



*Rockwell Collins' ARINC MultiLinkSM
Flight Tracking Service*

ICAO Seminar on Implementation Advance Surveillance & Automated Systems
Panama City, Panama 22 September 2015

Manny Gongora
mgongora@arinc.com

**Rockwell
Collins**

Building trust every day

Background

- Flight tracking is finally getting some long overdue attention in the industry—***for the wrong reasons***
- In May 2014, the International Civil Aviation Organization (ICAO) convened a special multidisciplinary meeting regarding global flight tracking (MMGFT)
 - Recommended the development of a concept of operations on aircraft tracking – high level requirements/objectives for a Global Aeronautical Distress and Safety Systems (GADSS).
 - “... a flight tracking concept of operations covering how the new tracking data gets shared, with whom, and under what circumstances” ¹.

Background

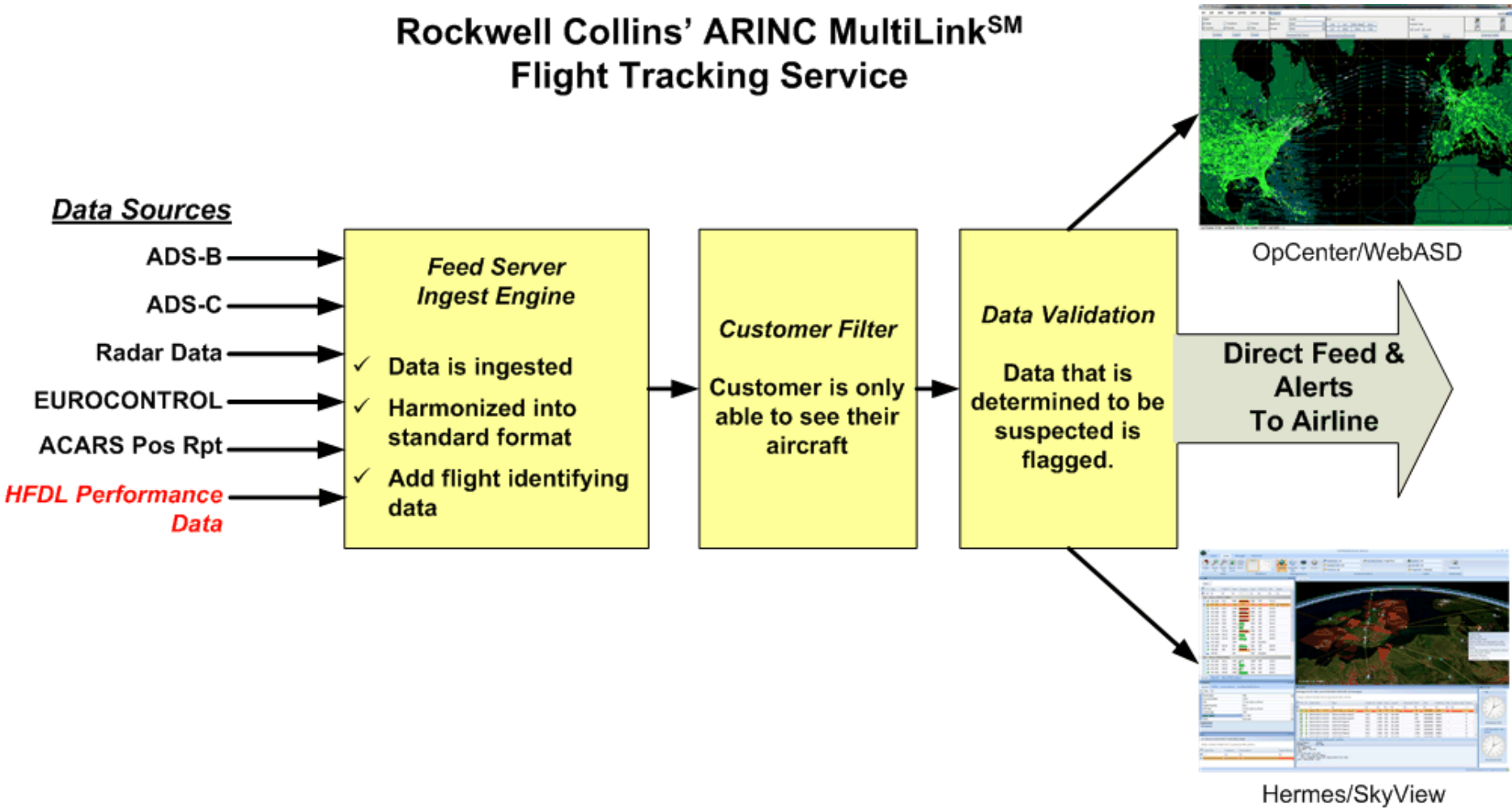
- June-October 2014, the International Air Transport Association (IATA)
 - Conducted an initiative to closely examine global flight tracking – Aircraft Tracking Task Force (ATTF)– “to identify the best near term options and develop performance based recommendations for global flight tracking” ² using existing coverage, practices and technologies.. ***In essence, use what is available today.***
- In February 2015, ICAO held the Second High-Level Safety Conference 2015 ³
 - Recommends the completion of the concept of operations for normal, abnormal, and distress flight tracking.
 - Recommends operators track aircraft “at least every 15 minutes for the portion(s) of the inflight operation(s) that is planned in an oceanic area(s)” ⁴... more in Fall 2015.
 - Final report expected Oct/Nov 2015

