Civil-Military Cooperation

A German success story

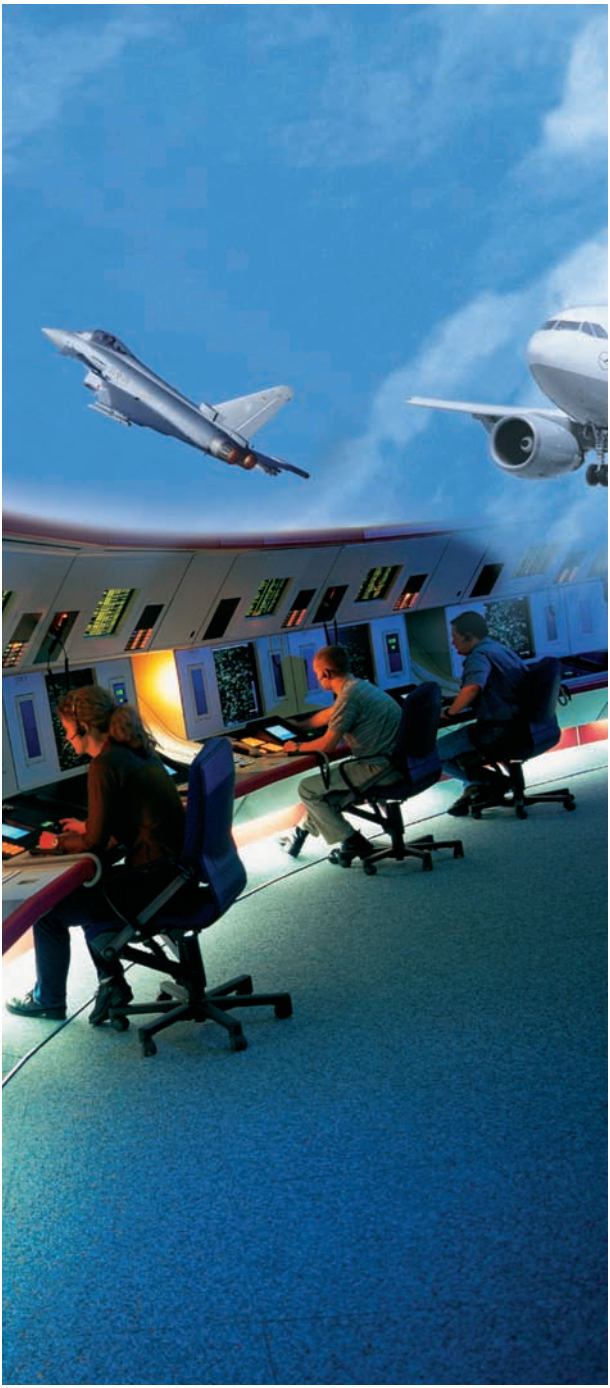
DFS Deutsche Flugsicherung

Contents

Foreword

Civil-military integration is a key to the success of DFS. This model has shaped the history of aviation in Germany and is also highly regarded at an international level. Previously organised in two separate systems, civil-military cooperation in the field of air traffic services in Germany has developed into an efficient and integrated organisation over the years.

Since 1993, DFS has been responsible for handling both civil and regional military air traffic in peacetime. This can be observed in everyday communication and ensures the flexible management of airspace. This cooperation is beneficial to both partners: It makes it possible to manage the ever-growing volume of civil air traffic as well as to meet the operational mission requirements of the Armed Forces.



Daily business

Integration in daily operations

In contrast to many other countries, a considerable amount of military training operations in Germany is conducted in airspaces jointly used with general air traffic (GAT). Only special profiles like air combat which require particular protection take place in protected airspaces for safety reasons. But DFS also has to cater for the mission and the requirements of military air traffic. For DFS, this means comprehensive operational support as well as flexible and cost-effective use of airspace with efficient deployment of staff. Joint training courses at the DFS Air Navigation Services Academy in Langen lay the foundations for training the personnel.

