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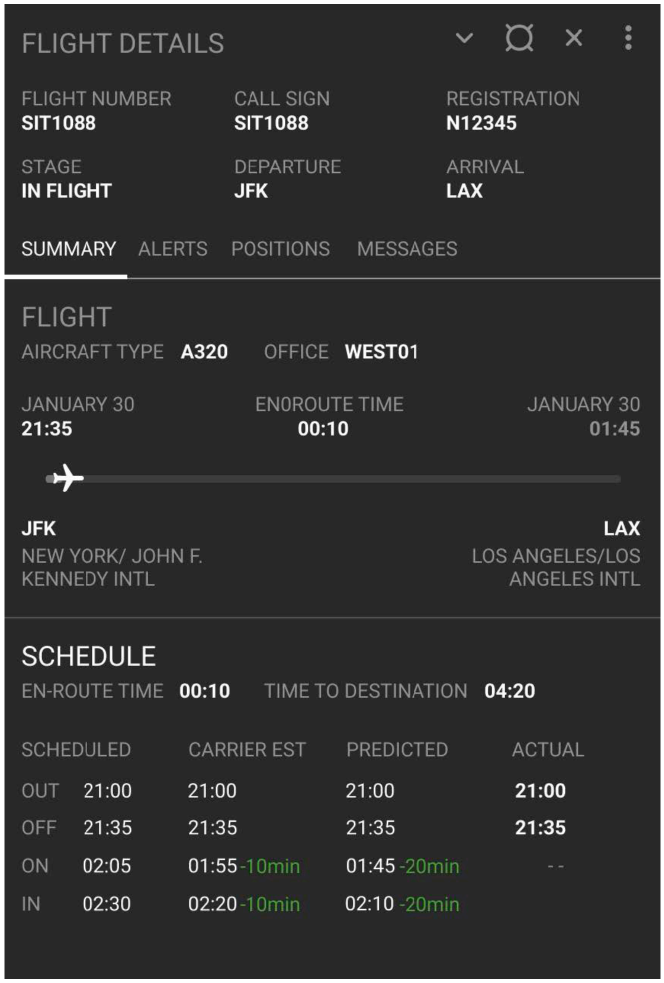
Predictive Flight Data gives Dispatchers the insight to optimize Block Times

By

SITA

FOR AIRCRAFT



Effective collaboration and data-driven technologies are fundamental for things to run smoothly. By simultaneously analyzing multiple data, eWAS

