Making Global Air Traffic Surveillance a Reality!

Space-based ADS-B Implementation Progress

May 26th, 2017

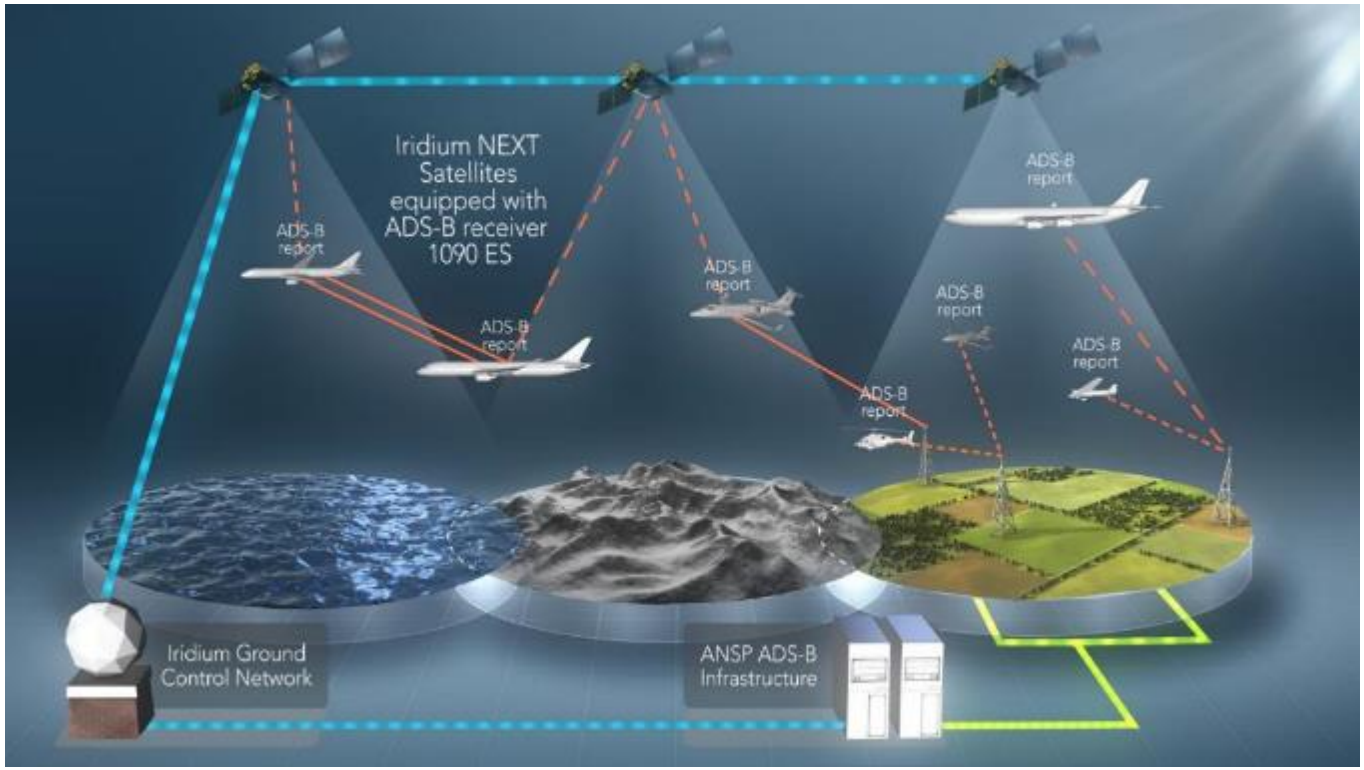
Aireon

Space-based ADS-B System Overview

Investors, Customers and Innovators:

A company created by ANSPs for ANSPs and Airlines

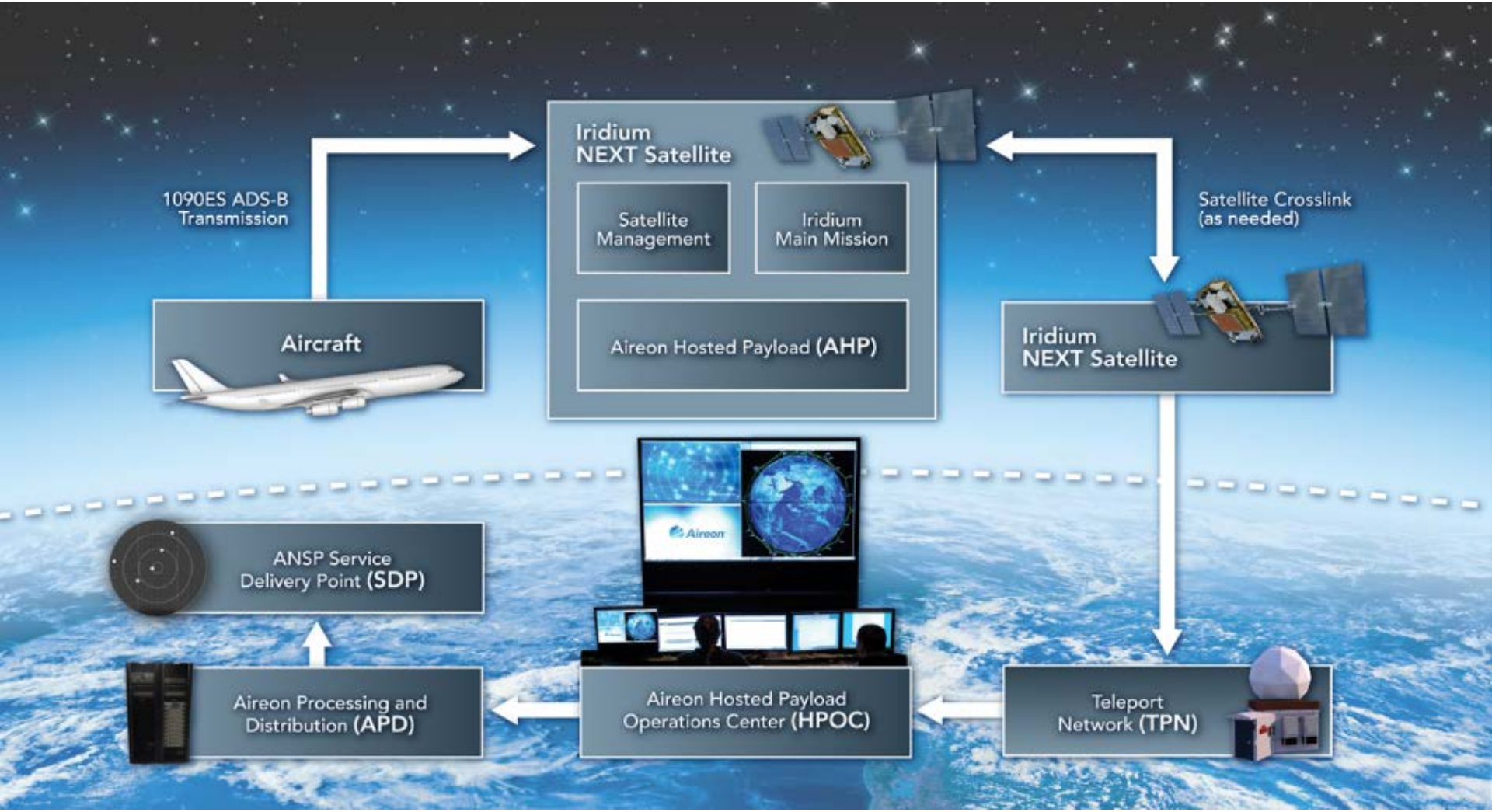
Space-based ADS-B Concept



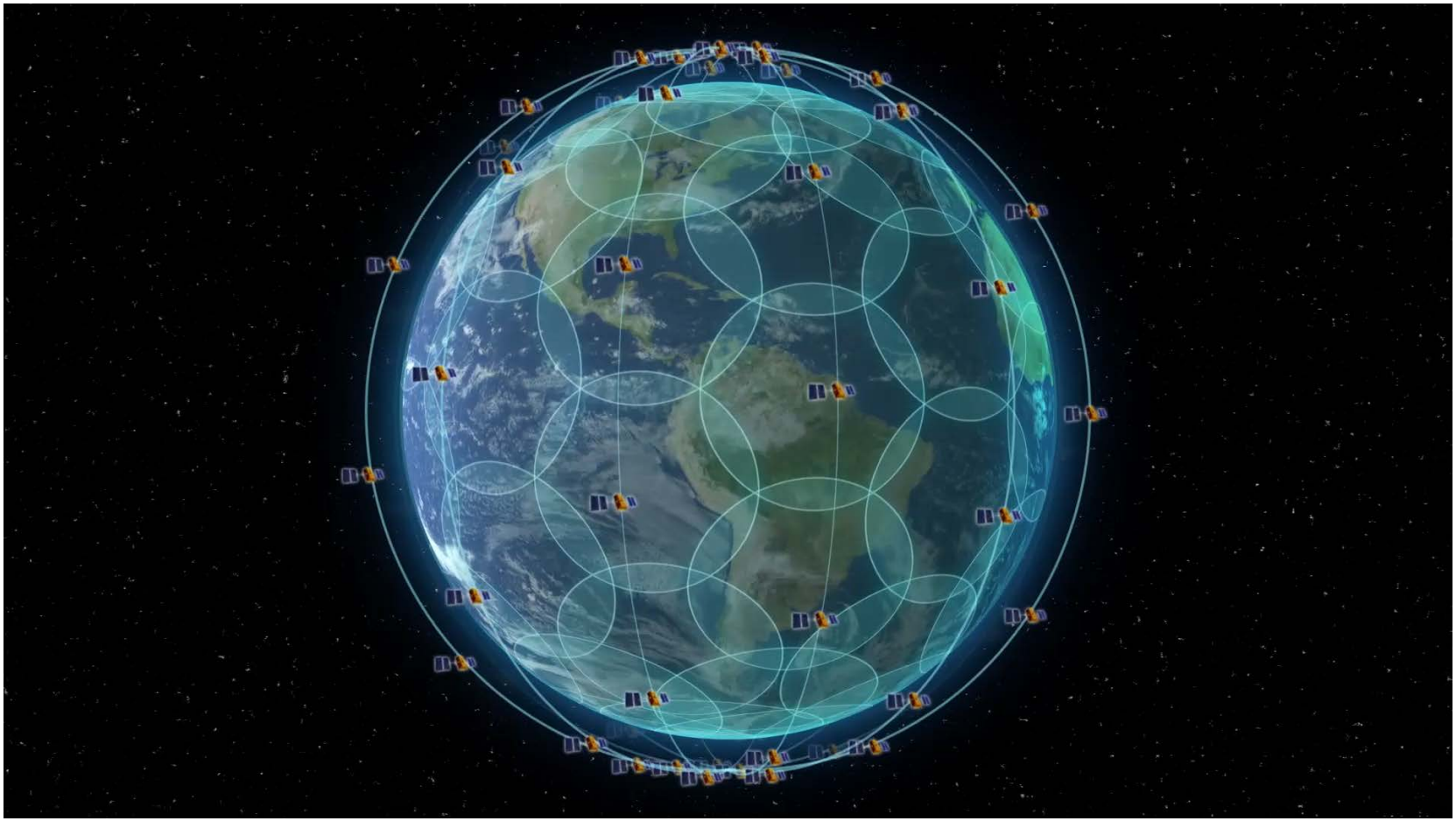
- Augments current radar systems with oceanic and remote air space coverage
- Delivers true pole-to-pole global coverage, with near real-time delivery of "ADS-B Out" data to Air Navigation Service Providers (ANSPs)
  - No additional aircraft equipage by using 1090 MHz ES
  - Adheres to all current and future ADS-B standards

