

**SACT REMARKS to
the INTERNATIONAL CONFERENCE on AIR and
SPACE POWER**

ISTANBUL, 2nd of April 2015

Turkish Air Academy

General, Ladies and Gentlemen

Just after the First World War, the founder of modern Turkey, Mustafa Kemal Atatürk said that: "*the future is in the skies*". He was a true visionary previewing modern operational environment where airpower has taken a core place.

Our airwomen and men shaped NATO's Air power as the tool of choice for Allies to answer to crises all around the world. Offering high responsiveness, unmatched power projection, flexibility in escalation, reversibility, precision, and delivering a broad spectrum of effects. Today, Alliance Air Power enables our political authorities to demonstrate determination while controlling the employment of force.

In my view, NATO's Airpower is certainly the sharpest sword of the Alliance, one of the main contributors to achieving our three core tasks: collective defence, crisis management and cooperative security.

Before I share with you my vision on future NATO Air Power, I would like to start with a quick glance back to the past to understand how Air Power has developed through recent decades, which should help us to capitalize in this precious legacy.

Since the inception of NATO some 66 years ago, the Air component has been at the heart of the Alliance Strategy including nuclear deterrent, Integrated Air Defence and force projection. During the last decades Air Power has proved to be a tool of choice in crisis management. The engagement of NATO Air component in the Balkans was instrumental to stop a crisis, at its borders . Air forces were the first responder to the 9/11 terrorist attacks and the following engagement in Afghanistan, where NATO's air support is still key in assisting Afghan forces.

In Libya, NATO Air Power demonstrated its outstanding responsiveness and its global reach, while Allied Air Forces were able to integrate Partners Air forces And I would suggest that the effectiveness of our comprehensive air coalition against Daesh is a great outcome of these interoperability efforts based on NATO's standards, doctrine, training and exercises. Last but not least, one year from now, NATO's Air Forces were the first to contribute instantly to reassurance measures in Eastern Europe, through increased Air policing, ISR and force projection. As we are looking to improve NRF responsiveness, I would argue that NATO's Air Component represents already by itself a very high readiness tool in our inventory.

If Air power has been enshrined in NATO for 66 years, if it is part of NATO's DNA, it is because Successive Air minded generations have been able to keep on innovating, investing in key capabilities. But, as we take pride in our past efforts and the outstanding legacy it leaves, we must keep on looking forward, we must think forward, and this conference is the ideal place to share our ideas and our perspectives.

At the Summit in Wales last September, Heads of State and Government highlighted that NATO joint air power require long-term consideration, to increase the Alliance's collective capabilities and better prepare NATO to address future threats. To this end, ACT has been tasked to lead a team in conducting an analysis on the future role of joint air power and provide recommendations on medium to long term capability requirements. As you can see,

this is a crucial tasking to be delivered by the next NATO Summit in Warsaw and we will need NATO Air Forces' support, we will work closely with SHAPE, AIRCOM, JAPCC, and many other stakeholders to ensure that this approach is both comprehensive and farseeing.

So let me try now to share some ideas which should influence these works. Looking into the future, we must not underestimate the challenges which stand in front of us if we want to keep the edge.

First, I would stress that our Future Air and Space Power will be challenged externally by very adaptive competitors and adversaries and internally by corrosive effects of budget constraints.

Some peer competitors have been investing for some time in technologies aiming to neutralize or at least deter our main airpower systems.

Major powers outside NATO have been developing modern fleets of interceptors for some time. They are also producing long-range missiles that can threaten specifically our high-value assets, AEW, C2...

In fact, they are developing a mix of innovative concepts and technologies that can offset our military superiority.

They have already invested in fully integrated Air Defence systems, which can support anti-access and area denial strategies. Combination of new generation radars and missiles systems disseminated close by the Alliance periphery could significantly limit the strategic depth that we have enjoyed over the last decades.

(Second), state and non-state actors will try to undermine Air power effectiveness by threatening our bases, network nodes and logistic centers.

With the presence of Ballistic missiles in the inventories of 35 Nations, and on-going development of more precise cruise missiles and drones, our airports, Command and Control facilities, satellite ground stations and even our supply lines have become critical targets.

This is why the development in NATO of modern, integrated, multi role air defence systems is so crucial.

Against non-state actors, such as in Afghanistan or Irak, we have to ensure better close protection of our bases. For instance, the attack on Camp Bastion was a clear warning with a significant psychological effect on Western populations. In addition, the security perimeters of our airports may be under greater threat with the fielding and dissemination of new generations of MANPADs.