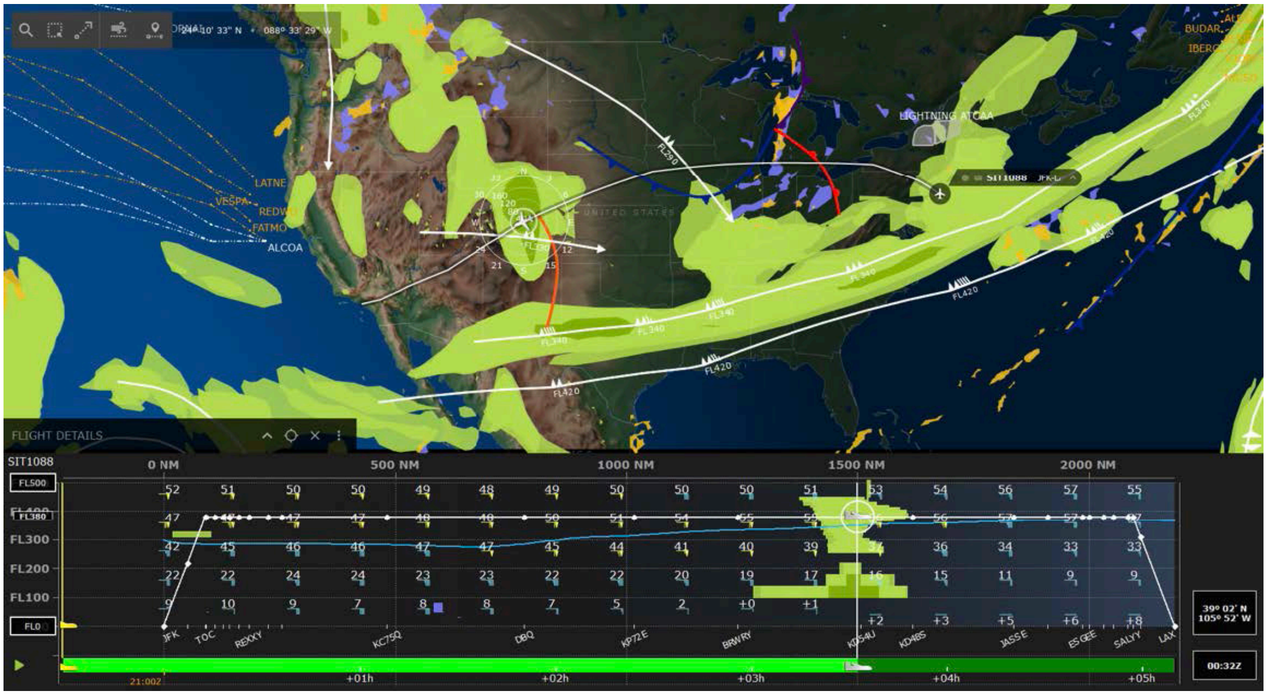
Overview

The latest eWAS Dispatch release features a new and invaluable capability: flight prediction services, powered by the ARiVA Global Feed (AGF) from PASSUR Aerospace, SITA eWAS' global data services provider. Now, the industry's first accurate flight arrival prediction is generated just 10 minutes after its departure. This allows the dispatcher, working with other appropriate airline ops personnel, to begin optimizing arrival operations based on the actual arrival time of each flight.

Over time, with consistently accurate arrival time forecasts, airline dispatchers in collaboration with network ops, Operations Control managers, arrival station ops and other same-day operational stakeholders will start to trust these predictions and adjust their operations accordingly to optimize actual arrival demand with available airport capacity.

This article looks at a sample scenario and use case to illustrate the benefits of this new capability in eWAS Dispatch.
A flight arriving early creates certain challenges and incurs costs unless definitive actions are taken.

The new alert features in eWAS Dispatch powered by AGF make these actions possible – resulting in significant operational improvements and preventing costly and disruptive events like misconnecting crew, passengers, and bags as well as unnecessary fuel burn. These benefits become more considerable as they are multiplied across hundreds of flights, over time.



The Early-Arriving Flight

With so many different parties and stakeholders involved in airline operations, effective collaboration and data-driven technologies are fundamental for things to run smoothly. By simultaneously analyzing multiple data, eWAS powered by AGF enables teams to make accurate, independent which are more precise than those generated by flight planning systems, ACARS, the ANSP, or other sources.

An early aircraft arrival sounds positive in theory. However, it can present so many challenges for operational teams to manage, that it can even end up as a late arriving flight.

Scheduled flight times are determined by block times – the estimated amount of time it takes to fly from points A to B. In airports that operate using time slots, they are developed in line with the IATA winter or summer season structure and can be categorized by two block time periods.
However, in the U.S. where slot times are a less critical factor (especially for domestic flights), block times can be developed by season at a more exact, monthly level, which enable greater efficiencies for operations time, fuel and airline resources.

Ultimately, the objective of block times is to present the most accurate possible forecast, and then follow the plan to meet it.

Let's assume we are operating flight SIT1088 JFK-LAX on a winter's day. ATC conditions are mostly normal: there are some typical delays out of JFK due to airfield departure queues, and at LAX due to arrival congestion as it's a busy time of day.

Our scheduled departure time (STD) is 2100Z (1600 EST) and our scheduled arrival time (STA) is 0230Z+1 (1830 PST).

As part of this process, we need to consider the estimated flight and taxi time for each city involved, the time of day that each flight is departing and arriving, the aircraft type as well as historical seasonal winds and weather conditions.

