Balkan Regional Approach to Air Defence (BRAAD): Role of NATO
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BACKGROUND

The Balkan Region
The South Eastern European countries of the Balkan Region form an area of nations with similar backgrounds, interests, and geo-political challenges. Most importantly, these countries are a connecting bridge between the rich and developed Western and Central Europe, and Russia, which in turn is the gateway to the emerging Asian powers.

Comprehensive programmes of modernization and development of national armed forces through regional cooperation would enhance stability and foster closer ties among the Balkan nations. Common systems would promote interoperability, both technically and procedurally, and would enable acquisition savings.

Air Defence
Air defence is a domain where modernization is sought for the Balkan Region and for South East Europe in general. NATO defines air defence as “all measures designed to nullify or reduce the effectiveness of hostile air action”. At first glance, this definition might just seem to concern the air domain; in reality, it touches all domains of the armed forces: land, maritime, and airborne.

The ability to control national airspace is a critical element for national defence. Air defence, against hostile military air action, or to neutralise potential terrorist use of civil aircrafts, provides an essential capability in guaranteeing national sovereignty. Air defence includes not only active means to detect, identify and respond to potential threats but also a Command and Control (C2) structure able to provide situational awareness to commanders and decision-makers.

Air defence is therefore a comprehensive capability, where the extent and quality of integration between air, maritime and land assets and cooperation between different entities (civil, military) and different nations is a key factor for a successful implementation. However, acquiring a comprehensive and modern air defence capability is expensive and possibly unaffordable for a nation with a relatively small defence budget. For all these reasons, air defence is an area where the Balkan countries can leverage shared investments into a common, multi-nationally funded project to jointly create a capability which will be more modern, comprehensive and economically sustainable than the capabilities they could afford alone.
NATO'S ROLE AND ACTORS IN THE BALKAN REGION

NATO has been involved in the Balkan Region and in South East Europe since the Alliance's foundation. The establishment of the NATO's South East Europe Initiative (SEEI) at the 1999 Washington Summit started NATO's focus on regional cooperation and long term security and stability in the region. In 2004, Bulgaria, Romania and Slovenia joined NATO, followed by Albania and Croatia in 2009. As of April 2010, Bosnia-Herzegovina, Montenegro and the former Yugoslav Republic of Macedonia have a Membership Action Plan (MAP), which provides a roadmap for their accession to NATO.

NATO Agencies and organisations, such as the NATO C3 Agency (NC3A), NATO Maintenance and Supply Agency (NAMSA), NATO CIS Services Agency (NCSA) and the NATO Programming Centre (NPC), and the NATO International Staff (IS) have supported the region in recent years by leading projects and initiatives in the area of C4ISR, starting with the physical connections of the new NATO nations' defence headquarters to the classified NATO communication and information systems (CIS) main networks.

NATO Air Defence Committee (ADC)

The ADC is the principal policy advisor of the North Atlantic Council (NAC) for all aspects of air defence. The ADC has a long history of working with Partners to enhance national air defence capabilities and structures and has recently launched an initiative with a number of Balkan nations on a regional approach to build and maintain core air defence capabilities.

NATO IS

NATO’s International Staff (IS) is based at NATO Headquarters in Brussels (Belgium), and it is an organisation comprising about 1200 civilian staff. An advisory and administrative body, the IS works under the authority of the Secretary General and supports the delegations of NATO members at different committee levels and helps implement their decisions. The IS has a role in facilitating political coordination and consensus building.

Over the past two decades, the NATO Analytical air defence Cell (NAADC) of the NATO IS/DI/AERO Directorate has performed joint air defence studies for the benefit of Partner nations and has recently supported NATO’s South East Europe Initiative (SEEI) by engaging with the Nations of South East Europe to analyse their air defence capabilities and seek regional solutions to enhance security.

NC3A

The NATO C3 Agency was established on 1 July 1996 by the amalgamation of the former SHAPE Technical Centre (STC) and the former NATO Communications and Information Systems Agency (NACISA). Both of these organisations take their roots from the origin of NATO and from the requirement to provide Consultation, Command and Control capabilities to NATO authorities.

