



FlightAware

Agenda

- 1 About FlightAware
- 2 Aireon Space-Based ADS-B
- 3 GADSS and Flight Tracking mandates in Asia Pacific
- 4 How airlines in Asia Pacific are complying with GADSS



About FlightAware

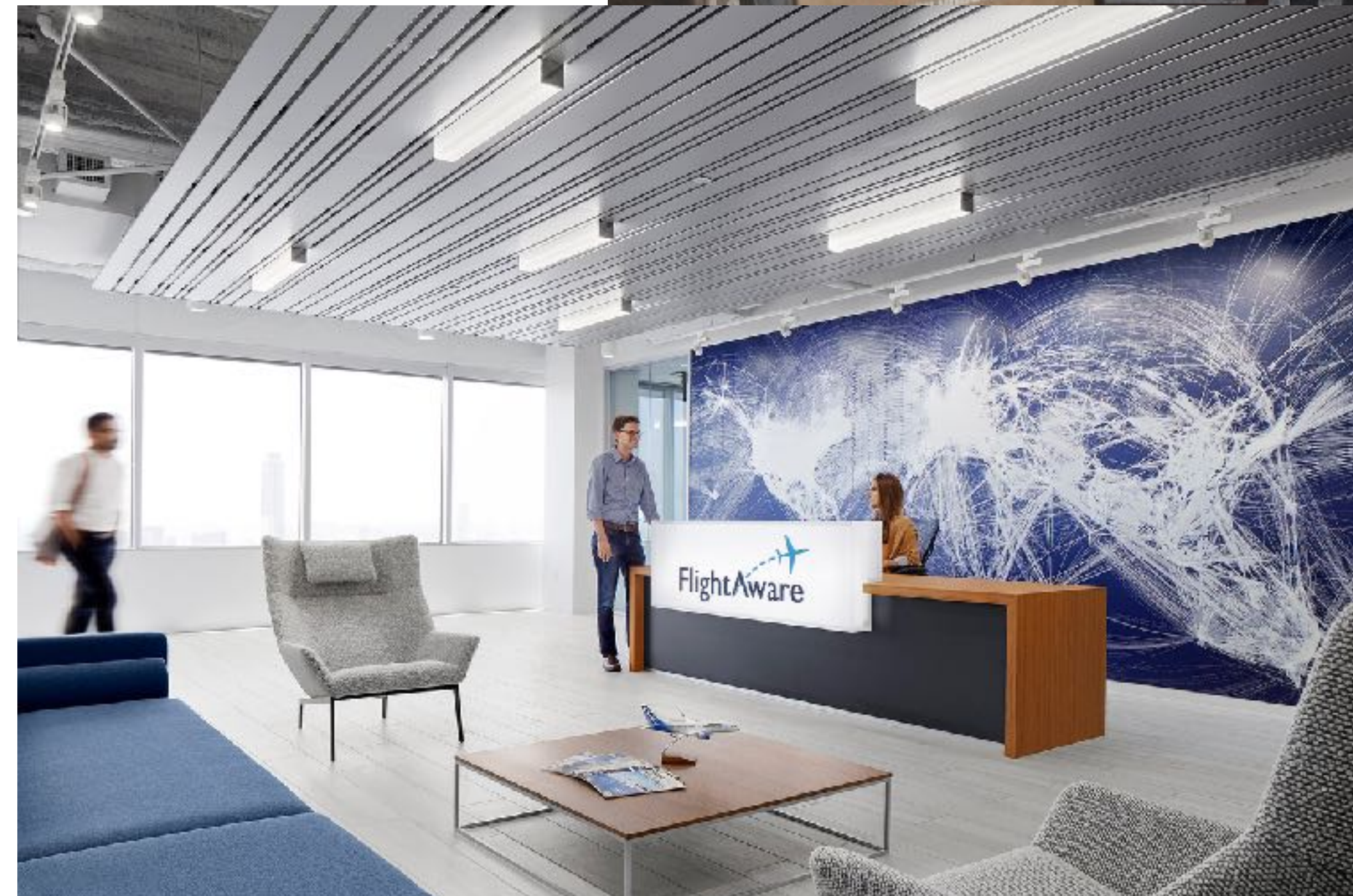


x

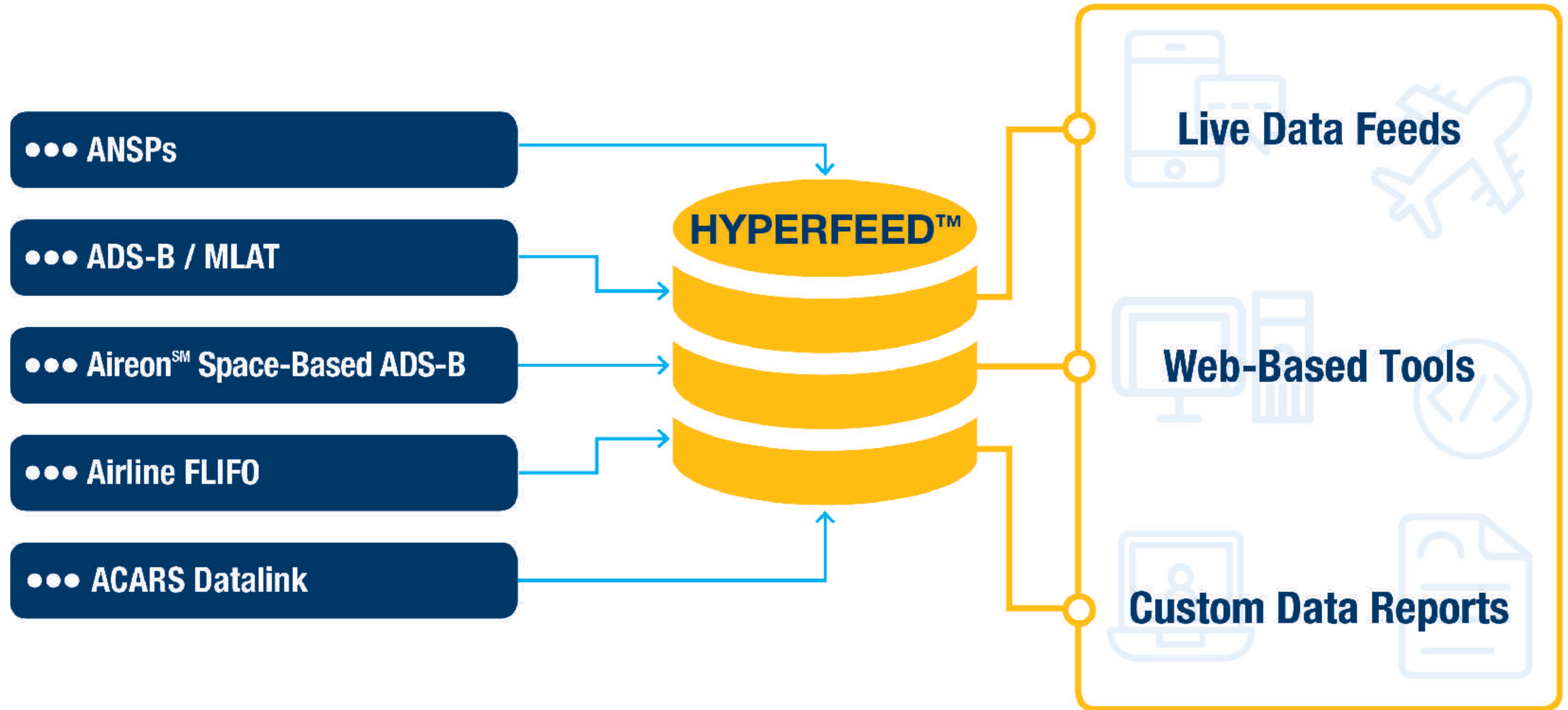


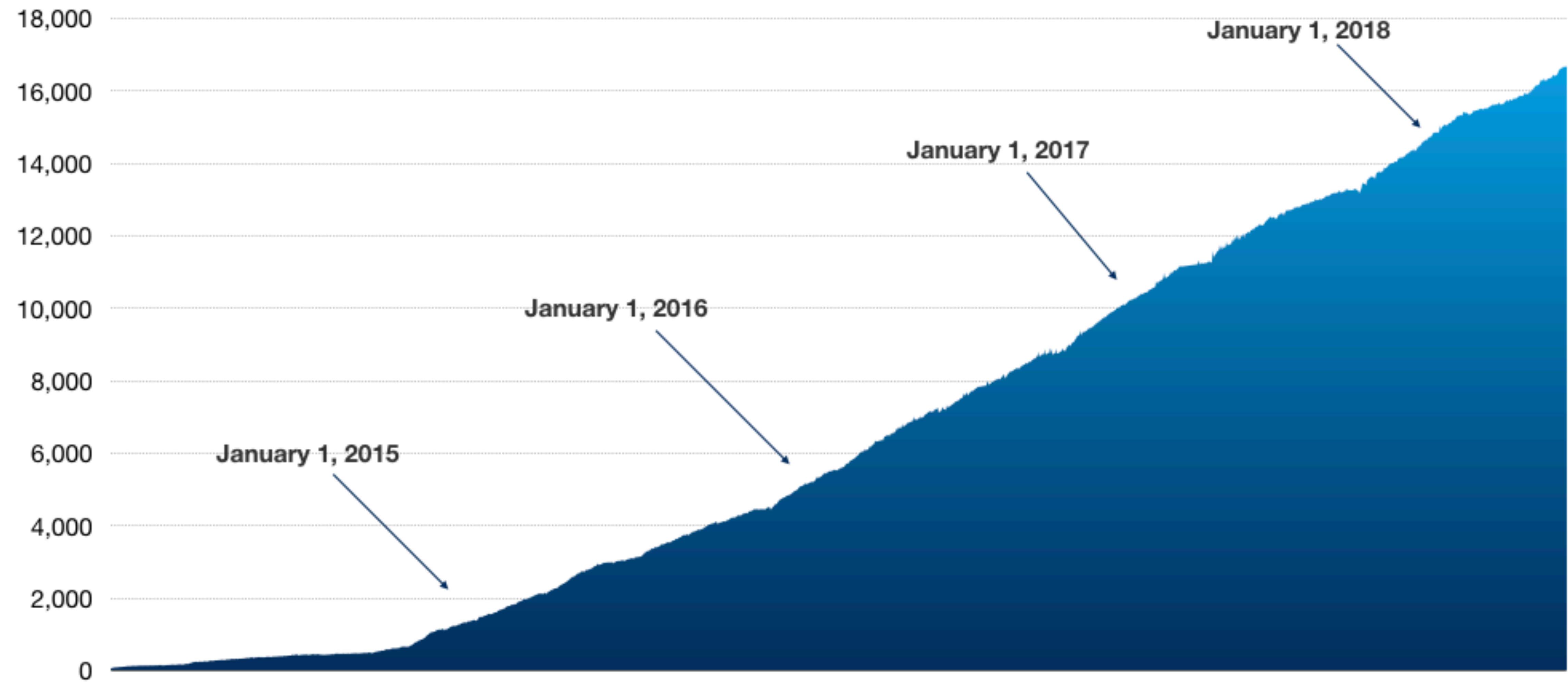
CONFIDENTIAL & PROPRIETARY - DO NOT REDISTRIBUTE