(Third), our fully integrated C4ISR may become the new target of choice as it is the backbone of our air and space operations.

We know that State actors have already developed anti-satellite missiles or directed energy weapons. Meanwhile affordable technologies have enabled outstanding improvements in Electronic Warfare. It has become very affordable to jam military communications or GPS signals, even for insurgents, and spoofing technics may affect the accuracy of our precision-guided weapons. Adversaries can as well innovate in improving basic or rudimentary counter-measures against our optical sensors.

(Fourth), Our adversaries have also recognized that all our aircraft, and command and control systems are digitally dependent, which makes them high value targets for cyberattacks that could lead to a significant loss of data, or a loss of control, and this is of particular relevance for Remote Piloted Aircrafts (RPAs)

Therefore, this ease and efficiency with which code, text, images and other forms of data can today be manipulated has raised the stakes, demanding new methods to protect the integrity of our operational information. It asks for enhanced user identification, authentication technologies, as well as resilient, redundant networks.

In addition, Command and control is as strong as its weakest link, so, we have to properly assess risks and we must train and exercise in a very realistic, and degraded environment in order to prepare our forces for the digital worst-case scenarios.

Fifth, in asymmetric warfare, our adversaries are better able to leverage modern technologies to their advantage. They can share information at the speed of light, they learn from Allied operations, they know how to take the full advantage of our will to limit collateral damages through strict rules of engagement.

They will try to delegitimize Air Power by disinformation in striving to win the battle of narrative through effective strategic communication.

Even if NATO's collateral damage reduced immensely over the last decade -500 during Allied Force in Kosovo, and 60 during offensive sorties in OUP - international public opinion can be turned swiftly as done by the Hezbollah in 2006 after Israeli incursions in South Lebanon, or as we see with armed drones employment polemics.

So, in order to regain initiative in the battle of narrative, we need to improve our transparency, to tell the truth, explaining our goals, our efforts to comply with humanitarian criteria and stress the enemy lawless behaviour. There is a compelling need to improve our interaction with medias and to develop a better understanding of airpower benefits and efficiency.

Concurrent with these emerging challenges, Allies have to face the internal economic challenges.

The strength of today Air Power relies on the significant investments that we made in the 1980's to offset the Soviet Forces with an indisputable qualitative advantage. Since then, in many NATO countries the "peace dividend" mind-set has prevailed, and we have seen for almost two decades budget cuts, subsequent reforms, and forces shrinking. As a result, many nations have somewhat sacrificed the serviceability, the preparedness and the logistic support of their forces. Meanwhile, some of our strategic competitors are closing the gaps in reinvigorating their defence –Russia for example has seen a threefold increase between 2005 and 2012.

In Wales, nations' Heads of States have made a pledge to increase defence budgets but while we must hope for these better days, we cannot wait to see the effect of this potential reinvestment. We have to better tackle now the crucial equation of performance, time and affordability in order to reduce costs and delays and increase operational effectiveness. We have to develop a culture of innovation and take the full benefit of new off-the-shelf, affordable technology in conjunction with new concepts. That also requires a constant effort to equip our future leaders with the best understanding of complexity and opportunities.

This new environment offers indeed a great potential to increase our "operational agility". In the future security environment, I believe that we must focus less and less on developing dedicated specific means, equipment for a single purpose. Instead, we should focus on developing a more modular, systems of systems approach. Through Innovation, we need to unleash the creativity of all stakeholders, taking into consideration lot of very constructive inputs from industry, innovative companies, and end users.

In addition, in a race for superiority with an enemy that will not be shy to use affordable yet efficient technologies, we should take a smart approach in developing Air Power. Therefore, we should avoid overreacting to all new emerging challenges in looking for a "silver bullet" solution. For instance, to ensure a 24/7 ISR coverage over Kabul, the cost-effective solution was lighter-than-air capabilities, a 19th century invention easily upgraded with last generation of imagery sensors.

As a consequence, I firmly believe that we must adopt a pragmatic approach in our equipment design and acquisition. We must find the right balance between quantity and quality. On one hand, we must develop "a sufficient number of platforms" to ensure an appropriate level of resilience and on the other hand define "the right payload" to achieve the required operational agility. In other words, whatever the asset, there is a clear advantage in building common, MODULAR, multi-role platform on which you can plug military equipment best suited to the mission and making use of the latest and affordable technology.