The NC3A’s core business is research, acquisition and development of advanced technology for NATO, specifically in the area of C4ISR. NC3A has fifty-five years of experience of providing scientific and technical advice to the operational community on matters of air defence and wider C4ISR issues. NC3A has a highly educated staff of over six hundred from 23 NATO nations, many with advanced post-graduate degrees and a wealth of international experience. More information can be found on the NC3A Web site.
The NATO C3 Agency (NC3A)\(^1\) has been playing an active role in South East Europe since the second half of 2009, participating to the South East European Defence Ministerial (SEDM)\(^2\) meeting hosted in Sofia on 21st of October and successive SEDM meetings, and jointly organising with the Bulgarian Ministry of Defence in Sofia the first C4ISR Chief Information Officers (CIO) Conference\(^3\), on February 2010, which saw the participation of NATO stakeholders and C4I leaders and heads of C4I departments from the SEDM Nations. NC3A is currently engaged with providing a series of C4ISR capabilities, ranging from defence planning to training on intelligence, naval communications, air surveillance and situational awareness, document handling and network connectivity and information systems, training and simulation and overall contract management to countries such as Bulgaria, Romania, Albania, Slovenia, Croatia, and Hungary. Such bi-lateral engagements enable NC3A to be well positioned within NATO to provide consultation and procurement support to multi-national C4ISR interests in the region. When it comes to the specific domain of air defence, the NATO C3 Agency also has unique and recognised technical excellence in the area of both active and passive sensors and has acquired multi-year experience in procuring national turn-key air surveillance capabilities.

**NAMSA**

Established in 1958, the NATO Maintenance and Supply Agency (NAMSA) is NATO’s principal logistics support management agency, providing cooperative logistic support services to NATO nations and NATO bodies. NAMSA’s mission is to:

- Carry out logistics support management functions which can be performed in common more effectively than by individual countries
- Provide direct logistics support solutions in operational theatres
- Act as an extension of national logistics support chains
- Maximise efficiency of logistics support to NATO military forces at minimum cost

More information can be found on NAMSA’s web site\(^4\).

The NAMSA air defence Programme (LE) provides logistic support to a wide range of radar systems, air C2 systems, tactical data link systems and ground-air-ground radios. The services cover acquisition support, supply, maintenance and technical services like lightning protection, system performance checks, configuration management, technical documentation, as well as system and software maintenance.

In the areas of air defence, NAMSA is an established partner of NC3A, working side by side with NC3A on the main common funded radar procurement projects for NATO nations as well as national procurements entrusted to the agencies. NAMSA’s role on the radar procurement projects is to deliver Integrated Logistics Support (ILS). Integrated Logistics Support is the business practice encompassing the management, definition and delivery of support elements required to maintain and support a system or equipment at its specified level of operational capability throughout its entire life cycle. In essence, NAMSA provides the continued Operation & Maintenance support to the systems delivered to the Nation by NC3A.

**NPC**

The NATO Programming Centre (NPC) is part of the NATO CIS Services Agency (NCSA) and has been providing for the last 39 years system and advisory support for the NATO Air Command and Control (C2) assets entrusted to the NPC. NPC both provides the continued support for the maintenance of legacy and interim air C2 systems in service within NATO and the Nations, as well as expertise and manpower in support of the procurement of NATO Air Command and Control System (ACCS). It will become the System Support Centre (SSC) for the ACCS LOC1 system.

NPC covers areas of Air C2 such as system engineering, obsolescence management, commercial-off-the-shelf (COTS) software management and technical training.

NPC is actively involved with partner nations in providing tactical data link services and several types of support including installation, helpdesk and maintenance for air situational data exchange (ASDE), MASE Remote Console (MRC) and Integrated Command and Control (iCC) systems.

The NACMO ACCS Software Committee (ASC) is the tasking authority for the NPC and acts as the configuration control board for the Air C2 systems entrusted to the NPC. Additionally, the ASC is the decision-making authority for all changes to in-service Air C2 systems, using the NPC’s Programme of Work as the basis for performance reporting and meeting the operational requirements of SACEUR.

More information can be found on NPC’s web site\(^5\).
WHAT IS BRAAD?

The Balkan Regional Approach to Air Defence (BRAAD) is a NATO multi-national initiative conceived by the NATO’s International Staff (DI/AERO/SAD section) and supported by NC3A, NAMSA, NACMA and NCSA/NPC. The aim of BRAAD is to coordinate and facilitate a cooperative regional approach for the modernisation of air defence capabilities of the Balkan nations, fostering a greater interoperability among these nations and with NATO, and allowing significant cost reductions to the nations.

