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Who we are

A brand of experience
DFS Aviation Services is part of the DFS Group which has been responsible for controlling air traffic in the Federal Republic of Germany for over 60 years. Today, DFS manages one of the most complex airspaces in the world with more than 10,000 flights per day and in total, over 3.3 million flights per year (2018).

ATM experts helping customers achieve their goals
DFS Aviation Services is responsible for the Group’s commercial activities across the globe and is offering a wide range of products and services. The extensive portfolio comprises the following areas: air traffic services (ATS), consulting, systems, data and engineering and training. In addition, we provide air traffic control at regional German airports, and are responsible for the provision of air traffic control at London Gatwick and Edinburgh airports through our UK subsidiary Air Navigation Solutions Ltd.

We are delighted to serve customers such as ANSPs, airport operators, airlines and aeronautical authorities from all over the world.

Therefore, we call ourselves:

A brand of experience – for ATM experts, from ATM experts
What we do

DFS Aviation Services itself is a young, dynamic company with a lean structure that can offer you a comprehensive range of services across all sectors of the air traffic industry.

As part of the DFS Group, we can draw on the technical and operational expertise of the largest ANSP in Europe and one of the largest and most advanced ANSPs worldwide.

This combination allows us to provide customers with tailor-made solutions with optimal value for money. With the technical and operational expertise, we can be your one-stop shop for all ATM topics.

Potential areas for common activities:

Air Traffic Management Strategies
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Technical Services & Support Systems for CNS
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Data Services & Provision
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Safety Management
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Training
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Our expertise - your benefits

Certified ANSP in Germany & the UK

International projects around the globe since 1995

100% Operational focus with ANSP expertise

>25 years civil-military integration

Customers from more than 40 countries

DFS ATM Suite
Development of Tower & Centre Systems
Main – Contingency – Fallback – Safety Net

Inhouse Research & Development of ATM

Training DFS Academy & on site


60 years of experience in advanced Air Navigation Services

Expert-to-Expert systems

International presence & two representative offices

UAS Traffic Management (UTM)
Our services across the globe

We provide our portfolio of products and services related to air navigation services to customers worldwide. We can look back on a series of successful international projects since 1995 – when our services were offered by a DFS division known as Aeronautical Solutions – with customers from more than 40 countries.

Our offices across the globe, additionally give us the opportunity to support our customers constantly.

Impression of our international projects:
Our management

We have been able to build “a strong force where both core businesses profit from each other and give us the ability to strengthen our portfolio and services for our clients”, reports Andreas Pötzsch, Managing Director of DFS Aviation Services.

The company can also draw on the resources and expertise of the largest ANSP in Europe, DFS, making us a powerful partner for our ANSP customers around the globe.

“Together with our highly motivated employees, who are extremely experienced in, and enthusiastic about, the products and services we offer, we can provide optimal solutions for all areas related to air traffic management”, argues Oliver P. Cristinetti, Managing Director of DFS Aviation Services.

We like to call ourselves your one-stop shop for ATM!
Our portfolio in detail

Airports

Airports are highly complex entities that require more than just modern and efficient airdrome control to ensure smooth operations. The processes on the ground, in the air and in the control tower have to be closely interlinked and require excellent coordination.

Besides the operational experience gained at airports in Germany and the UK as part of the DFS Group, DFS Aviation Services has successfully optimised the processes at numerous international airports by developing and implementing well-designed plans. These and other services have demonstrated their value over many years.

We look forward to your inquiries about:

- Apron management services
- Airport Collaborative Decision Making (A-CDM) & Total Airport Management (TAM)
- Operational Readiness, Activation and Transition (ORAT), including aerodrome licensing
- Capacity studies and simulations
- Airport slot coordination and management
- Operational and infrastructure concepts
Highlights

Operational Readiness, Activation and Transition (ORAT), including aerodrome licensing

To ensure a smooth transition through the whole planning and implementation phase of an airport construction and infrastructure project, good Operational Readiness, Activation and Transfer management is essential. With our long-term experience in ORAT consultancy, we can help you effectively optimise your processes.