When developing these programs, we have also to take care of the serviceability of the equipment we field. Indeed, maintenance has become the main part of the life-through-cost. Thus, we have to imagine new ways to provide maintenance and logistic, and to embed that in our initial requirement, in our initial investment. We have to be able to provide a coherent, continuous, robust supply chain to our theatre of operations and imagine how technology can better support serviceability.

There are obviously many other promising technologies for our future Air operations: directed energy weapons would mitigate current limitations on ammunition supplies and costs, artificial intelligence may support resilient swarm techniques for using manned and unmanned systems in operations. Development in the field of energy production and storage may certainly extend the endurance of these assets. In fact, for me, the true revolution in military affairs of this 21st Century will not rely mainly on technologies but on our ability to “operationalize” emerging technologies, to encourage creative thinking, innovative concepts, and to accept ‘out of the box’ ...solutions.

Having to replace some of the Alliance major air assets within the next two decades, it is crucial to foster innovation. The idea is to rethink capabilities as a whole, not to focus on reproducing current solutions, but rather to develop a new integrated, incremental approach based on capability requirements, critical analysis, technological awareness, imaginative concepts, and not to forget a constant cost and affordability assessment.

In NATO, we have many challenging test cases in front of us: the replacement of AWACS by 2035, the future of AGS and more broadly of JISR, and the integration of automation and robotics into our operational environment to name a few.

We will also carry on encouraging the development of multinational approaches through Smart Defence or other innovative solutions. For instance, Denmark is leading a Smart Defence project to increase the effective and efficient provision of Air-to-Ground Precision Guided Munitions, and five nations have already joined. The European Air Transport Command is another very good example of enhancing the combined operational capabilities

of Participating Nations and improve efficiency in conducting air transport, air-to-air refuelling and aeromedical evacuation missions. It now can start to take full benefit of the Airbus A400M 'Atlas' introduction, as it is the case in many NATO air forces, including here in the Turkish Air Force. In making the best of EATC and SAC (Strategic Airlift Capability C-17 Heavy Airlift Wing at Papas Air Base, HUN), we will be better able to support NATO's operations including the VJTF.

But if we want to tackle all the challenges I depicted, to realize the full benefit of our investments, we must first capitalize on our men and women who will remain at the heart of our capabilities, at the heart of innovation. Through the NATO Connected Forces Initiative, we will continue to build on the interoperability and lessons identified during the last decade operations. As we are refocusing NATO's exercises on high intensity, disruptive, challenging environments, it is essential that NATO Air Forces and partners take their full part in this opportunity, starting next fall with the biggest exercise NATO has conducted for a very long time. TRJE15 will assemble no less than 36 000 troops (ITA, PRT & ESP) and we are looking for a great air contribution.

Most of all, exercising will remain the capstone for ensuring the desired level of preparedness of our air capabilities. Exercising helps to bring together Allies and Partners to test their interoperability from doctrine to equipment, find solutions to problems identified in operations, define how to react and continue the mission with degraded capabilities.

We are thus getting more and more ambitious in training the whole NATO chain of command with complex realistic scenarios.

We must as well concentrate our efforts on critical expertise shortfalls such as JISR analysts, targeteers, JTAC, space, BMD, and cyber This is a major objective of the new strategic training plans that we are developing in ACT.

We are also aiming to fully leverage new technologies in ET&E. Simulation is already deeply embedded in our aviators training, and in partnership with Industry we can bolster distributed training, virtual reality, and the immense potential of Joint integrated simulations.

But to shape more flexible forces, to better share expertise and lessons learned, we will have to go further. Therefore, ACT is promoting new ways to deliver education and training such as serious gaming, the use of immersive environments, e-learning, or the recent demonstration of the first military Massive Open Online Course (MOOC).

These investments in education, training and exercises are crucial because they focus on our best assets, our people, on their skills, and their motivation, in a visible and concrete way. To keep a high level of common training and exercises is essential as well to build trust, confidence, and mutual knowledge between our Aviators, between Allied air forces.

I have no doubt that better trained, better equipped to face the many foreseeable challenges and crises, new generations of airmen and airwomen will push the boundaries of Air and Space Power to new, unthinkable limits

I thank the Turkish Air Force for providing us this unique opportunity to share new ideas, to candidly exchange our points of view on how to continue transforming our Alliance's Air Power and honing our cutting edge for the foreseeable future.

I thank you for your attention and wish you a fruitful continuation of this conference.