Rockwell Collins Solution

- Rockwell Collins' ARINC MultiLinkSM Flight Tracking Service –
 - Provides an airline the ability to track their aircraft anywhere in the world.
 - Tracking uses multiple data sources:
 - ADS-B (ground-based sensors)
 - ADS-C: Inmarsat, Iridium, HF DL
 - U.S. Traffic Flow Management (TFM) Radar Data (US operations)
 - EUROCONTROL position information
 - ACARS position reports
 - HF DL network performance data (includes latitude, longitude, and time)
 - Aircraft position information is displayed, or delivered as a data feed.
 - Offered as part of Hermes and OpCenter
 - Can be streamed to a carrier's own situational display solution

Our Solution

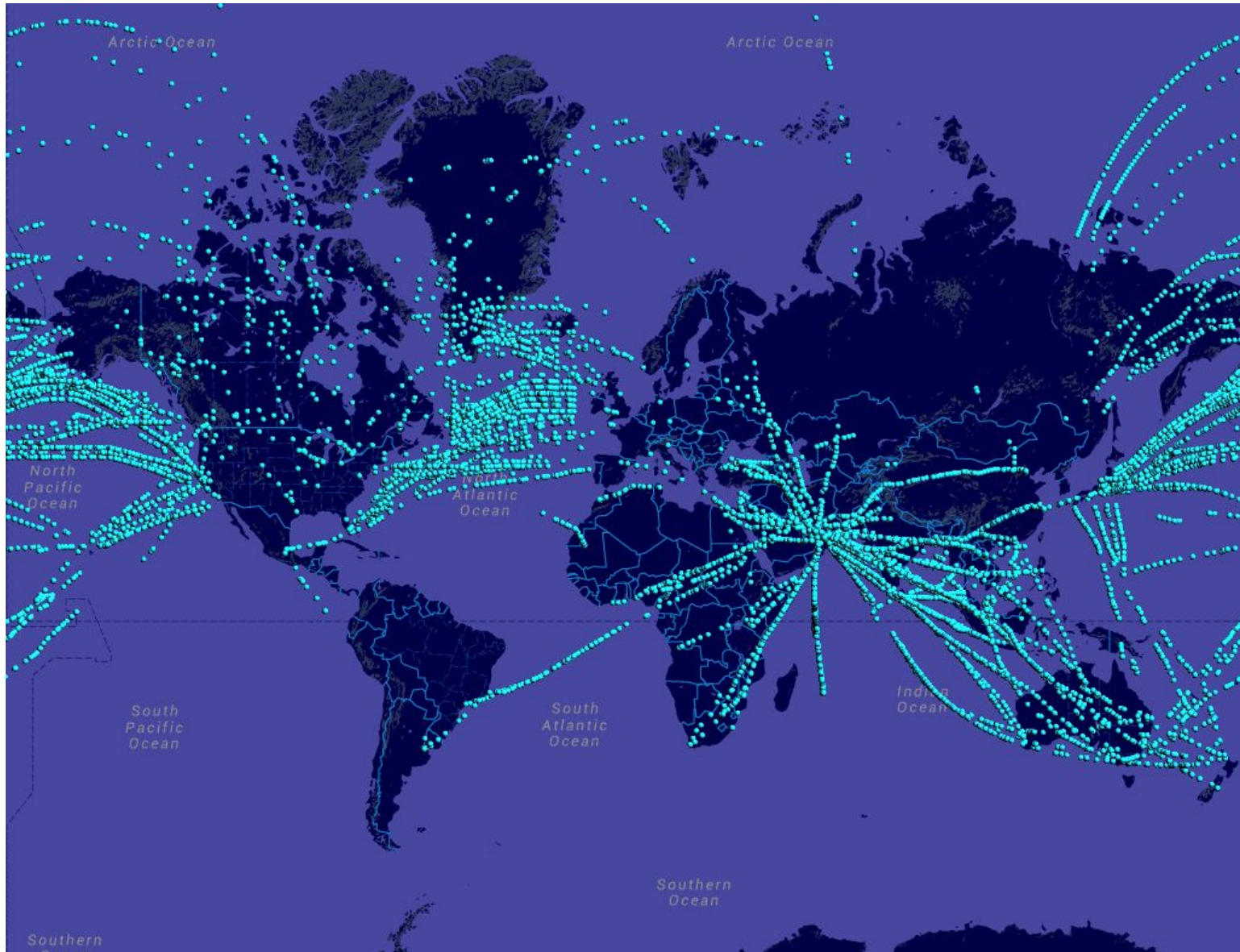
Rockwell Collins' ARINC MultiLinkSM Flight Tracking Service



