

Joint Air & Space Power – JAPCC Conference 2008

General Karl-Heinz Lather's Keynote Address

"Joint Air & Space Power – Decision Superiority in the 21st Century."

General Brady, Ladies and Gentlemen,

Approximately three months ago I was invited to give the Keynote Address to this conference. I immediately accepted the offer. I simply could not resist the opportunity to have you, the experts, listen to me as an Army General on future aspects of Air and Space Power.

Being well aware that it would require some preparation, I decided to take what we call in German a crash course to regain some knowledge on the history of Air and Space Power. Starting point was the initial use of balloons in 1793 in support of the artillery. I followed the development of initial air doctrines after the First World War; the increasing diversification of air assets into more and more specialised roles as well as the growing value and importance of communication means for the effective employment of air assets.

Very soon our predecessors acknowledged the fact that the inherent capabilities of air assets - range, speed, flexibility and effectiveness - would be of best value, if integrated in an overarching strategic concept. Air superiority, comprehensive awareness of the battle-space – what we today call “Common Operational Picture” and effective command & control were seen as other key elements for the effective employment of air assets.

Discussions over time focused on how these broad principles could be implemented best in light of the actual operational challenges, technical means and resources available.

Despite the fact that Air Forces are rather young - for example I recently learned that the USAF is just 61 years old - in their short life, they have had to go through some amazing changes to adapt to emerging challenges and opportunities. I guess that is also what we are trying to achieve in our conference.

Consequently, I will initially focus on the challenges of today, than provide an overview on procurement and related resource aspects from a SHAPE point of view, subsequently try to provide an assessment based on facts provided reaching into the third decade of the century and finally close with some recommendations for the panel's work. By doing so I will reserve the right to address some aspects of air power which are not the prime focus of this conference, however in my view need to be taken into account.

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Operational Picture

Let's first have a look on the operational picture of today and of course the primary focus is Afghanistan, this large country at strategic distance, with no coastline, a challenging topography and climate, rather limited infrastructure and an asymmetric threat to NATO forces.

It is evident, that in such a scenario several capabilities are key to enable prolonged operations. The first one is the ability to – very quickly – get any airfield up to operational status in order to support all required air movements. The second is to provide the strategic airlift, to include air-to-air refuelling, in order to be able to sustain operations and the third is related to the ability to provide the required in-theatre transport support.

It is not a secret that hand-held anti-aircraft weapons are widely spread around the globe. This poses an additional risk factor on required air transport movements, which can only be minimised by either an adequate defensive suite fitted to aircraft and helicopters, or by providing a secure environment, in particular for the take-off and landing phase.

Nations managed to provide the required strategic airlift capabilities. However, limitations became visible and resulted in various activities. A set of nations leased strategic airlift capabilities on a permanent basis, another set of nations decided to procure a limited number of cargo aircraft and share the available airlift capacity. Not so favourable is the situation looking at helicopters for in-theatre airlift. A vast amount of helicopters are not, or only of limited suitability for operations in rather mountainous terrain. Self-defence kits are not a standard piece of equipment. In 2007 NATO nations had to admit, that they would not be in a position to provide the required helicopter capabilities in total and decided to outsource some of the in-theatre airlift requirements.

Let's change the focus and look into the area of Intelligence, Surveillance and Reconnaissance (ISR). Assets available initially reflected pretty much, what we have seen for decades; tactical army organic on the one side and tactical reconnaissance aircraft on the other side. Only one nation was in a position to provide a meaningful number of long endurance UAVs. In addition, and maybe even more important, it became evident that real theatre-wide intelligence management and information sharing has not been practised intensely during routine exercises and the subsequent lack of capabilities is not necessarily enhancing mission effectiveness.

Fighter support is adequate. There is no doubt that fighters provide with their speed, their sensors and their weapons a key element of timely responsiveness. However, there are also challenges associated with the employment of fighters, which are mostly related to the rather large logistic support requirements, in particular fuel.

Finally, the availability of communication means in theatre deserves a closer look. Communication & Information Systems were not suitable to effectively conduct such a type of operation. In addition, the lack of interoperability does put significant constraints on our forces. Interoperability challenges are related to the ability of air and land forces to communicate with their standard equipment. In addition, the

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accreditation of connections between various networks providing information of the same security level is a continuous challenge. As a last aspect the assured access to sufficient SATCOM bandwidth is a constant area of concern. These three aspects are just spotlights on a highly complex and challenging area.