Even though the number of fighter aircraft has decreased by 80 percent since 1990, the qualitative requirements have increased after the introduction of new weapon systems. The support provided for operational air traffic (OAT) by far exceeds the requirements in civil aviation. This entails:

- Control and support of OAT during:
  - en-route and in-orbit air refuelling
  - control of training and live intercept missions
  - support of NATO AWACS
  - monitoring of military training airspaces (TRA)

- Tactical operational support for:
  - composite military air operations (COMAO)
  - active control during air exercises and coordination at NATO command posts
  - continuous exchange of information with air defence

Flexible and dynamic

Joint airspace use

In order to fulfil all requirements concerning the conflicting interests of military and civil aviation, all airspace users must use the airspace in a joint and coordinated manner. This philosophy has prevailed in Germany for more than 25 years now. In one of the busiest airspaces of the world, coordinated use of airspace is indispensable. And Germany was the first country to optimally implement the Flexible Use of Airspace (FUA) Concept in daily operations and to enhance it in a consistent manner.

Since the benefits of FUA are already reaching their limits in the ever-busier airspace and new fighter aircraft require larger airspace, DFS and the German Air Force are now testing an advanced concept: The former TRAs (Temporary Restricted Area) have been converted into training airspaces that can be assigned in a highly dynamic manner. They allow shorter flight routes and only in individual cases do aircraft have to fly around military airspace. Under the new concept, military airspace users only have to inform DFS about the dimensions of the training airspace and the planned scenario. DFS will then provide an airspace tailored to their specific needs while considering civil traffic flows.

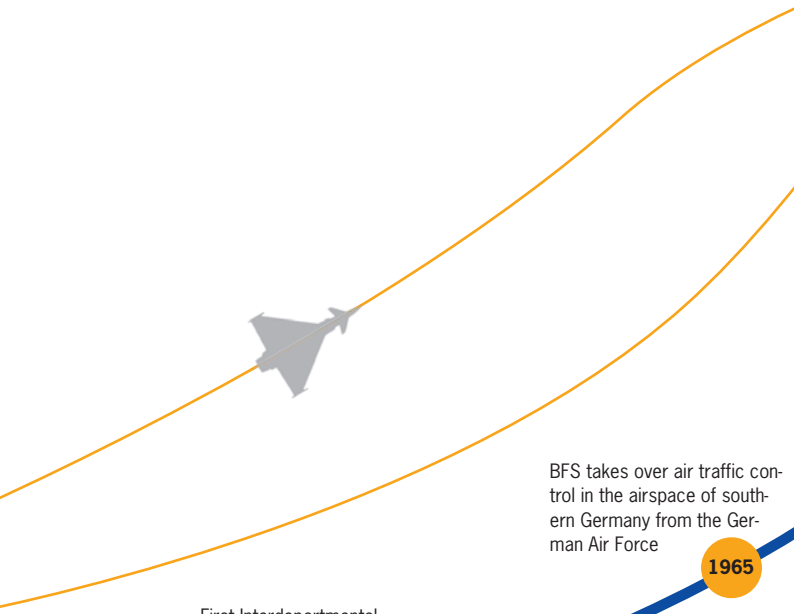
The advantages for civil and military aviation are obvious:

- Demand-oriented short-term allocation of military training airspaces with guaranteed usability
- Permanent and efficient military training and at the same time
- Optimised civil routings

Milestones

Fifty years of air traffic services history

Fifty years of exemplary civil-military cooperation are part of the German air traffic services history. But also in the future, many opportunities for further development lie ahead of civil-military cooperation.