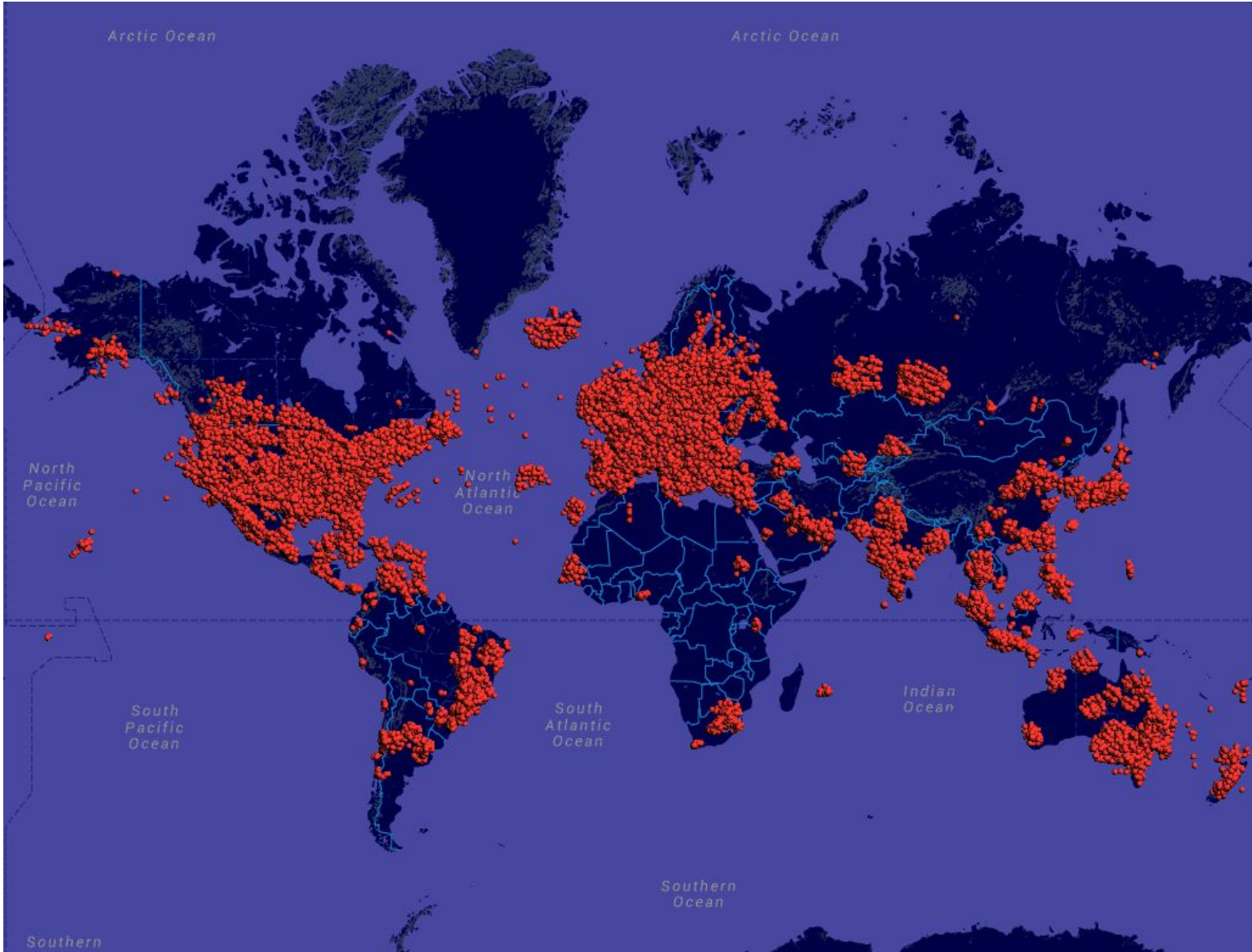
Capability Demonstration

- The following are images of individual data feeds over a 24 hour period:
 - ADS-C (selected carriers)
 - Periodic reports
 - Event reports
 - Waypoint change event
 - Level range deviation event
 - Lateral deviation event
 - Vertical rate change event
 - ADS-B
 - ANSP Radar Data (a.k.a. US TFM data)
 - EUROCONTROL