In July 2010, the NATO IS supported a conference in Podgorica (Montenegro), dedicated to the theme of a “Balkan regional approach to building common air defence core capabilities”, to measure the level of interest and determine where practical work might be initiated in the field of air defence. Three Partner nations (Bosnia and Herzegovina, the former Yugoslav Republic of Macedonia, and Serbia) and four NATO nations (Albania, Croatia, Hungary, and Slovenia) were represented at the conference. Also participating were representatives from CC-Air Izmir, EUCOM and USAFE. The great interest shown by the participating stakeholders was repeated at follow-on workshops and events which have finally led to the definition of a common NATO approach called the Balkan Regional Approach to Air Defence (BRAAD), directly supported by NC3A, NAMSA, NACMA, NPC and the NATO IS, and with external support provided by the NATO Operational Commands of CC Air Izmir and JFC Naples.

This approach was illustrated for the first time at the 2011 US-Adriatic Charter Chiefs of Defence (CHOD) Conference (June 27-28, Garmisch - Germany). The Chiefs of Defence of the A5 Balkan nations endorsed the following recommendations to be further taken forward to the next ministerial conference of the Balkan A5 group:

1. There is a need for an improved air surveillance capability in the Balkans and a common approach is recommended;
2. The plan to deploy 4 radars to meet BVC requirements in the Region appears sound (Albania (Fushe), Republic of Macedonia (Turtel), Montenegro (Vrsuta), Bosnia and Herzegovina (Jahorina)). Other radars may contribute to enhanced volumetric coverage and offer redundancy, and would be welcomed;
3. The use of NATO agencies for procurement, implementation and in-service support is recommended and requires further analysis;
4. Participation in the Air Surveillance Data Exchange (ASDE) programme, including preparation of the required MoUs and Technical Arrangements is endorsed.

As the next step in the process of implementation for BRAAD, the Hellenic Air Force will host a ‘Balkan Regional Approach on Air Defence’ workshop under the auspices of the Air Defence Committee (ADC) in Athens, Greece on 25 and 26 October 2011 with the main objectives to:

- Prepare the ministerial conference (currently planned for December 2010)
- Address surveillance requirements at low level altitude,
- Address communications (G-A-G, G-G)

NATO LIFE-CYCLE SUPPORT

One of strengths of BRAAD resides in the capability of the NATO Agencies (NC3A, NAMSA, NACMA and NPC) to work together in a coordinated fashion to jointly provide support across the whole life-cycle of the systems taken into consideration.

The following list summarises the different stages of the Life-Cycle support provided by the NATO Agencies working in partnership on large acquisition programmes for one or more NATO or Partner Nations:

Capturing of user requirements

*Thoroughly and correctly identifying user requirements is often crucial to a successful delivery of a capability. This is often conducted through a dedicated study which identifies the existing gaps in the national capabilities.*

Developing a cost estimate in the required NATO formats

*For NATO Common Funded projects, the NATO Type-B Cost Estimate (TBCE) is developed, covering the scope and cost of the project, and ultimately to be authorised by the responsible NATO bodies. For nationally funded projects, the price proposal made to sponsoring nations would include the Project Service Costs for the customer funded NATO Agencies and the cost of the systems to be procured from Industry.*
Developing a detailed technical Statement of Work
The technical offer is developed through a detailed technical Statement of Work, covering all aspects and requirements of the systems requested by the Nations, including requirements on project management, technical and engineering support, civil works, logistics support, documentation and training.

Issuing an Invitation for Bid, and inviting Industry to submit bids: the Invitation for Bid (IFB) and all associated documents are normally issued in an open competition in order to receive detailed technical proposals and price quotations from industry. This activity involves organising a bidders’ conference, and responding to clarification requests and receiving bids from Industry. All these activities are conducted on behalf of the requesting nations.

Evaluating industry proposals and selecting the best bid:
The industry bids will be thoroughly evaluated from a technical and financial viewpoint. The evaluation will identify the most attractive bid according to an appropriate NATO evaluation approach.