In 2018…100% Global Air Traffic Surveillance

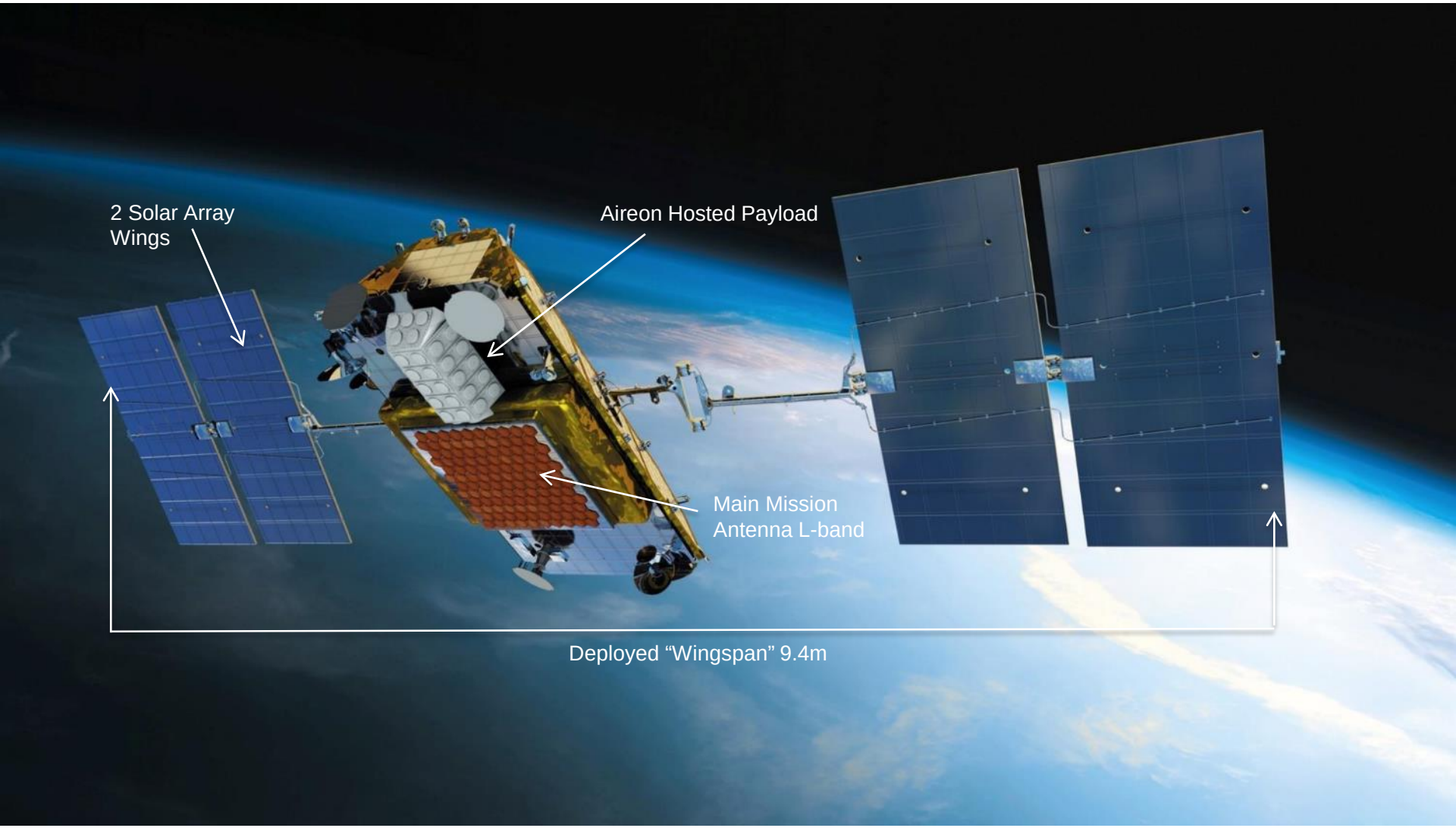
The Aireon System



Iridium NEXT Constellation



Iridium NEXT Satellite



Aireon System Implementation Status

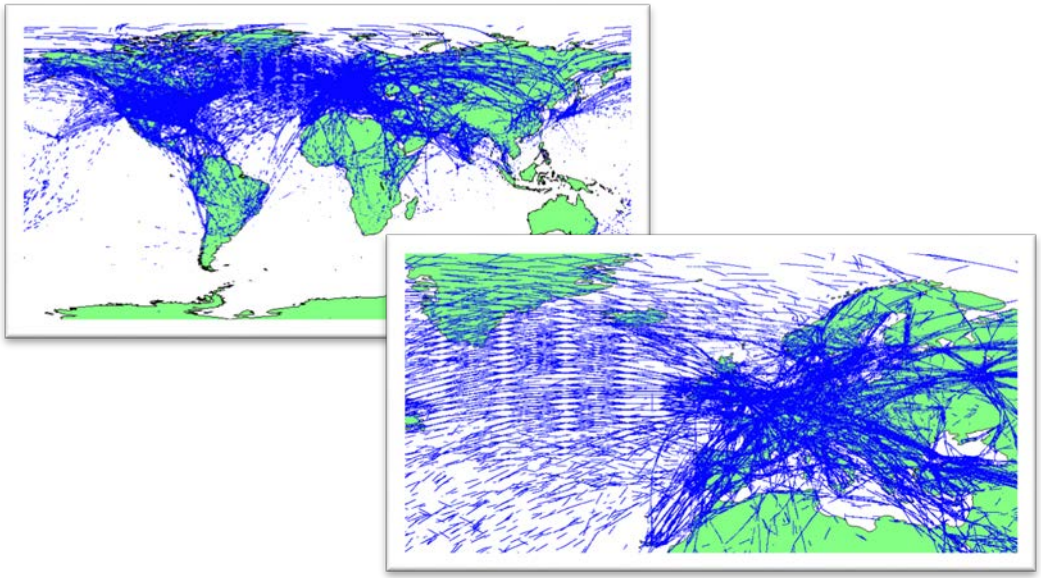
Launch Status

- First Launch: January 14, 2017
- Second Launch: June 2017
- Service Operational: 2018

Photos: SpaceX

