

ARTICLE

The Challenges of Hybrid Data



While airline passengers traveling from London to Miami sit back dreaming of beaches, salsa and sunshine, the airlines must manage numerous, real-time data sources and multiple challenges to create a satisfying customer experience and at the same time continue to turn a profit in a highly competitive sector.

Consider just one of the challenges facing airlines: changing weather conditions. Hurricane Irma in September 2017 is a prime example. First Irma bore down directly on South Florida. Then the storm shifted to wallop Tampa while still wreaking havoc on Miami. Six Florida airports closed: Miami, Tampa, Fort Lauderdale-Hollywood, Orlando, Jacksonville, and Palm Beach. During a 10-hour trans-Atlantic flight, a Florida-bound plane could have been rerouted several times. Miami International Airport averages more than 1,000 takeoffs and landings per day; in January 2018, more than 37,000 planes with 2.25 million passengers took off and landed from Miami International.¹

Airlines experience severe economic impact from such events not to mention logistical challenges. Flight cancellations create a ripple effect for carriers with passengers scrambling to get to their destinations. And carriers cancelled more than 25,000 flights as a result of hurricanes Harvey and Irma, according to FlightAware, a global aviation data services company.²

THE PAIN POINT

In addition to ever-changing weather conditions, airlines face increasingly stiff competition, numerous regulations, and a host of other issues that threaten their success.

Conserving fuel is a key criteria for flight optimization. But optimizing fuel efficiency requires careful calculation of routes as well as in-flight adjustments, such as slowing the flight down a bit to avoid congestion at the arriving airport while still achieving on time arrival.

1. [Miami International Airport Traffic Report, January 2018](#)

2. [Massive storms hit airlines where it hurts: Their hubs](#), CNBC, September 2017



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Deciding how much fuel to carry is another area of optimization; a plane must have enough fuel on board if it must divert to a more distant airport, but if it lands with significant excess fuel remaining, emergency services must be deployed for that landing.

And for unexpected diversions, airlines must verify that the airport where a plane lands has a runway long enough for takeoff later. Blizzard conditions recently forced a large passenger aircraft to land at Stewart Airport in upstate New York, rerouting an international flight originally bound for JFK.³ The aircraft was so large that the gates were not high enough for the 325 passengers to deplane, and the airline had to arrange ground transportation for those passengers during a blizzard.

Still other data must be considered when planning and optimizing flights. Airlines have to factor in landing fees for various airports, as well as high additional costs if they must land at an airport where the airline has no presence. Pilots and other crew members can't work beyond a specified number of hours without getting rest breaks. Airlines have to ensure that luggage, sooner better than later, also makes it to passengers' destinations. Airlines that excessively overbook, leave passengers stranded on the tarmac or commit other infractions face steep fines. Of course, the planes must take off and land safely. And don't forget the vegan meal in 15E, the high protein diet request in 36D or the kosher request in 18A.

THE DATA PROBLEM

Twenty-five years ago, airline workers tracked all these data sources by hand and coordinated verbally with their counterparts at other airlines and airports. Over time, the number and types of data sources have dramatically increased, along with rich media characteristics that impact overall volume. At the same time, compliance requirements have exploded. A job once handled with pen, paper, voice communications, and radar now requires computers to handle hybrid data from streams of data sources, in real time. For example, Europe alone has over 1800 regulations regarding air traffic; no dispatcher could deal with that amount of data.

3. [World's biggest passenger jet forced to land at small New York airport thanks to blizzard.](#) CNBC, January 2018



The hybrid data solution illustrates how this flexible approach to incorporating new streams of data is future-proof.

CHALLENGE ACCEPTED: KEEPING PLANES FLYING

In one of the earliest use cases to manage hybrid data, a major IT service provider has relied for two decades on a hybrid data software solution that manages these many data points for many airlines in real time. From the kosher meal for seat 18A, to the prediction of a shifting hurricane heading to Florida to a suitcase that barely made it on the plane in time, this system helps keep planes flying efficiently, safely and cost-effectively.

The service provider has continued to evolve its hybrid data solution, which makes it easy to integrate the latest data sources, optimizing the solution to meet the needs of numerous airline customers.

The solution takes in more data sources than those typically used for navigation, including weather data, air turbulence information, and radar images. The solution is further customized to incorporate additional data sources, such as specific satellite imagery required by particular airline customers. The hybrid data solution illustrates how this flexible approach to incorporating new streams of data is future-proof.

The solution enables ground support to see 1,000 miles ahead of pilots, who can typically see only 100 miles ahead, enabling them to find the best trajectory around singularities and storms, as well as empowering them to optimize the flight path for fuel efficiency.

BEYOND PLANES

The hybrid data challenges faced by airlines are a matter of life and death. Not all businesses face such high stakes, but nearly all face the same type of explosion of data sources and complexity. Compliance alone is an ongoing challenge for nearly all industries; consider the broad impact of the EU General Data Protection Regulation (GDPR), with enforcement starting in May 2018.

In the financial services industry, 70% of firms expect to increase their focus on regulatory risks, according to Thomson Reuters⁴. Cybersecurity is another area where an explosion of hybrid data sources creates challenges.

4. [Cost of Compliance 2017](#), Thomson Reuters.

The hybrid data solution is used by more than 61 different airlines, optimizing more than 300,000 commercial flights per day worldwide, and more than 115 million commercial flights per year.

All companies face the challenges of hybrid data. Depending on the organization, they must incorporate traditional in-house data sources, as well as social media, stock market information, and data streams from Internet of Things devices and other external sources.

RESULTS

Not surprisingly, numerous airlines find this IT service provider's hybrid data solution valuable. It's used by more than 61 different airlines, optimizing more than 300,000 commercial flights per day worldwide, and more than 115 million commercial flights per year.

Imagine how a hybrid data solution could empower you to make use of all the data sources you have now, as well as the ones you'll have tomorrow.

This article was written by CITO Research and sponsored by Actian

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