Let us support you by planning, implementing and executing all relevant airside processes:

- Air traffic control (ATC)
- Apron management services
- Operational concepts, procedures & trials
- Engineering services
- Unit Safety Cases

Airport slot coordination and management

As air traffic soars worldwide, the importance of efficiently planned airport capacities is also growing. Many airports have experienced problems trying to meet demand and in finding the most efficient and safest use of runway and terminal capacities.

Improving the quality, flexibility and effectiveness of the coordination and allocation process needs excellent cooperation between slot coordinators, airport operators, airlines and air navigation service providers.

DFS Aviation Services can support you with its vast experience in airport slot coordination and management to find the best solution to distribute information most efficiently to all parties concerned and allow your system to react best.

Our service covers arrival slots and departure slots. If possible, flight plan and the slot message are merged according to defined rules. The following cases are used: ‘no slot’, ‘off slot’ or ‘wrong slot’. An appropriate message with this information is sent to the airline operator automatically. It is also possible to use slot monitoring via a web application, which not only provides current but also historical information simultaneously.
Every airport has its own unique challenges and needs. The DFS is confronted with the same challenges and pressures you face because we provide air traffic control at all major German airports ourselves. Each airport has its own distinct conditions. These airports range from regional German airports through London Gatwick Airport, one of the busiest single-runway airports in the world, to the international hub of Frankfurt Airport, with half a million take-offs and landings per year.

As our customer, you can take advantage of our extensive expertise as an air navigation service provider as well as our wide range of products and services for aerodrome control at small, medium-sized and large airports.

You can benefit from our specialist support in:

- **Provision of aerodrome and approach control services in Europe and abroad**
- Aerodrome Flight Information Services (AFIS)
- **Multiple Remote Tower Control (RTC) solutions & consultancy**
- Procedure planning and simulations
- Feasibility studies, such as air traffic services (ATS), ramp or tower locations and construction
- Tailored operational concepts
- Development of solutions for ATM systems for control towers and control centres

Learn more about our DFS ATM Suite on page 10
Highlights

Remote Tower Control (RTC) solutions & consultancy

Remote tower services promise considerable cost savings and efficiency gains while maintaining safety and operational availability – matters of essential importance to operators of aerodrome control services worldwide and currently the number one concern in the ATM sector.

The DFS Group has developed an innovative solution together with the technical supplier Frequentis. Today, we can look proudly on a well-developed remote tower environment, successfully controlling Saarbrücken Airport from the Remote Tower Centre in Leipzig, 400 kilometers away.

Based on the successful cooperation during the DFS Remote Tower project, DFS Aviation Services and Frequentis have set up a joint venture, which is called FREQUENTIS DFS AERONSENSE. With their joint expertise, the two companies provide turnkey advanced remote sensing solutions for ATC combining Virtual Tower systems from Frequentis with proven operational and regulatory concepts and know-how from the DFS group.

We would be glad to share our wide range of operational expertise with you to find your tailored remote sensing solution.

Provision of aerodrome and approach control services

Since 2005, DFS Aviation Services has provided air traffic control services as a certified ANSP in Germany at regional airports (until 2016 under the The Tower Company name). In 2015, we also entered the UK market with our subsidiary Air Navigation Solutions Ltd. (ANS Ltd.), which then took over air traffic control at London Gatwick Airport, the second largest airport in the United Kingdom.

In 2018, DFS Aviation Services started providing air traffic control and air traffic engineering services (ATC & ATE) at two other airports, Edinburgh Airport (from April 2018) and Bodensee Airport Friedrichshafen (from July 2018). Are you looking for a new air navigation service provider at your airport?

We are able to deal with airports of various sizes and conditions. We would be glad to find the best solution together with you. Your success is our goal.
DFS ATM Suite

Our modular DFS ATM Suite features a set of integrated ATC automation components, which can be used in any air traffic control environment – in smaller, medium-sized and large towers, approach control or control centres anywhere in the world.

