Consulting professionals
Intercultural competence:
a portrait of three staff members from the DFS sales and consulting division

PHOENIX passes World Cup test
Brazilian ANSP uses DFS system

Optimised approaches lead to fuel savings
Cooperation with airlines pays off
Dear reader

The public usually sees air traffic control as a function of the State that ends at its border. However, this is no longer an accurate reflection of reality – at least not in every case. Many air navigation service providers (ANSP) have built up a sizable body of knowledge from decades of operations which they are looking to market across their borders. On the other hand, many ANSPs are looking to make the expertise gained by others their own. DFS, for example, has controlled one of the most complex airspaces in the world for decades. We set up a dedicated division to market our systems, products and experience worldwide. Our Aeronautical Solutions division has been very successful in this field for quite some time now. Take, for instance, our products and services such as the air traffic control systems AMAN and PHOENIX which have been deployed from Asia to South America.

Our highly motivated team at Aeronautical Solutions (AS) have twenty years of experience in providing consulting services across many different cultures. The AS portfolio includes support services in airspace planning, safety management and the installation of air traffic control systems. Additionally, we are at the forefront when it comes to civil-military cooperation, which has been common practice in Germany for many years.

We also offer training for new and experienced air traffic services personnel. Furthermore, via our subsidiary The Tower Company, we provide air navigation services at regional airports in Germany and soon at London Gatwick. I am pleased to say that we have been well received in other countries and our products and services have been met with great interest at international trade fairs. Our business partners place a great deal of trust in the quality of our work and take advantage of our expertise. Our goal is to expand our consulting activities. Attractive dynamic markets can be found all over the world: from our home base in Europe to the Middle East, Asia and South America. Our consulting business is an essential part of our efforts to make our company fit for future challenges. Aeronautical Solutions holds the key to resolving many issues faced by our clients and partners across the globe.

We hope you enjoy reading our magazine.

Prof Klaus-Dieter Scheurle
Chairman and CEO
DFS Deutsche Flugsicherung GmbH
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No real recovery yet

The military conflict in eastern Ukraine has brought about a shift in the flow of air traffic. Countries such as Macedonia, Bulgaria and Romania report large increases in traffic because flights bound for Asia are using alternate routes now. Overall, however, growth has been modest. After a two-year downturn, traffic has started to grow again in Europe. Nevertheless, it is a weak recovery at best, despite the fact that passenger and freight-tonne kilometres are on the rise.
Although air traffic in Europe did not continue its decline, a real recovery is still not in sight – that is a succinct wrap-up of 2014. The number of aircraft movements in European airspace increased to 9.6 million, which was 1.7 percent more than in the previous year. If the comparison is limited to the Member States of the European Union (EU), growth was even higher at 1.9 percent. In 2014, the 28 Member States registered 8.8 million aircraft movements. Moreover, the growth that was recorded was due to air traffic from outside of Europe. While the number of intra-European flights only grew by 1.3 percent, the number of entries and exits increased by 2.4 percent. Notable was the above-average growth in overflights. Across Europe, they increased by 8.8 percent. In the 28 EU States, this increase was an impressive 11.0 percent.

For air navigation service providers (ANSP) in the European Union, the weak growth in traffic poses a problem. First, the decline in traffic over the past two years resulted in lower revenues while their costs could not be reduced to the same extent. Second, European regulation has made ANSPs take on a portion of the risk associated with declines in traffic. Air navigation charges were fixed for the first reference period from 2012 to 2014 based on a 2011 forecast, which had expected strong growth. The 2014 figures are still nowhere near the forecasted numbers. In the second reference period from 2015 to 2019 better reflects current reality. The basic problem remains, however. If air traffic numbers do not develop as forecasted, this will be partially at the expense of the ANSPs.

In 2014, there were wide differences between European countries in the growth of traffic numbers. In Germany, the country with the most traffic in Europe, traffic volumes did manage to grow slightly, however, the 1.2 percent rise remained significantly below the European average. France, the United Kingdom and Italy all reported only average growth. By contrast, Spain saw an increase of 3.9 percent. In Turkey (ranked 6 in terms of traffic volume), the strong growth of the past years continued its course; in 2014, it came in at 11.2 percent.

Regionally inconsistent growth in Europe was felt at the airports as well. At the busiest European airport, London-Heathrow, the number of take-offs and landings remained at about the same level as the previous year (+0.2 percent). At Charles de Gaulle Airport in Paris, they went down by 1.5 percent and at Frankfurt Airport, there

### Major European airports
#### Average number of flights per day

<table>
<thead>
<tr>
<th>Airport</th>
<th>Country</th>
<th>2014</th>
<th>Change in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>London-Heathrow</td>
<td>United Kingdom</td>
<td>648</td>
<td>0.2</td>
</tr>
<tr>
<td>Paris-Charles de Gaulle</td>
<td>France</td>
<td>646</td>
<td>-1.5</td>
</tr>
<tr>
<td>Frankfurt</td>
<td>Germany</td>
<td>642</td>
<td>-0.8</td>
</tr>
<tr>
<td>Amsterdam-Schiphol</td>
<td>Netherlands</td>
<td>615</td>
<td>3.0</td>
</tr>
<tr>
<td>Istanbul-Atatürk</td>
<td>Turkey</td>
<td>588</td>
<td>8.5</td>
</tr>
<tr>
<td>Munich</td>
<td>Germany</td>
<td>513</td>
<td>-1.3</td>
</tr>
<tr>
<td>Madrid-Barajas</td>
<td>Spain</td>
<td>469</td>
<td>2.9</td>
</tr>
<tr>
<td>Rome-Fiumicino</td>
<td>Italy</td>
<td>428</td>
<td>3.4</td>
</tr>
<tr>
<td>Barcelona</td>
<td>Spain</td>
<td>389</td>
<td>2.6</td>
</tr>
<tr>
<td>London-Gatwick</td>
<td>United Kingdom</td>
<td>356</td>
<td>3.8</td>
</tr>
<tr>
<td>Zurich</td>
<td>Switzerland</td>
<td>353</td>
<td>0.8</td>
</tr>
<tr>
<td>Copenhagen-Kastrup</td>
<td>Denmark</td>
<td>345</td>
<td>2.8</td>
</tr>
<tr>
<td>Oslo-Gardermoen</td>
<td>Norway</td>
<td>339</td>
<td>2.8</td>
</tr>
<tr>
<td>Vienna-Schwechat</td>
<td>Austria</td>
<td>339</td>
<td>-0.2</td>
</tr>
<tr>
<td>Paris-Orly</td>
<td>France</td>
<td>317</td>
<td>-1.1</td>
</tr>
<tr>
<td>Stockholm-Arlanda</td>
<td>Sweden</td>
<td>313</td>
<td>3.8</td>
</tr>
<tr>
<td>Brussels</td>
<td>Belgium</td>
<td>309</td>
<td>6.7</td>
</tr>
<tr>
<td>Düsseldorf</td>
<td>Germany</td>
<td>288</td>
<td>-0.1</td>
</tr>
<tr>
<td>Geneva-Cointrin</td>
<td>Switzerland</td>
<td>248</td>
<td>2</td>
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<tr>
<td>Berlin-Tegel</td>
<td>Germany</td>
<td>247</td>
<td>4.4</td>
</tr>
<tr>
<td>Istanbul-Sabihat Göçen</td>
<td>Turkey</td>
<td>246</td>
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<td>Dublin</td>
<td>Ireland</td>
<td>245</td>
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</tr>
<tr>
<td>Antalya</td>
<td>Turkey</td>
<td>236</td>
<td>4.1</td>
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<tr>
<td>Palma de Mallorca</td>
<td>Spain</td>
<td>236</td>
<td>1.8</td>
</tr>
<tr>
<td>Manchester</td>
<td>United Kingdom</td>
<td>233</td>
<td>0.9</td>
</tr>
<tr>
<td>Helsinki-Vantaa</td>
<td>Finland</td>
<td>230</td>
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<tr>
<td>Milan-Malpensa</td>
<td>Italy</td>
<td>228</td>
<td>1.0</td>
</tr>
<tr>
<td>Lisbon</td>
<td>Portugal</td>
<td>214</td>
<td>7.3</td>
</tr>
<tr>
<td>London-Stansted</td>
<td>United Kingdom</td>
<td>214</td>
<td>8.9</td>
</tr>
<tr>
<td>Athens-Eleftherios Venizehos</td>
<td>Greece</td>
<td>204</td>
<td>9.9</td>
</tr>
</tbody>
</table>

