NATO'S JOINT AIR POWER STRATEGY

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PREFACE

1. NATO Joint Air Power (JAP) plays a key role in supporting the accomplishment of NATO's three core tasks - Collective Defence, Crisis Management and Cooperative Security - including the Alliance's strengthened Deterrence and Defence posture, NATO's efforts in Projecting Stability, and NATO's role in the International Community's fight against terrorism. A balanced and innovative approach to JAP, that understands, accepts and mitigates risks, will provide a coherent military capacity, enhancing the development of a credible and flexible NATO posture.

DEFINITION OF JOINT AIR POWER

2. Capturing the collective capabilities and capacity of air, land, maritime and special operations forces, JAP is the ability to coordinate, control, and exploit the air domain in the pursuit of Alliance objectives[1].

KEY CHARACTERISTICS OF JOINT AIR POWER

3. The core attributes of air power, which are unique and contribute to a wide range of effects, are speed, reach and height. Speed enables air power to exploit time and control tempo. Normally unimpeded by terrain, airborne capabilities provide unrivalled reach that permits air power to employ its capabilities at distance, including deep into enemy territory, and isolated locations. Height enables exploitation from an unparalleled vantage point. Ubiquity, agility and concentration are additional qualities that are enabled or enhanced by the three core attributes. Collectively, this combination provides air power with a high degree of flexibility and the Alliance with one of the most responsive and easily scalable tools available. As a resource-efficient application of power, JAP facilitates a high degree of risk-management in pursuit of Alliance objectives.

4. In addition to its strengths, air power has limitations, such as impermanence[2], payload limitations and relative vulnerability. Accordingly, future air power capability development, supported by innovative thinking and leveraging the benefits of technological progress, should aim to reduce these limitations and their effects.

THE SECURITY AND OPERATING ENVIRONMENT

5. The Alliance is faced with threats and challenges, from state and non-state actors, military forces, terrorism, as well as from hybrid attacks and cyber-attacks, which are more diverse, complex, rapidly evolving and demanding than at any time since the end of the Cold

[1] Within the definition of JAP, Joint is defined as "activities, operations and organisations in which elements of at least two services participate" – NATO Term Database.
[2] Impermanence is a limitation imposed by ground servicing, human limitations or rearming.

War. This diverse picture is further complicated by easy access to technology, the ability to limit or deny access and manoeuvrability, and the capacity to disrupt Command and Control (C2) networks. Future challenges and threats will be transnational and multidimensional in nature and will likely have long-term consequences for peace, security and stability in the Euro-Atlantic region. Furthermore, for the first time since the end of the Cold War, the Alliance has to be able to conduct operations against any peer-state actor. As a result, the future operating environment may be one in which air superiority can neither be assured at the onset of operations nor, once obtained, be an enduring condition.

6. Warfighting domains are inextricably linked. In the future, these interdependencies will continue to grow. Therefore, JAP will increasingly be able to affect these domains, and conversely, be affected by them. This requires NATO to employ JAP in flexible and interoperable ways, and for JAP to be seamlessly integrated with operations in other domains.

7. As air and space overlay the entirety of the globe, the Alliance must be able to employ JAP capabilities in and around all possible terrain and environments. The development, proliferation and integration of adversary ballistic and cruise missiles, advanced layered air defence, cyber and electronic warfare systems will change the dynamics of Alliance air operations, which have more recently been conducted in permissive conditions. Forces will need the ability to operate despite the existence and further proliferation of such capabilities, which may result in threat environments ranging from permissive to highly-contested.

8. Future environments will become more congested, and thus challenge the identification of friend or foe. Since military air activities share the same airspace as civil air activities, civil-military airspace coordination and integration will continue to be essential in order to reduce risk and maintain a safe and secure air environment. Furthermore, JAP must be able to adapt to progressive changes in global norms whilst considering specific national interests and sensitivities of Alliance member nations and recognising where appropriate, those of coalition partners. Given the trend that engagements during conflict occur in more densely populated areas, detecting and targeting, while considering the Law of Armed Conflict, will become increasingly challenging as urbanisation continues to proliferate and megacities emerge.