These short statements reflect a very quick rundown on the situation in Afghanistan. However we should not forget that other operations and military tasks are still being conducted. Those tasks are related to the Balkans, Active Endeavour and Air Policing. Another task on the horizon could be linked to safeguarding sea lines of communication against the growing threat of piracy. Finally let's not forget the resources required for the NATO Response Force.

I do not have to tell you, that it gets more and more difficult to find the right personnel to effectively conduct the tasks required, nor the money in the NATO budgets to fund infrastructure, or costly deployment's, such as the desired deployment of the NAEW&C component in support of ISAF.

However, I am not here to talk only about ISAF. I just wanted to highlight, that with the ongoing operations, which do – by far – not reflect the agreed Level of Ambition, we already reach some limitations in the availability of air assets and required supporting elements.

Ongoing Procurement Efforts

In a second step I will highlight some foreseeable changes in availability of equipment as procurement has been decided, or is in an advanced stage of decision making.

Let us first look at fighters. Nearly all NATO nations are in the process of procuring new fighter aircraft. RAFAEL, Eurofighter-TYPHOON, just to name two, are more and more occupying the skies. The Joint Strike Fighter (JSF) will follow soon. This means, that for the foreseeable future – as outlined – we have already today a very good understanding of the capabilities to expect. There should not be any secret of what to expect and how to best integrate those assets in future air operations. Unmanned Combat Aerial Vehicles (UCAV) are maturing and can be expected to enter service within the depicted timeframe. The integration of those assets in offensive air operations needs to be further defined.

NATO AWACS will remain in service, as will similar French, UK and US assets. Other nations have made decisions to procure national airborne air surveillance assets. In so far the availability of Airborne Early Warning and Control assets is another defined pillar, when looking on effective management of Air & Space Power in the foreseeable future.

Switching to the Air Transport world, the situation is quite similar. C-17, A400M, C-130J as well as some newly procured smaller transport aircraft will form the backbone for the coming decades. In addition, it can be expected that permanent lease of strategic airlift will be available.

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Medium lift helicopters and attack helicopters are about to enter service in some European nations. However, due to extremely long procurement cycles, not all of these helicopters are suitable for operating in the challenging environments we face today. Despite all the intense discussions not much progress can be seen in the provision of heavy lift helicopters. Even if the respective NATO Staff Requirement is agreed as envisaged this year it will take significant time before those assets are available. Normal procurement cycles for those assets easily exceed 15 years. Closely linked to this capability gap in heavy lift helicopters is the rather discouraging perspective for the support of special missions, such as MEDEVAC, Combat Search and Rescue (CSAR) as well as support to Special Operation Forces.

Within the ISR environment a variety of nations are putting efforts into the procurement of Medium Altitude Long Endurance (MALE) UAV Systems, whilst maintaining fighter-based tactical air reconnaissance capabilities. Army organic capabilities are also improving. Airborne maritime surveillance capabilities remain a challenge. The same is true for stand-off capable, wide area surveillance and reconnaissance assets.

In terms of managing ISR we are making progress. The so called JISR Step 1 approach for ISAF will enhance data sharing possibilities for Full Motion Video data, provide Collection Management Tools and optimise the data exchange and data search opportunities between various Intelligence Data Bases. A further Step 2 is being defined and will further enhance overall effectiveness.

All this is based on agreed standards and protocols and has been successfully tested in laboratories and during live exercises. However, challenges remain and are on the one side linked to the availability of trained personnel as well as standard support tools to professionally manage multinational JISR operations. The second aspect is the lack of ability for effective cueing of tactical ISR assets based on the situational awareness provided by wide area assets.

The Alliance Ground Surveillance (AGS) programme can provide the required personnel, the support tools and the missing stand-off capable wide area sensor to dramatically enhance ISR effectiveness as a unique force multiplier. As a NATO owned and operated asset, AGS will also be able to provide all nations with meaningful intelligence outside of a force generation process, which is in particular essential in unforeseen crisis situations requiring rapid response.

No major surprises are also to be expected within the area of ground based air defence systems, since all major procurement decisions are made.

Now let's shift focus again and look at the glue between capabilities, the Command & Control systems.

The Air Command and Control System (ACCS) is finally reaching key programme milestones, eventually leading to a system replication decision next year. I expect that in addition ICC will stay in service for a quite a prolonged time. Software connecting national sensors and weapon platforms for Active Layered Theatre Ballistic Missile Defence (ALTBMD) is under development and the programme is making solid progress. As a further aspect, the future of tactical data links needs to be looked at.

