint Air and Space Power. The event's success was marked by the engaging content and the unprecedented networking opportunities that fostered solid alliances and strategic partnerships. This year's Forum was a resonant success, charting new paths for innovation and collaboration within and beyond the NATO framework.

Joint Air and Space Power Network Meeting 2023.

The Joint Air and Space Power Network (JASPN) Meeting of 2023 took place from 14th to 15th November at the JAPCC in Kalkar. This gathering marked a significant milestone, as it celebrated ten years of continuous evolution and collaboration within the Air and Space Power community. With an exceptional level of participation, this event proved to be the most successful to date, highlighting the increasing significance of integrated Air and Space Power capabilities. Since its establishment in 2014, the JASPN Meeting has played a crucial role in cultivating a collaborative environment, reminiscent of the Think Tank Forum. This unique platform brings together NATO and European Union organizations, facilitating the exchange of valuable insights, the identification of shared interests, and the harmonization of collective efforts.

This year's gathering focused on a spectrum of pivotal topics, including MDO and C2, ACE, and Logistic Support to Air Operations. The discussions were enriched

by the diverse perspectives of representatives from various prestigious entities, including NATO HQ, NATO Science & Technology Organization, and the European Defence Agency, to name a few. The dialogue was further deepened with explorations into emerging technologies such as Hypersonic and Artificial Intelligence, reflecting a collective commitment to staying at the vanguard of technological advancements.

The JASPN Meeting's objectives (information sharing, prevention of duplicative efforts, and fostering cooperation) were met and exceeded, as participants engaged in meaningful exchanges that underscored the essence of the meeting: to be a crucible for ideas and a bridge for collaboration. The 2023 event highlighted the intrinsic value of personal networking opportunities, allowing for strengthening existing relationships and the establishing new connections, which is pivotal for the future of joint Air and Space Power. The JAPCC continues to extend an open invitation to NATO, EU, and international entities invested in the Air and Space domain, urging interested parties to participate actively in this dynamic and consequential dialogue.



2024



Find more information at
<https://www.japcc.org/conference>

Fighter Jet: © Lockheed Martin; Globe: © Jeffrey Maviskho – stock.adobe.com

European Safety & Security Professionals Network. The European Safety & Security Professionals Network (SSPN) organization brings together specialists from industry, academia, civilian law enforcement and the military. Its aim is to share ideas, discuss challenges and ultimately create or update best practices. The JAPCC participated in the SSPN Seminar in 2023 and delivered a JAPCC Mission Brief. Participation in the SSPN allows JAPCC to maintain its understanding of developments in the civilian environment and compare and contrast these with those in the military. This, in turn, enables JAPCC FP SMEs to capture best practices and input this into the entire spectrum of JAPCC FP work. The network enjoys JAPCC input into several academic activities within The Hague University of Applied Sciences (THUAS) curriculum. The facilitation by THUAS of the SSPN also provides a mechanism for the JAPCC to develop both the Asset Protection Handbook and, eventually, an International Standard for Asset Protection.

Support of Association of Old Crows 2023 EW Conference Europe. The Association of Old Crows Global Event Directorate invited one of the JAPCC Space SMEs to speak at the annual conference in Bonn from 15 to 17 May 2023. The JAPCC Space SME presented on 'EW in the Space Domain', highlighting the key takeaways from the article 'The Impact of Commercial Space in Times of Conflict' from the EW perspective published in the 35th Edition of the JAPCC Journal. The conference was held with over 800 participants from 60 countries. Following the conference, the organizing association shared its appreciation of JAPCC's participation and aspiration for future JAPCC involvement in this global event, the biggest EW conference outside the US.

Engagements at NATO Steering Bodies

JAPCC personnel fill chairmen, co-chairman, and panel positions on numerous NATO steering bodies and provide custodianship to several NATO doctrine documents, as highlighted below.

