

LUFTHANSA TECHNIK BUILDS A DIGITAL FOUNDATION WITH RED HAT

Lufthansa Technik

SOFTWARE

Red Hat® OpenShift
Container Platform

Red Hat Enterprise Linux®

Red Hat JBoss® Enterprise
Application Platform

Red Hat JBoss Data Grid

Red Hat JBoss Fuse

Red Hat Gluster® Storage

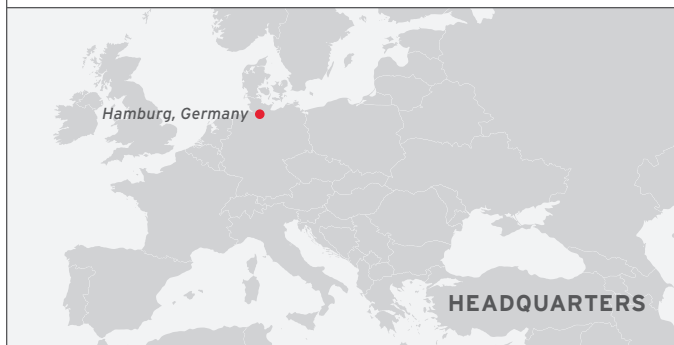
Red Hat 3scale
API Management

Red Hat Ansible® Tower

PARTNER

Microsoft

Lufthansa Technik, the world's largest independent provider of airline maintenance, repair, and overhaul (MRO) services, sought to create a digital platform for the aviation industry, AVIATAR. To support its development and operation, the company created a hybrid cloud infrastructure based on enterprise open source software from Red Hat. The AVIATAR team can now use agile DevOps approaches, automation, internal and third-party integration, and self-service capabilities to quickly iterate based on data and feedback. As a result, Lufthansa Technik provides an innovative digital platform that helps the world's airlines optimize their operations.



AVIATION

26,000+ EMPLOYEES
35 SUBSIDIARIES
1,700 AIRCRAFT
INSPECTIONS DAILY

“The moment we have an idea, we can start building the product. This agility is something we have never experienced before.”

TOBIAS MOHR
HEAD OF TECHNOLOGY AND INFRASTRUCTURE,
AVIATAR, LUFTHANSA TECHNIK

BENEFITS

- Faster application workflows with self-service capabilities, automation, and agile DevOps processes
- Greater flexibility through improved integration between internal infrastructure and third-party solutions
- Anticipates significant savings for participating airlines on maintenance, repair, and overhaul (MRO)—equating to millions of euros



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“Relying on open source from Red Hat gave us the opportunity to increase speed and development, because behind open source technology there’s always a big community evolving the product very fast compared to proprietary technology.”

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HEAD OF TECHNOLOGY AND
INFRASTRUCTURE, AVIATAR,
LUFTHANSA TECHNIK

IMPROVING AIRLINE TECHNICAL OPERATIONS

Customer and passenger expectations in the airline industry are incredibly high, making delays and cancellations costly—both financially and in terms of brand image. Predictive analytics is key to avoiding these service interruptions by helping airlines use data to better organize and schedule maintenance events.

Lufthansa Technik is the world’s largest independent provider of maintenance, repair, and overhaul (MRO) services for commercial airlines, as well as head of state and VIP jets. To create a solution to these industry challenges, the company’s application development and UX teams began a collaborative project with data scientists, airplane engineers, and other experts. The solution, AVIATAR, would support digital products for material planners, engineers, and other end users in development and operations—helping them better predict events and, as a result, save time and money.

To create and support AVIATAR, the Lufthansa Technik team needed a flexible, scalable environment that could run multiple applications using a shared repository of industry data, such as aircraft sensor data, as well as operational data, such as flight plans and delay information. The team also sought to gradually move from on-premise to cloud infrastructure.

“Keeping our customers’ data stored separately from the Lufthansa infrastructure is key to remaining open and neutral,” said Tobias Mohr, head of technology and infrastructure for AVIATAR at Lufthansa Technik.

The team also decided to shift to an agile, DevOps work approach. “We wanted to deliver new features several times a day, generating feedback very quickly,” said Mohr.

BUILDING A CLOUD PLATFORM WITH OPEN SOURCE

Lufthansa Technik sought to use open source technology and shift to a hybrid cloud approach to support the creation and operation of AVIATAR. “There are lots of similarities between the open approach of AVIATAR and the open source model. We want to be the open market player, not the proprietary one. We want to help the industry. That goal is very similar to what the open source movement wants to achieve,” said Johannes Hansen, senior director of application development/UX for AVIATAR at Lufthansa Technik.

Based on previous experience, the team quickly decided to deploy enterprise open source software from Red Hat, including:

- **Red Hat Enterprise Linux** to create a robust, enterprise-grade Linux and container technology foundation.
- **Red Hat OpenShift Container Platform**, running on Microsoft Azure, to support the team’s DevOps and continuous improvement approaches, as well as build, deploy, run, and integrate new infrastructure components.
- **Red Hat Gluster Storage** to provide flexible, scalable, cluster-based storage for OpenShift Container Platform.
- **Red Hat JBoss Enterprise Application Platform**—running in a Linux virtual machine (VM) and OpenShift—to provide a back end for AVIATAR Java™ and Java Enterprise Edition (Java EE) applications.
- **Red Hat JBoss Data Grid**, to quickly store and retrieve in-memory data—as well as perform simultaneous computation and querying—for key predictive analytics capabilities.

- **Red Hat JBoss Fuse** to integrate internal and third-party data storage sources.
- **Red Hat 3scale API Management** to offer protected self-service application program interface (API) management capabilities to developers.
- **Red Hat Ansible Tower** to create and run reusable infrastructure code and automate provisioning tasks for Azure, Gluster, and other infrastructure components.