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Link 16 and Link 22 standard message formats will provide the backbone of tactical data links for the foreseeable future. In total, the Command and Control environment relevant for air operations has been defined.

Finally, the NATO owned communication means are being further enhanced to meet the demands of envisaged NATO Network Enabled Capabilities (NNEC). This includes enhancements in availability of SATCOM.

Overall, we can expect significant improvement over the coming years, however I do not expect any additional assets or capabilities being made available – at least in terms of significant number - for air and space power beyond the scope I just broadly defined.

Other Contributing Factors

Especially in light of the current crisis on the financial markets, which I expect to have a long-term impact, I do not foresee any real increase in military budgets nor in military personnel. To meet operational requirements within the defined level of ambition effective management of resources will be the key critical element. As you are well we are in the final stages of the review of the NATO Command Structure. Whilst the number of headquarters virtually remains the same, cuts in personnel are significant. As you all have experience with the restructuring of organisations, you will understand that it will be extremely challenging to maintain effectiveness.

On the other hand we have good examples of very effective organisational changes. The foundation and the integration of the Intelligence Fusion Centre – the IFC – into SHAPE's day-to-day battle rhythm is a real success story. Consequently, we are proceeding with the same approach for the NATO Joint Electronic Warfare Core Staff – JEWCS – within the framework of the ongoing review; and we are expecting the same positive results.

This brings me to some more general considerations. NATO nations are quite different in size, population, economical strength and resulting options to provide military capabilities to the Alliance. Military capabilities, being complex, costly and manpower intensive can only be provided to the Alliance by a rather limited number of nations. And, in all fairness, this is in particular true for Air & Space assets.

A First Assessment - How do all of these facts impact our conference?

The first question to be asked before we start the discussions in the panels on Joint Air & Space Power and Decision Superiority in the 21st Century is related to potential future changes to the operational environment that we are experiencing today. In my mind maintaining the ability to conduct Article V operations, whilst being able to sustain operations as we see it today in Afghanistan, paired with the ability to rapidly react in case of unforeseen crisis will be the operational framework of today and tomorrow.

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When conducting research and analysis on how to meet those challenges, those activities need to take resource considerations into account. Realistically we are living in an environment, where we have to accept the fact that we design to budget. Consequently the effective use and efficient management of available resources is paramount.

Concerning capabilities available for the next 10-20 years in the fields of Air & Space Power, I strongly believe the playground is defined by the major procurement efforts as outlined. So the task is to come up with a solid plan to most effectively use those assets, embedded in the framework of a truly joined and combined environment.

Potential avenues for such an approach could be described as follows:

Concerning the effective use of available Air Transport capabilities efforts should go into an even better co-ordination of cargo and personnel management. Tools are available on the commercial market, since large logistic companies essentially face the same challenges. Considerations need to take into account the transportation requirements for NATO owned and operated capabilities. Reliable and timely fulfilment of air transport requirements is a prerequisite for meeting strategic, operational and tactical requirements.

Within the field of an integrated employment of UAVs and manned ISR and combat assets we have to work on concepts and doctrines. However, what we do not need are dedicated UAV documents. We need to adapt our existing documents to the new situation, meaning integrating the UAV aspect into existing ATPs. The manned and unmanned worlds need to understand each other and learn to take advantage of the mutual strengths of the individual systems. This will lead to gaining most of the potential synergies and subsequently will provide more efficient air power.

Airspace management is one of the critical elements within this effort. Whilst technical solutions are always charming, we should follow an approach where procedural means form the baseline and technical means further enhance the employment options by reducing separation criteria. Not doing so would render air assets inefficient in the absence of the required communication means required for the technical solution.

Management of information within tactical data links is another challenge. We all know about the limitations. An alternate approach to be further explored could potentially be to get all relevant status information to ground command and control elements via low bandwidth SATCOM and reserve tactical data links for tasking only. This approach would maintain shared situational awareness, whilst maintaining decision superiority.

Within this context we need to close the loop between intelligence and operations. Especially in a near real time environment we can not afford an artificial separation between those two disciplines. Ideally both sides should work off the same Common Operational Picture with different applications for their dedicated tasks. Seamless transfer of relevant data between Ops and Intel should be the standard. Here is where we need to merge AGS, ACCS and ALTBMD from an operational and technical perspective.