Assigning the contract, monitoring and control of the work:
Upon selection of the bid, a contract is negotiated with the selected contractor, following the applicable NATO standards and rules. The project will be started and the work can commence. The progress will be closely controlled to ensure that all work is performed in line with the contractually agreed activities and the statement of work. This phase of the work will include a number of detailed engineering design reviews.

Testing, acceptance and hand-over of the final system to the nation (Final System Acceptance)
All systems and sub-systems put into place and configured will undergo thorough testing and verification, witnessed by the purchaser (i.e. the requesting nation). NATO will oversee phases of the factory acceptance testing, all site acceptance tests, reliability, availability and maintainability testing (RAMT) and the final system acceptance tests, reviewing, improving and approving on behalf of the nation all test plans provided by the contractor.

Contracted Logistics Support (Operation & Maintenance)
After final system acceptance, the installed systems have generally 1 year of warranty. After the first year of warranty is over, NATO can provide on behalf of the nation the on-going operation and maintenance (O&M) support, typically for 20 years as a series of contractual options. The entire set of services are generally managed through Contracted Logistics Support (CLS) and include technical documentation and manuals, training, spare parts management and supply, system repairs, remote support and helpdesk, on-site support for repair, configuration management, and obsolescence management. NATO can complement the portfolio of services covered by CLS to meet national requirements through industrial or organic means.

Air Defence and BRAAD domains
Air defence can be further sub-divided into the following domains or capability areas:

- Air Surveillance
- Air Command & Control (Air C2)
- Ground-Air-Ground Communications
- Civil-Military Interaction (CMI)

![Figure 2: Successive increments or spirals of the BRAAD initiative](image)
Such capability areas can be integrated by NATO to form a comprehensive air defence capability, made of sensors, reporting and decision support systems, communications between relevant air policing ground, naval and airborne assets. By acting in synergy and partnership, the NATO Agencies of NC3A, NAMSA, NACMA and NPC, are able to offer lifecycle support across the different stages of the air defence domains, starting with the definition of the requirement, the acquisition of the capability through competitive procurement strategies the implementation and activation of the system in field and its continuous operation and maintenance).

For the purpose of BRAAD, we consider NATO’s intervention in three successive spirals or increments. The first increment or spiral is described in this leaflet, and will include air surveillance and air C2, which are the primary and essential capabilities of air defence.

The second spiral or increment to be implemented following the first spiral is the one including ground-air-ground communications and civil military interaction (CMI).

The ground-air-ground (G-A-G) communications system provides nations with a solid ground-based wireless communications infrastructure, including voice communications between tactical aircraft and the territory above which the aircraft are operating. This capability is required to provide secure communications by using encryption and needs to be resistant to Electronic Countermeasures (ECM).

Recognising that a threat to the Air sovereignty of a nation can also be of “civilian” nature, with a clear example being a renegade aircraft in the hands of terrorists, NC3A brings experience of managing a CMI programme to share civilian air traffic data between three NATO nations (Norway, Poland and Turkey) and Russia through the Cooperative Airspace Initiative (CAI) project (more information on CAI can be found on the NC3A Web Site).

The final increment will provide further integration of the Balkan nations into NATO context, including NATO Missile Defence capabilities and their integration into existing C2 Systems.

The following sections further detail the services that NATO Agencies can offer in the first spiral domains of BRAAD listed above, across the full life-cycle of the systems considered.

**Air Surveillance and Radar Procurement (BRAAD Spiral 1)**

**Definition**
The main purpose of an Air Surveillance system is to provide Nations with positive control of the airspace over their territory. NATO requirements are for a nation to provide basic volumetric coverage; however a nation will typically have requirements to control lower altitudes, as well.

**Main elements of an air surveillance capability**
Major sub-elements that comprise a typical air surveillance capability are: civil works, long-range fixed air defence radars (FADRs) including Identification Friend Foe (IFF) interrogators, mid/short range active and passive sensor systems,
radio equipment, cabling, power supplies, encryption devices, networking appliances, operator workstations, test and simulation equipment, software and all related tools and procedures to operate and maintain such a capability. Connectivity and integration with national and NATO command and control systems and legacy equipment is an important factor, whilst also taking account of future upgrade plans. It is clearly recognised that proper integration produces a capability that is greater than the sum of the individual parts.