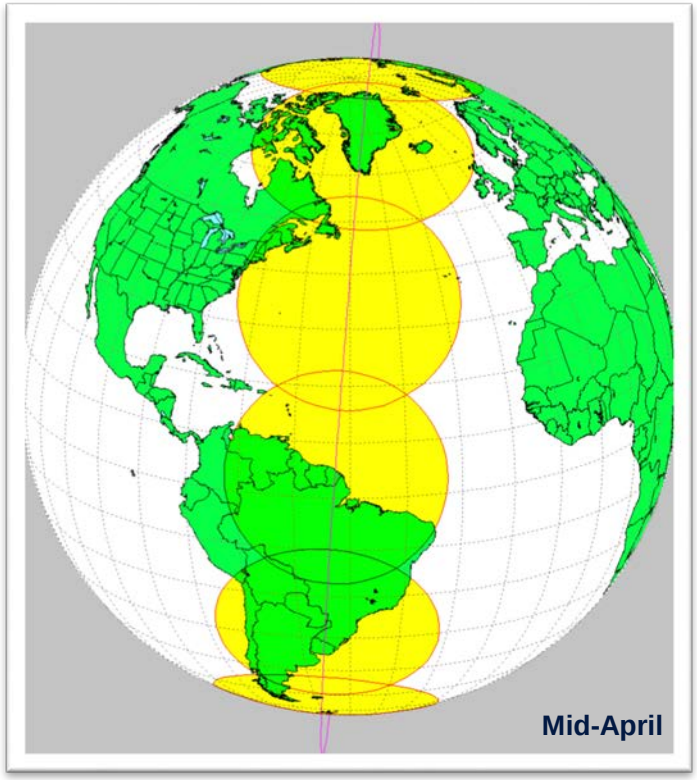
Launch 1 Coverage

Data from One Payload Stitched Over 62 Hours



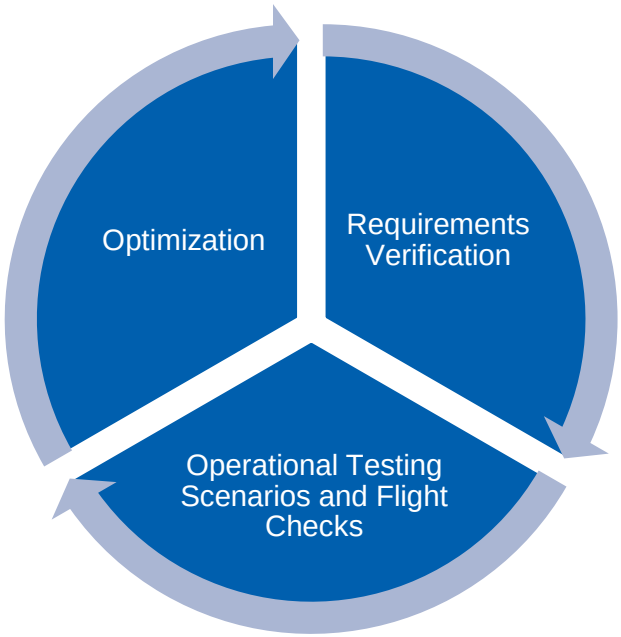
Date / Duration	2017-02-25 to 2017-02-27 / 62 Hours
Unique Aircraft	17,229
Max Range	3,500km
Types of Aircraft	Commercial Jets, Business Jets, General Aviation, Helicopters
Airspace Domains	Polar, Oceanic, En Route, Terminal, and Surface