Final block times are based on an airline's planned reliability factors. For example, an airline with 75% block time reliability means that its flight will arrive on or before the scheduled time, 75% of the time. It will therefore be late 25% of the time.
With this in mind, let's assume that our block time for this use case is 05h30m based on the airline having 80% reliability.

While working on the flight plan, the dispatcher develops optimized routing based on the airline's flight planning system, and by adding the required fuel load. This includes any additional fuel required if the flight encounters adverse weather or other operational impacts – and needs to land at an alternative airport as a result.

After the flight plan is confirmed, the dispatcher continues to check the route's weather conditions, airport ceiling and visibility. They conclude that there is going to be some moderate turbulence around 03h30m into the flight; but that current airport weather conditions are still as forecast which should not delay the scheduled arrival time.

While calculating the flight plan, the dispatcher realizes that the flight has been given a revised arrival block time of 1820 PST (0200Z) – 10 minutes earlier than originally scheduled – due to weaker than expected headwinds en route. The dispatcher reviews the potential impact of this early arrival in LAX on operations, passengers and crew, so those involved can take proactive action. They conclude that there are no major issues impacting the flight and proceed as planned.

eWAS Powered by ARiVA enables ETA to be updated faster

Just ten minutes after the flight takes off, eWAS Dispatch sends its first Estimated Time of Arrival (ETA) update powered by ARiVA. eWAS flags an alert as the ARiVA ETA is some 20 minutes earlier than the flight planning system predicted.

AGF is the only source that combines global enroute and surface traffic surveillance data from two global terrestrial ADS-B networks (the largest resource in the world), along with satellite ADS-B sources. Schedules, flight plans, and flight event data from ANSPs, airlines, and global live OOOI data (Out Off On In) are also collated with surveillance, airport and weather data to build flight, airport and airspace data objects.

The result is the earliest, most accurate and actionable predictive flight behavior available anywhere.

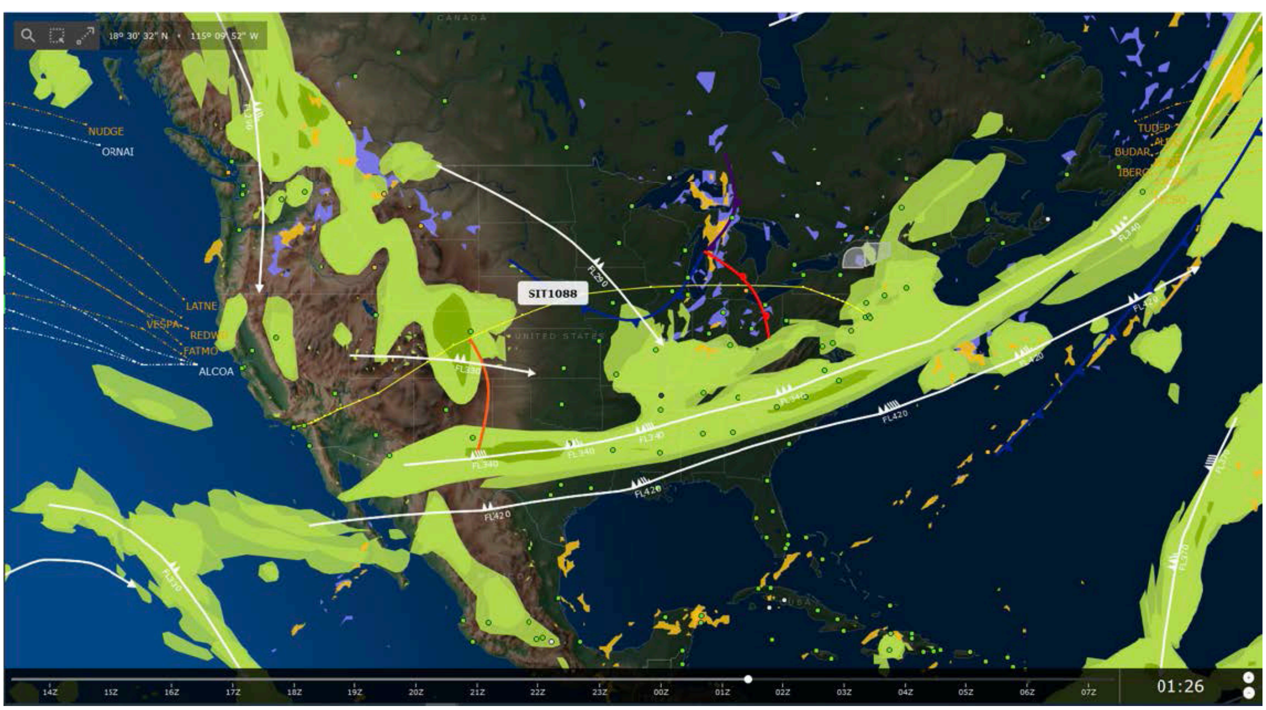
Overcoming the 'Early Arrival' Challenge