ADS-C Data (Selected Carriers)

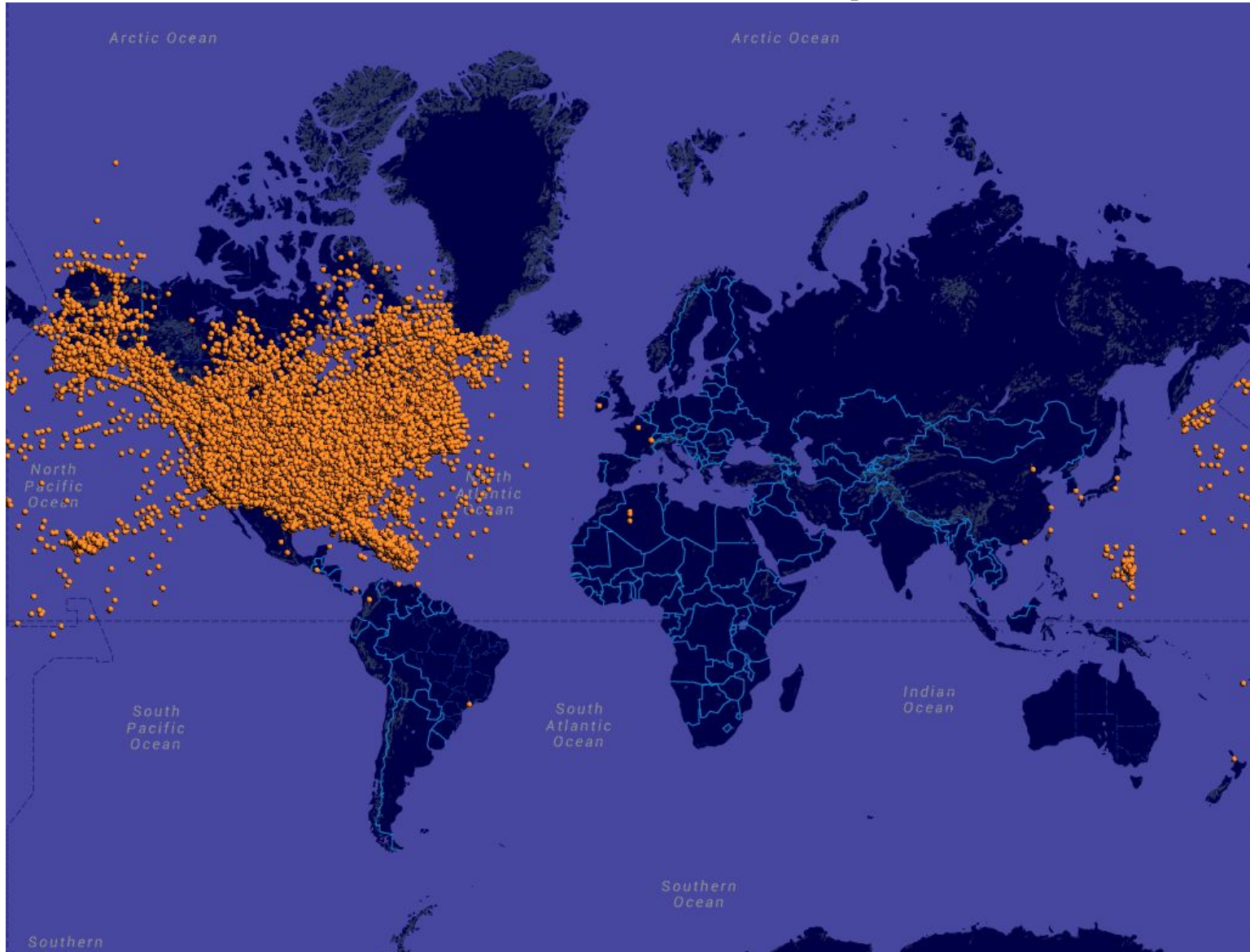


ADS-B Data (all available carriers)

