HEXAGON

Case Study

Lufthansa Systems Relies on Data Visualization for Real-Time Updates Inflight

Although airlines need to minimize their costs and emissions, ensuring passenger safety remains paramount. With Lido/Flight WINDS, visualization software that is easy to use, Lufthansa Systems helps their pilots steer clear of costly delays and obstacles while inflight.

Climate, High Air Traffic Density Push for Change

Lufthansa Systems, a subsidiary of Lufthansa Airlines, started supporting the operational needs of airlines in 1995.

The weather along the U. S. East Coast is generally unpredictable; storms can develop within hours. Airlines that could avoid diversions because of storm fronts would save tens of thousands of dollars each time. With Lido/Flight WINDS, dispatchers can react to storm predictions to alert pilots who would otherwise be taken by surprise.

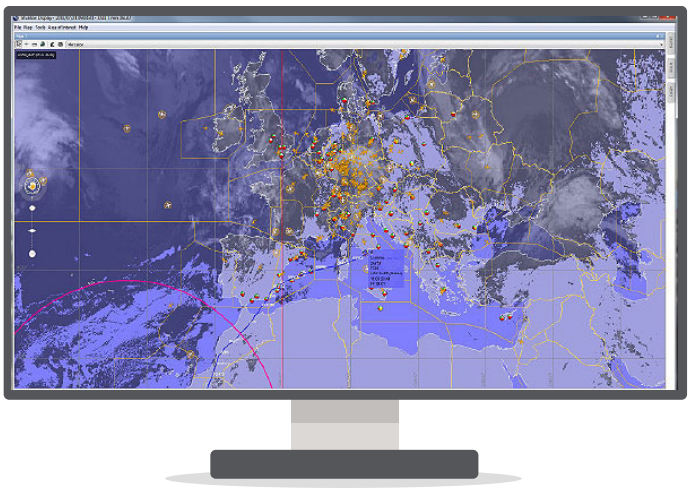
Supported by the dispatcher and hours ahead of landing, pilots can make minor adjustments to correct their course. They arrive with minimum delay at the destination airport as soon as possible after the storm. Without this technology, aircraft might be forced to land far away and re-route passengers to their final destinations. Global warming and higher traffic density makes this scenario increasingly probable. That's why Lufthansa Systems decided to extend their product, Lido/Flight, with a decision-support system called WINDS (Weather Information Decision Support).

Leaders wanted to integrate more dynamic data, so pilots would know about changes in conditions while in the air. Lufthansa Systems needed Luciad visualization technology. "Today we can display 70 different overlay maps," says Christoph Krüger, Lead Architect of Lido.

Lido/Flight WINDS pulls data from many more sources than traditional flight planning solutions. Flight crews benefit from information about weather, back-ups at airports, regulations, and nearby military operations, as well as information about environmental threats such as volcanic ash.

In the past, pilots received flight plans and confirmed with air traffic control as many as three hours before their flights. With Lido/Flight WINDS, pilots receive real-time information about potential impediments in their path. Professionals on the ground simultaneously monitor planes and data from Lido/Flight WINDS. They relay information about situations affecting flight safety and fuel consumption of the aircraft.

Today, before a plane leaves the ground, a dispatcher provides trajectory optimization, fuel calculation, and a briefing on weather and regulations. Optimization usually takes just 30 seconds thanks to the power of Lido/Flight WINDS. The dynamic integration of aeronautical data provides pilots with superior route optimization.



Lufthansa Systems uses Luciad technology to map aircraft positions and georeferenced data to support.

"During optimization, we not only take into account geospatial data such as way points, we also take into account geo-references such as air pressure, air temperature, humidity, fuel prices and overflight charges," Krüger says.

Another benefit - the availability of better data has improved job satisfaction for flight dispatchers. They once were flight - monitors. Today, they are problem-solvers. "With Lido/Flight WINDS, the dispatcher gets alerts and detailed information allowing him to give the best possible advice, using the very best visualization software and integrating data from several sources," Krüger says. "The system of airways, way points, and regulations is far too complicated for human beings, so we need computers to do it."

One of the greatest advantages of Lido/Flight WINDS is the ability to predict challenges.

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>
> **Christoph Krüger,**
> Lead Architect of Lido

Visualization Technology Handles Dynamic Data

When the need for including more dynamic data in its flight planning solution became evident, Lufthansa Systems didn't want to start from scratch. Their company leadership liked Lockheed Martin's WINDS product. In 2011, they began developing their own solution that used the Luciad technology. Today, Lido/Flight WINDS gives pilots and their flight crews 11 million position updates per day. Lufthansa Systems chose Luciad technology because it best provided the geospatial situational awareness solution that they wanted. This technology leads the world in providing geospatial solutions for the aviation and defense industries. Hexagon's Geospatialdivision clients that use their Luciad Portfolio include Boeing, Airbus, NATO, and Eurocontrol.

Lufthansa Systems exploits the power of this visualization technology, including:

- The ability to combine any number of data layers and to connect to any data source
- Visualization in 2D, 3D and even 4D
- Mapping the factor of time
- The power to handle dynamic data such as video feeds and weather data
- GPU-accelerated visual analytics. For example, showing the impact of weather events on the number of phone calls made
- Flexible deployment and licensing
- The proven industry expertise of Hexagon
- Opportunity to embed this technology in their solution as a white label product.

In 2016, Lufthansa Systems decided to expand their Web as well as Cloud capabilities. Hexagon's Geospatial division looks forward to providing their technology to visualize Lufthansa Systems' life-saving, cost-cutting data.

Going Forward

Nearly half of all flights in Europe are calculated with Lido/Flight WINDS. Up next for Lufthansa Systems - penetration of the American market.

The success of Lido/Flight WINDS illustrates the tremendous value in geospatial data. Want to make money with dynamic data? You need the right tech partner. Hexagon Geospatial is here to help.

Turn to Hexagon's Geospatial division for creation of geospatial data applications from start-to-finish. The possibilities for products with geospatial elements are endless. You will get your product to market more quickly, reduce costs and risk, and see your profits soar.

The possibilities for products with geospatial elements are endless. Learn how to monetize your great idea by partnering with us. With offices around the globe, we are ready to roll up our sleeves and change the world with you.

Contact us

For more information, please contact us at:


marketing.us.gsp@hexagon.com


+1 877 463 7327


https://go.hexagongeospatial.com/contact-us-today

Hexagon is a global leader in sensor, software and autonomous solutions. We are putting data to work to boost efficiency, productivity, and quality across industrial, manufacturing, infrastructure, safety, and mobility applications.

Our technologies are shaping urban and production ecosystems to become increasingly connected and autonomous — ensuring a scalable, sustainable future.

Hexagon's Geospatial division creates solutions that deliver a 5D smart digital reality with insight into what was, what is, what could be, what should be, and ultimately, what will be.

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