Chairmanships

- Air Operation Working Group;
- Co-Chair the Maritime Air Coordination Conference;
- Doctrine, Organization, and Interoperability Panel, subordinate to NATO Force Protection Working Group;
- Nimble Titan 20/24, Wargame Control Group and Analysis Team;
- GE Hypersonic Workshop with Fraunhofer;
- Co-Chair the NATO STO SCI-SET-353 task group on C-UAS Mission-Level Modelling & Simulation;
- Co-Chair the NATO STO AVT-359 Study about Hypersonic capabilities.

Panel Member/Working Group

- Allied Joint Operations Doctrine Development Working Group;
- BMD Operational User Group;
- Counter-UAS Working Group;
- Force Protection Working Group and Force Protection Advisory Group;
- Helicopter Operations from Ships other Than Aircraft Carriers Working Group;
- Integrated Air and Missile Defence Policy Committee;
- Joint Capability Group Unmanned Aircraft Systems;
- Maritime Operations Working Group;
- Maritime Tactical Operation (Fixed Wing) Working Group;
- Maritime Unmanned Systems Steering Board;
- Personnel Recovery/Search and Rescue Working Group.

Doctrine Development (Custodianship & Contribution)

Over the last year, the JAPCC led and/or participated in the following doctrine efforts:

- MC 064/12 NATO EW Policy;
- MC-0610, FP Policy for NATO-Led Operations (Custodian);
- MC-0656, Policy for FP of Alliance Forces (Custodian);

- MC 485/2 NATO SEAD Policy (Custodian);
- AJP-3.14 Allied Joint Doctrine for FP (Custodian);
- AJP-3.3 (Custodian);
- AJP-3.3.2(A) Allied Joint Doctrine for Close Air Support and Air Interdiction;
- AJP-3.3.3 Air-Maritime Coordination;
- AJP 3.6 NATO Joint EW Doctrine;
- AJP-3.7 Allied Joint Doctrine for Recovery of Personnel in a Hostile Environment;
- ALP-4.3 Air Forces Logistic Doctrine and Procedures;
- ATP-3.2.49 Use of Helicopters in Land Operations (Custodian);
- ATP-3.3.2.1 Tactics, Techniques and Procedures for Close Air Support and Air Interdiction;
- ATP-3.3.2.2 Joint Terminal Attack Controller Program;
- ATP-3.3.3.1 Maritime Air Coordination Procedures;
- ATP-3.3.4. Vol I Edit A Ver 1 (STANAG 7207 Air-to-Air refueling (AAR) Doctrine (Custodian);
- ATP-3.3.4. Vol II Edit A Ver 1 (STANAG 7207 Air-to-Air Refuelling (AAR) Doctrine (Custodian);
- ATP-3.3.4.1 Tactics, Techniques and Procedures for NATO Air Movement Operations (Custodian);
- ATP-3.3.4.2 Air-to-Air Refuelling (Custodian);
- ATP 3.3.4.2.1 SRD 1 Guide to Obtaining AAR Clearances and Compatibility;
- ATP 3.3.4.2.2 SRD 2 Recommended AAR Aircrew Certification and Currency;
- ATP 3.3.4.2.3 SRD 3 Tanker Capabilities;
- ATP 3.3.4.2.4 SRD 4 Tanker/Receiver Clearance Compatibility Matrix;
- ATP-3.3.4.3 Tactics, Techniques and Procedures for NATO Air Transport Operations (Custodian);
- ATP-3.3.4.4 Tactics, Techniques and Procedures for NATO Airborne Operations (Custodian);
- ATP 3.3.4.5 AAR Boom-Receptacle Requirements;
- ATP 3.3.4.6 AAR Pro-Drogue Characteristics;
- ATP 3.3.4.7 AAR Signal Lights in Hose and Drogue Systems;
- ATP-3.3.6 NATO FP Doctrine for Air Operations (Custodian);
- ATP 3.6.2 EW in the Land Battle;
- ATP 3.6.3 EW in the Air Battle.