Particular attention needs to be paid to the protection of high value assets, such as power plants and to protect avenues of low-level approach. The number and locations of sensor sites need to be carefully selected to maximise coverage and minimise the number of systems required. This selection depends on terrain, accessibility of the site, types of sensors, location of other infrastructure, possible interference, as well as a wide range of operational, political, economic and environmental concerns.

Driving costs down through ICB
An air surveillance capability is a large investment, probably the most expensive part of BRAAD. It is therefore crucial to look at important factors that can reduce costs, such as cooperation with neighbouring nations to share coverage and the use of alternative lower-cost sensor technologies. Full competitive bidding will result in lower acquisition costs: experience shows that international competitive bidding can reduce the costs of radar acquisition by as much as 45% over sole-source acquisition. Competitive bidding managed by NC3A is therefore really an area where the sponsoring nations could receive great benefit from NATO’s involvement.

There are other significant factors that can lead to cost reductions: a well-written specification, successful contract negotiations, careful risk management, a soundly defined, well-executed testing programme, and effective communication with all involved parties. NC3A and NAMSA have a highly-skilled, interdisciplinary team who can cover all aspects of implementing successful air surveillance capabilities.

Nationally-independent procurement versus BRAAD
It is important to stress the many benefits for the Balkan Nations which will decide to be part of BRAAD, versus them acquiring radars individually. If a Balkan nation is to procure FADRs individually, the number of FADRs procured will be limited (1 or 2), resulting in a high unit price for the FADR, due to the high margins applied by Industry. More Balkan nations joining together into multi-national acquisition will create sufficient demand to stimulate a greater and better offer from Industry: more FADRs will result in a much lower margin applied, inducing shared savings for the nations. The same reasoning applies to the CLS contract: an individual 20-year CLS contract is likely to have low bargaining power, while the prospect of a collective CLS contract for the same duration will strike a much better bargain and also will result in significant savings of spares pool, as these can be shared among several nations. In terms of radar coverage, a nation procuring individually may have to complement the FADRs with additional short range or passive sensors in order to obtain sufficient low-level coverage. With BRAAD, the studies developed by the NATO’s IS show that optimal radar coverage of the Balkan Region can be achieved by carefully selecting the location of the radars in each country. Moreover, there would be redundancy for free, due to overlapping radar coverage by neighbouring nations.

A counter argument to BRAAD could be that the joining nations would not have total control over their national air-surveillance. This argument can be greatly reduced by endowing each participating nation with a sufficient air surveillance capability that is able to function independently. This can be achieved through careful selection of the sensor sites and ensuring that each BRAAD nation has at least one FADR on its soil.

Figure 4: NC3A and NAMSA in partnership, delivering the acquisition of radars and their continued maintenance
NC3A and NAMSA in partnership for radar procurement

Air Surveillance is a highly complex capability and every implementation must be tailored to the unique operational requirements and the legacy environment into which it must be integrated. It begins with a proper requirements analysis. This analysis will examine the operational requirements, the legacy environment, and any other relevant political or economic issues. It will identify existing gaps and alternatives to fill these gaps, gather rough order of magnitude (ROM) costing figures, and present final recommendations and options to high-level decision makers.

Once a decision has been made to acquire an air surveillance capability, there is a full spectrum of activities required to conduct a successful implementation, including: preparing formal notification of intent, developing specifications for an invitation for bid (formalised with the definition of the Statement of Work and the issuing of an Invitation for Bids (IFB) to Industry, covering technical, logistical, programme management and contractual issues), preparing the bids, selecting a contractor, reviewing the detailed design documentation, preparation of the civil works and coordination of the civil works interface with the contractors, reviewing and approving the test procedures, physical installation, testing, training, documentation, to ultimately final commissioning and hand-over of the Air Surveillance capability to the Nation and handover of the logistics to NAMSA. The whole process is clearly illustrated in Figure 4.

Air Command and Control (BRAAD Spiral 1)

Definition

Air Command and Control is a process and structure that aims at managing air operations, getting the air assets in the air at the correct time and place with timely information and accurate plans to provide the desired effect. With the increasing emphasis on joint operations and doctrines, Air Command and Control is no longer just ‘Air’ anymore. Today, both ground and naval assets are fully part of the Air C2 context, as well as Air assets become integral part of land-based and maritime operations. Moreover, command presupposes knowledge, and knowledge is a function of information and analysis. It is, therefore, no surprise that so much importance is being placed in the effective integration and use of ISTAR (Intelligence, Surveillance, Target Acquisition, and Reconnaissance) resources, and the fusion of intelligence information.