DFS Communication Layer

The DFS Communication Layer is a middleware for communication between the different modules of the DFS ATM Suite as well as with other external systems, such as the airport or ATC systems. Multiple redundant communication layers can be configured on different machines to ensure failure safety and high availability.

DFS Flight Data Processing System (DFS FDPS)

With a modern paperless system, air traffic controllers can work more efficiently and control more aircraft movements than with traditional systems. As part of the integrated Tower Working Position or as a standalone solution, flight plan data from take-offs and landings, transit flights and vehicle movements can be stored, processed and changed. Air traffic controllers enter their changes directly on the screen with either a stylus pen or a mouse and keyboard. All data can be made available to different customers (airports, airlines, etc.). Thus, the system also supports Airport Collaborative Decision Making (A-CDM).

DFS Departure Manager (DFS DMAN)

The DFS Departure Manager can be easily adapted to local parameters of any airport. It enhances the predictability of departure times as well as runway capacity significantly by optimising the take-off as well as off-block sequence while considering constraints of the ANSP, airport, airline and handling agent. In its optimisation, the DFS Departure Manager takes account of the runways in use, the variable taxi times between each runway and each parking stand, the wake turbulence separation and minimum departure intervals to optimise and maximise the use of the available runway capacity and deliver departures on time at the take-off runway. The planning results are always up to date and are continuously adapted to take into account changing conditions from external systems or manual inputs.

DFS Arrival Manager (DFS AMAN)

The DFS Arrival Manager (DFS AMAN) meets the needs of highly complex airspace structures.

The modular arrival management system is able to register all arriving aircraft within a range of more than 200 miles around the airport and provides automatic change of the operating scenarios including flexible runway detection during the last 6 NM on final. It continuously calculates hand-over and landing times based on different parameters, such as speed, current and predicted flight path, traffic density and controller activities. It also calculates an optimal approach sequence without any frozen pictures.

The highly developed system can process any type of data and features a map editor for easy configuration and adaptability of operational concepts as well as a simulator environment to test the effects of new concepts or airspace designs.

The DFS Arrival Manager supports controllers in maintaining safety requirements while enabling the maximum utilisation of high-density airspaces.
Integrated Working Position

The DFS Integrated Working Position combines the current traffic situation as well as flight plan strips on one screen enabling seamless interactions between both worlds. The traffic situation display area can show both the air and ground situations simultaneously. The flight strip display area shows all flight plan-related information in a paper-strip-like fashion. However, the same data can also be displayed on time ladders and the like. Interactions, such as manual flight plan correlation, can be carried out in an intuitive manner (such as drag and drop, mark-up via mouse click).

DFS PHOENIX

DFS PHOENIX is a client-based, multi-sensor tracking and surveillance data display system which was developed for tower and approach control as well as for use as a fallback system in an area control centre. Over the last few years, the system was extended to include additional components, convincing numerous international customers to adopt the system. The main functionalities, and these additional components, comprise the services of the DFS ATM Suite.

Safety Net (SNET)

With the Safety Net functions, you can provide ongoing support to your air traffic controllers. The system fulfils all international requirements and features various warning messages, such as short-term conflict alert warnings, area intrusion alerts, minimum safe altitude warnings and approach path monitoring. The applications run in the background without impacting the user. However, in critical situations, the warning messages are displayed in a clear manner for the air traffic controller.

Maintenance Working Position (MWP)

The system’s hardware and software can be monitored from the Maintenance Working Position. This position’s situation display corresponds to the controller working position with all permitted functions. However, technical staff have additional functions, such as map processing and local system configuration and control. System-relevant monitoring and control data are provided by the SNMP protocol.

Multi Sensor Data Fusion (MSDF)

The core of the system is the high-performance multi-sensor fusion tracker (PSR, ASR, SMR, ADS-B, MLAT), which can process sensor and position data from up to 50 sensors and simultaneously store and process up to 5,000 tracks. It can be used to process and display sensor data in area, approach and aerodrome control as well as in ground control and taxing guidance.