Source: EUROCONTROL

The traffic volume at London-Heathrow stagnated, while Paris-Charles de Gaulle and Frankfurt experienced declines. In 2014, these three large hubs continued to suffer from the slump in air traffic in Europe. Most of the major European airports saw a slight uptick in business, but growth was weak. Turkey is the exception. At Istanbul Atatürk Airport, traffic volumes grew by around 8.5 percent, while the neighbouring airport of Sabiha Göçen experienced growth of almost 25 percent.
Traffic figures from 2014

Traffic figures from 2014

was a decline of 0.8 percent. Europe’s sixth busiest airport in Munich also reported a decrease in traffic of 1.3 percent. Unlike Munich, both of Istanbul’s airports continued to report growth. At Atatürk Airport, the number of aircraft movements increased by 8.5 percent; at Sabiha Gökçen, it was a whopping 23.8 percent.

Growth was not limited to Istanbul. Air traffic is booming throughout Turkey. The number of aeroplanes landing or taking off in Turkey in 2014 went up by 9.1 percent. The number of overflights above Turkey grew even more. It rose by 17.2 percent, but this is due to an unfortunate circumstance. Due to the ongoing conflict in eastern Ukraine, airlines are detouring their flights bound for Asia and taking alternative routes and thus using Turkish airspace more often.

Overflights of Ukraine have virtually ceased. As early as April 2014, there was already a significant ebb in the number of flights due to the conflict between Ukraine and Russia as to who was responsible for controlling the airspace above Crimea and parts of the Black Sea. As conflicting air traffic control instructions from two separate authorities can have fatal consequences, airlines were advised to avoid the area in April. In July, a catastrophe took place over eastern Ukraine, where an armed pro-Russian separatist insurgency was taking place. A Malaysian airliner on its way from Amsterdam to Kuala Lumpur was shot down with 298 people on board, probably by a surface-to-air missile. Since then, the area has been given a wide berth. In December 2014, only 475 overflights were recorded, which was a decrease of 98 percent over the previous year.

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**Flights under instrument flight rules (IFR)**

<table>
<thead>
<tr>
<th>Country</th>
<th>Flights</th>
<th>Change in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany*</td>
<td>3,030,012</td>
<td>1.2</td>
</tr>
<tr>
<td>France</td>
<td>2,947,043</td>
<td>1.6</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>2,268,742</td>
<td>2.0</td>
</tr>
<tr>
<td>Italy</td>
<td>1,679,650</td>
<td>1.9</td>
</tr>
<tr>
<td>Spain</td>
<td>1,586,969</td>
<td>3.9</td>
</tr>
<tr>
<td>Turkey</td>
<td>1,268,918</td>
<td>11.2</td>
</tr>
<tr>
<td>Austria</td>
<td>1,152,203</td>
<td>3.4</td>
</tr>
<tr>
<td>Netherlands</td>
<td>1,137,546</td>
<td>2.6</td>
</tr>
<tr>
<td>Belgium and Luxembourg</td>
<td>1,132,785</td>
<td>2.9</td>
</tr>
<tr>
<td>Switzerland</td>
<td>1,032,953</td>
<td>1.4</td>
</tr>
<tr>
<td>Sweden</td>
<td>739,124</td>
<td>1.2</td>
</tr>
<tr>
<td>Poland</td>
<td>701,525</td>
<td>1.4</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>700,447</td>
<td>3.1</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>683,389</td>
<td>24.1</td>
</tr>
<tr>
<td>Greece</td>
<td>677,938</td>
<td>8.8</td>
</tr>
<tr>
<td>Hungary</td>
<td>669,717</td>
<td>11.6</td>
</tr>
<tr>
<td>Norway</td>
<td>618,893</td>
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<tr>
<td>Denmark</td>
<td>618,533</td>
<td>0.0</td>
</tr>
<tr>
<td>Romania</td>
<td>598,229</td>
<td>16.6</td>
</tr>
<tr>
<td>Serbia and Montenegro</td>
<td>553,768</td>
<td>6.9</td>
</tr>
<tr>
<td>Ireland</td>
<td>536,796</td>
<td>2.8</td>
</tr>
<tr>
<td>Croatia</td>
<td>519,661</td>
<td>5.5</td>
</tr>
<tr>
<td>Portugal</td>
<td>480,064</td>
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</tr>
<tr>
<td>Slovakia</td>
<td>436,313</td>
<td>9.8</td>
</tr>
<tr>
<td>Slovenia</td>
<td>347,987</td>
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</tr>
<tr>
<td>Ukraine</td>
<td>311,630</td>
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</tr>
<tr>
<td>Cyprus</td>
<td>304,343</td>
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</tr>
<tr>
<td>Bosnia and Herzegovina</td>
<td>298,307</td>
<td>13.7</td>
</tr>
<tr>
<td>Lithuania</td>
<td>257,067</td>
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</tr>
<tr>
<td>Belarus</td>
<td>251,280</td>
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</tr>
<tr>
<td>Finland</td>
<td>247,749</td>
<td>1.9</td>
</tr>
<tr>
<td>Latvia</td>
<td>242,323</td>
<td>2.7</td>
</tr>
<tr>
<td>Albania</td>
<td>198,410</td>
<td>-1.1</td>
</tr>
<tr>
<td>Estonia</td>
<td>191,339</td>
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</tr>
<tr>
<td>FYROM</td>
<td>146,382</td>
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<td>Iceland</td>
<td>142,054</td>
<td>8.5</td>
</tr>
<tr>
<td>Azerbaijan</td>
<td>124,266</td>
<td>-3.4</td>
</tr>
<tr>
<td>Georgia</td>
<td>115,738</td>
<td>5.0</td>
</tr>
<tr>
<td>Malta</td>
<td>101,768</td>
<td>-6.8</td>
</tr>
<tr>
<td>Moldova</td>
<td>56,283</td>
<td>-24.2</td>
</tr>
<tr>
<td>Armenia</td>
<td>50,531</td>
<td>-3.4</td>
</tr>
</tbody>
</table>

* Due to different calculation methods, the figures published by EUROCONTROL are not identical with DFS figures.

Source: EUROCONTROL/STATFOR

The number of passengers in Europe in 2014 rose by almost 6 percent over the prior year. The increase in the number of flights, on the other hand, was considerably weaker. The number of take-offs, landings and overflights only increased by 1.7 percent across Europe. Once again, Turkey experienced much stronger growth. Traffic in this country at the interface between Europe and Asia grew by 11.2 percent. A similar trend could also be seen in Bulgaria, Romania and Hungary.
The shift of the routes has been noticeable not only in Turkey but also in neighbouring countries such as the former Yugoslav Republic of Macedonia, Bulgaria and Romania. In Macedonia, the number of overflights rose by almost a third; in Bulgaria, by more than a quarter and Romania reported about one fifth more than the previous year. The significant growth in traffic in the three countries – 29.9 percent in Macedonia, 24.1 percent in Bulgaria and 16.6 percent in Romania – can be largely explained by this. Greece, Bosnia and Herzegovina and Hungary also benefited from the new routes. The number of overflights in these countries has also increased since August.