9. Advances in technology create opportunities for increased and improved exploitation of the electromagnetic spectrum (EMS) by the Alliance. However, due to increased risks of its interference or degradation as well as the fact that adversaries will use actions against information systems, emitters and sensors to disrupt Allied operations, innovative approaches will also need to be developed to reduce Allied EMS vulnerability.

10. In the future, the successful use of JAP will be more dependent upon a robust and securely networked environment, including integrated and interoperable networks that will enable JAP to be exploited to the maximum extent. Deployed or remotely operated systems and support operations will use expansive, networked infrastructure which, in return, need to be included in prevention, detection, resilience, recovery and defence from all forms of cyber-attack[3]. The protection of the network will become as important as the protection of

[3] These include: network crime and insider cyber threats (either espionage or sabotage), including phishing, identity theft, and cyber stalking, as well as financial scams and the theft or misuse of classified information. It also includes attacks on NATO Information Technology and Operational Technology systems as well as the networked software of Alliance weapons systems or platforms.

the platform. Forces will also need to protect against manipulation of data and information, and should be able to validate and verify data to ensure it is accurate, reliable, and derived from trusted sources.

11. Increasing reliance on cyber and space-based capabilities by Alliance forces presents vulnerabilities for adversaries to negate critical NATO capabilities through degradation, denial or destruction, whilst providing opportunities for the Alliance to integrate such capabilities with JAP for kinetic and non-kinetic effect. Both the resilience and exploitation of such capabilities is therefore a critical requirement that future development should address.

JOINT AIR POWER'S SUPPORT TO NATO OBJECTIVES

12. JAP is a key instrument in achieving NATO's three core tasks and other political objectives. As such, JAP provides decision makers with scalable and agile options. NATO's Consultation, Command and Control capability links political intent with military missions and is an essential element of political objectives and military missions. This includes the provision of Indications and Warning to enhance awareness and understanding in support of decision-making. The following structure articulates how JAP supports the three core tasks, and the achievement of political objectives, both now and in the future.

13. **Collective Defence.** JAP's support to the Collective Defence task includes, but is not limited to, conventional deterrence, conventional actions, Integrated Air and Missile Defence, and nuclear deterrence. JAP supports the political and military requirement for situational awareness and understanding while providing the political level with agile means to rapidly change posture, escalating or de-escalating through appropriate measures as required. JAP protects and defends NATO's territory, populations and military forces from attacks, including ballistic missiles. JAP also provides the capacity for operations which can contain or delay an adversary when the Alliance is either surprised or engaged elsewhere. Facilitated through the attributes of speed and reach, support operations such as strategic lift and air-refuelling capacity enable JAP to contribute to the transatlantic link, demonstrate solidarity and cohesion, and help reassure and reinforce Allies in an agile and responsive way. Finally, JAP's contribution to both conventional actions and nuclear deterrence provide options to address the challenges of facing a nuclear capable adversary in peace, crisis and conflict.

14. **Crisis Management.** JAP provides the political leadership with flexible military options to address the full crisis spectrum - from low to high intensity operations - pre, during and post-crisis or conflict. An urgent crisis, which requires an immediate response to regain the initiative, will often employ JAP as a lead element. JAP also provides reliable capacity to support crisis prevention or early intervention at distance by providing strategic lift, air-refuelling, and support to Joint Information, Surveillance and Reconnaissance (JISR). Its flexibility and agility allow for timely demonstration of NATO's resolve and intent, often as part of NATO's Comprehensive Approach. Furthermore, it supports international event monitoring, and intelligence gathering and decision-making pre, during and post-crisis. JAP provides mobility and combat support for sustained stabilisation and reconstruction in a complex environment.