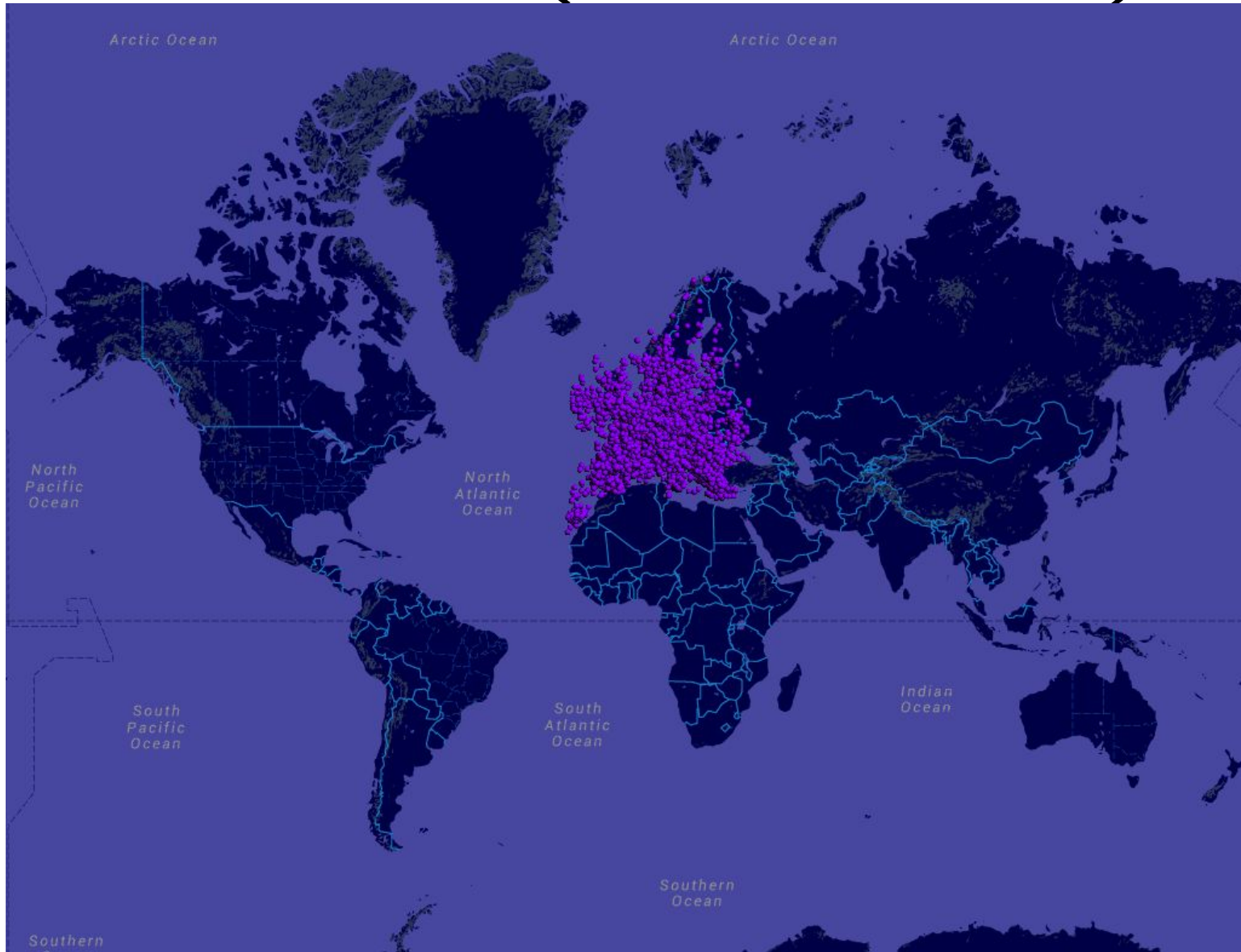




ANSP Radar Data (all US operations)