Air C2 in the Balkans: current status

From the NAADC Studies performed for Balkan nations, particularly Bosnia and Herzegovina, Montenegro and the former Yugoslav Republic of Macedonia it has been noted that the partner C2 chains are not fully compatible with the NATO C2 structure and are not supported by appropriate C2 systems when existing. Moreover, there is no exchange of air situation data between Balkan partners and NATO. Potential needs for the Balkan nations are therefore:

- A real time capability to display NATO unclassified (NU) Recognised Air Picture (RAP);
- A real time capability to create and display a Local Air Picture;
- A planning and tasking tool to support air operations, and possibly joint operations.

Displaying the NATO Recognised Air Picture

The generation of a Local Air Picture will be possible when the sensors are in place and operating. As shown by Figure 4, radar procurement takes a few years to deliver an operating capability. BRAAD will therefore first focus on connecting the Balkan Nations to NATO and deliver a Recognised Air Picture (RAP) down-classified to NU for the Partner Nations. The Air Situation Data Exchange (ASDE) program provides such capability. This system manages the controlled exchange of air picture data by filtering the NATO air picture in such a way that it is releasable to partner nations. It also enables the integration of a partner nation’s RAP into the NATO air picture. The initial ASDE system was developed in cooperation with the NC3A and the NPC. Since 2007, the NPC has provided full system support for the ASDE including system installations and further development.

A Nation joining BRAAD could initially establish an Air Surveillance Unit on their territory for the purpose of connecting such unit to the nearest NATO CRC. A Multi-AEGIS Site Emulator (MASE) Remote Console (MRC) installed in the Air Surveillance Unit would display the NATO NU RAP and the local air picture data if available.

MASE

The Multi-AEGIS Site Emulator (MASE) is a flexible, low cost, state-of-the-art solution developed by NPC to support the execution of air operations. MASE supports the following functions:

- Production of a real-time RAP based on input from active/passive sensors and civilian air traffic control;
- Identification and exchange of the RAP with other military units in a NATO-wide, real-time network;
- Control of air defence assets like fighter aircraft and SAM.
Both military and civilian radars can be connected using most relevant protocols on dedicated lines or packet switched networks. The sensor data from these sources is processed using a multi sensor tracker, which provides the real-time air picture.

Flight plan data from civilian or military Air Traffic Control (ATC) centres are received, correlated with the real-time air picture and displayed to the operational user to support identification of the RAP.

Today more than 60 installations in 20 NATO countries use MASE to execute Air C2 on national territory.

**Air Surveillance Centre (ASC) and production of the RAP**

When the sensors are in place and operating, the Balkan nations will have two choices: the nationally-independent choice would be to implement a full mission capable national Air Surveillance Centre (ASC), manned and operating 24/7. Typically such ASC requires manning in the order of 150 skilled operators and technicians combined. The investment needed by each nation could be significant, in the order of 5 Million Euro, without considering the recurring costs of personnel. The regional approach would instead be to create a regional full mission capable ASC for RAP production, shared by the BRAAD nations, coupled by at least one Air Surveillance Unit in each nation for LAP and RAP display, manned by a far lower number of operators and technicians. This solution would significantly reduce both investment and running costs for each nation, and would still enable each nation to retain a minimum independent capability.

Integrating the ASDE filtered NATO NU RAP can enhance the RAP in the ASC. Furthermore the ASDE enables the integration of the ASC RAP into the NATO air picture.

**Planning and Tasking of air operations with ICC**

BRAAD recommends that the Planning and Tasking of Air Operations are conducted at the Joint level, through the implementation of a Joint Operational Command (JOC).