15. **Cooperative Security.** JAP plays an important role in projecting stability and building the air power related resiliency of partners. Additionally, JAP contributes to Capacity

Building by developing host nation support capability, civil-military airspace utilisation, military-to-military relationships, information sharing and building interoperability with NATO's partners and other International Organisations such as the European Union. Air traffic coordination and airspace management with civilian organisations is a key ongoing task to enable air operations. With respect to NATO's interface with civilian organisations and national authorities in connection with Ballistic Missile Defence, this has to be seen in the context of Council approved plans and policies addressing the consequences of ballistic missile intercept and engagement. Finally, the flexible attributes of JAP support arms control, disarmament and non-proliferation, including the possibility to verify and monitor compliance with agreements using JISR.

THE CORE ROLES OF JOINT AIR POWER AND ITS EMPLOYMENT IN A MULTI-DOMAIN ENVIRONMENT

Core Roles

16. The interdependent core roles of JAP are counter-air, attack, air mobility, and contribution to JISR. Each role, enabled and synchronised through a secure C2 layered network, is required to achieve the principle functions of JAP - the coordination, control and exploitation of the air – which provide the instruments for the political level to achieve or support Alliance objectives. Control of the air is the required degree of freedom in the air domain necessary for the exploitation of the air. It enables protection of Alliance interests, population, territory, forces and infrastructure. Exploitation of the air is the use of the air domain to maximise the achievement of Alliance objectives. The proper balance between the core roles is driven by the specific application of JAP in supporting NATO's core tasks. However, maintaining an enduring and robust capacity across each of the core roles is essential to ensure the flexibility of response options available to NATO.

17. Achieving a desired degree of control of the air at a certain place and/or time is primarily gained by opposing the adversary's air power through counter-air operations. These operations, which may be offensive or defensive in nature, and kinetic or non-kinetic, are key to enabling the freedom of manoeuvre of air and surface-based forces in all domains.

18. JAP's decisive influence can be exercised through its attack role, which can be executed on very short notice. Attack has the capacity to generate effects from the tactical to the strategic level through the threat or the use of force, by kinetic or non-kinetic means, including conventional and nuclear deterrence capabilities.

19. JAP's speed and responsiveness support a wide range of air mobility functions in support of NATO's core tasks. Such functions include the deployment, sustainment, relocation, and recovery of military or civilian personnel and materiel, including those engaged in Special Operations.

20. It is fundamental to gain and maintain situational and strategic awareness in order to support proactive decision-making, increased flexibility, and effectiveness. JAP's continuous contribution to JISR allows for the rapid collection of information and the awareness and understanding necessary for decision-making, planning, preparation and execution of operations at all levels.

Joint Air Power Employment in a Multi-Domain Environment

21. The increased complexity of modern warfare requires NATO to be prepared to fight as a joint force in a multi-threat environment in order to achieve desired effects in all domains and at the strategic, operational and tactical levels. Coordination, control, and exploitation of the air are critical to the success of Allied and joint operations. Since JAP includes elements operating in the Air, Maritime, Land and Cyber domains, supported by Space, it represents one of the strongest drivers for the integration of multi-domain operations, including the capacity to conduct C2 from the air.

22. JAP contributes to Land, Maritime and Special Operations by gaining and maintaining the desired degree of control of the air in order to affect its exploitation. This enables freedom of manoeuvre in the Land and Maritime domains. Conversely, JAP relies on Land, Maritime, Cyber and Special Operations capabilities, which assist in intelligence collection, including support to targeting, attribution of actions and confirmation of effects of air operations on the ground, in the air, at sea or in cyberspace, in addition to the provision of critical infrastructure support. Strategic basing, strategic lift, air-refuelling, and maritime manoeuvre and mobility allows for the deployment and sustainment of joint forces at strategic distance and enables the exploitation of air power attributes.