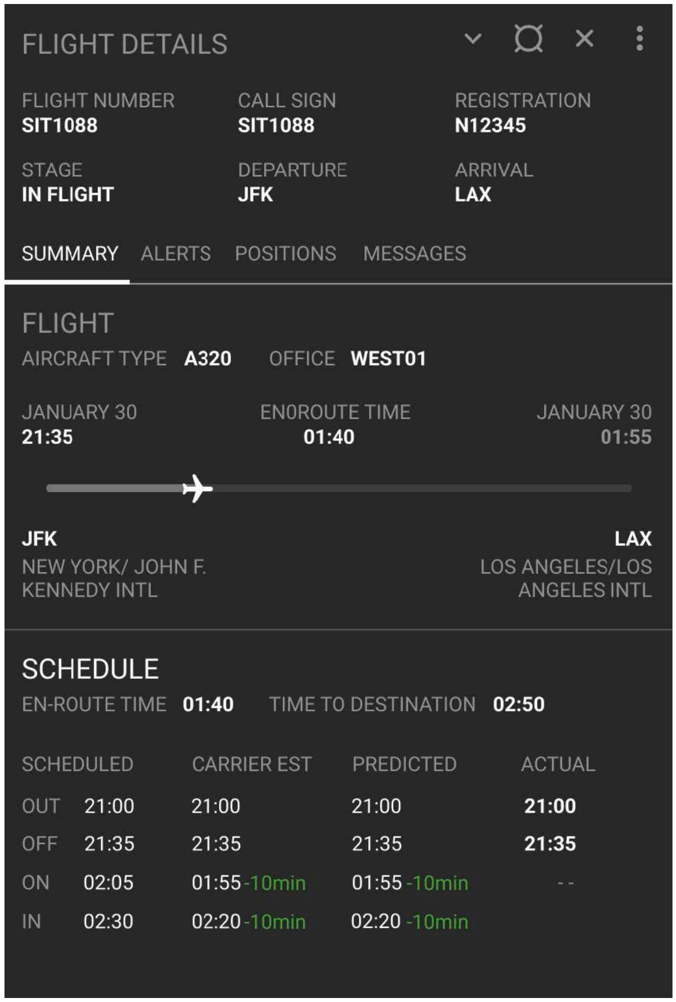
An early aircraft arrival sounds positive in theory. However, it can present so many challenges for operational teams to manage, that it can even end up as a late arriving flight. In our scenario, the dispatcher immediately understands that this 20-minute early arrival will create a gate conflict at LAX. They contact the airline's station operations to explore the option to swap arrival gate assignments for SIT1088 to accommodate the early arrival and reduce or eliminate the expected gate hold out.

LAX SIT station ops reply that with an earlier arrival time of 20 minutes, they will be unable to reassign SIT1088 due to operational constraints at LAX and the airline's other flights coming in early and late. Put simply, there are no spare gates available.

Accordingly, flight SIT1088 will have to wait for a gate for 30 minutes – ultimately making it 10 minutes late.

Flight SIT1088 JFK-LAX is carrying 130 passengers, 60% of whom have a connecting flight to go on to. Of those, about 30% have tight connection timings to 20 other flights: they risk missing their connections if there is a 10-minute delay. What's more, the flight crew is scheduled to operate a critical short leg flight from LAX to SFO which if delayed, might jeopardize their crew duty time limits and result in cancellation. There is a 20-minute





window to get the crew from the JFK-LAX aircraft to their LAX-SFO flight.