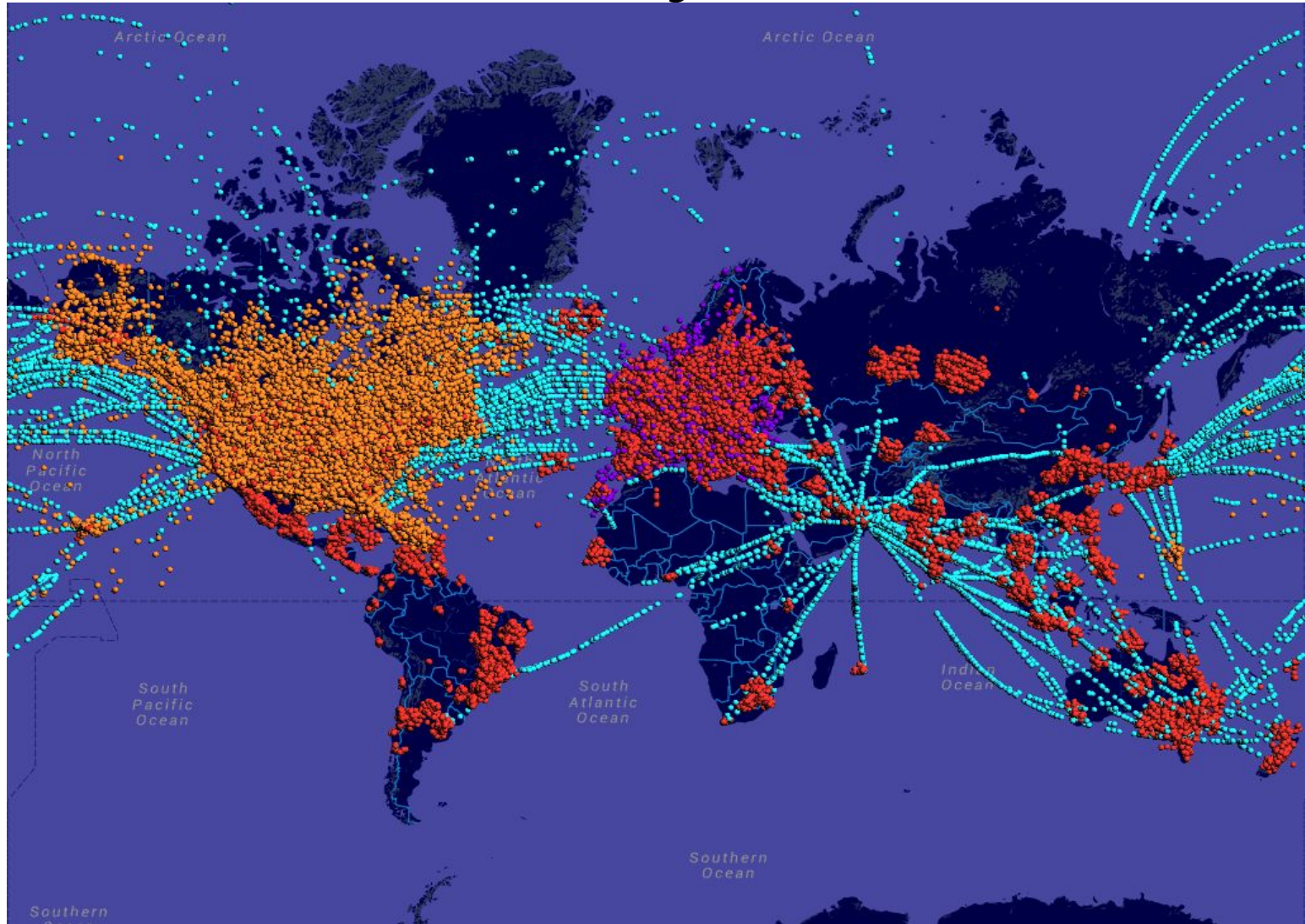
EUROCONTROL (all available carriers)



Capability Demonstration

- The next image shows the combination of all data readily available to industry, each for a 24 hour period:
 - ADS-C (selected carriers)
 - ADS-B (all available carriers)
 - ANSP Radar Data (US operations)
 - EUROCONTROL (all available carriers)
 - ACARS Position Reports (selected carriers)