While there was only an uptick in the number of aircraft movements in Europe in 2014, the number of passengers surged. According to the International Air Transport Association (IATA), the number of passenger kilometres flown in Europe in 2014 was 5.7 percent higher than the previous year. Passenger kilometres worldwide also grew. An especially large increase of 13 percent was recorded in the Middle East. In total, all airlines recorded 5.9 percent more passenger kilometres in 2014 than in the year before. IATA counted about 3.3 billion passengers worldwide – twice as many as at the end of the 20th century.

Growth was also recorded for cargo. IATA reported a 4.5 percent increase in the number of freight-tonne kilometres flown worldwide, subsequent to the previous year’s weak 1.4 percent. The reason for this was the growth in the Asia-Pacific region, which is the largest air cargo market in the world with a share of 40 percent.

The airlines are under enormous economic pressure, which can be seen clearly in the fact that the traffic figures did not grow as much as the passenger and cargo numbers. Fuel prices have sunk significantly, which lowers costs. However, because there has been a significant decline in the share of business and first class seats sold, airline profit margins have shrunk. Airlines have been trying to fill up their aircraft as much as they can, to cut underused connections and to replace smaller airplanes with larger more cost-efficient ones. According to IATA, the passenger load factor – the percentage of available seats that are filled by revenue passengers – has increased steadily and levelled out at 79.5 percent in 2014. North American airlines did the best job filling seats with 83.5 percent, followed closely by European airlines with 80.4 percent.

## Air traffic in Germany

### IFR take-offs and landings at international airports

<table>
<thead>
<tr>
<th>City</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>Change in %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Berlin-Schönefeld</td>
<td>71,048</td>
<td>69,227</td>
<td>63,092</td>
<td>66,881</td>
<td>5.5</td>
</tr>
<tr>
<td>Berlin-Tegel</td>
<td>168,579</td>
<td>170,303</td>
<td>173,979</td>
<td>181,532</td>
<td>4.4</td>
</tr>
<tr>
<td>Berlin in total</td>
<td>239,627</td>
<td>239,530</td>
<td>237,071</td>
<td>248,413</td>
<td>4.7</td>
</tr>
<tr>
<td>Bremen</td>
<td>37,120</td>
<td>35,547</td>
<td>35,107</td>
<td>36,538</td>
<td>4.0</td>
</tr>
<tr>
<td>Cologne/Bonn</td>
<td>130,720</td>
<td>125,380</td>
<td>119,538</td>
<td>122,184</td>
<td>2.1</td>
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<tr>
<td>Dresden</td>
<td>27,779</td>
<td>25,758</td>
<td>22,333</td>
<td>23,502</td>
<td>4.5</td>
</tr>
<tr>
<td>Düsseldorf</td>
<td>221,206</td>
<td>216,664</td>
<td>210,279</td>
<td>209,771</td>
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<td>Erfurt</td>
<td>6,308</td>
<td>4,410</td>
<td>4,796</td>
<td>4,883</td>
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<td>Frankfurt</td>
<td>487,052</td>
<td>482,079</td>
<td>472,549</td>
<td>468,915</td>
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<td>Hamburg</td>
<td>149,073</td>
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<td>146,315</td>
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<td>62,914</td>
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<td>59,467</td>
<td>60,482</td>
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<tr>
<td>Munich</td>
<td>407,148</td>
<td>395,210</td>
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<td>374,110</td>
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<td>Münster/Osnabrück</td>
<td>24,802</td>
<td>19,689</td>
<td>16,322</td>
<td>17,678</td>
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<td>Nürnberg</td>
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<td>53,727</td>
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<td>Saarbrücken</td>
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<td>9,548</td>
<td>8,567</td>
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<td>Stuttgart</td>
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<td>113,798</td>
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<tr>
<td>Total</td>
<td>2,059,372</td>
<td>2,000,877</td>
<td>1,992,889</td>
<td>1,947,971</td>
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</tr>
</tbody>
</table>

Source: DFS

After two years of decline, 2014 saw a slight increase in the number of take-offs and landings at international airports in Germany. This, however, was not the case for all airports. The hubs of Frankfurt and Munich saw traffic volumes decline in 2014. Growth, on the other hand, could be observed at both airports in Berlin (Tegel and Schönefeld). Hamburg Airport, the fifth largest in Germany, also reported more traffic.

The situation at DFS

The decline in air traffic seems to have been halted, at least for the time being. In 2014, DFS recorded 2.98 million IFR flights. This means that the traffic volume in Germany was actually on the rise for the first time in two years, but it was a slight increase and well below the level of 2012. An all-time high was reached in 2008 when DFS controlled 3.15 million flights. Since then, the total traffic volume has not reached the three-million threshold again except in 2011. Among the European countries with the most air traffic, Germany ranks ahead of France and the United Kingdom. Every third flight in Europe flies over Germany.
Consulting professionals

Sales and consulting are major pillars of our division Aeronautical Solutions (AS). Clients from around the globe place great confidence in the intercultural competence and expertise of the division. This edition of transmission features brief portraits of three professionals on our DFS consulting team.

When Brigitte Bussmann joined the company in 1996, consulting services at DFS were just getting started. After completing an apprenticeship in business administration, she began her career as an office assistant for AS. Over time, she was entrusted with more and more business duties. Today, she is responsible for all general administrative aspects of the division. "I have many diverse tasks and there is always a lot to do," says Bussmann. Part of her job includes supporting the consultants in their administrative duties when preparing bids and conducting projects.

International clients are in good hands with: Dr. Hans de Jong, deputy head of Aeronautical Solutions Achim Eckermann, Sandra Stark and Brigitte Bussmann (from left to right). Photo: H.-J. Koch
Above all, her responsibilities include cost control, procurement of subcontractors and invoicing. Along with the project managers, she calculates the bids for clients. She is in constant contact with the project managers and has to be up-to-date on the status of the project at all times. “My job requires a great deal of perseverance to get all the information I need,” reports the mother of a grown son. The most time-consuming task is to constantly monitor what has to happen when. For the Doha project, DFS set up their business on site. Bussmann was responsible for integrating the bookkeeping in Qatar with the project bookkeeping at DFS headquarters.

Back when I first started at AS, it was a male-dominated domain.

She has a particularly high workload whenever the annual budget is being drawn up. Calculating the costs in relation to expected revenue is not a simple task. She is also responsible for quality management and oversees running processes and their improvement. In addition, she supervises administrative trainees and is in charge of briefing new AS employees about administrative issues. She is supported by three colleagues and two project assistants who also take on some of the administrative tasks. “Back when I first started at AS, it was a male-dominated domain. I was the only woman,” recalls Bussmann. She is happy that things are different today with a relatively high percentage of women on the team.

She is also glad that most of the project managers are knowledgeable about administrative matters. This includes team member Sandra Stark who is responsible for the sale and implementation of the air traffic control system PHOENIX for NAV CANADA. This project manager has a combined business and engineering degree with a major in air transport, which she rounded off with a technical traineeship at DFS. She has been part of the Aeronautical Solutions team since 2010.

