Reconsidering the Relevancy of Air Power – German Air Force Development

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Abstract

In a dynamically changing and complex security political environment it is necessary to constantly reconsider the relevancy of air power. In these days of change, it is essential to look far ahead within the framework of security political concepts and network enabled operations. The German Air Force sees itself as a *Service Provider* for other services, but also in an interagency context and beyond, e.g. by providing reconnaissance results for police forces or NGOs within the framework of crisis prevention, crisis management, de-escalation, and post-crisis rehabilitation as well as an increasing number of relief operations. Consequently the focus of its future development will be put on four subject areas: *Air-Surface Integration*, *Unmanned Aircraft Systems*, *Military Use of Space* and *Missile Defence*.

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ANALYSIS

Focus

The German Air Force has always been the national competence centre in the third dimension. The mission and orientation of own air forces, however, cannot be measured anymore primarily by the aerial warfare capabilities of a potential enemy. In a dynamically changing and complex security political environment it is necessary to constantly reconsider the relevancy of air power. In these days of change, it is essential to look far ahead within the framework of security political concepts and network enabled operations. High-value contributions of the German Air force will not only have to be made in cooperation with the air forces of other nations in joint and combined operations, but increasingly also in an interagency context, especially in the fields of C4ISTAR[1], warfare in and from the air or space, air transport, combat search and rescue. Consequently, the focus of future development will be put on four subject areas:

- Air-Surface Integration
- Unmanned Aircraft Systems
- Military Use of Space
- Missile Defence

Air-Surface Integration

Operational experience that has been gained in a multinational context throughout the last decade gives evidence of the synergies to be achieved within the framework of network enabled operations. An even closer interleaving of military capabilities in joint and interagency operations is possible and profitable for all parties involved. The Air Force's capabilities, i.e. its capacity of acting as a leading and coordinating power as well as its effects, need to be adapted to other actors' needs to a much higher degree than before.

Air-Surface Integration (A-S-I) means the German Air Force's effort of bringing forth conceptual ideas in order to further develop *integrated missions* and thus the synergetic cooperation of air, land, and naval forces within the whole operational area. The goal of Air-Surface Integration is to achieve a comprehensive, networked and coordinated planning, synchronization and integration of air force specific capabilities available within an operational area – from the earth's surface to space with a proportional utilization of the information area – with land and naval forces as well as other actors on a joint mission in order to reach the desired effects in terms of the overall operation. It particularly addresses the command and control of air forces and, furthermore, doctrines, concepts, organization, methods, training, exercises as well as the design of capability platforms like e.g. weapon systems.

[1] Command, Control, Communications, Computers, Intelligence, Surveillance, Target Acquisition and Reconnaissance

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This includes all present considerations concerning joint fire support (JFS). JFS is being expanded by additional reconnaissance, command and control and support elements. The NATO Joint ISR Concept forms a significant basis for the synchronization of the available reconnaissance means and the utilization of the corresponding reconnaissance results within the decision-making process and when using appropriate weapon systems.

Air-Surface Integration builds upon well-proven command and liaison elements. It incorporates newly gained integration possibilities as well as the thus necessary adaptation of the operational command and control of air forces. Its added value becomes particularly obvious during missions:

- Following the objective of network enabled operations, the air forces' performance spectrum and capabilities can be transferred faster and closer to the places and levels where they are immediately needed during a mission.
- The actors can be supported by an efficient command and coordination element that is tailored to the appropriate level and adjusted to the corresponding operational needs.

All in all, the German Air Force's aim is to employ its capabilities at the right time, the right place, and the right way.

Unmanned Aircraft Systems

In this context, unmanned aircraft systems (UAS) have grown enormously in importance throughout the past decade. Currently, UAS are mainly used for reconnaissance and surveillance purposes. With advancing technological development, however, it is foreseeable that they will take over or add to the capabilities of manned aircraft across the whole spectrum of reconnaissance – command and control – engagement. Furthermore, they contribute to the field of support, e.g. for transport services. A similar development can now be observed in the interagency environment.

Besides being the main actor of the Bundeswehr when it comes to the deployment and operation of unmanned aircraft systems of the HALE[2] and MALE[3] classes, the German Air Force is also the main provider of airborne reconnaissance capabilities. The German Air Force's approach of a systematic expansion of UAS capabilities enhances and adds to the performance spectrum of the armed forces as a whole. The mission in Afghanistan with the interim solution HERON 1 for medium-altitude imagery reconnaissance already shows – despite all restrictions – the important operational potential that UAS offer, especially with respect to the increasing demand for full-motion pictures in real time. The German Air Force is planning to launch a follow-on system without development risks from 2013 on with its capacities being upgraded in further steps. The field of high-altitude UAS in the Bundeswehr is fundamentally covered through the gradual introduction of the EURO HAWK for wide-area signal detection reconnaissance as from 2011.

[2] High Altitude Long Endurance
[3] Medium Altitude Long Endurance

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As a supplement, NATO is planning on procuring an alliance ground surveillance system (AGS) for wide-area imagery reconnaissance and surveillance of the situation on the ground – a fleet of 6 unmanned platforms based on the US GLOBAL HAWK. The planned build-up of a national component for wide-area imagery reconnaissance is directly linked with this. In the future, the German Air Force will also integrate unmanned systems in its capability portfolio for the purpose of target engagement.