23. The ability to understand and therefore operate effectively in cyberspace is essential in modern warfare. JAP relies, and will increasingly rely upon, modern, resilient, multi-level information networks, which could be challenged by state and non-state actors. Increased reliance on Cyber domain capabilities may present vulnerabilities for adversaries to affect this critical enabling capability with cyber or kinetic activities. However, JAP must be sufficiently robust and resilient to operate in a degraded or denied cyber environment. Moreover, national contributions to cyber operations can further enable effective JAP applications. The effective integration of Cyber into JAP operations will leverage the Alliance multi-domain approach in a synergistic way both in kinetic and non-kinetic effects.

24. There are strong dependencies between JAP and national space-based capabilities, even though NATO neither owns nor controls them. JAP relies upon multiple functions provided by space assets, including but not limited to early and timely warning, space ISR, satellite communication, and the provision of Position, Navigation and Timing information. This air-space dependency requires JAP to consider the space environment, in particular the vulnerabilities of space-based systems. However, as JAP must remain employable with degraded or no space support, space requirements and vulnerabilities are essential elements to be considered during the planning of NATO operations and must therefore be drivers for capability development.

JOINT AIR POWER – ESSENTIAL ELEMENTS FOR TRANSFORMATION AND CAPABILITIES AND CAPACITIES

25. The ways that will enable the transformation of JAP comprise the following essential elements: Interoperability and Integration; C2; Infrastructure and Logistics; Education and Training, Innovation and Adaptation; and Strategic Communications (StratCom). These essential elements outline how the transformation of JAP will achieve political objectives and emphasise the need for continuous adaptation across the spectrum of Doctrine; Organisation; Training; Material; Leadership; Personnel; Facilities; and Interoperability (DOTMLPFI). Due to the complexity of JAP, this spectrum has to be expanded to capture

the capability and capacity needs of C2, Innovation and Adaptation, StratCom, and Policy and Concepts.

26. Expressed as capability and capacity needs across this extended spectrum, this approach will ensure the relevancy, effectiveness and utility of JAP both now and in the future, in all phases of peace, crisis and conflict, in both permissive and contested environments. These capability and capacity needs are further specified within a separate supplementary document[4] to this strategy to help identify actions to implement the Joint Air Power Strategy, with an emphasis on defence planning.

Doctrine

27. In order to effectively execute this strategy, and to emphasise the inter-dependency of domains, evolving NATO doctrine must address the following challenges, which necessitate integration between the different domains: civil-military coordination, peer-state actor's capabilities and activities, degraded environments, asymmetric/hybrid activities, proliferation and urbanisation. Set against the context of the challenges and speed of the operations in the current and future security environments, the coordination and synchronisation of C2 including doctrinal interoperability will be essential in order to enable timely and seamless integration of offensive and defensive activities as well as all other JAP roles.

Organisation

28. NATO's operational organisation must be agile, resilient, scalable and adaptable in order to fully support the seamless transition from peacetime to conflict or, in worst case, a strategic surprise. The organisational structure must persistently leverage NATO and national capabilities in a federated approach in order to achieve Alliance objectives. The structure must also be able to bring together all the elements of JAP into a coordinated and coherent framework under the umbrella of robust, resilient and interoperable, securely networked and adaptable C2-structures.

Training

29. The successful execution of this strategy will require appropriate education, training and exercise at all levels from individual to organisational. Synchronising air power within a joint campaign will require an adaptation of the NATO Education, Training, Exercise and Evaluation Policy to include joint competencies aimed to provide understanding on all aspects of the military instrument of power, and develop inter-agency, inter-governmental, and multi-national capabilities. Training and Readiness should include aspects of high intensity warfare against a peer-state actor in a degraded environment across all domains. Specific emphasis should be placed on space, cyber, JISR to include analysis and dissemination, EMS operations, asymmetric and hybrid threats, and civil-military coordination. Interoperability through language skills and cross-cultural awareness, including federated strategic understanding by the persistent leveraging of regionally specific expertise, will support JAP's ability to operate effectively across the joint force.

[4] NATO Joint Air Power Capability and Capacity Needs – a NATO unclassified document that is intended to inform NATO Defence Planning Process (NDPP) cycles and decisions.