The air traffic control system PHOENIX is one of the most popular products in the DFS portfolio and can be tailored to meet client needs. Sandra Stark’s job is to communicate NAV CANADA’s requirements to DFS software developers and to run the project costs and administer the conduct of the project. “The NAV CANADA project was a bit tricky at the beginning,” explains Stark. She first had to win the respect of her Canadian business partners. “In the meantime, the project is going very well.” She really enjoys the fact that her job involves working with other cultures.

Passion for flying

Since the project began in 2011, she has been in Ottawa at NAV CANADA’s headquarters twice a year. Ottawa is not especially known as a tourist magnet, but

Ottawa, where the headquarters of NAV CANADA are located, is especially charming in winter. During one of her business trips there, DFS consultant Sandra Stark joined the ice-skaters on Rideau Canal. Photo: Shutterstock

Photo: HIA Doha

The new airport in Doha. For this project, DFS set up its own office in Qatar.
when the Rideau Canal is frozen in winter there is practically a public festival on the ice when everyone skates on the world’s largest natural ice rink. “I was able to go skating myself when I was there on a business trip in January,” reports Stark.

Sport is one of the project manager’s biggest passions. Her favourite pastime is long-distance running and she is also a dragon boat enthusiast. She is just as passionate about flying. “When I was little, my great dream was to become a commercial pilot. Unfortunately, I am too short for that job,” she explains. Nevertheless, she has had a private pilot’s license for several years and flies from a small airport 30 minutes north of Frankfurt. “When you see the earth from up above, your everyday problems seem pretty irrelevant.”

By contrast, Stark’s colleague Hans de Jong’s journey to the aviation world was not as neatly mapped out. He is a physicist with a PhD in mathematics who initially worked on basic research at the University of Groningen in the Netherlands. When he finished his PhD, he happened upon a job advert for the Netherlands National Aerospace Laboratory (NLR), which was looking for a mathematician to develop models for safety assessments. Dr De Jong worked at NLR for about eight years on various safety management topics before he joined DFS in 2007. In the consulting team, he is in charge of safety management and safety assessments are still his speciality. The focus is to estimate the potential negative consequences of new systems or new procedures and to classify and mitigate the risks. The safety expert provides expert advice to clients worldwide. At the moment, he is working on unmanned aircraft systems and their integration into civil air traffic. He creates concepts and safety assessments not only for air navigation service providers (ANSP), but also for government ministries, other commercial entities and manufacturers of drones.

Passion for languages

Dr De Jong is responsible for training safety managers from around the world. Some of his most important clients are the ANSPs of China and Hong Kong. This suits him well as one of his passions is Far Eastern culture. The Dutchman started learning Chinese three years ago by taking a language course in the city of Qingdao. “I can even speak a little bit already,” he says modestly. “The hard part is understanding people’s responses.” His Chinese clients enjoy his safety management seminars. “Client behaviour is different around the globe,” says Dr De Jong. Take, for instance, a group from Kazakhstan, who came across as being serious, to the point of seeming almost critical. “It took me a while to understand that they were just thinking through the details of how to implement our advice in their organisation and so they had a serious look on their faces.” Just like Sandra Stark, he is very happy to be able to work with lots of different cultures.

As a Dutchman in Germany, Dr De Jong was also confronted with a few cultural differences when he first arrived here. At the beginning, he was not sure when to address someone with their first name or with their surname. In Dutch, it is less common to be formal. “When I arrived at DFS, I called my boss by his first name. But I soon noticed that I was the only one on the team to do so.” However, this did not seem to harm his career at Aeronautical Solutions.
Active around the globe

**DFS is an attractive business partner in the international arena.** The company offers air traffic control systems as well as consulting and training services on the global market. And the plan is to expand.

Being able to have a commercial business was a new opportunity following the corporatisation of DFS in 1993 when the former public authority was transformed into a limited liability company, with the State remaining as sole shareholder. The newly formed company was able to start offering products and services on the market in addition to performing its sovereign task, the provision of air traffic control services.

The commercial business grew quickly. Thanks to the excellent reputation earned by DFS over the preceding decades, air navigation service providers around the world have chosen to transfer DFS expertise into their own organisations. In the 1990s, clients from Kuwait, Croatia and Romania were among the most important for DFS. The Croatians took advantage of the training opportunities available at the DFS Air Navigation Services Academy. Romania made use of DFS consulting services. In addition, DFS was an active consultant in the construction of the new airport for Athens.

After the turn of the millennium, the commercial business expanded further to Africa, Asia and South America. Today, the DFS division Aeronautical Solutions (AS) represents DFS on the commercial stage and is active around the globe. The most important strategic markets besides Europe are the Middle East and Asia. In the future, DFS wants to expand its commercial activities even more. It plans to set up local offices in Beijing, Southeast Asia and the Middle East. According to the deputy head of Aeronautical Solutions, Achim Eckermann, clients in these regions like to have a local contact. The commercial business is especially important for DFS as it is not subject to the constraints of the economic regulation regime prevailing in Europe. Each euro DFS can earn by selling a system, consulting and training services, or maintenance and repairs improves the overall financial health of the company. In 2013, DFS was able to generate revenue of EUR 24 million via its commercial business division, yielding profits of more than EUR 3 million. In 2014, the DFS Group was awarded the contract for the provision of tower services at Gatwick Airport in London. This is regarded as a particular success. A newly formed UK subsidiary of DFS will start providing these services as of spring 2016.

--- Sandra Ciupka ---

DFS commercial services
- Sales of systems (PHOENIX and AMAN)
- Consulting
- Training services
- Apron control services
- Maintenance and repair services
- Provision of radar, flight plan and ground situation data
- Air traffic control services (outside the area of sovereign tasks)
- Tower services at airports via the DFS subsidiary The Tower Company (TTC)
- Sales of aeronautical maps and charts, aeronautical information and pilot supplies via the DFS subsidiary R. Eisenschmidt GmbH
- FCS Flight Calibration Services GmbH
Mr Eckermann, DFS offers a range of services and products to its clients, everything from training and consulting to services and systems. Which area is the most important for your business?

ECKERMANN: It is safe to say that all areas are important for us. The largest potential for development is, however, in the field of systems and system-related support. The consulting business in general is very promising. We offer a wide range of consulting services. When it comes to training, new structures will have to be put in place to offer better prices.

DFS systems such as PHOENIX are in high demand. Are your products sold to your clients ‘off the shelf’, so to speak?

ECKERMANN: No, we tailor our products to meet each client’s individual needs and requirements. Often they are looking for a simple inexpensive version. In these cases, we sell a core module and the client pays a licence fee. This core module can be expanded as the client sees fit. Today, there are already a large number of PHOENIX installations around the world. Each one is unique, as they have all been customised to meet the client’s individual situation.

Who are your clients?

ECKERMANN: Our main clients are large air navigation service providers (ANSP) and manufacturers, but we also work with airport operators, consulting firms and supervisory authorities. We have also been called upon to advise EUROCONTROL and the European Union.

Who are your most important clients at the moment?

ECKERMANN: At the moment, we are delivering the PHOENIX system to the Canadian ANSP NAV CANADA. Before that, we had sold the same system to Brazil. We completed the project just in time for the World Cup in 2015. Recently, we also finished a large consulting project for the new airport in Doha, Qatar. At the moment, we are working together with the Saudi Arabian ANSP.

Your division has also been very active in Sudan, Kuwait and Romania.

ECKERMANN: Yes, that’s right. In the 1990s, we had a long period of advising the Romanian ANSP. And air navigation services had to be re-established in Kuwait after the Gulf War. DFS was a key player in the construction of the control centre there. In Sudan, we were very active for about two years between 2001 and 2003.

What makes DFS an attractive business partner for these countries?