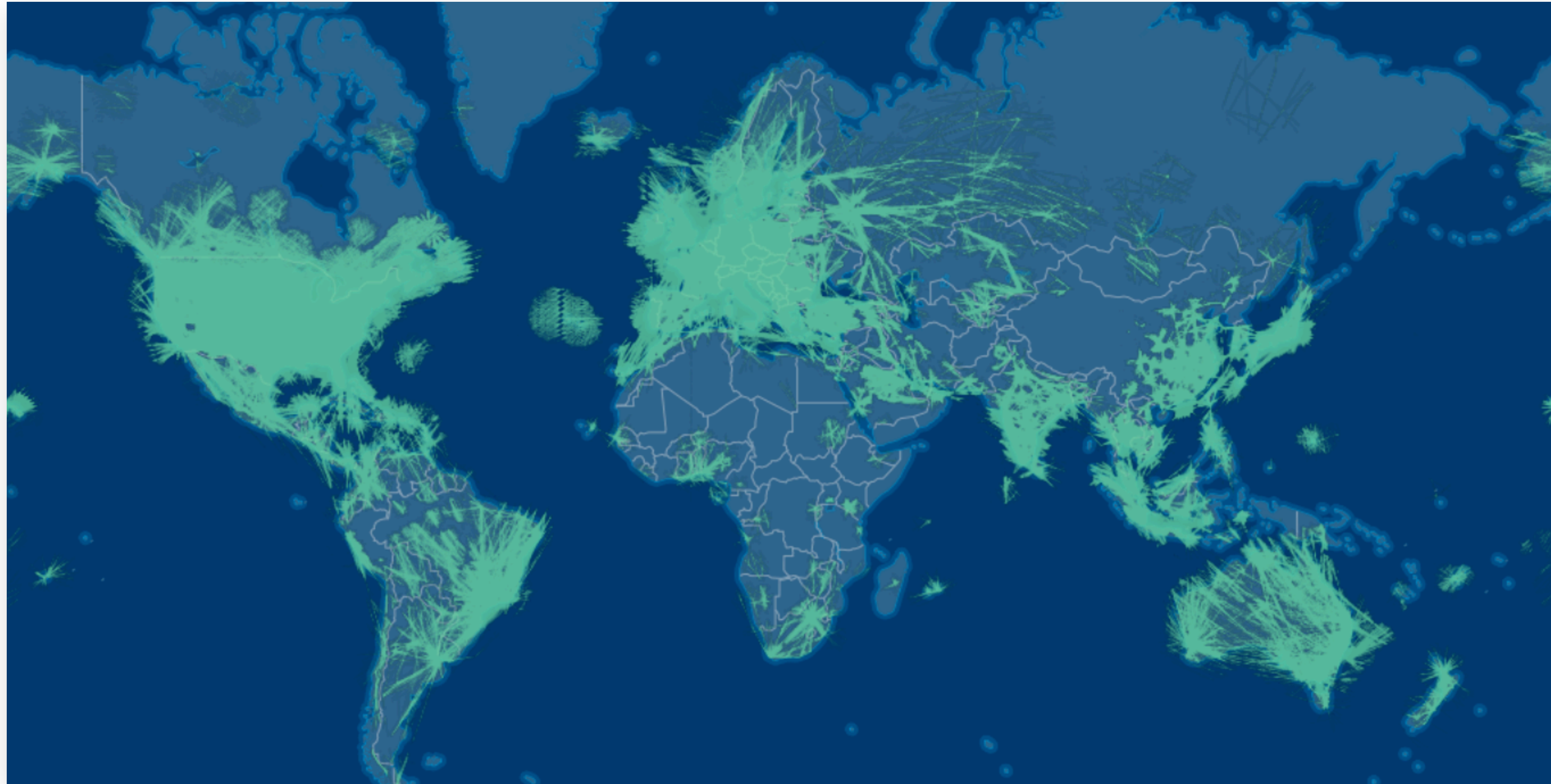
- Founded in 2005 by pilots
- Headquartered in Houston, Texas with presence in New York City, United Kingdom and Singapore
- Largest provider of flight tracking services to commercial airlines and private aviation
- FlightAware Asia Pacific
 - Since January 2017
 - Hiring of commercial and technical staff to provide customer support for region