Advanced Surface Movement Guidance and Control System (A-SMGCS)

Higher A-SMGCS functionalities are key to integrated surface management at large airports, for decision support, planning and safety and are currently being researched. The DFS ATM Suite provides level-two Advanced Surface Movement Guidance and Control System functionalities. Level-two monitoring and alerting is based on tracking information and covers:
- Runway incursions depending on CAT and actual runway conditions
- Infringements of critical/sensitive ILS areas depending on CAT and target types
- Surface conflict detection (such as aircraft is directed to a closed area)

Analysis Working Position (AWP)

The DFS Analysis Working Position has been designed to analyse the quality of sensor, radar and tracker input data to provide continuous monitoring of the performance of the sensors. It also allows for the reconstruction of a situation with directly accessible recording and replay features.

Record and Replay (RAR)

DFS PHOENIX is equipped with a central data recording and replay server. This makes it possible to record and replay radar plots, tracks and flight plans in the local network.
Every third flight in Europe flies over Germany. Due to its central position in the heart of Europe and the large number of airports within and outside its borders, German airspace is one of the most complex in the world. At peak times, our air traffic controllers handle up to 10,000 flights per day, more than a third of which are overflights. The German air navigation services have handled a high volume of air traffic for over 60 years on a daily basis: safely, punctually and efficiently.

Over the years, the DFS Group has developed its own systems and tools to optimise enroute control. As our customer, you will receive access to our modern simulators and benefit from our experience in optimising airspace structures. Our competencies in this field include:

- Development and delivery of ATM systems for tower facilities and area control centres (see also DFS ATM Suite on page 10)
- Introduction of new ATM systems (e.g. specification, procurement, testing, etc.)
- **Planning, optimisation and management of airspace structures**
- **Fast- and real-time simulations**
- Operational and contingency concepts
- Relocation or integration of approach and area control centres
- Air Traffic Flow and Capacity Management (ATFCM) processes and systems
Highlights

Planning, optimisation and management of airspace structures

Although airspace structures are not designed with rapid changes in mind, they still need to be questioned and revised on a regular basis. Current developments in global air traffic pose new challenges to existing airspace structures. At times, adjustments need to be made to meet future performance requirements.

We can provide a simulation toolchain that covers the entire process from airspace design and validation to the training for new airspace structures:

- Airspace design
- Proposals for airspace structures and use of airspace
- Planning and optimisation of ATS routes
- Implementation concepts for the flexible use of airspace
- Reduction of CO₂ emissions and fuel consumption: greener departure and arrival

Fast- and real-time simulations

Fast-time simulations to increase capacity in airspaces and at airports

Fast-time simulations can help you to evaluate your options in a quick and efficient manner and at a reasonable cost. The simulated airspaces can be defined individually to conduct cross-border analyses, for example, to assess functional airspace blocks. For each simulation run, individual factors can be modified as desired to simulate different scenarios. Practical cost-benefit analyses help you to optimise management decisions.

We use the most sophisticated simulation tool on the market, the Air Traffic Optimiser (AirTOp). The AirTOp fast-time simulator can simulate high volumes of air traffic in great detail. Highly sophisticated analytical and data processing applications determine the degree of workload, potential conflicts, cost benefit, delay distributions and other factors.

Real-time simulations to validate new procedures or structures

Simulation-driven validation of ATM systems means you can evaluate ATM concepts, airspaces and operations in real-time simulations with air traffic controllers. Our team of engineers, technicians, psychologists, physicists and air traffic controllers offers you a comprehensive solution from simulation design, to simulation execution, to statistical analyses and result reporting. It is also possible to connect and integrate prototypes, future operational ATM systems and/or flight simulators in the real-time simulation environment and extend your validation scope.
Air Traffic Management Strategies

Viable organisational structures and effective strategies are the prerequisites for efficient air traffic management. Since its foundation, DFS has been a pioneer in this domain. Having successfully achieved civil-military integration in German airspace more than 25 years ago, DFS plays a leading role in this area.