ECKERMANN: We are well known and have an excellent reputation. Often, first contacts are made at trade fairs. At other
times, manufacturers contact us when they need an ANSP in their team to carry out a project.

Do you also look at a country’s political situation?

ECKERMANN: Of course. There have been requests from countries that it would have been inadvisable to work with, for example, countries where the German government had imposed an embargo. Besides that, we can’t accept contracts in countries where our employees’ safety cannot be ensured. Apart from these exceptions, you can say that over the twenty years of our existence, we have been involved all over the world.

Does working in an international context make your job appealing?

ECKERMANN: Yes, definitely. All of the people who work on our team are a special type of person: they are all very open-minded and truly interested in learning about other countries and cultures.

There are probably some people who are envious of the travelling you get to do.

ECKERMANN: While part of a business trip certainly includes being shown around a city or going out to eat, delivering the cost proposition clients demand means we actually have to be very good at keeping our trips efficient. Usually, you fly in the evening or night before the meeting the next day and then fly home that same night. This can be quite exhausting after a while. That is the reason we want to be more present on location in the future.

What do you mean exactly?

ECKERMANN: Our plan is to set up local offices or find local representatives. The offices will probably be located in Beijing and one in Southeast Asia as well as one in the Middle East – the exact locations still need to be determined. This is not just about avoiding travelling to and fro. Clients in these regions expect there to be a local contact.

Why Asia and the Middle East?

ECKERMANN: There is a lot of movement in these markets. They show strong growth and these countries have the financial means. Airports are being built on a grand scale, for example. And there is a need for expertise, or rather the ability to transfer expertise – that is where we come in – whether with systems or training and consulting services.

This means that the other regions of the world are less important for DFS?

ECKERMANN: No, of course there are other important markets; for example, South America. However, our chances there are very much dependent on the individual country. Africa is still emerging at the moment. There are enough areas where new projects would be a good thing, but they often lack the financial resources. Nevertheless, who can deny the potential in the market in Africa. There are two aspects to the European market. On the one hand, Europe, including Germany, is our core market. On the other hand, traffic growth is weak and in most countries, opportunities are rare as air navigation and other services are usually provided by the country’s own ANSP.

When was the last time you were really surprised while abroad?

ECKERMANN: That would be the time I was visiting a new control centre in Turkey. It really brought home to me how many legitimate solutions there are to the same problems. Initially, I was surprised that the ANSP had not integrated the various systems that controllers need for their work but had simply installed separate monitors for each system at the working position. My first reaction was that their method was not as good as ours but then I paused and realised the many advantages this set-up has. Systems can be exchanged or upgraded quickly and in an uncomplicated way. The solution doesn’t look as sleek as our working positions do, but it is pragmatic, efficient and adaptable. That really made a big impression on me.

So, your consultants need to have tact and sensitivity.

ECKERMANN: Exactly. At the end of the day you have to build a relationship with your client. We can’t just show up with the attitude that we know everything better and that we will show you how to do it. You need to pick the right mode of consultancy so that clients can best meet their own goals and objectives.

Interview by Christopher Belz and Sandra Ciupka
Fierce competition under the glare of the sun

Two DFS consultants faced a challenging environment when managing a project for airside operations at the new airport of Doha, the capital of the State of Qatar.

Not so very long ago, pearls were the main source of Qatar’s income. During the last century, however, the State accumulated considerable wealth from its oil and gas reserves. Today, the country has one of the world’s highest per-capita incomes. The ruling family is investing huge sums to improve the country’s education system and infrastructure – one of these investments was the construction of Hamad International Airport, the new Middle East hub in Qatar’s capital of Doha.

The airport was built on reclaimed land at a cost of $11 billion. DFS was one of the partners who contributed their technical expertise to accomplish this ambitious project. In July 2011, the Gulf State awarded DFS with a contract for operational airside readiness at the new airport. A few weeks later, in early August 2011, Detlef Schulz-Rückert and Moritz Manzel travelled to Qatar for the kick-off meeting as leaders of an international consortium. They both spent almost two and a half years heading the Qatar Civil Aviation Authority Operational Readiness, Activation and Transfer Programme (QCAA-ORAT) on behalf of DFS – Schulz-Rückert as Programme Director and head of the DFS unit in Qatar and Manzel as his assistant and specialist for air traffic control systems and procedures.

The project demanded all their expertise in project management, in the consultancy process and in working with clients to bring about the desired result that went well beyond simply supplying expertise or personnel resources. The positive result shows that they adopted the right approach: DFS succeeded in executing the project on time and without any complaints from the clients. “We are very proud that we have completed this project successfully under the prevailing conditions,” says the Programme Director. In the Gulf region, this cannot be taken for granted as, according to Schulz-Rückert, suppliers often have problems meeting the specific requirements of the Arab market.

The new Hamad International Airport in Doha, Qatar. Photo: Tim Griffith/HIA Doha
One of the core tasks of the project was the implementation of the applicable international safety and quality standards for meteorological services, aerodrome and approach control services, aeronautical information services as well as airport fire-fighting services at the old and the new airport. They also had to ensure that the deadlines and cost framework were adhered to. “Operational readiness meant that the airport had to be ready to start operations in compliance with all applicable standards,” says Schulz-Rückert. “It was our job to check if all of the individual work packages were fully compliant with international requirements, to ensure their implementation and to make the Qatar Civil Aviation Authority ready to handle airside operations at the new airport.” This meant working with the clients to develop their capabilities rather than simply transfer expertise.

Fierce competition

The DFS consultants were faced with fierce competition in Doha. “We were under constant observation by our clients and our competitors,” says the project manager. Our clients frequently changed deadlines or contractual performance requirements. We had to respond to these demands and had to deliver the results. In addition, there was tough competition from other providers. Each member of a meeting tried to outdo the others. “You really needed a high degree of personal assertiveness and good language skills. You had to convince others of your point of view with the professionalism of your presentations,” emphasises Schulz-Rückert. Hamad International Airport is now up and running. Such challenging projects demonstrate the range of skills required of companies hoping to compete for such contracts and deliver the results clients want. Schulz-Rückert thinks that Doha is the most important international project which DFS has managed so far: “We have proved that we can succeed in global competition.”

Fifty-eight degrees Celsius in the shade

Schulz-Rückert, a former air traffic controller and IT business administration graduate, has been working in air navigation services for 34 years and has gained a wealth of experience in the field of international projects. But the working conditions in the Gulf region were nevertheless hard for him: The DFS team spent eleven hours a day working at the construction site, often in blazing heat with temperatures rising to 58 degree Celsius in the shade. And then there was the long time away from family and friends. Trips back to Germany were rare. Some aspects of everyday life were another challenge. During the fasting month of Ramadan, for example, eating and drinking in public is prohibited between sunrise and sunset. Expats can only eat and drink in private among themselves. Schulz-Rückert and Manzel also had to get a special driving licence to be allowed to move around by car on the huge construction site.

The Doha assignment was the first major project for the 28-year-old after graduate school. He really did jump in at the deep end: Manzel set up the project office in Qatar, which was in charge of project planning, reporting, client invoicing, document management and updating the project documentation. He was also responsible for organisational matters, the preparation and follow-up of the numerous coordination meetings with the German partners of DFS, which included the construction company HOCHTIEF and the Munich Airport operator. “It was a huge amount of work and Moritz Manzel really did a great job.” Project manager Schulz-Rückert is full of praise for his young colleague: “He has developed into a real operational and technical expert.”