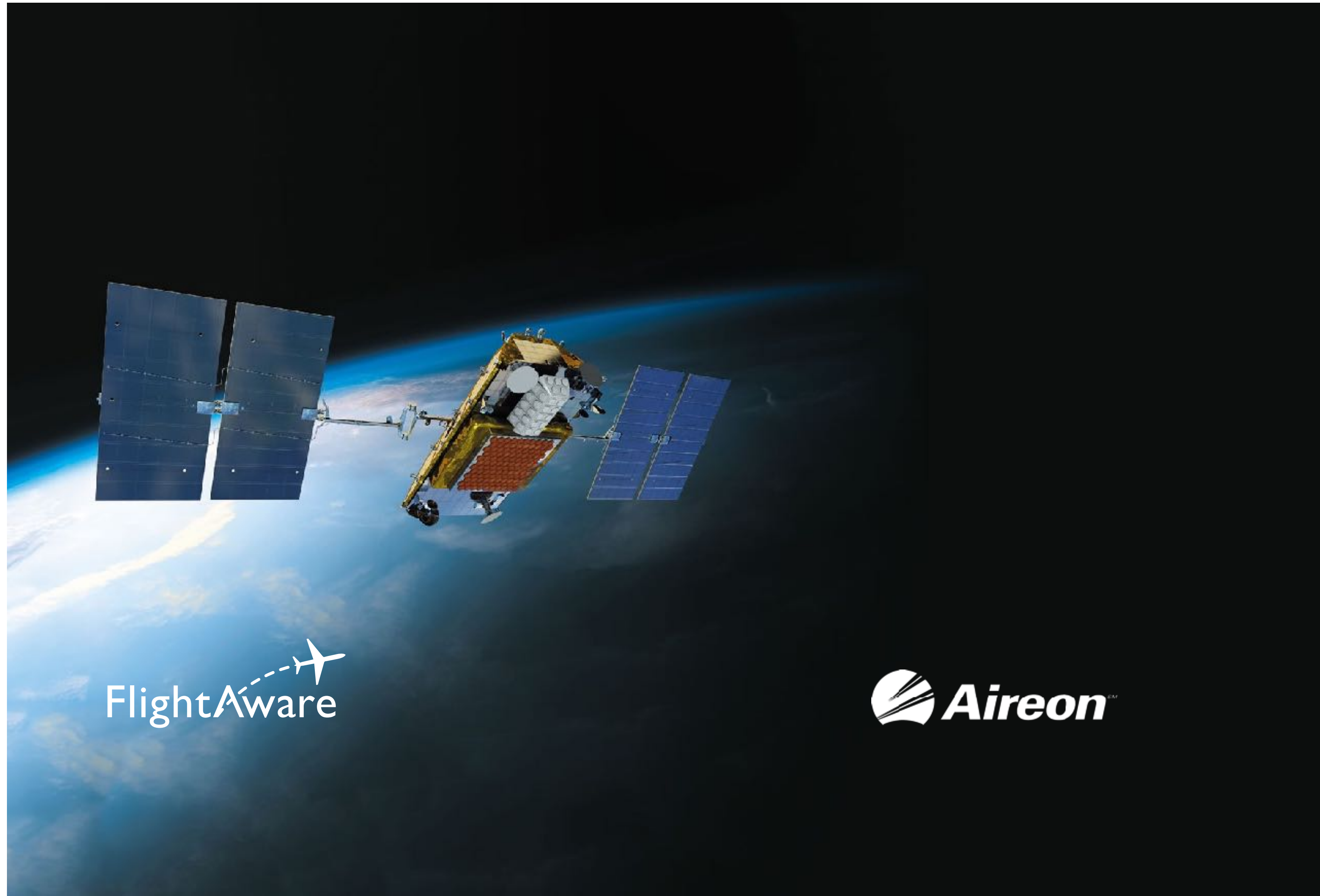






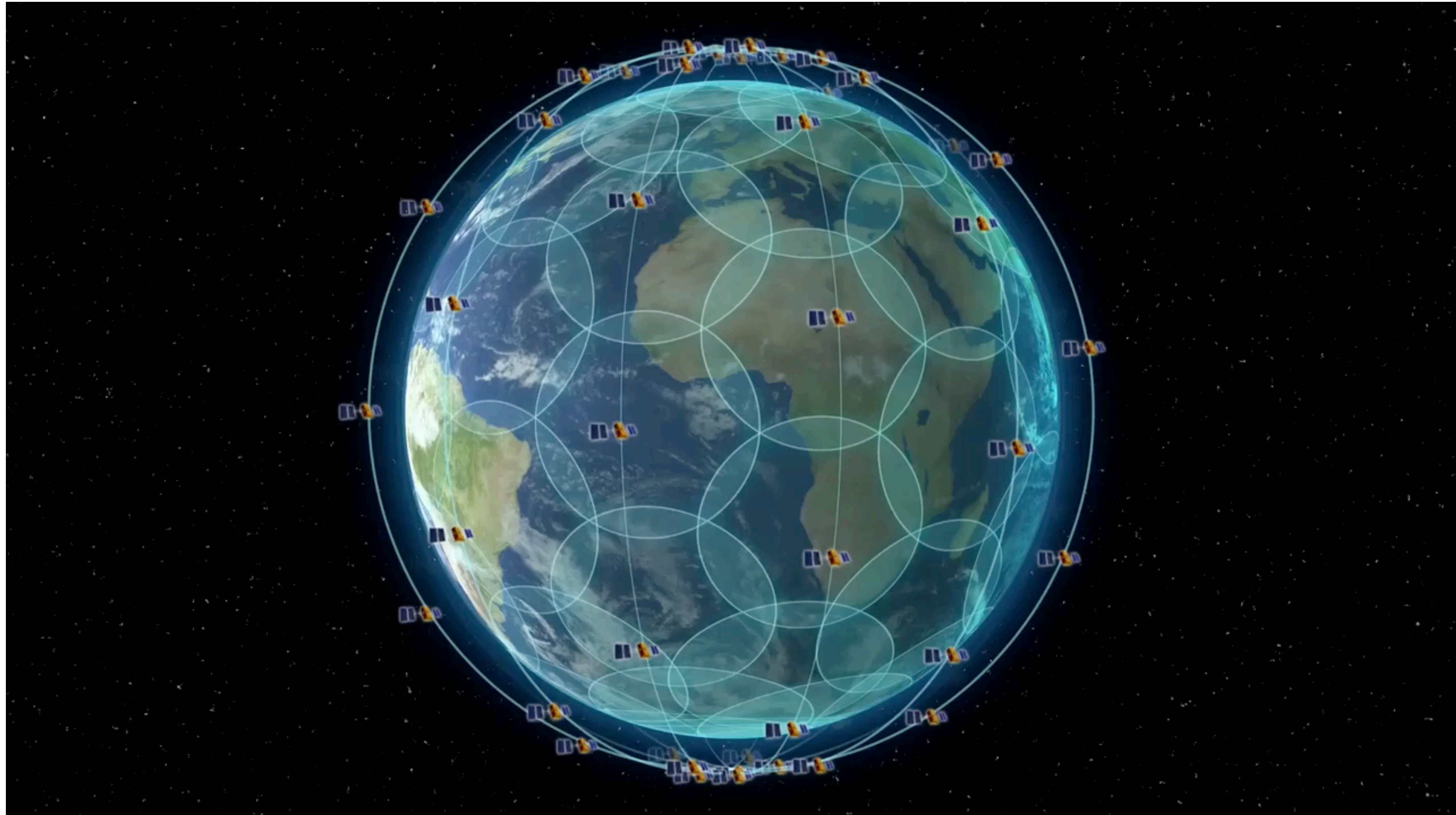
 ADS-B

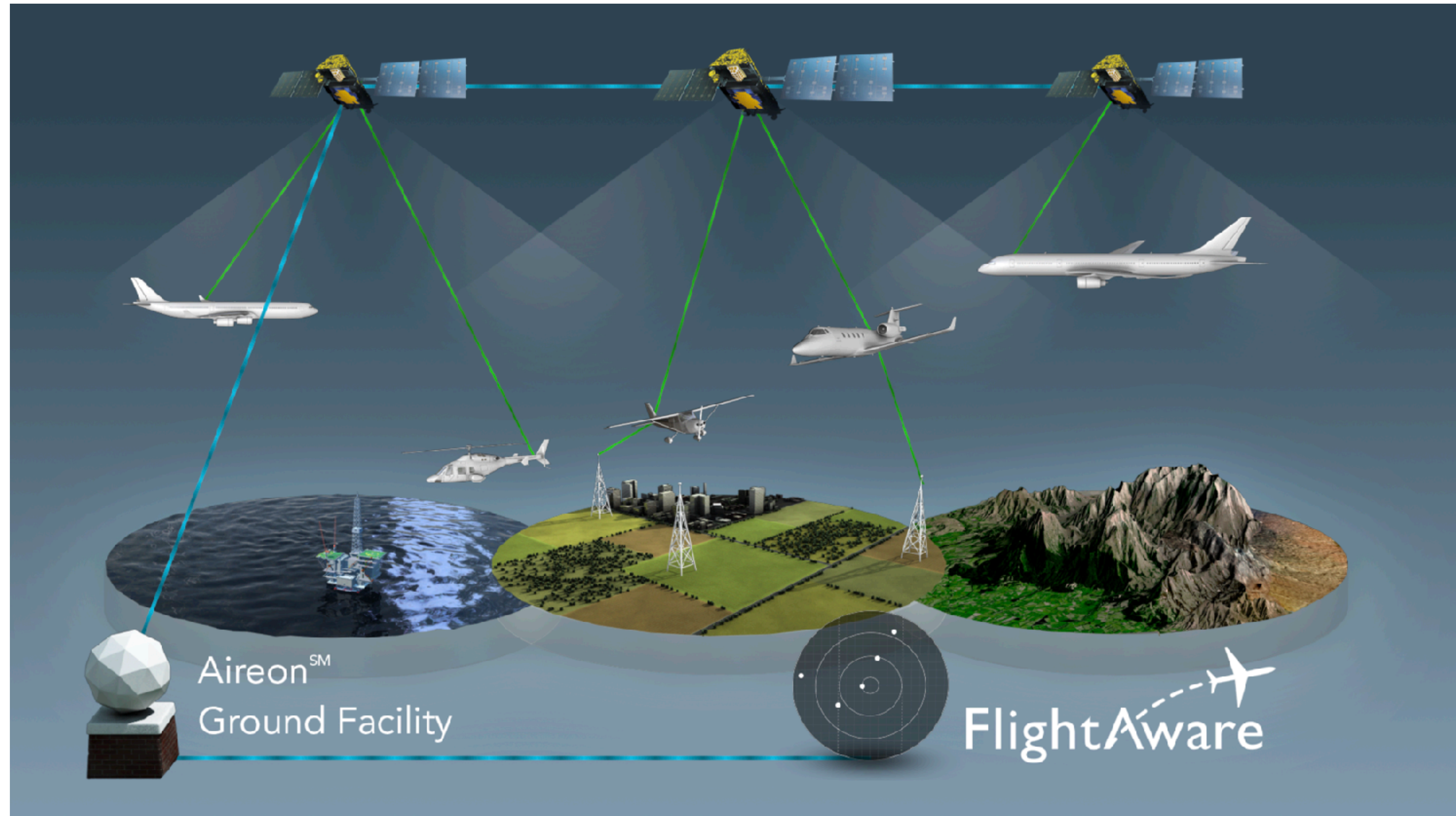
Introduction





Satellite Constellation





[Close](#)[Print This Page](#)

Regulatory/Legislative

FAA Plans Evaluation Of Space-Based ADS-B

Aviation Daily Oct 09, 2018 , p. 3


Bill Carey

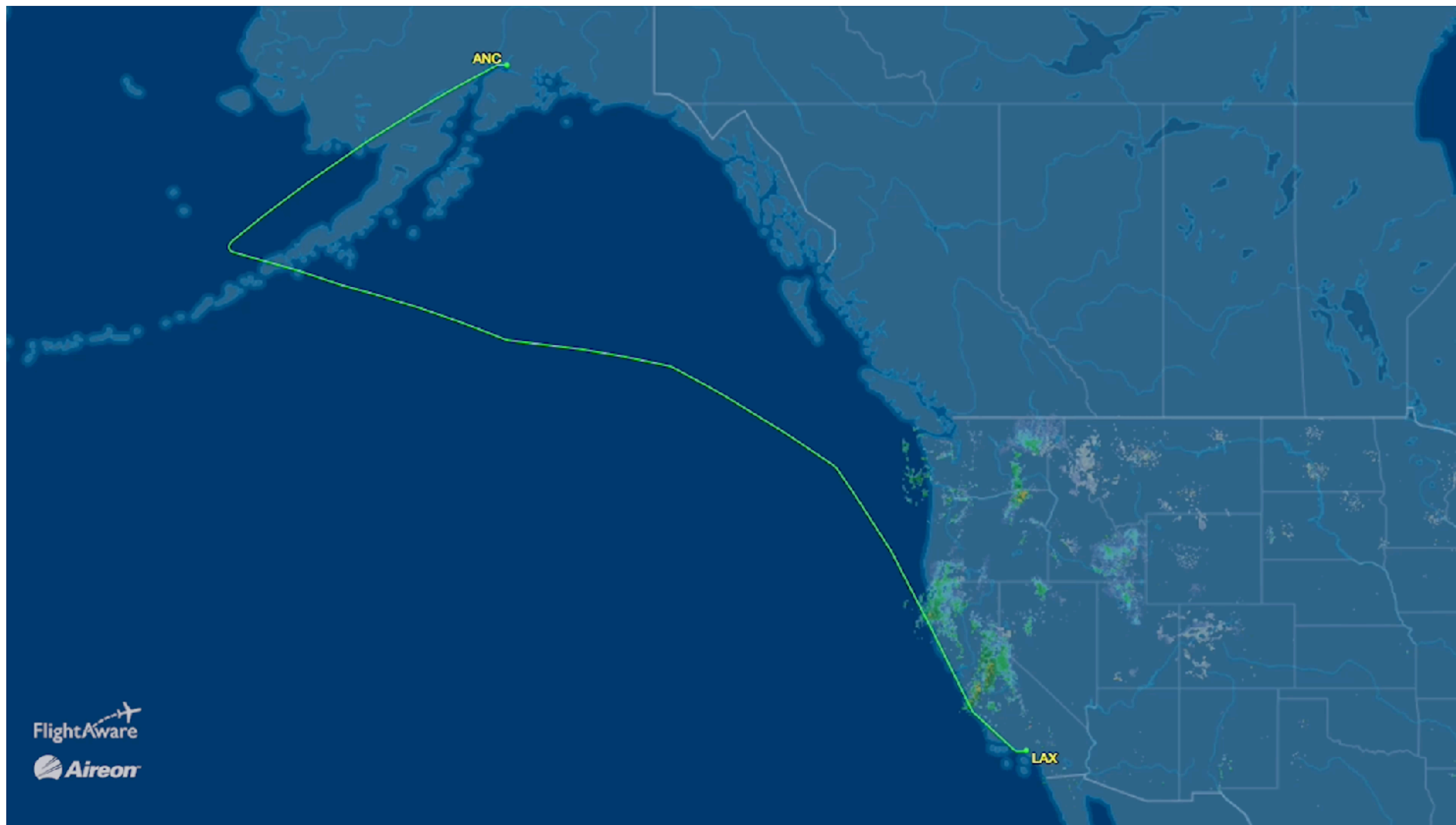
NATIONAL HARBOR, MARYLAND—The [FAA](#) next year plans to begin an evaluation of satellite-aided surveillance of aircraft flying in the Caribbean region, including use of the Aireon space-based automatic dependent surveillance-broadcast (ADS-B) system. The agency expects several airlines will participate in the evaluation, which eventually could lead to reduced aircraft separations in FAA-controlled oceanic airspace.