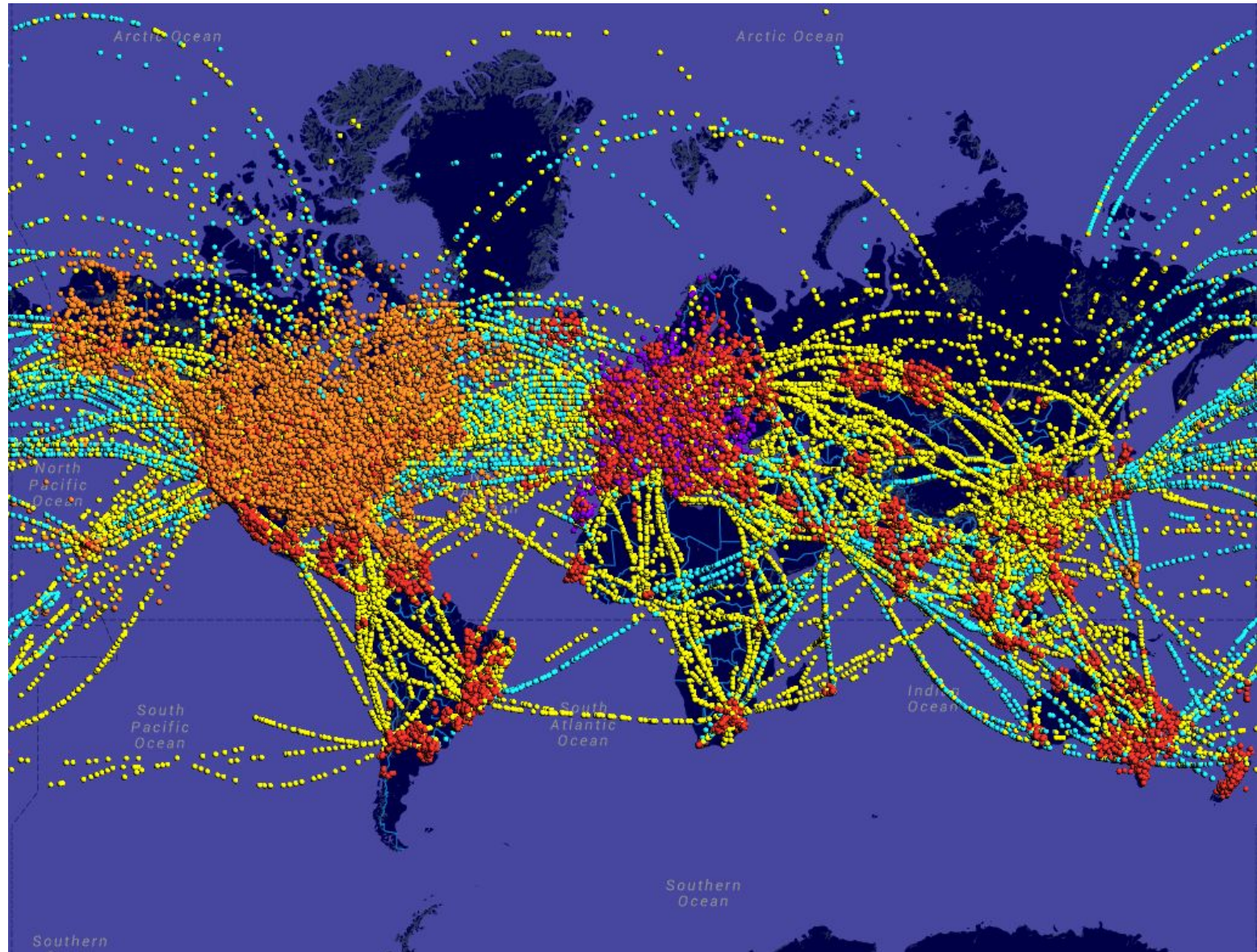
Industry Data



● ADS-C ● ADS-B ● TFM ● EUROCONTROL ● ACARS

Capability Demonstration

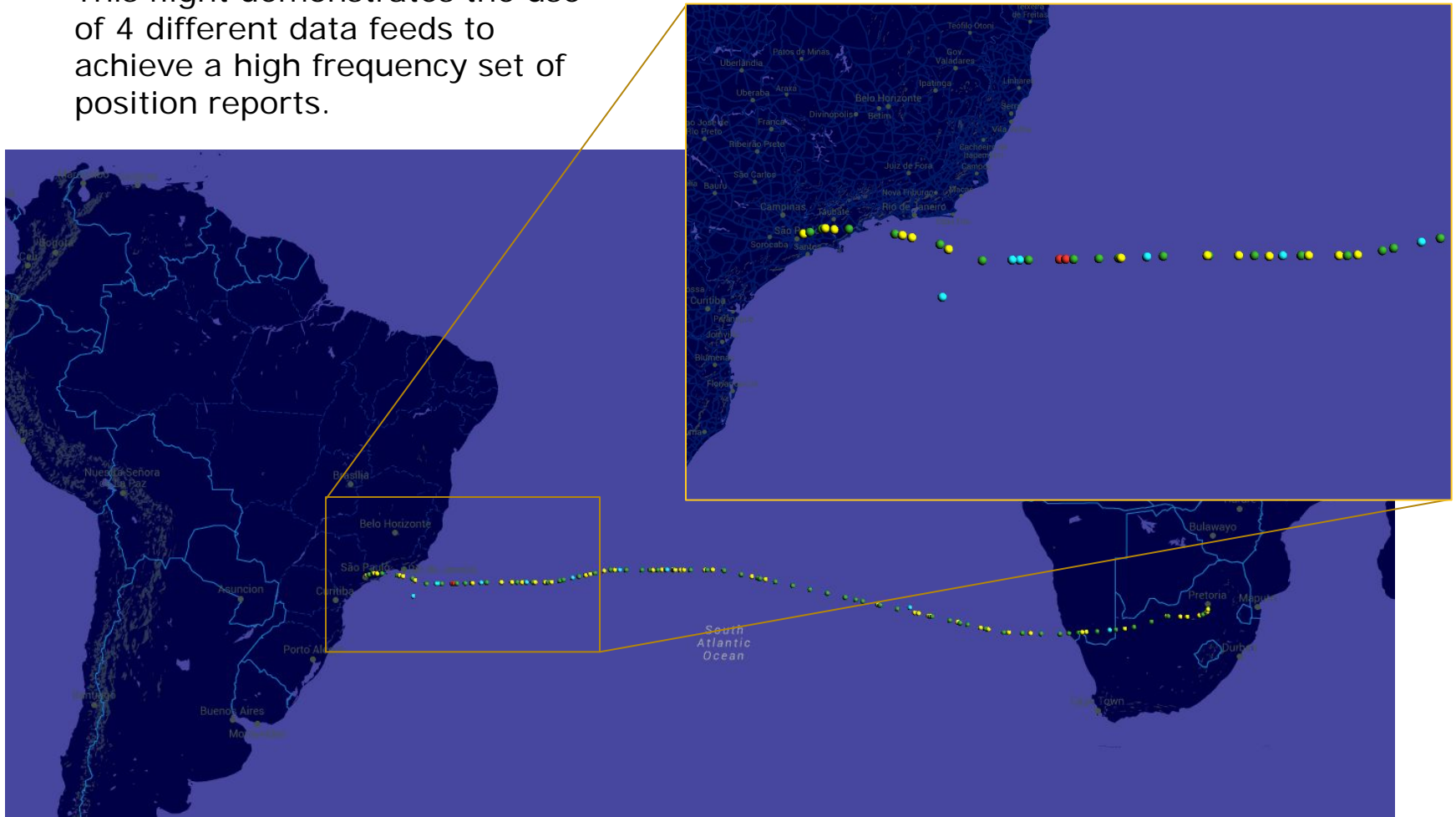
- The *FINAL* image shows the combination of all readily available industry data, each for a 24 hour period, PLUS...:
 - ADS-C (selected carriers)
 - ADS-B (all available carriers)
 - ANSP Radar Data (US operations)
 - ACARS Position Reports (for a small number of carriers)
 - ***Including HFDL Performance Positional Data***