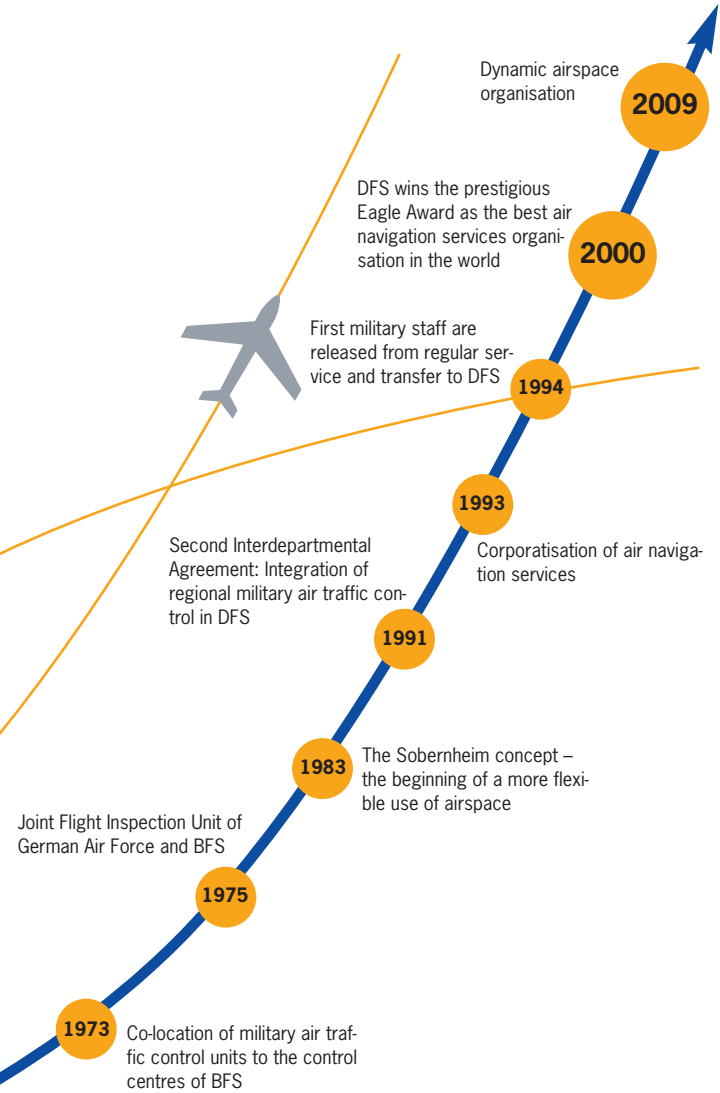


1953
Foundation of Federal Administration of Air Navigation Services (BFS)

1959
First Interdepartmental Agreement between the Ministry of Transport and the Ministry of Defence

1963
German Air Force establishes a liaison office for the Federal Administration of Air Navigation Services (BFS)

1965
BFS takes over air traffic control in the airspace of southern Germany from the German Air Force


Dynamic airspace organisation
2009
DFS wins the prestigious Eagle Award as the best air navigation services organisation in the world
2000
First military staff are released from regular service and transfer to DFS
1994
1993
Corporatisation of air navigation services
Second Interdepartmental Agreement: Integration of regional military air traffic control in DFS
1991
1983
The Sobernheim concept – the beginning of a more flexible use of airspace
Joint Flight Inspection Unit of German Air Force and BFS
1975
1973
Co-location of military air traffic control units to the control centres of BFS

Holistic cooperation

Technology, training, data management

As with ATC operations, the DFS air traffic services technology is also in tune with military interests. This covers:

- Primary-radar surveillance technology for displaying non-cooperative targets and secondary radar for decoding aircraft parameters
- Communications technology and data transfer technology between adjacent air traffic services units in Germany and abroad and between ground and air
- Navigation technology for en-route services, arrivals and departures

The systems used at DFS are compatible with those used by the Armed Forces. Military sensors are integrated into the civil-military radar data network. Communications technology includes UHF aeronautical radio services which are normally reserved for the military. DFS even has the technical responsibility for tactical air navigation (TACAN) technology of the Armed Forces. The equipment of DFS control centres meets the requirements of peacetime operations as well as operational support of military air traffic. The networks also have multiple redundancies.