30. NATO certified education and training programs will need to be utilised to better integrate human capital with unmanned and/or autonomous[5] JAP capabilities. Education must leverage opportunities to integrate technology into joint operations and to contribute to the development of new concepts, doctrine and legal frameworks.

31. Future training environments must take advantage of technological advances to balance live, virtual and constructive opportunities and exploit the potential to permit persistent synthetic training in complex environments. A realistic training environment will incorporate a wide variety of characteristics such as military, civil, political, governmental and non-governmental organisations, while maintaining the military principle of 'train as you fight'. NATO must be capable of rapidly adapting training environments to incorporate lessons learned and intelligence output.

Materiel (including Infrastructure and Logistics)

32. The complexities of coordinating and operating in an increasingly urbanised environment present challenges in distinction between combatants and non-combatants. JAP capabilities must enable detection, distinction, identification and tracking in this environment as well as fusing and correlating information to improve situational awareness at all levels.

33. Due to the through-life-cycle system costs[6] of modern capabilities, as well as the increasing challenges to the security of global supply chains, innovative logistics and procurement capabilities will need to be developed. However, even though NATO leverages technology and develops a smaller and more cost effective footprint, it will be essential to account for mass to ensure sufficient capacity remains to execute all roles of JAP. With respect to the development of medium to long-term capabilities, a subtle and balanced approach between quantity and quality should be adopted.

34. Data management and networked capabilities will require secure infrastructure and must be capable of handling large volumes of data. JAP's effectiveness is enhanced when resiliently linked to these capabilities. JAP-related systems, procedures and platforms must be agile, flexible and scalable to manage the emerging requirement and maintain resiliency in a degraded or denied operating environment, including cyber-attack.

35. JAP's innovative approach to logistics and procurement processes requires efficient, cost-effective, scalable and responsive support including dedicated logistics chains that facilitate appropriate and timely positioning. It must be flexible to meet the needs of the different core tasks in a range of challenging climates and environments. Capabilities of interchangeable modular design, stockpiles of replacement components as well as easily repairable standardised equipment across the Alliance will improve support to JAP.

36. Innovative high-end technology gives the Alliance the option to consider reducing the size of future logistics footprints. The geographic span of the Alliance requires a forward-thinking and situationally adaptive approach towards the development of appropriate supply

[5] The degree of autonomy permitted is subject to further political approval.

[6] In this instance, life cycle costs are defined as the sum of all recurring and one-time (non-recurring) costs over the full life span or a specified period of a good, service, structure, or system. It includes purchase price, installation cost, operating costs, maintenance and upgrade costs, and remaining (residual or salvage) value at the end of ownership or its useful life.

and transportation networks necessary to support all NATO core tasks. This implies that the lines-of-communications should be globally monitored and secured over cyber, land, sea and in the air. Setting up transit, base and port access agreements, leveraging national transportation networks, and enhancing the capability to transition personnel and materiel between multiple-modes of transportation will be critical to the fulfilment of military objectives. Emerging technology gives the Alliance the option to consider the required logistics footprint as well as leverage automation for increased speed of logistics operations.

Leadership

37. Since JAP is part of NATO's response to each of its core tasks, leadership should embrace the inclusion of all aspects of JAP, ensure that air power is integrated from the outset of the campaign planning process, and understand multi-domain capabilities and limitations when developing comprehensive campaign plans. This will necessitate a deep understanding of the advocacy of air power and its articulation to key decision-makers. Furthermore, NATO leaders will need to consider the potential of peer-to-peer conflict and the associated increased risk of attrition, the challenges associated with an evolving security and dynamic operational environment, the role of technology to support pro-active and accelerated decision-making, and the link between StratCom and the application of JAP.