Fierce competition

Holger Matthies

ORAT project team (from left to right): Philip Dalmeijer, Cherry de Costa, Detlef Schulz-Rückert, Franz Sammueller, Okan Byram, George Szilagyi, Moritz Manzel, Dr Gunther Heidelmeyer, Maria Küchler, Theo Konstantinidis, Karl-Heinz Föller and Chryssa Plytaria. Photo: ORAT project
At the FIFA Brazil 2014 World Cup, Germany was successful on many fronts. The German soccer team under their head coach Jogi Löw made a big impression in the stadiums in Porto Alegre, Belo Horizonte and Rio de Janeiro thanks to their fighting spirit, speed, enthusiasm and ultimately a perfect goal in the hard-fought final against Argentina. More German-made perfection could be found in the technology in use far away from Estádio do Maracanã and its screaming fans. Unlike the fans, it was working silently in the background. The skies above Brazil benefited from a system developed by DFS that helps to make air traffic even safer.

**Flying not driving**

Aeroplanes are crucial in a country like Brazil, which takes up almost half of the area of the South American continent. The distances are huge. Encompassing 8.5 million square kilometres, Brazil is almost as large as the United States of America. While the US network of paved roads and
Highways stretch about 4.2 million kilometres, Brazil has about 200,000 kilometres of paved roads. As the games of the World Cup were played at locations spread over the whole country, players, coaches, officials, fans and journalists had to rely on aeroplanes to get them from place to place. According to DECEA, there were 18 million passengers flying in Brazilian airspace between the opening ceremony and the final on 15 July 2014.

While controlling this huge area – in addition to the 8.5 million square kilometres over land, DECEA is also responsible for an airspace of 13.5 million square kilometres above the ocean – much more reliable data were available to the air traffic controllers than previously. This was thanks to the DFS system PHOENIX. The core component is a multisensor tracker that processes the signals from various radar stations. Together with two further components, it ensures that air traffic controllers have a consistent picture of the air situation on their screens.
Why PHOENIX?

Brazil chose PHOENIX because of the problems they were having with radar data quality due to the size of the country. To achieve radar coverage similar to that in Germany, for example, the country would have to erect 500 additional radar stations to the 80 already in existence – well beyond what would be feasible. So instead, the new system takes advantage of the maximum range of each existing radar station. While in Germany the range of a radar station reaches up to 150 nautical miles, in Brazil they have to reach 250 nautical miles.

Another difference compared to Germany is that large parts of airspace are not covered by two or more radar stations but just by one. This has repercussions on the accuracy of the data. In the past, radar targets sometimes just vanished from the controller’s screen. At other times, the targets appeared twice or jumped unexpectedly from one spot to another when the data from two radar stations did not coincide.

The Brazilians are not the only ones who have been won over by the system.

The PHOENIX multisensor tracker helps eliminate these types of errors. Erroneous radar tracks are eliminated and accuracy is improved significantly. After the Brazilians had tested PHOENIX for several months, they were won over and the contract was signed at the end of 2009. Subsequently, the system provider ATECH integrated PHOENIX into the air traffic control system of DECEA.

The Brazilians are not the only ones who have been won over by the system. Many customers around the globe have acquired PHOENIX from DFS. The Netherlands air navigation service provider LVNL, for example, uses PHOENIX as a backup system in its contingency control centre. At the moment, the Canadian air navigation service provider is integrating the tracker into their overall system landscape at all seven control centres. For this purpose, an additional feature called Safety Net is being added to the system which provides a range of alert functions. The system draws the controller’s attention to infringements of separation minima or when aircraft come too close to the ground, obstacles or restricted areas, for example.

Deployed around the world

PHOENIX is also used for tower operations, not just control centres. In Thailand, for instance, the Royal Thai Air Force uses the system in its control towers. Kazakhstan uses it, too. In the contingency tower at Almaty International Airport, the system has been deployed since 2012. In 2015, the tower at Taldykorgan Airport will also install PHOENIX. The Italian air navigation service provider has been following the development of the system with interest. Their plan is to install a PHOENIX test system at Milano Malpensa Airport to display the ground situation of the airport.

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Christopher Belz

PHOENIX can be used to process and display radar data in area control, in approach and aerodrome control as well as in ground control and taxying guidance. The core component of the system is the high-performance tracker which can process sensor and position data from up to 50 sensors and simultaneously store and process up to 3,000 tracks. Both the air and ground situation can be displayed at the working positions, which is an advantage especially for tower controllers. The air traffic controller can zoom in from the air to the ground situation and has a direct overview of the necessary information about the aircraft in the air and on the manoeuvring area. Thanks to its modular structure, PHOENIX can be adapted for use in a variety of environments.

The system was first developed as a fallback system for DFS control centres and towers. In Germany, the system supports tower controllers at 30 airports. In addition, PHOENIX is integrated into 800 working positions at all DFS control centres as a fallback solution. DFS has continuously expanded the PHOENIX product family. It provides, for example, a turn-key solution for control towers with integrated safety functions and a flight data processing system.
DFS is not only responsible for en-route control in German airspace and for arrivals and departures at the 16 international airports in Germany: Via its subsidiary The Tower Company, it also controls traffic at ten regional airports in Germany and soon in London, England, as well.

Airports often undergo major changes, experiencing dramatic growth spurts because of political, economic and social forces. Dortmund Airport, located in the Ruhr region, the historic industrial heart of Germany, provides an illustrative example. In fact, the airport is something of a latecomer. The grass runway was not replaced by tarmac until 1974 and the first scheduled air service only began in 1979. But, it has grown.

This is thanks to steady expansion and the boom of low-cost carriers in the mid-1990s. Airlines like Easyjet, Ryanair, Germanwings, Vueling or Wizz Air ensured a dramatic rise – and pushed German regional airports like Dortmund, when measured by passenger numbers, into a higher league. With almost 20,000 take-offs and landings and more than two million passengers in 2013, Dortmund has just about reached the same level as the international airports of Dresden, Münster/Osnabrück, Saarbrücken and has surpassed Erfurt Airport.

Germany has designated 16 airports as international airports and, for these, DFS is responsible for controlling the approximately two million take-offs and landings per year. DFS also provides safety at many regional airports via its subsidiary The Tower Company (TTC). Regional in this case means that they are not officially designated as international airports under German law. Dortmund Airport was one of the first TTC customers. Today, the company that was founded nine years ago...
DFS subsidiaries 

The clients of TTC
- Dortmund Airport (since 1 May 2006)
- Niederrhein-Weeze Airport (since 1 July 2006)
- Leipzig-Altenburg Airport (since 1 July 2006)
- Frankfurt-Hahn Airport (since 22 June 2007)
- Karlsruhe/Baden-Baden Airport (since 22 June 2007)
- Magdeburg/Cochstedt Airport (since 1 July 2010)
- Memmingen Airport (since 22 June 2007)
- Mönchengladbach Airport (since 22 June 2007)
- Paderborn-Lippstadt Airport (since 22 June 2007)
- Lahr Airport (since October 2013)

controls air traffic at ten regional airports in Germany.

The trigger for the creation of TTC and thus the change in the air traffic control landscape was an EU regulation that came into force in 2006. It changed the environment for both airports and ANSPs alike.

This regulation implied that air traffic control at regional airports could no longer be carried out by air traffic controllers who were entrusted with their duties individually and acted under the functional supervision of DFS. Instead, air traffic control had to be provided by certified companies.

As a consequence, the German legislator decided to open the market to competition for all regional airports. All certified ANSPs in Europe now had the right to tender for the provision of air traffic control at these regional airports. To be able to
offer the regional airports a service that was tailored to their needs, DFS founded an independent company – TTC.

This company faced competition right from the start. Some airports decided to obtain certification themselves and carry out their own air traffic control services. Others awarded their air traffic control services to the Austrian ANSP Austro Control.