Flight data handling

In Germany, military flight operations are performed on the basis of demand-oriented flight planning. These specific military requirements have to be processed by systems which are rather geared towards meeting civil needs. Military flight missions pose constant challenges to automatic data exchange, the enhanced flight data processing system and stripless control. Together with their civil colleagues, qualified non-commissioned officers who were released from regular service and transferred to DFS are responsible for optimal data adaptations and thus play an important part in the flight data handling process.

Holistic cooperation

Flight calibration

In Germany, flight inspection is carried out by a separate company for both civil and military surveillance and navigation infrastructure. The DFS subsidiary FCS (Flight Calibration Services GmbH) performs calibration flights for all facilities that cannot be checked from the ground. For the Armed Forces, FCS performs flight inspections for ASR and PAR stations (aerodrome surveillance and precision approach radar) as well as for the tactical air navigation system TACAN. Flight inspection work includes:

- Commissioning calibration prior to the first operational use of newly installed navigation and radar systems
- General flight inspections / routine flight inspections for periodic verification
- Special flight inspections (e.g. after maintenance work or system changes)

In the field of flight inspection, it is also former military staff who ensure the required military expertise.

Training

The Air Navigation Services Academy of DFS provides joint training for civil trainees and fully qualified military aerodrome control officers so that they can perform air traffic control services in the DFS control centres.

Military flight data specialists who are to be temporarily released from military service and transferred to DFS undergo ab initio training at the Academy. Modular training courses prepare air traffic control officers, flight data specialists, AIS officers, FIS specialists and airport coordinators for the civil-military requirements in operations.

Aeronautical Data Management

Messages related to air traffic services have to be processed and the full scope of aeronautical publication services must be ensured. When performing these vital tasks, DFS also cooperates with military units to ensure technical and operational redundancy and integrity of aeronautical data.

Military

Partner and customer

The special connection between the military and DFS is not only evident in day-to-day operations. For many years now, both partners have benefited from an intensive exchange, such as a military customer forum. During a forum that lasts several days, top representatives from the flying units of the Armed Forces meet with DFS to address and discuss current airspace issues and changes in the operational process. In order to fully meet the requirements of military customers, a customer survey tailored to the military is also conducted every two years. With the customer survey, DFS intends to obtain information on strengths and weaknesses concerning site-related, weapon-systems-related and mission-related aspects. Apart from constructive criticism, DFS is always praised for its flexibility even in critical situations. In 2006, a remarkable customer satisfaction index (CSI) of 71 percent was achieved, which is almost the same as in civil aviation.

In terms of corporate governance, the military is also represented at DFS in all important areas: The Federal Ministry of Defence is involved in the governance of DFS by way of the Joint Ministerial Committee and forms part of the DFS Supervisory Board. The Advisory Council of DFS provides advice and support to the Board of Managing Directors in important issues related to economic and transport policies. In this council, the Chief of Staff, Air Force, represents defence policy and military aviation interests. Senior Air Force officers who were released from regular service and transferred to DFS are, moreover, represented at all management levels of DFS. At the DFS control centres, transferred air traffic control officers and flight data specialists contribute their military expertise.

The Bundeswehr Air Traffic Services Office (AFSBw) conveys the military requirements to DFS through the department Corporate Military Affairs. The Bundeswehr Air Traffic Services Office exercises functional supervision over the air traffic control units of 34 military aerodromes and – wherever provided – over the military aeronautical information services and approach control units. The implemented European air traffic services standard guarantees safety and quality in training and operations of the local military aerodrome control towers and approach units. It was already laid down in the Interdepartmental Agreement that the Bundeswehr Air Traffic Services Office would be located in the same building as the DFS Headquarters. Clear responsibilities, personal contacts, meetings on a regular basis and short coordination channels facilitate the cooperation.

Mission-related support

Prepared for emergencies

DFS is responsible for internal tactical training, including the use of confidential mission-related information of NATO. The regular exchange with operational units as well as the representation in NATO bodies ensure that DFS is up-to-date concerning operational procedures and principles.