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The key enabler is interoperability. However, adherence to agreed STANAGs for data exchange will not be sufficient. Exercises tailored to identify and mitigate interoperability challenges need to be a standard part of our day-to-day business. A building block approach starting within a laboratory environment with emulation of systems and taking results into live exercises have proven to be a solid approach. But interoperability is not purely linked to data exchange aspects. The ability to communicate across nations and services via voice, chatrooms or other means must be assured to improve situational awareness and subsequent decision superiority. However, the use of national crypto devices has the potential to render all attempts to gain interoperability useless. In this regard considerations on where national encryption is really required to protect sensitive data are crucial. The message within the Alliance is clear - avoid where you can!

Lacking the capability of instant coordination and consultation will lead to delays in decision making with a clear negative impact on decision superiority. The very simple message is that without interoperability in communications and data exchange, decision superiority will be very hard to achieve.

And there is still more on interoperability. Quite often the same weapon systems are procured by a variety of nations. Those systems usually continue to look the same over their lifetime; however there are quite a few examples where very soon after the fielding of the system interoperability between similar weapon systems is lost. Associated with this type of diverging approaches are usually different mission planning requirements, different training concepts and operating procedures. It is not unusual, that even in one nation the same weapon system is neither fully interoperable from a technical nor from an operational point of view.

All of this is resulting in the need for additional resources and loss of flexibility in a multinational environment. Resources we actually do not have.

It is a fair question to ask, whether potential benefits resulting from tailoring a weapon system to the very specific needs of one nation, or one service, are really justifying the additional resources required in today's broad spectrum of potential operations primarily conducted in a multinational environment and in light of the need to minimise the effort in order to sustain operations over rather long periods.

Enough on interoperability; let us look at network enabling capabilities. We all appreciate today's possibilities to get access to all type of information nearly everywhere on the world. However, I have sometimes the feeling that I get, or even ask for more information than is really relevant for the decisions I have to make. The impacts are twofold. They drive resource requirements in terms of bandwidth and bear the risk of too much information being available having a potentially negative impact on an effective and timely command & control process.

In addition it is essential, especially in a networking environment, to allocate decision processes to the appropriate level. In principal two extremes are possible. The tactical level making strategic decisions – since the information to do so is available – without being aware of potential negative impacts, or the strategic level making tactical decisions and starting to micromanage operations.

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In essence, I am convinced that modern communication means require discipline, a lot of discipline. Discipline to identify the real personal information requirements and discipline to restrict decision making to the specific task assigned in order to support effective command & control and subsequently gain information superiority.

I do not wish to say too much about space and there is not much to be said. The simple fact is that we need guaranteed access to SATCOM and space-based navigation means, however guaranteed access is not a synonym for ownership. Potential attempts to negate access to space capabilities could currently probably best be countered by redundancy, which we should be able to provide to our forces.

I said at the beginning, I would limit my view to just reach into the third decade. I further stated that for this timeframe I consider the playground in the Air & Space environment as being defined. However we have to look into the far future, since the definition of this future needs to start now.

This need is related to our procurement cycles. Most of the current programmes, initiatives and systems will have been delivered by 2020. This is when new initiatives and programmes must be launched.

This gives us about 10 years to define the Air and Space Power architecture of the next generation and to break this architecture down into operational requirements for future systems.

Accordingly a variety of questions have to be defined and answered. Within the Army environment the principle of defining first smart questions to receive meaningful answers has proven a very valid concept. So let me phrase some of the potential questions:

What are potential avenues for the development of the Global Security Situation and what is the impact on Air & Space Power within the different scenarios? The first part of this question has already been tackled by ACT; the second part has to be answered by you.

What are likely scenarios concerning availability of technology, personnel and budgets for procurement efforts starting 2020 and related to that, what can still be done by pure national efforts, or are multinational approaches the preferred course of action? Maybe multinational approaches are even desired to maintain the coherence within the Alliance by taking those nations along who are simply too small to procure and operate resource intensive systems.

Just to remind you, NATO NAEW&C and AGS are products of a combination of both strands.

Space will most likely play a major role in these considerations as will be the information environment and the definition of a related organisations making best use of emerging technologies.

Another key aspect within those considerations could be the definition of the future role of the NATO Command Structure and potentially NATO owned and operated

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assets as the glue for the seamless integration of national capabilities in a system of systems approach.