The AVIATAR team collaborated with Microsoft and Red Hat to create its new hybrid cloud environment. The initial version of the platform was launched in just 100 days. It now runs a growing number of applications and predictive algorithms, helping airlines prevent disruptions to their operations.

The solution debuted at the 2017 MRO Americas Conference to a positive reception. As a result of its success with open source infrastructure, Lufthansa Technik achieved a 2018 Red Hat Innovation Award.

SPEEDING APPLICATION DEVELOPMENT AND DELIVERY

MORE EFFICIENT DEVOPS WORK

For Lufthansa Technik's DevOps teams, one of the key benefits of adopting a new hybrid cloud infrastructure built with Red Hat software is the ease of collaboration on new AVIATAR features and applications, using capabilities from automation to self-service provisioning.

Red Hat Ansible Tower lets DevOps team members provision environments and resources automatically using reusable code and infrastructure components—without extensive infrastructure process expertise. For example, data scientists can now flexibly spin up massive compute clusters as needed. This efficiency helps the AVIATAR DevOps teams rapidly create test environments to gain feedback.

"If we had infrastructure that was set up manually and wanted to change something, we had to wait for the person who implemented it. Instead, we have infrastructure as code, reproducible at any time. Infrastructure teams can just launch Ansible Playbooks for configuration and focus on work that's really important or interesting," said Thorsten Pohl, architect and product owner for AVIATAR. "Ansible automates everything from setting up Azure VMs and services to installing OpenShift clusters, Gluster storage, or third-party services."

With reusable, modular, microservices-based infrastructure components—supported by automatically scaled, container-native storage from Red Hat Gluster Storage and rapid data retrieval by Red Hat JBoss Data Grid—AVIATAR can deliver new applications in weeks, rather than months or years. "The moment we have an idea, we can start building the product. This agility is something we have never experienced before," said Mohr.

As a result of these improvements, the AVIATAR team can make changes without service disruption and quickly adapt to shifting demand, ensuring end users gain access to the predictive data they need, when they need it.

IMPROVED FLEXIBILITY AND INTEGRATION

By using enterprise open source software from Red Hat, the AVIATAR team has not only improved internal collaboration, but also collaboration with industry organizations, open source technology communities, and other external parties. "The aviation industry is rather proprietary. AVIATAR offers an open and neutral technology platform that invites other industry players to bring in their ideas," said Mohr. "Behind open source technology there's always a big community evolving the product very fast compared to proprietary technology."



CUSTOMER CASE STUDY Lufthansa Technik builds its digital foundation with Red Hat

ABOUT RED HAT

Red Hat is the world's leading provider of open source software solutions, using a community-powered approach to provide reliable and high-performing cloud, Linux, middleware, storage, and virtualization technologies.

Red Hat also offers award-winning support, training, and consulting services. As a connective hub in a global network of enterprises, partners, and open source communities, Red Hat helps create relevant, innovative technologies that liberate resources for growth and prepare customers for the future of IT.

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Red Hat products help AVIATAR gain the flexibility to integrate with partners or customers, regardless of their technology. Using open standards and flexible solutions—such as JBoss Fuse, 3scale API gateways, and Red Hat single sign-on (SSO)—makes providing applications on the AVIATAR platform easy and reliable. Customers and partners can use and offer their preferred solutions and tools while maintaining a uniform user experience. 3scale API Management controls access to the company's APIs to support safer integration and collaboration with external developers. By deploying apps in containers and using container-native solutions, Lufthansa Technik can offer AVIATAR's capabilities in any environment.

"We can collaborate with third-party developers who are very specialized in other areas of aviation—for example, operations, fuel efficiency, or catering," said Hansen. "Customers can choose between different solutions running on AVIATAR and, if they have favorite providers, work with them to easily integrate and run on AVIATAR."

These improvements mean the AVIATAR team can more effectively collaborate to build services that meet its end users' demands for better maintenance predictions and other insights.

ANTICIPATED FINANCIAL SAVINGS

With its Red Hat infrastructure supporting AVIATAR, Lufthansa Technik anticipates significant reductions in MRO costs for participating airlines—equating to millions of euros per airline.

"With tight schedules and high passenger expectations, the costs directly related to delayed flights are growing quickly for the average airline," said Hansen. "We are taking out a huge chunk of those costs with AVIATAR."

FINDING NEW WAYS TO INNOVATE

Lufthansa Technik plans to continue improving AVIATAR by automating technical processes and expanding the solution's use cases, helping airlines continue to gain insight from digital data analysis.

"We have a large use case pipeline based on decades of engineering experience. We're going to deploy lots of new applications solving different needs on top of AVIATAR," said Hansen. "The list grows longer every day, because we're talking to and co-creating with our customers. We're incorporating a lot of user feedback."

Using its new agile, flexible, hybrid cloud infrastructure, the company can focus on work that supports its core goal: improving the experience of airline passengers. "What keeps us motivated when working on AVIATAR is that passengers get home on time and can spend more time with their families," said Hansen. "We're really improving the passenger experience, and that's something to be proud of."

ABOUT LUFTHANSA TECHNIK

Lufthansa Technik is the leading provider of maintenance, repair, overhaul, and modification services for civil aircraft. With tailored maintenance programs and state-of-the-art repair methods, Lufthansa Technik ensures the unbroken reliability and availability of its customers' fleets.

Lufthansa Technik is an internationally licensed maintenance, production, and development organization. The seven business units of Lufthansa Technik (Maintenance, Overhaul, Component Services, Engine Services, VIP Services, Landing Gear Services, and Original Equipment Innovation) serve about 800 customers worldwide.