It is laid down in Art. 87a of the German Constitution that, after the triggering of specified alert measures, the Armed Forces assume the responsibility for handling and planning the entire air transport and air traffic control services in states of tension or defence. In order to perform the broader range of tasks, the Armed Forces have to rely on the personnel and material support of DFS. Procedures to prepare, conduct and implement personnel measures in terms of mobilisation orders and the temporary exemption of DFS staff from military service are stipulated in the agreement between the Federal Ministry of Defence and the Federal Ministry of Transport concerning the provision of air navigation services in states of tension and defence. These personnel measures are taken on the basis of the laws concerning compulsory military service and alternative civilian service.

Emergency and crisis management

Reacting quickly to unforeseen events

Disasters such as terrorist attacks or aircraft accidents require a quick reaction. To this end, DFS performs its own emergency and crisis management that is closely linked to the crisis centres of the Federal Government and the Länder. It is activated at short notice in special situations such as accidents, technical failures or strikes. It is therefore in the interest of DFS to play an active role during crisis exercises. What ensures the exceptional performance of DFS is its ability to master unexpected situations, sharpen perception of such situations and learn from them.

If the situation requires joint intervention, the joint crisis management team consisting of DFS and the Bundeswehr Air Traffic Services Office is convened to support civil and military decision-makers. As soon as the German Bundestag declares a state of tension (Art. 80a of the German Constitution) or determines a state of defence (Art. 115 of the German Constitution), the crisis management team is mobilised.

Seizing opportunities together

Europe is shaping the future of aviation

Civil-military cooperation in Germany has had a significant impact on European developments. Now Europe is reshaping the future of aviation. The following initiatives and projects are at the core of future air traffic management in Europe:

Single European Sky (SES)

The demand for mobility, cost reductions and protection of the environment has generated political pressure on the transport system, and on aviation in particular. In airspace, this was due to capacity bottlenecks, and on the ground to the infrastructure. The Single European Sky (SES) initiative with its powerful legislation was launched in the EU for the purpose of harmonisation and better regulation.

Interoperability

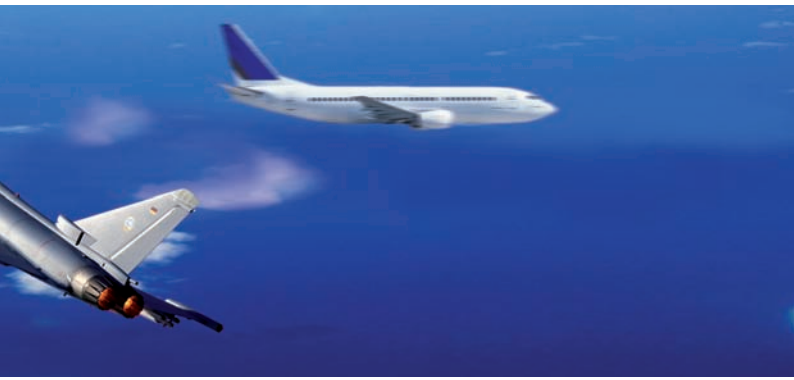
The future development of European air traffic will inevitably require interoperability and the integration of military systems. When implementing SES, minor incompatibilities should not be allowed to thwart the benefits of technical and operational innovations. Since the military will continue to use the airspace, the aviation industry has to meet these challenges already today.

SESAR

The aim of the Single European Sky ATM Research Programme (SESAR) is to put in place an entirely new ATM infrastructure. The SESAR Joint Undertaking was established on the EU Commission's initiative with the objective to promote and consolidate the research and development activities for modernising the European ATM system and to provide financing for the programme in accordance with the master plan.

Functional Airspace Block Europe Central (FABEC)

Functional Airspace Blocks form the basis for the organisation and use of airspace within the scope of SES. For the creation of a functional airspace block at the heart of Europe, the experience made by DFS is used for the realisation study to develop an optimum model of civil-military cooperation for the six Central European States. DFS is a role model in this context.



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