The NATO Integrated Air Defence as well as the NAEW&C has played that role very well and the AGS is supposed to take on this role in the field of JISR.

Recommendation

Let me finish with some recommendations, no not recommendations, just let me share some views on how I would proceed within this conference and beyond.

My clear preference would be a coordinated parallel approach. The immediate effort would be focused on integrating current systems and those we know that are already in the pipeline, into an overall effective Air and Space Power “package”. This effort should be based initially on current organisational structures. We need to be effective now.

The second activity string should focus on the Air and Space Power requirements for the timeframe 2030 plus. Once the broad framework for this timeframe is defined and agreed among NATO nations the coordination effort has to be initiated.

This coordination effort should focus on transforming – meaning gradually evolving - the current structure into the fourth decade of the century. I am strongly convinced that after two decades of rather rapid changes to our forces we need less revolutionary ideas. We need to take the time to consolidate what we have achieved.

Ladies and gentlemen, this concludes my address, thank you for your attention.

Q&A

Q – There is the impression that the development of capabilities is driven by budgets. Can you confirm this?

A – We demand a capability, based on an assessment and budget is one factor in the assessment. Money is limited and must be a primary factor in assessing capabilities. National interests are playing a factor, the Level of Ambition (LOA) must be discussed, and however, Nations are failing to deliver. The development of NRF is not as successful as we hoped. The next three NRFs will only be able to fill one mission in the meaning of force generation. SACEUR has tasked to review NRF and related concepts and to report with first findings at the next Multinational Combat Service Support (MCSS).

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Q – Space awareness – why is there only little to say?

A – No NATO doctrine is available at this time. Communications are touched on, because this is the only focused area, but NATO has for the time being no idea or concept on other space aspects.

Q – What is the most critical area to concentrate on?

A – In favour of the Joint environment taking advantage of strengths. Interoperability of systems is the key. There is dominance in dropping bombs, but there is a need to improve Joint ISR too.

Q – How well do we generate shared understanding at political and strategic levels?

A – Consensus building is the main concern of the Military Committee (MC) and the North Atlantic Council (NAC) as it is being taken into account. Minimum military requirements are being looked at with the budget. Some nations are playing different roles in different committees; they play a big game of chess. However, NATO has achieved a lot and is still capable to make fast decisions, for example to send STANNAVFOR to Australia within two weeks.

Q – The growth of Corps is becoming component commanders, but air forces retain their traditional thoughts. There is not enough qualified Air C2 (command and control) personnel to equip component commands. How can NATO deal with this?

A – DJSE (Deployed Joint Staff Element) will be established in NATO's force structure, but it is still not yet decided when it will happen. There is synergy in a joint force at a DJSE and JFC, and I can think at a joint level but not operate at it cause of software and equipment is not robust enough. One Air Component Command would have been ideal, do we need four CAOCs? Some nations decided not to man some CAOCs, maybe a manpower problem because Air C2 capacity at right quality is being cut.

Q – DJSEs have limitations. How are we going to ensure that they can do the job across all scenarios? Land forces yes, but joint?

A – We have to operate within given restrictions and need to be realistic, DJSEs are at an operational level of command, therefore JFC plus DJSE is needed, Joint commanders will lead and use DJSEs forward, rely on air components and maritime components. DJSE is a step forward from DJTF.

Q - How do we sell NATO better?

A – Strategic communications are the key. ACE Directive stirred up the water already, but needs another six months to coordinate with the public policy division. Nations have their own political interests. Info ops, psy ops and public relations should be combined in one doctrine. We are getting better, but ask me in six months time again.

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Q – Regarding Decision Superiority, NATO Network Enabled Capability (NNEC) and Effects-Based Approach to Operations (EBAO) are all linked together however; General J. Mattis has thrown away EBAO. What has SHAPE done about this?

A – NAC has agreed on EBAO, General Mattis has taken out EBO in his US hat. We are using EBAO in Afghanistan and in Kosovo, but we must move away from scientific art and towards what we really need, scientists in uniform make it more difficult than it actually is. SACT is next to JFCOM in Norfolk and their can be confusion. ACT supports EBAO and its place in the comprehensive approach.

Statement – I am not sure that General Mattis' decision is the US position.

Statement – General Mattis believes in NATO's comprehensive approach but his concern is with the US point of view. ACT is aware and in consultation with JFCOM and ACO.