The growing UAS capability portfolio calls for a well-founded conceptual groundwork. Existing background documents have to be adapted and further developed in the light of dynamic technological and operational developments. The framework for these demanding challenges is formed by the required systemic integration of UAS into the network of reconnaissance – command and control – engagement, the dependency of their effectiveness on long-range means of communication and near real-time evaluation systems, the connection to multinational collaboration systems like the *Afghan Mission Network*, and the tactical and operational integration into multinational *Joint and Combined Operations*.

Space

For the Bundeswehr, the utilization of space is of significant importance. This is not only true for the further development of its capability profile, in particular the armed forces' capability of conducting network enabled operations. Present and future missions are and will not be feasible without satellite-based platforms. Space provides the armed forces with a large utilization spectrum for improving their capabilities, also in the context of national security provision. The Bundeswehr uses data and services of space-based systems in the area of communication, reconnaissance, navigation, and geoinformation. It has its own space-based reconnaissance and communication systems available.

The German Air Force is the designated competence centre for establishing a holistic, capability-oriented, and joint military space utilization. Its task is to further shape the future development of the Bundeswehr space utilization, especially with regard to the protection and operation of their own satellites. It is necessary to close capability gaps or build up new capabilities in the area of space situational awareness and early warning/missile defence.

- The availability of satellite-based services is a basic requirement for the operational capability of modern armed forces.
- The Bundeswehr operates two important systems, i.e. SAR-Lupe and SATCom Bw 2. Their operational readiness is of fundamental significance for situational awareness and the command and control capability of the Bundeswehr.
- Protecting those space-based systems and ensuring their correct operation calls for the ability of creating a picture of the situation in space as a prerequisite for the detection and evaluation of all elements and processes in near-earth space.

Based on a space situation picture, it is possible to provide target-group oriented reports and warnings to Bundeswehr actors, military partners, and other authorized civilian actors. The *Space Situation Centre* is at the

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centre of interest, whose build-up as the future data and service centre for the Federal Republic of Germany is pursued by the German Air Force with determination. It shall collect, analyse, and subsequently process a high amount of information from national, international, civilian, and military sources for different ministries. Due to the increase in space waste, it is foreseeable that collision warnings will become one of the main tasks of the centre.

Through the collocation with the command and control centre for national air defence, the importance of the space situation centre in the area of national security provision is being highlighted. At the same time, the German Air Force specifically supports European activities in close cooperation with France. Another essential element of the progressing build-up and expansion of the space situation centre is the cooperation with the USA that started last year and has been growing steadily ever since.

Missile Defence

Missile defence is a national task, with the German Air Force being mainly responsible. Long before a mission already, it is necessary to prevent the proliferation of key knowledge and technologies as well as to monitor the observance of treaties. Military contributions range from deterrence, e.g. through credible missile defence capabilities, the monitoring of embargoes and offensive operations aimed at preventing missile launches, to active missile defence.

Within the Bundeswehr, the German Air Force is mainly responsible for the target-oriented build-up of capabilities as well as the provision of contributions to the alliance in the field of missile defence. Within the framework of the strategic concept of NATO adopted in November 2010, the build-up of a powerful missile defence forms a core element of collective defence for the purpose of protecting the population and the territory of the member states. The capabilities and experience of Germany form a sound basis when it comes to playing an active role in this build-up.

Through the operation and further development of the weapon system PATRIOT, the German Air Force has gained expertise in the area of ballistic short-range missile defence over many years. The continuously growing competence in the area of missile defence that results from the permanent technical improvement of PATRIOT and the continuous further development of operational procedures enables the German Air Force to carry out missions within the whole target spectrum and intensity range of active ground-based air defence. This capability is to be further developed with an eye on the future.

German military contributions to missile defence are generally to be considered in the context of the comprehensive NATO missile defence architecture. The aim of current developments is a vertical layered architecture that enables an efficient missile defence against all range categories and trajectories on the basis of a target acquisition chain and endo- / exo-atmospheric weapons. With a view to the capabilities already available, Germany will initially concentrate on contributing to short-range missile defence. Contributions to a future NATO MD structure in the form of personnel as well as contributions to its data base (including the

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required interfaces) will have to be derived conceptually. Furthermore, the main focus is on the protection of troops on mission.

Enabler und Service Provider

In the future, the number of forces on a mission is to be kept as low as possible within the area of operations. Tasks that do not urgently require physical presence in the theatre of operations can be accomplished from and in Germany. Standoff elements will project air power from areas depending on the theatre of operations, while making use of the strengths of air forces like standoff capability, speed, and precision - and by employing leading-edge technology. Space-based systems and UAS provide for a unique situational awareness in near real time; long-endurance future combat aircraft systems (FCAS) are on station above the area of operations and can be employed, if necessary, precisely and at short notice.

With a view to the implementation and support of networked security on site, the German Air Force no longer sees itself merely as an *Enabler* but also particularly as a *Service Provider* for the troops in theatre, e.g. by providing reconnaissance results for police forces or NGOs. Missions within the framework of crisis prevention, de-escalation, and post-crisis rehabilitation as well as an increasing number of relief operations call for the German Air Force's mobility, flexibility, and willingness to perform.

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Remarks: *Opinions expressed in this contribution are those of the author.*

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