An option to support planning and tasking of Air Operations in the Balkan Region is the Integrated Command and Control (ICC), a NATO-funded capability developed by NC3A and maintained by NPC. The ICC is currently used for Air and Joint C2 operations in NATO and NATO nations with usage 24 hours a day, 7 days a week in 23 countries in more than 400 locations (see Figure 5). The ICC provides capabilities for integrated planning, tasking, intelligence targeting and operations, information management and decision support to operational and tactical level air operations during peacetime, exercise, crisis and conflict. ICC is a truly comprehensive suite for Air C2, capable of displaying a Joint Common Operational Picture (COP) and to support the joint targeting cycle between the Joint Force Command (JFC) and the various Component Commands (CC)\(^{10,11}\), with interfaces to get access to ISR data from the Coalition Shared Databases (CSD, part of the MAJIC programme) and display Friendly Force Tracking Information. NPC delivers on-going maintenance to all the ICC installations provided by NC3A.
With the industrialised NATO successors of ICC being worked on, i.e. Air Command and Control Information Services or Air C2IS and NATO ACCS, NATO funding for ICC will be reduced in the upcoming years. For this reason the Agency, receiving clear interest from several NATO and Partner Nations (among others Belgium, Bulgaria, Czech Republic, France, Italy, The Netherlands, Poland, Portugal, Spain, the United Kingdom and the United States), has launched a multi-national ICC Programme which will cater for the future developments and maintenance requested by the Nations who joined the Programme and are currently using ICC for their national needs.

**Integration of weapon systems and Tactical Data Links**

Integration, command and control of weapon systems and naval assets can be provided through the CRC System Interface (CSI) and Ship-Shore-Ship Buffer (SSSB) systems.

CSI provides the capability for weapons command and control of SAM and airborne assets as well as exchange of the recognised air picture using a wide range of NATO standardised Tactical Data Links. The CSI is being used by 20 NATO countries in more than 40 installations.

The SSSB provides exchange of air surveillance information between Air C2 and Naval units and is deployed to 7 NATO countries (CRC, NATO FORACS ranges). The system supports the use of Link 1, Link 11, Link 11B, AIS and Link 22. CSI and SSSB capabilities are managed through NAMSO Support agreements to ensure that future developments and maintenance requests by the participating nations can be provided.

Networked Interoperable Real-time Information Services (NIRIS), a product developed by NC3A and maintained by NPC is capable of interfacing a wide range of commonly used Tactical Data Links, enabling the information to be visualised and consumed by C2 tools such as ICC. NIRIS is a middle-layer system which is also capable of translating one TDL format into the other, facilitating the dissemination and consumption of information for operational purposes. NIRIS is operationally deployed at over 220 sites throughout Europe (SHAPE, Regional Commands, Component Commands, JSRCS, CAOCs, over 150 national sites).
GOVERNANCE AND FUNDING

In order to allow the BRAAD initiative to be initiated as a Programme, there needs to be an official tasking by a group of the Balkan Nations. NC3A, NAMSA, and NCSA/NPC are Executive Agencies, which means that they take official action only if tasked by Nations or by a Steering Committee created by Nations as Governance mechanism for the Programme.

Different mechanisms for funding could be applied to BRAAD:

- National funding (from beneficiary and/or from donor nations)
- NATO Common Funding
- C4ISR Integration Fund (CIF)

These options are not alternative to each other and actually could very well be used complementary to launch the BRAAD Programme.

National Funding

National Funding means direct funding from a nation’s government, typically from its Ministry of Defence. This is the typical option chosen by NC3A and NAMSA when providing bi-lateral C4ISR support to a nation.

Usually, the nation providing the funds to run the project is the beneficiary nation. This can be in part an option also for BRAAD, i.e. one or more of the Balkan Nations contribute to BRAAD separately, each Nation pursuing specific objectives of the Programme. This should be complemented by other means of funding to cover the common parts of the Programme which benefit all joining nations at the same time.

Another case, which is often found with nations that need to close an existing gap in capability with more advanced nations, is when such funding is provided by donor nations, which are not part of the direct beneficiaries.

Several nations could be interested to be donors in a programme to support a regional approach to the development of air defence capabilities for the Balkan nations. The USA are greatly involved in supporting modernisation programmes in South East Europe, especially through bi-lateral programmes with SEE nations led by the US European Command (EUCOM) and through multi-national programmes led by the Department of Defence. Other NATO European countries are currently providing support to Air Surveillance and Air Policing in the Balkans.