TTC has been able to survive and prosper in this competitive landscape. Among the ten regional airports TTC is currently responsible for, there are both small airports as well as five of the largest regional airports in Germany. In addition to Dortmund, these are the airports of Frankfurt-Hahn, Niederrhein, Karlsruhe and Paderborn. Gauged by traffic and passenger numbers, TTC is the market leader in Germany.

**UK subsidiary**

The degree to which airports are allowed to put out air traffic control to tender varies as much in Europe as it does around the world. In reality, most States will not permit real competition to their national ANSP. In Europe, only Spain put out the provision of air traffic control at their towers to tender. When this happened, TTC joined forces with a Spanish partner and put in an offer which was unfortunately not taken up. The DFS subsidiary has, however, now been chosen to provide tower services at London Gatwick Airport. Soon, the UK subsidiary of TTC will be controlling flights at Gatwick. NATS is scheduled to hand over aerodrome control of London’s second largest airport in the spring of 2016.

**Gatwick control tower**

With its 245,000 aircraft movements per year, Gatwick Airport, located 40 kilometres south of London, is the busiest single-runway airport in the world. It is also the second largest airport in the UK following Heathrow. The airport operator has chosen Air Navigation Solutions Ltd., the UK subsidiary of The Tower Company, to control traffic from the tower at the airport. The decision was made in the late summer of 2014.

Until now, NATS has provided tower and CNS services at Gatwick. According to the airport operator Gatwick Airport Ltd., a wide range of factors were critical in deciding on who would get the contract – not just the price – things like safety and innovativeness also played an important role. The DFS Group’s bid was convincing across the board. At the end of December 2014, the contract was signed and operations will begin in March 2016.

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*Christopher Belz*
It all began with the world’s very first aeronautical chart in 1909. It was produced for airships, also known as Zeppelins. The creator of the chart, a lieutenant-colonel, already had a publishing house in mind to market the charts around the whole world, the firm Rudolf Eisenschmidt. Today, the world’s oldest publisher of aeronautical charts is a company of the DFS Group.

Back in 1909, Eisenschmidt already had a flourishing business in Berlin with 29 years of experience producing general-purpose maps. In the same year, the aeronautical chart made its debut at the first International Airship Exhibition (Internationale Luftschifffahrt-Ausstellung) in Frankfurt. The exhibition lasted a whole 100 days, from July to October. A special chart just for aviation was an entirely new idea and went down in aviation history.

Another new product came in 1928. Eisenschmidt published the first aeronautical information publication for Germany, which included approach charts for aerodromes. After World War II, general aviation was banned in Germany. As a consequence, Eisenschmidt went back to publishing just general-purpose maps. Then in 1961, the German Federal Administration of Air Navigation Services selected Eisenschmidt to be the sales agency for its official publications for pilots because of its history of expertise in sales and aviation products. Today, the company offers a range of almost 4,000 products and is located at the largest German general aviation airport in Egelsbach, just south of Frankfurt. At 134 years old, it is the oldest aviation publisher in the world. Since July 2013, it has been part of the DFS Group.

Aeronautical charts have remained the most important products Eisenschmidt sells – and with which they continue to write history. “We were the first ones worldwide to introduce the standard ICAO aeronautical charts as a smartphone app for VFR pilots,” says Jan-Eric Putze, head of R. Eisenschmidt GmbH. Back then, the 42-year-old was responsible for sales and distribution for general and business aviation at DFS. By chance, he came across a classified ad: “Aviation specialty shop in Egelsbach for sale.” At that time, DFS had an external logistics firm handling most of the sales of aeronautical publications and aviation products. The ad came at just the right time as DFS was interested in having the distribution of products be handled within the company itself. So, DFS bought Eisenschmidt and made it part of the DFS subsidiary International Business Services. Putze heads the company together with the new managing director Achim Eckermann, the long-time head of sales in the DFS division Aeronautical Solutions.

Jan-Eric Putze, himself a pilot, heads the operation of Eisenschmidt.
The road to optimal management of sales has not been easy. “It is somewhat akin to open heart surgery,” explains Putze when talking about the past year. Product portfolios, logistics departments, the web shops of both companies had to be combined and integrated. And a completely new merchandise planning and control system had to be created – all of this while continuing normal business operations of distribution and shipping. “After all, we are the main point of contact for general aviation in Germany,” says Putze. This includes 35,000 pilots with 42,000 licences flying propeller aeroplanes, ultralights, hot air balloons or sailplanes in Germany.

The aviation bible

Putze is himself a pilot as well as a flight instructor. This background makes him very aware of what his customers are looking for. The acquisition of Eisenschmidt is part of the DFS plan to expand its commercial business. Besides providing official aeronautical information, the new webshop boasts a large selection of items pilots need for flying: log books, navigation instruments, headsets, flight bags, torchlights, training and flight planning software, a yoke mount for tablets, life jackets and fire extinguishers. In short, everything you need to conduct flight operations and to train pilots. About 4,000 products are available.

The bread-and-butter business, however, is the sale of products complying with the Standards and Recommended Practices of the International Civil Aviation Organisation (ICAO), such as 1:500,000 scale visual operation charts for general aviation. Or the bible of the aviation world – the aeronautical information publication (AIP). Both the AIP IFR and VFR for Germany are published in German and English and contain all important regulations and information for aviation in the Federal Republic of Germany. The current German AIP IFR comprises a total of three volumes, or 3,498 pages and 128 folded charts. The edition for VFR has an impressive 1,874 pages for 600 aerodromes in Germany. It is a good idea to have the pages you need at hand in paper form to be on the safe side. In Germany, each Federal State has its own aviation rules and laws. Only four of the 16 German States recognise the electronic version of the AIP. Amendments, supplements and aeronautical information circulars are published every four weeks to keep the AIP up-to-date. The number of printed pages is in the millions. In 2013, a total of 1.1 million IFR pages were printed and over 4.5 million pages were sent to VFR pilots, flight instructors and flying schools.

We are going to continue to modernise our portfolio.

Eisenschmidt, though a traditional company, is exploring further potential behind digital information. “I am sure that someday, there will only be electronic aeronautical maps and charts in the cockpit,” says Putze. The licensing business is also creating opportunities. Eisenschmidt makes their digital data available to manufacturers of GPS devices and navigation software. Social media provide the opportunity to interact with customers. Our books for learning radiotelephony come with software that uses modern speech recognition. The area of training is a flourishing market: “We are going to continue to modernise our portfolio,” says Putze. Interesting innovations will be presented at the International Trade Fair for General Aviation AERO at Lake Constance in April 2015.

Rüdiger Mandry

Salesroom at Egelsbach Airport: A member of the sales staff assists a customer. Photos: Melanie Bauer
Optimised approaches lead to fuel savings

Together with a number of airlines, DFS has investigated optimised approach profiles at three airports in Germany. For the first time, a wide range of data was available that allowed actual fuel savings to be calculated.
Optimised approaches are a relatively easy way for airlines to make significant reductions in fuel consumption. This is the provisional result of the trial operations carried out by the airlines and DFS at the end of 2013 under the auspices of the Optimised Flying working group at Hannover, Frankfurt and Munich airports. The working group was set up by DFS together with airlines (Air Berlin, Condor, Lufthansa, Tuifly and Germania) and the German Airline Association (BDF) to work on operational enhancements. The airlines requested that, as a first step, the parties involved should focus on the descent profile during approach to land.