2024 Outlook

Future Projects

White Paper 'Planning in Multi-Domain Operations'. In the NATO Vision 2030, NATO articulated the will to be better prepared to counter any threat of the future battle space, like emerging disruptive technologies and peer or near-peer opponents. The current operational concept, acting Joint, is deemed inappropriate to ensure this, as it focuses too much on the services and components. The future battlespace necessitates a broader approach. It demands the ability to effectively coordinate capabilities across all domains, rather than just within specific services, with utmost speed and relevance. This is crucial to outwit, outmanoeuvre, and outlast any adversary. NATO must collaborate with non-military entities to harness the full potential of both state and non-state capabilities, enabling coordinated and synchronized actions against any threat from all directions. The groundbreaking concept of MDO will serve as the cornerstone of this assurance.

MDO is focused on achieving decisive effects across various levels, ranging from strategic to tactical. To accomplish this, MDO relies on capabilities that possess reach, speed, and flexibility. In addition, a C2 structure is required which can ensure this, from peacetime to conflict. Air Power has the capabilities, from drones to strategic bombers, from Ground-Based Air Defence to 5th Gen Fighters. At the same time, air power has a standing C2 structure, already active in peacetime, to ensure timely and agile application of air power, from air policing in peacetime to deep strike capabilities in conflict. Air Power is a fundamental pillar of MDO. However, if it is not effectively integrated, MDO will significantly diminish its decisive capabilities.

The concept of Multi-Domain Operations (MDO) is open to interpretation and allows for various development streams, ranging from doctrinal to technical projects. NATO has taken steps towards

implementing MDO, with a current focus on the technical aspects. MDO heavily relies on establishing shared situational awareness and understanding, which necessitates the use of technology. However, it is important to note that MDO is not solely reliant on technology; it represents a shift in mindset from focusing on service capabilities to domain capabilities. This shift requires a new approach to planning the utilization of capabilities. MDO planning involves exploring all potential capabilities to achieve effects across domains. The current planning process is more service-centric rather than domain-centric. The White Paper aims to investigate how the existing planning process can be adapted to fully leverage all capabilities across all domains within the context of MDO.

JAPCC's Lessons Learned Process. JAPCC's commitment to refining its Lessons Learned processes is poised to embrace a game-theoretical framework and advanced Modelling & Simulation (M&S) techniques in 2024. This initiative, currently underpinned by the formulation of guideline documents, seeks to integrate these methodologies to better anticipate and strategize against multifaceted security challenges. The aim is to leverage the predictive nature of game theory alongside the dynamic reenactments of M&S, ensuring that NATO's strategic and operational preparedness is both resilient and adaptable to the rapid evolutions in the global defence arena.

Resilient Basing Workbook & Questionnaire. In response to an RfS from the Royal Netherlands Air Force (May 2021) to better analyse the current resilience status of Alliance members against a full spectrum of threats, the JAPCC published the Resilient Basing Enhancement Workbook. The Workbook intends to take a comprehensive approach across civilian infrastructure and military installations, enabling organizations to identify their strengths and vulnerabilities, and challenge them to mitigate any identified shortfalls. This Workbook challenges nations to self-evaluate their resilience by answering questions and sharing

their findings, including mitigating strategies, via an embedded response sheet. The number of inputs received was insufficient to make a thorough assessment. As a result, JAPCC will reach out to the nations with an unclassified version of the workbook and subsequently assess received inputs, identify lessons learned, and inform nations about the results in a White Paper.

Asset Protection Handbook (FP). The JAPCC has always considered this project to be a long-term initiative. It is the forerunner to developing an International Standards Organization (ISO), standard for asset protection. The concept captures best practices from in-



***Introduction to the Resilient Basing
Enhancement Workbook***

Second Edition – Revised Timeline



<https://www.japcc.org/white-papers/introduction-to-the-resilient-basing-enhancement-workbook/>

dustry, academia, civilian law enforcement and the military and sets it down using common terminology that each cohort can recognize.