NATO Common Funding

NATO Common Funding is the usual vehicle for investments that benefit the entire NATO community and are therefore defined “eligible” to common funding, i.e. to use funds authorised by the Investment Committee (IC) and derived from the direct contributions of NATO’s members to the Alliance. In a first step, NATO Common Funding could only be used for the Air C2 part of BRAAD Spiral 1, in relation to the dissemination of the filtered unclassified NATO RAP to the Balkan countries and could be applicable for installation and support of NATO owned capabilities as ASDE and MRC. NATO Common Funding is not applicable for the Air Surveillance part of BRAAD Spiral 1.

C4ISR Integration Fund (CIF)

The C4ISR Integration Fund (CIF) is a mechanism already used by NATO in supporting the modernisation of PfP nations. The CIF is described in detail in the publication available on the NC3A Web Site.

The CIF is designed to execute specific C4ISR projects aiming to deliver the implementation of capabilities to those NATO nations and partner nations lacking sufficient financial resources, as well as competence and specific expertise to achieve the purposes of NATO C4ISR integration.

For the CIF three entities are defined:

**The donor(s):**
Are the Entities with legitimate title and interest which provide financial contribution for specific efforts to be accomplished through the CIF.

**The Fund Executive Agency:**
Is the Agency responsible for the execution of the project(s), for the management/employment of the financial resources of the fund for the agreed purposes, and for the planning and administration of the CIF.

**The Beneficiaries:**
Are the Entities for the benefit of which the project is conducted and ultimately the entities which will retain the project immediate business benefits.
Governance of the CIF will be retained by a Steering Committee comprised of representatives of donor nations which provide funding to a specific project or pool of projects.

The CIF could prove to be the ideal solution for BRAAD. It could provide an initial pool of funds coming from a coalition of the willing nations within the Balkan Region, as well as pool additional funds coming from external donor nations.

**MANAGEMENT AND RELEVANT NATO CONTACTS**

The BRAAD Initiative is led by the NATO’s International Staff, and partnered by NC3A, NAMSA, NACMA and NPC.

When this initiative is turned into an actual Programme upon decision of the Balkan Nations, an international Programme Management Office (PMO) would be created for the purpose, led by one Programme Manager from NC3A and several project managers for the specific management of the different parts of the Programme (such as Air Surveillance Procurement, RAP production and dissemination, Air C2 planning and tasking, Air Surveillance O&M, Air C2 O&M, and others eventual). The projects will be managed according to the PRINCE2 project management framework and PMI methodologies. The PMO will comprise technical experts from the different domains which pertain to the Programme, including project managers, legal experts, contracting officers, ILS engineers and will have the possibility to incorporate technical experts from the Balkan nations, and auditors from the eventual donors.

It is anticipated that in order to establish formal cooperation activities with the Partner Nations, NC3A will require approval from the NATO Atlantic Council (NAC). NC3A recommends that the Partner Nations individually establish Memoranda of Understanding (MoU) for C4ISR cooperation with the NATO C3 Agency. The MoU can be approved by the NAC and opens up the possibility for a Partner Nation to cooperate with NC3A.

In the case of NAMSA, the NAC has authorised the NAMSO Board of Directors to conclude MoUs with PfP states for the provision of logistic support services. Specific implementation agreements would afterwards need to be established for each project or related group of projects. In the case of FYROM\(^{33}\), an agreement with the NAMSO for logistic support cooperation is already existing, and only the implementing agreements would need to be drawn up.
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**ENDNOTES**

i. AAP-6 NATO Glossary of Terms, 2009

ii. Turkey recognises the Republic of Macedonia with its constitutional name

iii. http://www.nc3a.nato.int/

iv. http://www.namsa.nato.int/

v. http://www.ncsa.nato.int/

vi. http://www.npc.nato.int/htm/about.htm


viii. Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance

ix. www.nc3a.nato.int

x. http://www.nc3a.nato.int/


xii. http://www.nc3a.nato.int/news/Pages/20100801-CIO.aspx

xiii. http://www.namsa.nato.int/

xiv. http://www.npc.nato.int/


xvii. NC3A Service Catalogue, Air Surveillance Expertise, page 14

xviii. Effective Air Command and Control, paper written by Air Chief Marshal Sir Glenn Torpy

xix. NC3A Service Catalogue, Integrated Command and Control System Support, page 24

xx. http://www.nc3a.nato.int/About/Pages/Publications.aspx

xxi. Turkey recognises the Republic of Macedonia with its constitutional name