To deliver results as quickly as possible, approach procedures were left unchanged at the beginning. Pilots and air traffic controllers, however, were intensively briefed on the trial operations and were encouraged to request/offer the fuel-saving approach as often as they could. The goal was to keep aircraft at cruising level as long as possible, where they use the least amount of fuel, before transitioning directly to continuous descent. This means that level flight segments are reduced, that engines perform optimally and that fuel consumption is kept as low as possible. The International Civil Aviation Organisation ICAO uses the term continuous descent operations, CDO, for this procedure.

The CDO trials started in Munich, with the local DFS unit and Lufthansa working together. The trials began with the A320 family before being extended to include Lufthansa’s long-haul services, Lufthansa CityLine and the Air Berlin fleet. Subsequently, the trials were extended to include all four DFS control centres and additional airlines. The control centres in Bremen (responsible for Hannover Airport) and Langen (Frankfurt Airport) joined the Munich unit. The Upper Area Control Centre in Karlsruhe was also involved.

Since the trial began, the proportion of CDO approaches on selected routes has been boosted by two to three times. By the end of June 2014, an average of one in three approaches at Munich Airport met the CDO criteria when landing from the west, while landing direction east came in at 12 percent. At Frankfurt Airport, a 14-percent share in the use of CDO was achieved for flights via the NELLI waypoint located to the south near Stuttgart. An alternative route using the ASPAT waypoint over the Black Forest is also in use, with 44 percent having an optimised descent profile. At Hannover Airport, 20 percent use CDO.

CDO, however, does bump against its limitations as the airspace gets more complex and the traffic volume rises. If approaching aircraft have to be spaced at close intervals or if air traffic controllers need to coordinate approaches and departures on crossing routes, it is not possible to offer continuous descent approaches. The descent capabilities of the various aircraft types vary so much that adequate separation between arrivals and departures would no longer be ensured.

To offer CDO more often, DFS has been testing a new idea in Munich. Along the approach routes, altitude ‘windows’ have been established so that pilots can choose their own altitude within these limits. These bounds make CDO easier to plan for air traffic controllers. Used in this manner, CDO can also be offered at medium traffic volumes not just at low ones. After the success at Munich Airport, the idea was taken on by Frankfurt Airport, too. Following tests in the simulator, DFS will collect data using this method in a trial later this year.

Such optimised profiles offer airlines significant cost savings. By starting the descent as late as possible and keeping it as continuous as possible, airlines can save over 100 kg of fuel per flight. When multiplied by the large amount of traffic, a hefty sum results. Within only one month, 20 tonnes of fuel were saved during the CDO trial operations at the airports of Munich, Hannover and Frankfurt.

The success has led to the trial being extended until further notice at the airports of Frankfurt and Munich. Hannover Airport has already switched from the trial phase to regular operations.

Christopher Belz

How much fuel do continuous descent operations (CDO) save?

The analysis of the fuel savings which DFS conducted with the Technical University of Dresden (TU Dresden) provided useful real-world data. Due to strict data protection laws in Germany, it is not possible to use actual consumption values. In the past, the data had to come from flight simulations. The present results, however, are based on actual flight profiles and a broad range of data. The approaches which met the CDO criteria were separated from the other profiles, while the TU Dresden developed a model which was validated with real data to determine fuel consumption.
Automated software tests introduced

DFS has taken another step in its endeavours to remain at the cutting edge of technology: At the DFS centres, tests of air traffic control software have now been automated.

Before any updates to components of an air traffic control system can be installed, the software has to be tested before it goes live. The tests are conducted on a reference system, basically a copy of the operational systems. Operations are simulated in this test environment to check if the system is working as desired. If everything functions smoothly, the new system is allowed to go live. Up to ten system updates are installed in the DFS control centres each year. To test these updates, 120 procedures with 900 test cases and 81,000 test steps need to be worked through. Now, parts of this test can be run automatically, thanks to a tool acquired from a company called SQS Software Quality Systems. This tool enables automated tests to be set up and run. The test results can be shown graphically.

The test procedure is entered into the computer and the SQS tool operates the system just as if an air traffic controller or an engineer were making entries. Staff no longer have to spend their time on routine tests. The tool is especially suitable when it comes to carrying out regression tests, i.e. those tests that have to be repeated again and again. One particular advantage is that tests can be carried out at night without having to be supervised by staff.

The ability to carry out tests automatically has made DFS a leader in this sector in Europe.

DFS announces new charges for 2015

Despite the significant rise in the costs for financing occupational pensions, DFS was able to keep the increase in air navigation charges for 2015 at a lower level than expected.

DFS will lower terminal charges in 2015 by more than five percent, while en-route charges will rise by 14 percent. The rise is primarily brought about by the decline in traffic volume. In the first reference period (2012 to 2014), the traffic forecast drawn up beforehand turned out to be much too optimistic. This led to lower charges, which benefited airlines. The forecast for the second reference period (2015 to 2019) better reflects current reality. This can be seen in the significantly higher en-route charges. The background is the charging regime set up on the initiative of the European Commission back in 2012. Under this regime, air navigation charges are no longer set by the air navigation service provider itself but by each national supervisory authority. The regime is based on traffic forecasts, which are drawn up at the beginning of each reference period.

Originally, DFS expected it would have to considerably raise the charges for both terminal and en-route services. The low interest rates prevailing at the moment are having a negative impact on the financing of occupational pensions. DFS, as many other companies, are being forced by the historically low interest rates to raise the provisions for pensions to ensure that they meet their obligations in the years to come. In 2013, DFS started a comprehensive efficiency programme to reduce the cost base by EUR 100 million by the end of the second reference period. This, however, was not enough to offset the higher costs associated with occupational pensions.

The Federal Government of Germany has now taken steps to ensure that these costs are not passed on to the airlines one to one. It has declared itself ready to contribute a total of EUR 500 million additional equity in DFS over the next five years. This money will be passed on directly to the airlines in the form of lower charges. The Federal Government will transfer EUR 50 million this year, followed by EUR 112.5 million per year in the subsequent years. This will result in savings of EUR 100 million on average per year for the airlines.
Inside DFS

“There is a lot of information that private pilots need to master when it comes to flight safety. That’s why we are so pleased that so many pilots see this day as a platform to exchange information,” says Ralf Diedrich, head of Customer Relations at DFS.

The interest in the event has increased so much that more buildings and rooms around the DFS Campus had to be taken over this year. Previously held only directly in the DFS Headquarters building, last year the Air Navigation Services Academy located directly on site also had to be used. The DFS flight information service (FIS) set up its simulator in front of the large lecture hall at the Academy and it was crowded from the beginning to the end of the day. A series of lectures and talks were also offered. Two in particular resulted in a full house: one on changes to airspace structure brought about by SERA (Standardised European Rules of the Air) and the other on the insights gained in 2014 on awareness issues. These two were so popular that many had to stand or sit on the floor. Without exception, all talks held in all the available conference rooms proved to be popular. Experts from across DFS held talks, particularly on issues relating to flying under visual flight rules (VFR).

Below you can find some of the topics covered to give you a taste of the range of issues dealt with: tasks and responsibilities of military air traffic control, aeronautical data management, pre-flight information available on the internet on the AIS portal, VFR flights in Europe including customs and entry requirements, aeronautical charts, planning return flights using the services offered by the German Meteorological Service (DWD) and airspaces subject to clearance in Germany.

Holger Matthies

Fourth DFS Pilots’ Day

November 2014 saw the fourth DFS Pilots’ Day at the DFS Campus in Langen. The Pilots’ Day gives private pilots the chance to spend a day getting to know DFS – how it works and what it has to offer. This year more than 500 pilots took up the invitation.

All the information pilots need: Astrid Kleinwächter from the Aeronautical Solutions division at a stand during the Pilots’ Day.