Slots 1-7 and 11 are Filled



On Orbit Test Campaign

- Detailed antenna pattern measurement with ground transmitters
- Time Stamp Accuracy
- Bandwidth Characterization



- Commanding:
  - Test target message rate
  - Antenna schedule dwell
  - Payload Redundancy
- Status:
  - ADS-B target processing
  - Payload Redundancy

- Low-power target performance
- Track Aircraft in high-FRUIT regions
- TPM Collection (Update Interval and Latency)

Aireon has performed three successful flight tests

NAV CANADA

Iqaluit GBRT

Polaris

FAA

NAV CANADA Test Flight – March 7th, 2017

- Only one Aireon payload was providing ADS-B data due to the stepwise schedule in gradually implementing the new satellites into the constellation.
- 6,935 ADS-B messages were received from the payload during the test flight.
- The table below summarizes expected versus measured performance for some key parameters:

NAV Flight Test Plan and Aircraft

From 1 Payload	Best Expected	Best Measured
Aircraft Elevation (deg)	7.00	0.08
Slant Range (km)	2550	3229
95th % Update Int.(s)	8.00	4.09

Polaris Flight Systems Test Flight – March 20th, 2017

- Two Aireon payloads were providing ADS-B during the time of this test flight.
- The UI performance shifted due to the high density of aircraft with 1090 MHz transmissions (ADS-B, Mode S, and ATCRBS).
- There was a 95th percentile UI, which is about 10s, an improvement on the performance of the expected value of 15s for two payloads.

Polaris Flight Test Plan and Aircraft

From 2 Payloads	Best Expected	Best Measured
Aircraft Elevation (deg)	4.00	- 1.37
Slant Range (km)	2800	3392
95th % Update Int. (s)	15.00	9.97

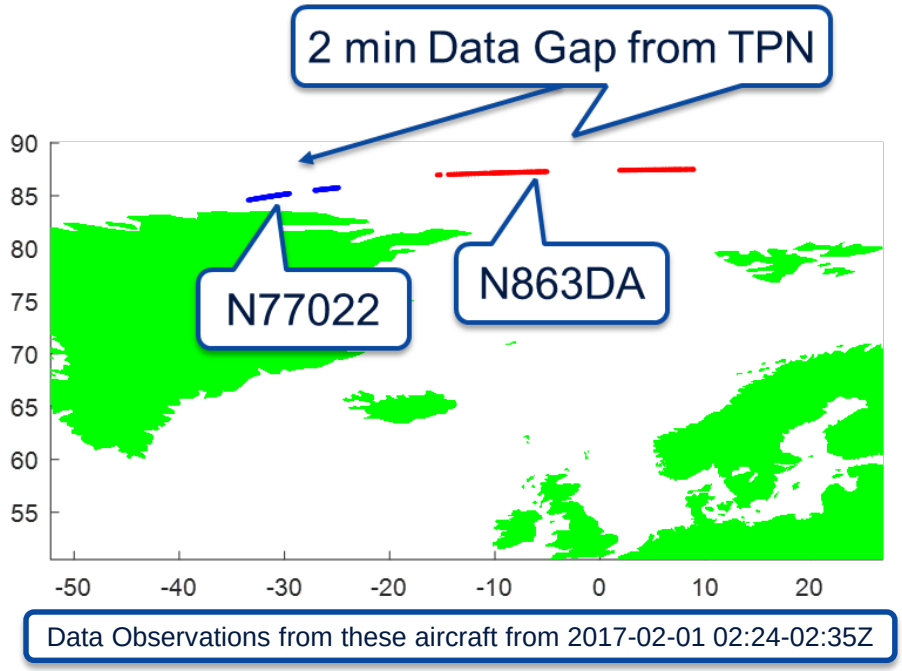
FAA Test Flight – March 30th, 2017

- During this flight test, three Aireon payloads were available to receive data, offering significantly more samples than if only one payload was in operation.
- The measured UI performance and the results look strikingly similar to terrestrial ADS-B coverage.
- 2,462 ADS-B messages were received from the during the test flight.
- The table below summarizes expected versus measured performance for some key parameters:

FAA Flight Test Plan and Aircraft

From 3 Payloads	Best Expected	Best Measured
Aircraft Elevation (deg)	7.00	- 4.58
Slant Range (km)	2550	3768
95th % Update Int.(s)	15.00	10.02

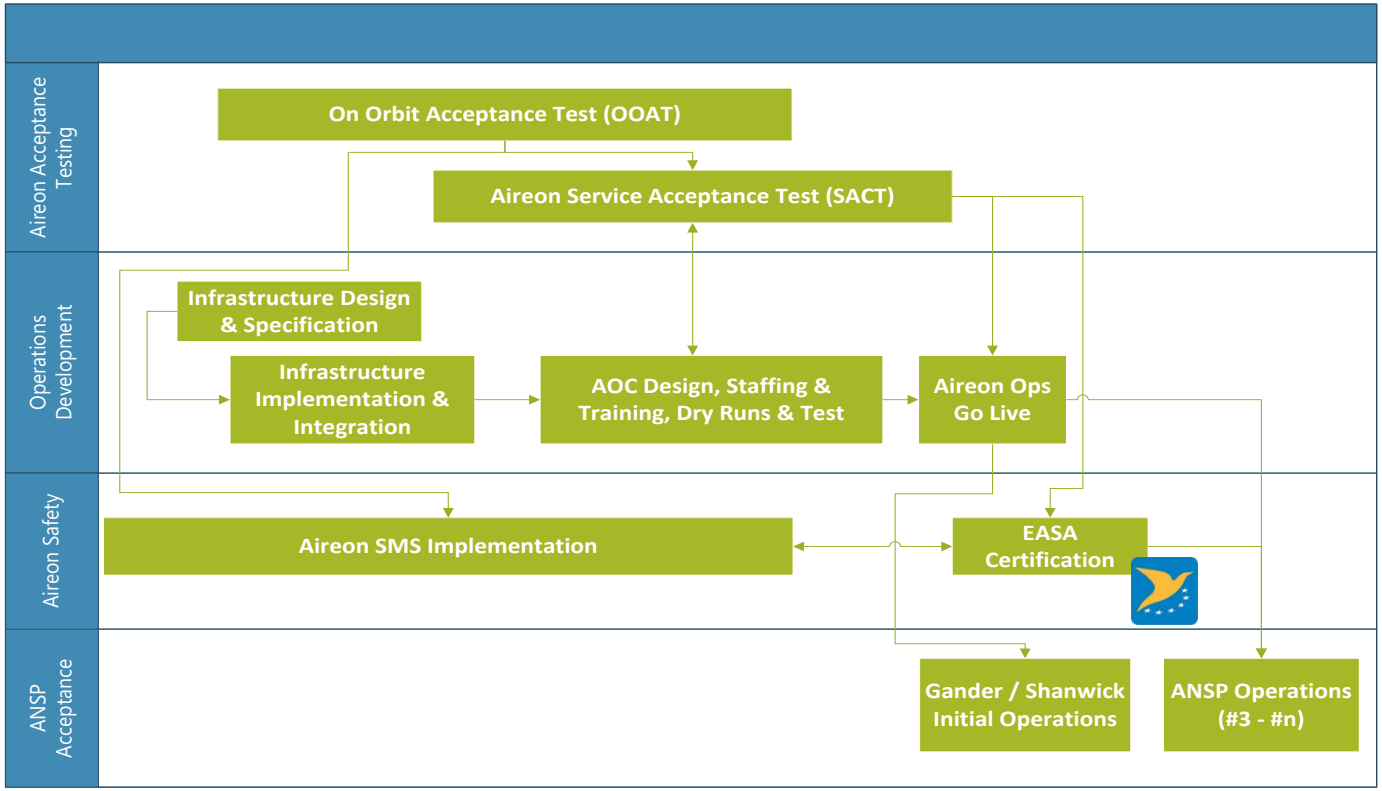
Preliminary Data: Polar Traveling Aircraft



These two aircraft are travelling Eastbound together at about 490 knots at the same altitude (35,000') with a separation distance of ~155 NM

ANSPs implementation of Space-based ADS-B

Transition to Operations



Safety is part of developing the system and maintaining operations for the life of the service

Launch Customer's Team Meeting at IAA facilities March '17

Thank you

Questions?

Aireon