

Fast-time simulation

Look before you leap



DFS Deutsche Flugsicherung

In the air transport system, time and capacity are scarce resources. This aspect is regaining importance in the light of the renewed traffic growth. Each manager in the air transport system associates very concrete questions with this situation. How can I organise airspace without producing capacity bottlenecks? How can I make sure that all gates can be reached as quickly as possible? How can I integrate a new hub into my route network? These questions must be answered today without knowing what will happen tomorrow. DFS fast-time simulations will help you evaluate your alternatives in a quick and efficient manner.

Finding the best

The DFS fast-time simulation is a sustainable method of finding the best airspace or airport design. The procedure makes it possible to reproduce each airport and each airspace structure in a realistic way within a relatively short period of time and at reasonable costs. The simulated airspaces can be defined individually in order to conduct cross-border analyses, for example, to assess functional airspace blocks envisaged by the Single European Sky regulations. For each simulation run, individual factors can be modified as desired to simulate different scenarios. Your benefit as our customer: You are in a position to optimise your management decisions by means of practical cost-benefit analyses.

DFS originally started conducting fast-time simulations to optimise its own airspace structure more than 15 years ago. The experience gained from solving national prob-

lems has increasingly been applied to international areas. We have analysed hundreds of sectors and a great number of routes, both for en-route operations and in the approach and departure area. Our focus has always been on enhancing capacity while, at the same time, reducing potential conflicts.

Thinking in terms of "gate to gate"

Using full gate-to-gate simulation tools, we have supported all major German airports in analysing and comparing planned alternatives regarding airport infrastructure. For airport studies, it is important to not only consider the ground movement but also surrounding airspace because all components have reciprocal effects on each other. By taking this into consideration, we are able to assess various aspects for the airport operators, e.g. airport capacities, taxi and apron procedures, gate handling, taxiways, runways, gates, and de-icing areas.

More and more airlines are using the DFS fast-time simulation to optimise airport procedures, especially when the airport is one of their major hubs. Therefore, we have performed some simulation studies involving an airport operator as well as an airline. Typical airline studies are designing flight schedules or optimising airport procedures.