Progress toward an operational evaluation, the result of more than two years of FAA study into the benefits of enhanced surveillance in oceanic airspace, was revealed during the Air Traffic Control Association (ATCA) annual meeting in early October. An oceanic capability would complement the FAA's ground-based ADS-B surveillance system that is expected to prevail in U.S. domestic airspace beginning in 2020.

The agency “is working toward a funding decision” to start the evaluation, acting FAA Administrator Dan Elwell told the ATCA conference. “Obviously, the FAA would need to look at how any new technology impacts the service provision that we have today, but I think space-based ADS-B is a natural evolution of the technology developments that we’ve seen over the decades and I think it’s going to be the wave of air traffic control in the future.”

Timelines	Milestones
14 Jan 2017	Successful 1st launch of 10 Iridium Next Satellites
25 Jun 2017	Successful 2nd launch of 10 Iridium Next Satellites
9 Oct 2017	Successful 3rd launch of 10 Iridium Next Satellites
22 Dec 2018	Successful 4th launch of 10 Iridium Next Satellites
30 Mar 2018	Successful 5th launch of 10 Iridium Next Satellites
22 May 2018	Successful 6th launch of 5 Iridium Next Satellites
25 July 2018	Successful 7th launch of 10 Iridium Next Satellites
11 Jan 2019	Successful 8th and FINAL launch of 10 Iridium Next Satellites

Timelines	Milestones
5 Nov 2018	Aireon Space-Based ADS-B: Longest coverage gap < 15mins, meeting ICAO GADSS 4D15
8 Nov 2018	GADSS (4D15) in effect
Q1 2019*	<div>Iridium NEXT constellation completed (66+9) and in full operation. Space-Based ADS-B 100% global coverage at 1position/min tracking.</div> <div></div>



1. Safety and Regulatory

- Enhanced safety and improved situational awareness
- Comply with GADSS requirements and recommendations
- 100% Global coverage (including polar, oceans, remote areas) at frequency of at least once per min

2. Cost savings

- No additional avionics
- Cheaper than SATCOM and comparable solutions
- Not volume sensitive and no additional communication charges

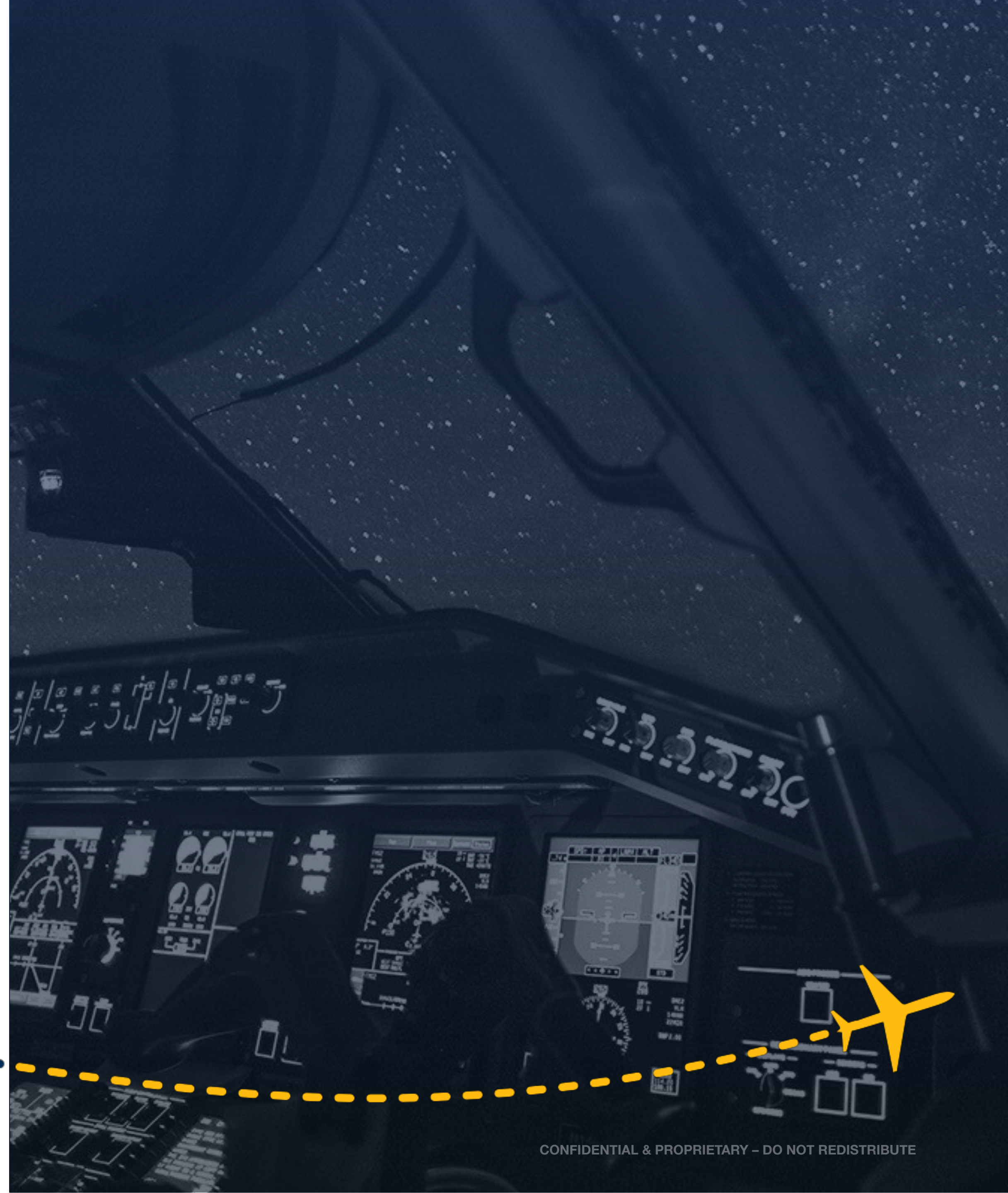
3. Improving operational efficiency

- More efficient and predictable airline operations and resource planning
- Accurate aircraft movement, speed and altitude data for better analytics

GADSS



X



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- Global Aeronautical Distress & Safety System (GADSS)
- Establishes flight tracking standards that the flying public will come to expect
- Shifts the onus for flight tracking to airline and aircraft operators
- Requires automated, 4 dimensional positions
- Relies on 100% global coverage
- Applicable starting November 2018

Two Flight Tracking Elements:

2018

Aircraft Tracking:	Frequency:
Normal Operations	1 position / 15 minutes

2021

Aircraft Tracking:	Frequency:
Distress	1 position / minute

1. ADS-B positions (terrestrial and space-based)

● Worldwide

2. MLAT positions (via terrestrial)

● Worldwide

3. RADAR positions

● United States, Canada, Central America, Australia* and New Zealand

4. VHF/Satellite ACARS datalink positions via SITA or ARINC

● Worldwide

5. Transoceanic and estimated positions

● Worldwide

6. Surface Movement


● Coverage of airports progressively increasing

7. Flight status: takeoff/landing times and flight plans

● Worldwide

Positional:
Timestamp
Transponder 24-bit ICAO code
Altitude
Latitude
Longitude
Groundspeed
Heading
Air (A) / Ground (G) flag
Ident
Registration
Squawk code

Flight Following:
Scheduled/Actual OUT time (where available)
OFF time
ON time
Scheduled/Actual IN time (where available)
Scheduled departure time
Estimated departure time
Scheduled arrival time
Estimated arrival time
Origin airport
Destination airport
Flight plan altitude
Flight plan route (decoded and raw)



GLOBALBEACON
POWERED BY FLIGHTWARE & FLIGHTRACKER

Welcome ThengHui Low ▼

24 OCT 2018 14:52 Z

Alert Settings
 Notification Settings
 Logs
 My Account

+ -
2000 km / 1000 mi

In-Flight Aircraft (117) ⊗
Completed Flights

QTR1336 ⊗
A7-AEO

Ident	Tail / Mode S	Age ▼	Origin / Departed	Destination / Arrives	Latitude	Longitude	Altitude	GS
Last Position Received: 14:51:25 Z Flight Information Region: FIR NAIROBI - HKNA								
QTR1336 ▼	A7-AEO 06A051	1m	HKJK / 14:20:38 Z	OTHH / 20:15:38 Z	1.2911	39.2465	37,000 ft	466 kts
QTR1354 ▶	A7-ADB 06A017	1m	HTKJ / 14:19:00 Z	OTHH / 20:32:00 Z	-1.1430	38.4641	37,000 ft	443 kts
QTR921 ▶	A7-BBF 06A076	1m	NZAA / 02:28:16 Z	OTHH / 19:56:00 Z	10.5552	85.6231	38,000 ft	493 kts
QTR8143 ▶	A7-BFH 06A141	1m	OTHH / 10:04:13 Z	ELLX / 16:28:00 Z	46.6175	19.9179	35,000 ft	389 kts
QTR105R ▶	A7-BCY 06A0BD	1m	OTHH / 12:22:52 Z	LEBL / 18:32:00 Z	38.4941	38.9456	40,000 ft	428 kts
QTR739 ▶	A7-BAG 06A071	1m	OTHH / 05:24:20 Z	KLAX / 20:46:00 Z	75.3842	-72.9610	35,000 ft	502 kts

▶ TECHNICAL SUPPORT INFO

GLOBAL BEACON

POWERED BY **Airman** & FlightAware

Welcome Thenghui Low

24 OCT 2018 14:54 Z

Alert Settings

Notification Settings

Logs

My Account

WARNING

Choose method of notification and enter information

☒ Email

thenghui.lcw@flightaware.com

Test

☒ Phone Call

9436 6277

☒ Text Message

9436 6277

☒ Audio Sound

☒ I acknowledge that the delivery of any and all notifications is dependent on my cellular and wireless service, and is thereby the responsibility of both my employer and myself.

EMERGENCY

Choose method of notification and enter information

☒ Email

thenghui.low@flightaware.com

Test

☒ Phone Call

9436 6277

☒ Text Message

9436 6277

☒ Audio Sound

SAVE

GLOBAL BEACON powered by Altair & FlightAware

Welcome ThengHui Low

24 OCT 2018 14:57 Z

Alert Settings Notification Settings Logs My Account

1000 km 500 mi

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Distressed Aircraft (5) In-Flight Aircraft (118) Completed Flights

Search by ident, tail number, origin, destination

Ident	Tail / Mode S	Triggered	Origin / Departed	Destination / Arrives	Latitude	Longitude	Altitude	GS
QTR211	A7-BCB 06A0A6	14:56:28 Z	OTHH / 11:47:06 Z	LGAV / 16:15:00 Z	39.2949	34.4410	42,975 ft	428 kts
Alert Trigger: Altitude above 42,000ft. Last Position Received: 14:56:12 Z Flight Information Region: FIR ANKARA - LTAA								
QTR841	A7-BCK 06A0AF	14:56:28 Z	VTSP / 13:36:05 Z	OTHH / 20:31:00 Z	12.0239	88.5528	42,975 ft	483 kts
Alert Trigger: Altitude above 42,000ft. Last Position Received: 14:55:31 Z Flight Information Region: FIR CHENNAI - VOMF								
QTR4WZ	A7-BDB 06A0C0	14:56:28 Z	OTHH / 13:02:19 Z	LIRF / 18:45:00 Z	37.4833	45.2772	43,000 ft	439 kts
Alert Trigger: Altitude above 42,000ft. Last Position Received: 14:55:44 Z Flight Information Region: FIR TEHRAN - OIIX								
QQE785	A7-CEP 06A131	14:56:28 Z	OTBD / 12:29:16 Z	LOWW / 17:57:00 Z	39.1197	41.9161	43,000 ft	424 kts
Alert Trigger: Altitude above 42,000ft. Last Position Received: 14:56:20 Z Flight Information Region: FIR ANKARA - LTAA								

EMERGENCY Distress Alert - Inbox

Message

Delete Archive Reply Reply All Forward Attachment Meeting Move Junk Rules Move to Focused Read/Unread Categorize Follow Up Customer Manager

EMERGENCY Distress Alert

GlobalBeacon Alerts <noreply@globalbeacon.aero>

Theng Hui Low

Wednesday, 24 October 2018 at 22:58

Show Details

An EMERGENCY distress has been triggered for A7-BCB / QTR211 on 24 OCT 2018 at 14:56:28 Z due to

- Altitude above 42,000ft

At the time of distress, latitude: 39.2949, longitude: 34.4410, altitude: 42975 ft, FIR ANKARA - LTAA.

[Go to GlobalBeacon](#)

GLOBAL BEACON powered by Altair & FlightAware

An **EMERGENCY** alarm for **QQE531 / A7-CGB** has been triggered at **14:56:28 Z** due to **ALTITUDE ABOVE 42,000FT.**

You are being alerted via **TEXT, EMAIL, PHONE, AUDIO.**

Please acknowledge the distress alert and follow company protocol.