Personnel

38. In order to execute this strategy and fully enable the NATO Command and Force Structures for all core roles, sufficient trained personnel will be required as agreed in the Peacetime Establishment and Crisis Establishment structures. Personnel must have the capability to operate in a multi-cultural environment and understand their role in the Joint Campaign. Due to the criticality of JAP-supporting enablers such as space assets, cyber, and EMS operations, a growth in the demand for Subject Matter Experts in these areas is anticipated and will need to be considered.

Facilities

39. JAP is dependent on adequate and secure basing. From well-established to austere, this basing is required to accommodate the forces necessary to achieve all deployment, operating and sustainment objectives. Accordingly, enhanced coordination between military and civil authorities, including shared access to airspace and infrastructure, will be a required capability.

40. JAP infrastructure, capacity and the strategic logistic lines-of-communication must be protected to retain the ability to support multiple simultaneous activities, including support to operational and training missions. This must include the capability to maintain functionality in a degraded operating environment and in all anticipated climatic conditions.

Interoperability

41. Achieved through common doctrine, procedures and technical means, and enhanced by cultural awareness, interoperability[7] spans the entire expanded DOTMLPFI spectrum, and is essential for JAP's success. Since Allies and partners will deliver capabilities to

[7] Interoperability is defined in AAP-6 as "the ability to act together coherently, effectively and efficiently to achieve Allied tactical, operational and strategic objectives".

NATO at differing generational and technological levels, the integration of upgrades to legacy communication, identification and information systems, including technical validation and verification processes, will be critical to further enable enhanced interoperability.

42. Shared and flexible use of airspace with civilian actors including dual military-civilian use of facilities in peacetime, improved cultural awareness in both joint and multinational context, improved common standards and effective exploitation of space and cyberspace are key for NATO's JAP capabilities and integration. JAP must consider on-going civil aviation modernisation programs and their impact on the ability of NATO's JAP to access and operate in such airspace.

43. JAP's interdependent and functionally integrated forces require persistent capabilities to conduct federated networking. This will enable the most efficient use of resources, maximise effects on an adversary's forces and capabilities, and minimise the risk of collateral damage and fratricide. Federated networks, open-architecture-based systems, standardised procedures, standardised materiel and standardised training of personnel, and modular and plug-and-play type capabilities will improve interoperability while reducing single point of failure vulnerabilities. In order to achieve the desired level of integration without creating vulnerabilities, the Alliance must complement interoperability through the use of encryption, segmentation, and segregation.

Further Elements outside DOTMLPFI

44. In addition to those aspects considered within DOTMLPFI, the following additional essential elements must also be considered.

Command and Control

45. The ability to command and control JAP, based on human capacity that is augmented and assisted by information technology, is a requisite capability to ensure the level of flexibility and agility necessary for effective JAP employment. Future networks must support the collection, processing and distribution of significant amounts of data to facilitate timely command and control of JAP. Supported by standing Joint Air C2 capability and supporting tailored command structures, a high level of interoperability and deployability, including procedures, training and exercises, will be key to sustainable, effective and affordable Joint Air C2 network capabilities and structures. In the current and future security environment, resilient, interoperable, and redundant C2 systems that utilise and provide persistent federated networks and data analysis tools are required in order to assist leaders with decision-making and the timely comprehension of complex challenges.

46. In order to seamlessly adjust to rapidly changing situations, Joint Air C2 capabilities must be able to synchronise and coordinate the efforts of a wide range of entities while providing clear military direction and guidance through unity of command. Joint Air C2 capabilities must also facilitate close coordination with relevant civil aviation authorities when transitioning from peace to crisis or conflict.

47. Comprehensive and persistent situational awareness and understanding is required for effective and informed decision-making pre, during and post-crisis. Therefore, NATO requires agile, coordinated multi-domain ISR as a permanent task, with a standing Joint Air C2 structure in place to oversee its operation. The Alliance should acquire the capability to

analyse and rapidly disseminate various JISR products that are releasable to a multi-national audience. NATO must strive for improved policies that will drive collaboration, integration, and partnership with other nations to ensure that pertinent intelligence may be shared in a timely manner. Furthermore, to enhance accuracy, capabilities for reconnaissance and surveillance must be tailored and take advantage of cost-effective technologies.