● ADS-C ● ADS-B ● TFM ● EUROCONTROL ● ACARS ● HFDL Perf. Rpt.

Example: Johannesburg – São Paulo

This flight demonstrates the use of 4 different data feeds to achieve a high frequency set of position reports.



- ADS-C
- ADS-B
- TFM
- ACARS
- HFDL Perf. Rpt.

Program Status Update

- Phase 1 Operational 15 Sep 2015
- Established a supplier agreement with FlightAware to provide the ADS-B component of MultiLink
- Beta Program:
 - 10 carriers from various parts of the world participated and will continue to evaluate through October
 - Inputs collected and are being refined into a Phase 2 & 3 release
- Phase 2/3
 - Expanded Alerting
 - Flight Plan Deviation
 - ADS-C Flight Path Deviation
 - Two additional feeds being investigated
 - Tighter integration of flight plans into MultiLink
 - Creation of a tool to replay a specific flight
 - Creation of a dashboard
 - Looking for a carrier that would like to trial the use of automated AOC/ADS-C to fill gaps in tracking

Value Proposition

- Global Tracking
- Repurposes existing data to provide tracking information
- Airlines can augment readily available industry data in specific geographic regions in order to minimize cost
 - AOC ADS-C where necessary/possible
 - On demand ACARS position reports
- Data is validated, harmonized and provided in a common format for ease of use
- Alerting capability
 - Deviation reporting using ADS-C
 - Level range deviation event
 - Lateral deviation event
 - Vertical rate change event
 - Silent/Mute aircraft

Thank You!

Footnotes

- ¹ International Civil Aviation Organization (ICAO) (2014). *ICAO Delivers Agreement Between States, Industry Groups on Global Airline Flight Tracking Capability*. Retrieved February 15, 2015 from <http://www.icao.int/Newsroom/Pages/ICAO-delivers-agreement-on-global-airline-flight-tracking-capability.aspx>
- ² International Air Transport Association (IATA) (2014). *Aircraft Tracking Task Force Frequently Asked Questions*. Retrieved February 15, 2015 from <https://www.iata.org/pressroom/Documents/aircraft-tracking-task-force-faqs.pdf>
- ³ ICAO (2015). *Second high-level safety conference 2015, planning for global aviation safety improvements*. HLSC/15-WP/102, February 4, 2015.
- ⁴ International Civil Aviation Organization (ICAO) (2015). State letter AN 11/1.1.29-15/12 on aircraft tracking. February 27, 2015.
- ⁵ International Civil Aviation Organization (ICAO) (2014). Aircraft Tracking – working paper presented by France at the ICAO Multidisciplinary Meeting Regarding Global Tracking in Montreal, Canada, May 12-13, 2014. Global Tracking 2014-WP/8 9/5/14, <http://www.icao.int/Meetings/GTM/Documents/WP.08.France.Aircraft%20tracking.pdf>.