OK

An entry for this distress event has been created in the Alerts log.

Mail 9:58 PM 91%

<1 (832) 956-0417>

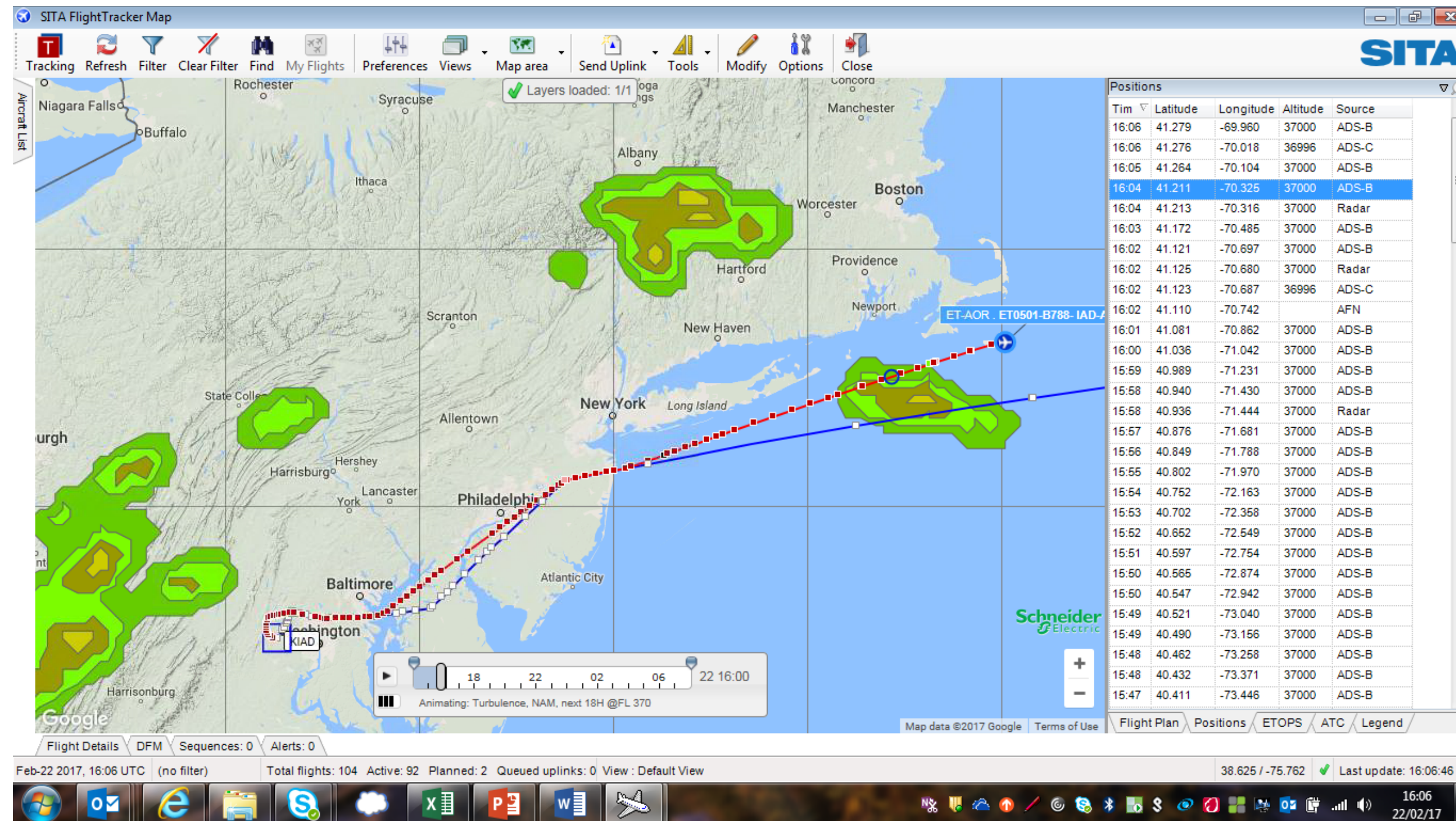
of distress, latitude: 12.0239, longitude: 88.5528, altitude: [42975](#) ft, FIR CHENNAI - VOMF.

An EMERGENCY distress has been triggered for A7-BCB / QTR211 on 24 OCT 2018 at 14:56:28 Z due to altitude above 42,000ft. At the time of distress, latitude: 39.2949, longitude: 34.4410, altitude: [42975](#) ft, FIR ANKARA - LTAA.

An EMERGENCY distress has been triggered for A7-BDB / QTR4WZ on 24 OCT 2018 at 14:56:28 Z due to altitude above 42,000ft. At the time of distress, latitude: 37.4833, longitude: 45.2772, altitude: [43000](#) ft, FIR TEHRAN - OIIX.

An EMERGENCY distress has been triggered for A7-CGB / QQE531 on 24 OCT 2018 at 14:56:28 Z due to altitude above 42,000ft. At the time of distress, latitude: 23.8784, longitude: 60.6769, altitude: [43000](#) ft, FIR MUSCAT - OOMM.

Text Message



18 April 2017 Malaysia Airline enlists SITAONAIR, Aireon and FlightAware for 100% Global Flight Tracking

- COO, MAS: “Real-time global air crafting tracking has long been a goal of the aviation community. We are proud to be the first airline to adopt this solution using space-based ADS-B data as part of SITAONAIR’s AIRCOM FlightTracker.
- CEO, Aireon: “Malaysia Airlines has taken a lead role in the industry since the tragic events of 2014. Real-time, global flight tracking, anywhere on the planet will further its safety goals, by allowing MAS to track its aircraft anytime, anywhere.”

	GlobalBeacon	Firehose	Third Party Integration
Provider	FlightAware	FlightAware	FlightAware Partner
Service Type	Monitoring and Alerting Tool	Data Feed	Aircraft Situational Display (ASD)
Implementation Time	Same Day	Development Required	Varies
100% Global Coverage	✓	✓	✓
Terrestrial + Space-Based ADS-B	✓	✓	✓
ANSP Data	✗	✓	✓
ACARS Integration	✗	✓	✓
Historical Flights	✓	✓	✓
Weather	✗	✗	✓
Mapping Interface	✓	✗	✓
Alerts	✓	✗	✓



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