Given the LAX Hub layout, it looks like the process of getting these connecting passengers and crew to their flights will prove extremely difficult.

So, the LAX SIT Station Ops team asks dispatch if the flight can arrive at 1820Z (10 minutes earlier than scheduled) and reduce the gate holdout time to 15-20minutes. At the same time, the dispatcher talks to the flight crew about either filing a new flight plan to add time to the flight or “slow-flying” the aircraft (reducing its speed) to help bring the flight closer to its original scheduled arrival time.

The flight crew contacts ATC to ask for a “slow-fly” or reroute. ATC, crew and dispatch agree on a combination of filing a new route and controlling in-flight speed.

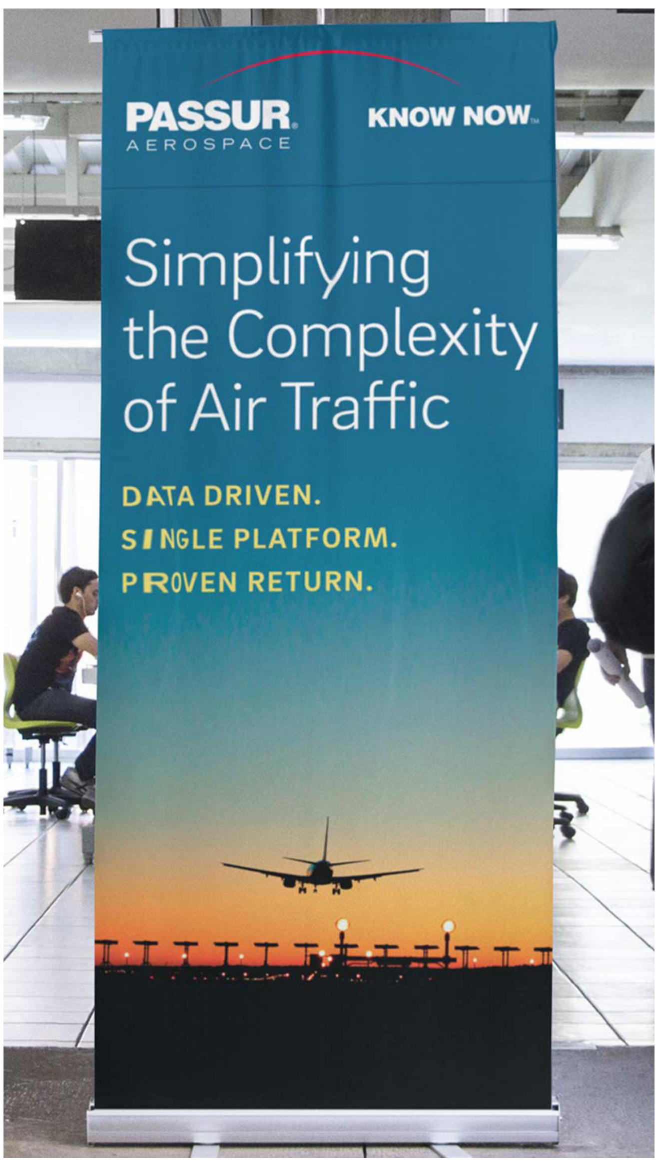
Working together to succeed

A new route is filed to extend flying time and ARiVA ETA makes updates to match within 10 minutes of the scheduled block time. Although the new route will burn some extra fuel, the resulting cost savings relating to crew, bag, and passenger connections more thn compensates for this.

Key cost savings include:
• No wasted fuel from sitting on the ramp for an additional 20 minutes (= cost and CO2 reductions)
• No risk of cancelling the critical LAX-SFO flight, which means that the crew can have its legal duty rest period before completing its next scheduled flight (no need to find and brief a new crew)
• Passenger misconnection IRROP costs (hotel / food / compensation / re-booking on OAL) are eliminatedn
• No “ripple effect” to delay or disrupt a possible additional 20 connecting flights

This new information is shared with LAX SIT station ops. They put together a revised gate arrival plan for SIT1088 that avoids any gate holds. Crew, PAX, and bags are now back on track to make their connections. Everyone is happy and risks have been avoided.