Policy and Concepts

48. In order to execute this strategy effectively, NATO must identify, adjust and improve policies and concepts related to JAP, such as those related to aircraft cross-servicing, Space, EMS exploitation, and movement of resources across Alliance internal borders. In parallel, the ability of the Alliance to share intelligence and information is being improved through policies, which will persistently provide adequate, accurate and timely intelligence and information to support NATO's Air decision-making process. However, it will be essential that Allies remain committed to implementing and adhering to these policies.

Innovation and Adaptation

49. JAP should evolve through two types of innovation: conceptual innovation, in order to improve and enhance the use of organisational structures and the interoperability of existing and new resources; and technological innovation, in order to create, maintain or expand advantages over adversaries. JAP should exploit a diverse commercial innovation market and capitalise on government-funded innovations.

50. Advancements in new technologies to defeat emerging threats may require upfront investment to realise longer term cost-effectiveness. JAP must be able to employ scalable, sustainable and multi-role capabilities to provide the necessary range of effects. Advances in machine learning, human machine interfaces, and data clouds, all offer the potential to enable the evolution of JAP across an information centric, multi-domain construct. Machine learning provides significant potential savings over the human learning process in terms of cost, speed and effectiveness. The improved human machine interface and use of data clouds offer the potential for capabilities comprising mixed forces of manned and unmanned systems.

51. JAP should continue to exploit potential lower cost capabilities such as directed energy in support of counter-air operations and unmanned and/or autonomous systems across all core roles. Striving to maintain technological advantage can mitigate risk through the accurate delivery of effects. However, when leveraging advanced technology, sufficient quantity of assets, including low technology such as swarming drones, must be maintained to execute all roles of JAP. Acquisition of commercially developed capabilities, especially networked capabilities, must occur in a flexible and timely manner and balance potential cost savings against the risks of supply chain cyber intrusion.

52. In addition to the need for resilience, JAP must advance its capability to recover from hostile actions and maintain operational capabilities in a degraded environment. Furthermore, JAP capabilities must be able to continue to operate in a Chemical, Biological, Radiological and Nuclear contamination environment. JAP capabilities must exploit and operate in the EMS. In addition, Joint Air C2 capabilities, JISR and individual capabilities must consider cyber interference. Finally, resilience against asymmetric/hybrid threats

including Improvised Explosive Devices and layered defence are critical capability areas for JAP.

Strategic Communications

53. The core attributes of air power provide the Alliance with a highly flexible and scalable set of responses to threats and crises. Its use is highly visible and very frequently the kinetic weapon of first choice; it is also often the first military element to be deployed to deter potential adversaries or reassure allies. At heart, the employment of air power sends messages, and it is therefore critical that the communication aspects are fully considered and integrated into the planning and execution of air power operations. Well planned and coordinated StratCom enhances the operational effectiveness of air power; by acting as an amplifier for air power capabilities and their effects, it can deliver a broader cognitive effect against an adversary in order to deter them and/or undermine their will to fight. Accordingly, winning the information war can be every bit as important as winning the war in the air.

54. Integrating StratCom into air power operations is also essential in order to combat disinformation and to maintain freedom of action. The more prominent air power becomes in an operation the more likely it is that it will be targeted by disinformation campaigns designed to distort or to malign the Alliance's intent and/or quality of execution. Adversaries, especially those in the asymmetric environment, are acutely aware of the impact of air power which is often essential for success. Therefore, limiting its use will be a central element of adversarial information operations; notably, this will include claims of civilian casualties, or the exploitation of events involving civilian casualties. NATO cannot afford to have its air power capabilities unnecessarily constrained and this makes it even more essential that the communications aspects are taken account of in planning and execution of air operations. Effective StratCom is a critical requirement in diplomatic and informational environments to protect NATO's freedom of action in the air such that the Alliance can maximise the effects from its airborne capabilities.