Wide range of experience

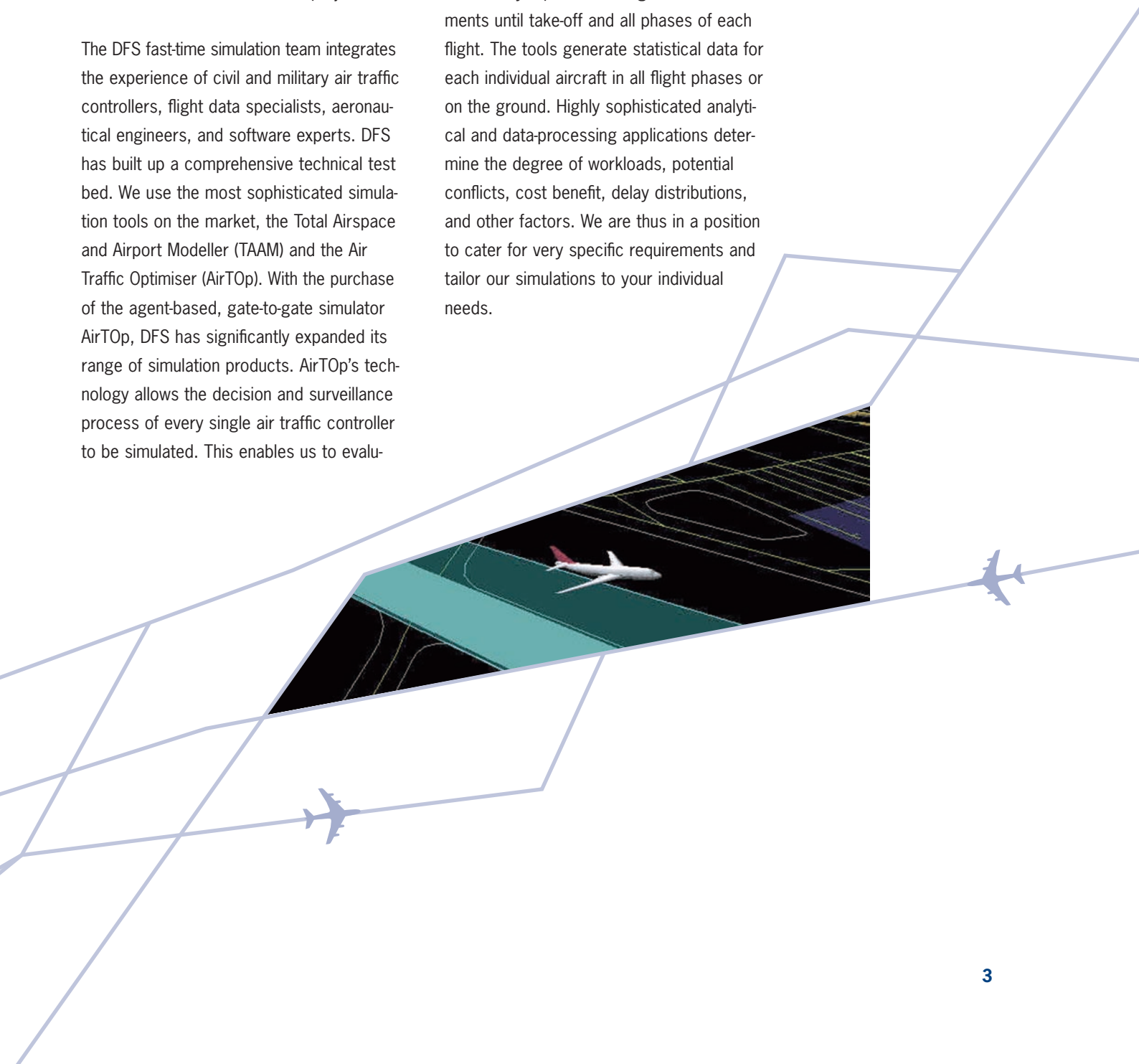
Since 1990, DFS has successfully carried out more than 80 simulations ranging from airport capacity assessments to national and international airspace efficiency analyses. In most cases, our simulation results and recommendations have been implemented into daily operations. Being aware of the benefits of our simulations, most of our clients become our reference customers. And our experience and competence are in great demand, both in the field of research and in international projects.

The DFS fast-time simulation team integrates the experience of civil and military air traffic controllers, flight data specialists, aeronautical engineers, and software experts. DFS has built up a comprehensive technical test bed. We use the most sophisticated simulation tools on the market, the Total Airspace and Airport Modeller (TAAM) and the Air Traffic Optimiser (AirTOP). With the purchase of the agent-based, gate-to-gate simulator AirTOP, DFS has significantly expanded its range of simulation products. AirTOP's technology allows the decision and surveillance process of every single air traffic controller to be simulated. This enables us to evalu-

ate complex future ATC concepts. The simulation results are analysed with ATC Playback. This tool facilitates advanced detailed analyses and trajectory visualisation.

High-performance tools

The tools can simulate high volumes of air traffic in great detail; the European ONESKY project, for example, included 30,000 aircraft movements. The simulated aircraft can be picked up in hangars, at gates or at any position at the airport, and the simulator realistically reproduces all ground movements until take-off and all phases of each flight. The tools generate statistical data for each individual aircraft in all flight phases or on the ground. Highly sophisticated analytical and data-processing applications determine the degree of workloads, potential conflicts, cost benefit, delay distributions, and other factors. We are thus in a position to cater for very specific requirements and tailor our simulations to your individual needs.



DFS Deutsche Flugsicherung GmbH
Aeronautical Solutions
Am DFS-Campus 10
63225 Langen
Germany

Telephone +49 (0)6103 707-2051
Facsimile +49 (0)6103 707-4995
E-mail sales@dfs.de
Internet www.dfs.de