SITA FOR AIRCRAFT



About SITA

SITA is the air transport industry's IT provider, delivering solutions for airlines, airports, aircraft and governments. Our technology powers more seamless, safe and sustainable air travel.

With around 2,500 customers, SITA's solutions drive operational efficiencies at more than 1,000 airports while delivering the promise of the connected aircraft to customers of 17,000 aircraft globally. SITA also provides technology solutions that help more than 70 governments strike the balance of secure borders and seamless travel. Our communications network connects every corner of the globe and bridges 60% of the air transport community's data exchange.

In 2021, SITA became a certified CarbonNeutral® company in accordance with The CarbonNeutral Protocol – the leading global standard for carbon neutral programs. We are reducing our greenhouse gas emissions for all our operations through our UN recognized Planet+ program, while also developing solutions to help the aviation industry meet its carbon reduction objectives, including reduced fuel burn and greater operational efficiencies. In 2022, we announced our commitment to setting science-based emission reduction targets aligned to the Science Based Targets initiative Net-Zero Standard.

SITA is 100% owned by the industry and driven by its needs. It is one of the most internationally diverse companies, providing services in over 200 countries and territories.

For further information, go to www.sita.aero

About PASSUR® Aerospace, Inc.

PASSUR Aerospace, Inc. (OTC: PSSR) is the operations platform of choice for aviation experts, offering a unique combination of global data, decision support, and subject matter expertise solutions to improve operational efficiencies. Our platform and people help deliver actionable-data and user-friendly tools to corporate and operations leadership.

Specifically, PASSUR products identify creative ways to minimize and eliminate bottleneck capacity constraints, react to irregular operations (IROPS), restart operations after an interruption in service, and enhance the efficiency of the daily schedule. Our collaborative framework uniquely enhances data sharing, communications, and decision-making within and between stakeholders in an operations ecosystem. PASSUR provides its solutions to the largest airlines and airports globally including in the United States, Canada, and Latin America. Visit PASSUR Aerospace's website at www.passur.com for updated products, solutions, and news.

eWAS Dispatch Powered by ARiVA Data Services

eWAS Dispatch currently ingests and displays two different categories of ARiVA Data Services – Positional Data (Flight Tracking) and in the newest release of eWAS Dispatch, the addition of ARiVA Predictive Services.

Positional Data (Flight Tracking) Since May 2022, eWAS Dispatch has been ingesting ARiVA Global Feed to power the live visual display of aircraft (flight track) on the eWAS interface, and all other eWAS functions that require real-time flight positions. The ARiVA Global Feed fuses positional (surveillance) data from two different global terrestrial ADS-B networks (together, the largest terrestrial ADS-B array in the world); global satellite surveillance; global aircraft unique ID databases; North America and Europe ATC data; and multiple additional data sources.

ARiVA Global Feed also supports the ability for eWAS Dispatch users to visualize all current traffic within a 400NM radius of the selected aircraft, for the most complete awareness of the total operational picture.

ARiVA Predictive Services

In the latest (January 2023) release of eWAS Dispatch, SITA has added ARiVA Predictive Services as an option. Once activated, this service provides the earliest, most accurate and actionable flight predictions available anywhere (supported by multiple independent studies).

ARiVA flight predictions are generated through a combination of current live trajectory of all aircraft on the route of focus; aircraft density by region and airborne regional transition times; aircraft types and performance characteristics; historical data reflecting the same operational time frames, routes, and operating conditions; heuristics, A/I and Machine Learning.

The actionability and impact of ARiVA Prediction Services derives from the early time horizon of the predictions, their accuracy, and the fact that they apply to each flight gate-to-gate (not just runway-to-runway) – considering that at many airports globally, the airfield surface operation's status and performance can have a major impact on the accuracy of arrival time predictions.