The important topic of integrating unmanned aircraft systems (UAS), commonly called drones, is another area where the DFS Group is making rapid progress. Backed by a wealth of experience in air traffic management strategy, we are honoured to help you successfully meet the challenges of the future.

We offer tailored consultancy services and support for:
- Separation of air traffic services and national supervisory authority
- Innovative operational concepts, such as sectorless ATM (flight-centric ATC)
- Consulting, tools and knowledge transfer/support for civil-military integration
- Integration of UAS
- Procedures and modules for defining air navigation service charges
- Master plans for airports, air navigation services and airlines
- Project management for ATM and CNS projects worldwide
- Performance management
- Efficient staff planning for air traffic controllers (ATCO)
- ICAO and IATA audits
Highlights

Consulting, tools and knowledge transfer for civil-military integration

Civil-military cooperation in air traffic management is a key enabler with regard to the optimised use of national airspace and ATM resources. Germany leads the field in Europe with more than 60 years of experience. Since 1993, it has moved from a coordination model to an integrated model of civil-military ATM. One of the key elements of this model is the idea of Flexible Use of Airspace (FUA), which was started in Germany in 1996 long before it became part of the Single European Sky (SES) initiative.

Integration of Unmanned Aircraft Systems

The use of unmanned aircraft systems (UAS) has increased greatly over the past decade, making it a necessity for all of us to integrate them outside of segregated airspace. The extreme versatility of drones and the advantages they provide with respect to cost, size and convenience are pushing this integration forward. Drones are used to conduct a wide variety of operations, such as rescue missions, reconnaissance and safety inspections, in a quieter and more environmentally friendly way.

To utilise this potential, but also integrate UAS safely into airspace, DFS has made sizeable investments into research & development in this area.

This airspace management concept does not designate airspace as solely civil or military airspace. Instead, airspace is considered a continuum in which all users’ requirements have to be accommodated to the maximum extent possible as is described in Commission Regulation (EC) No 2150/2005 of 23 December 2005.

For example, DFS has teamed up with Deutsche Telekom AG (DTAG) to investigate the use of mobile networks to communicate with and to locate drones by making full use of the expansive infrastructure that has already been set up by DTAG. The solution can essentially turn drones into flying mobile phones as they will be equipped with SIM cards to integrate them into our UAS Traffic Management (UTM) system.

Let us share our common experience and define operational UTM concepts and procedures with respect to safety, quality, coordination and trials for your context.
Technical Services and Support Systems for CNS

Aerodrome control is only possible with advanced technology. Because the DFS Group aims to implement highly advanced CNS systems for its own use, we naturally only recommend the best to our customers.

These include, for example, satellite-based precision approach procedures using GBAS (Ground-Based Augmentation System) as well as tools developed in-house to reduce the load on radio frequencies and to eliminate Mode S conflicts. Of course, we are continuously developing and improving our high-performance backup systems as well.

Would you like to use advanced technical systems and tools developed by real-world users for real-world use? Would you like support in choosing or maintaining your CNS equipment? We can aid you in the following areas:

- System maintenance, operation and lifecycle management
- Technical consulting, concepts and processes
- Virtual test systems
- Flight inspection and evaluation
- CNS support tools and services:
  - Support services for GNSS, such as RAIM – APS
  - GBAS implementation
  - Frequency compatibility analyses
  - Technical safeguarding for CNS systems
  - Geodesic assessments
  - Radio frequency monitoring of 1030 / 1090 MHz
  - Recognition of on-demand lighting systems for wind turbines
  - Mode S Interrogation Code Conflict Alerter (MICCA)
Data Services & Provision

Air traffic control would not be possible without data. Our reliance on up-to-date and complete data continues to grow, as does the complexity of the data.