Within the military across NATO, one of the biggest single challenges, as discussed in the 2021 JAPCC White Paper ‘NATO Force Protection on a Knife-Edge’, is the current lack of expertise and experience in the field of FP. Within Air Forces, this coupled with an over-focus on exquisite air platforms, without the commensurate investment in war-fighting enablers, such as FP.

The Asset Protection Handbook Project is designed to capture the core of FP knowledge developed within NATO since the Cold War and meld it with knowledge and best practices from academia and industry in the field of what they refer to as Safety & Security Management and Industrial Security (the civilian equivalents of FP). The purpose of setting down this information in a single publication is to create a foundation for the consideration of the issue of Asset Protection. This, in turn, will create a set of robust underpinning principles and supporting practices for FP. The outcome should be to remove the need to regularly revisit and reword FP publications, which is currently the case and delivers little if any, advancement in considering or understanding the subject. Progress with this project has continued throughout 2023. It is intended to deliver a first complete draft by the end of 2024.

Exercise and Experimentation Support

During the Ramstein Ambition (RAAM) 23 exercise, the JAPCC performed an experiment in the context of MDO developments. In a tabletop exercise parallel to the RAAM23 script, a working group discussed the possibilities of integrating MDO-related planning activities in the current NATO Operational Planning Process (NOPP). The result of the tabletop was a capability to effect the matrix recognizing all domains and the capabilities and was service agnostic. The tabletop results will directly contribute to the White Paper ‘Planning in MDO’.

Events

First Quarter 2024: Think Tank Forum (TTF). The 10th TTF is scheduled to take place in the first quarter of 2024, bringing together national Air Warfare Centres, national HQs/staffs, and A&S-related academic institutions to share information and insights regarding A&S Power challenges and to engage in collaborative discussions on current and future trends facing the Alliance.

17–19 June 2024: Steering Committee (SC)/Senior Resource Committee (SRC) Meetings. The annual SC meeting serves as a platform to update the Sponsoring Nation Air Chiefs or their designated Flag/General three primary Lines of Effort (LOE) Officer representatives on the JAPCC POW, the director's priorities, and the current state of the Centre. This meeting also allows the Committee to offer strategic guidance informing the future POW.

The SRC oversees legal, financial, personnel, infrastructure, and other administrative matters on

behalf of the SNs and immediately follows the SC and is set up to review the previous day's meeting decisions and the normal budget review, including the last year's summary and current year's execution.

8–10 October 2024: The JAPCC Joint Air and Space Power Conference, Congress Centre Essen, Germany. The 2024 iteration of the JAPCC conference is themed: 'Challenges and Opportunities for A&S Power in an Evolving Security Environment.' Like in previous years, this event is the flagship bringing together NATO Leadership and industry.

November 2024: Joint Air and Space Power Network (JASPN) Meeting. In November, capitalizing on the success of its 10th iteration, the 2024 vision for the JASPN meeting aims to broaden its influence and enhance collaborative outreach. This endeavour further consolidates JASPN's role as a cornerstone for knowledge exchange and strategic discourse within the Joint Air and Space Power community.

Conclusion

Thank you for dedicating your time to peruse the JAPCC Annual Report for 2023. We sincerely hope that this report has provided you with valuable insights and a deeper appreciation for the significance and pertinence of the JAPCC within the Alliance. Should you require further information regarding the JAPCC, please do not hesitate

to reach out to us via email at contact@japcc.org or visit our website at www.japcc.org.

Stay connected with us on X (@JointAirPower) and LinkedIn (@JAPCC) for the latest updates and networking opportunities!



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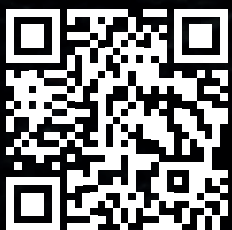
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Challenges and Opportunities for Air and Space Power in an Evolving Security Environment

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