The DFS Group has a valuable data pool at its disposal. It also has the expertise to provide you with access to data, assist you with your data management and provide consultancy services for the following areas:

- Provision of radar and voice communication data
- Aeronautical Data Quality (ADQ) management
- System-Wide Information Management (SWIM)
- Provision of aeronautical data (flight plans and flight-plan-associated messages, NOTAM, etc.)
- Air traffic planning and statistics provision of data for maps/charts

Technical maintenance and reliable data are integral to an extended life span for ATM systems.
Safety Management

Safety is the most important goal we all aim for and is, naturally, the reason why air navigation services even exist.

In 2018, DFS celebrated its 25th anniversary. Before its foundation as a private company, it was a governmental agency of the Federal Republic of Germany. In the past 25 years, air traffic has nearly doubled in Germany, and DFS has helped to ensure that more than five billion passengers have reached their destinations safely. In 2018, over 3.3 million flights were recorded in German airspace – more than ever before. At the same time, DFS can be proud of its consistently high safety standard in one of the world’s most complex airspaces. This clearly demonstrates the quality of our air traffic controllers’ work, excellent training standards and the use of advanced and reliable technology.

We have successfully managed numerous projects for ANSPs, national supervisory authorities, ministries of transport and defence as well as aircraft manufacturers from Europe, Asia and the Middle East.

We would be glad to support you with our extensive international experience in:

- **Safety assessments**
  - for changes in ATM (e.g. airspace, procedures, systems, human factors, traffic environment)
  - for the integration of UAS

- **Consultancy** to improve the effectiveness of your Safety Management System (SMS)

- **Training courses**
  - Fundamentals of safety management
  - Safety assessments
  - Occurrence investigation
  - Human factors and team resource management
  - **Fatigue management**
  - Safety awareness and culture
  - Critical Incident Stress Management (CISM)

*Please also refer to the DFS Academy Training Catalogue on page 21.*
Fatigue management training

Strong factual evidence has revealed that a number of major accidents and incidents were caused by fatigue, or fatigue was a contributory factor.

As a safety hazard, fatigue can predictably degrade various aspects of human performance. In ATM, air traffic controllers work in shifts, which results in a high probability of suffering from sleep deprivation due to a disturbed circadian rhythm.

To tackle this topic and thereby further improve aviation safety, ICAO has recently amended Annex 11 – Air Traffic Services with a requirement for air navigation service providers to establish a Fatigue Risk Management System by 2019.

Our training course has been devised to provide the essentials of fatigue management to prepare the organisations concerned.

The core contents of the course comprise the scientific principles of fatigue such as sleep and circadian rhythm, the regulatory background of fatigue management in ATM and various approaches to establish a fatigue management system.

The course can be tailored to meet your specific needs.
Training

A sophisticated selection process and professional training are the basis for reliable workforce planning. The DFS Group has many years of experience in training its own personnel as well as customers from all over the world. A modular training concept has been developed to tailor each training plan individually for each customer. In addition, DFS courses comply with Commission Regulation (EU) 2015/340.

DFS Aviation Services offers its own training courses and is your contact point for access to the wide range of courses that DFS provides.

The courses are held at the DFS Academy in Langen, Germany – one of the world’s largest ATC training facilities – or at a location of your choice.

Partner with us for:

- Initial training for air traffic controllers in Germany and the UK (through our subsidiary Air Navigation Solutions Ltd.)
- Initial training for air traffic safety electronics personnel (ATSEP)
- Support in recruiting air traffic controllers and staffing processes
- Training and refresher courses to maintain the employability of air traffic controllers
- Emergency training
- English language training (according to ICAO requirements)
- Courses covering the whole range of ATC
- Safety management training (see previous section)
The DFS Academy is one of the world’s largest and highly experienced ATC training facilities.

Highlight

**DFS Academy Training Catalogue**

The DFS Air Navigation Services Academy trains air traffic controllers, ATM specialists, air traffic safety electronics personnel (ATSEP) and engineers, and AIS officers.

The focus is meeting the training needs of both external customers and DFS staff.

Since it was founded, some 2,300 air traffic controllers have been trained there.

Find out more about the training courses in the current catalogue on [www.dfs-as.aero](http://www.dfs-as.aero) or just scan the QR code.