

A close-up, low-angle view of an airplane's fuselage and wing. The fuselage is white with a light blue stripe running along its length. The wing is also white with a light blue stripe. The background is a solid light blue color. The text is overlaid on the left side of the image.

PBN Implementation

From AMBER to E-GEN

Pauls Calitis

Senior VP Flight Operations

29 SEP 2015

airBaltic

Who we are

- Latvia's national carrier, based in Riga
- Latvian State is 99% shareholder
- Focus on travel to from Baltics and Nordics
- 20 years of operation

airBaltic →



Who we are

- 60+ destinations
- Direct flights from Riga, Vilnius, Tallinn



Who we are 2015

- 40K flights
- 3 mio passengers
- 12 B737
- 12 Q400



Currently **NOT** EGNOS LPV approach capable!

Who we are

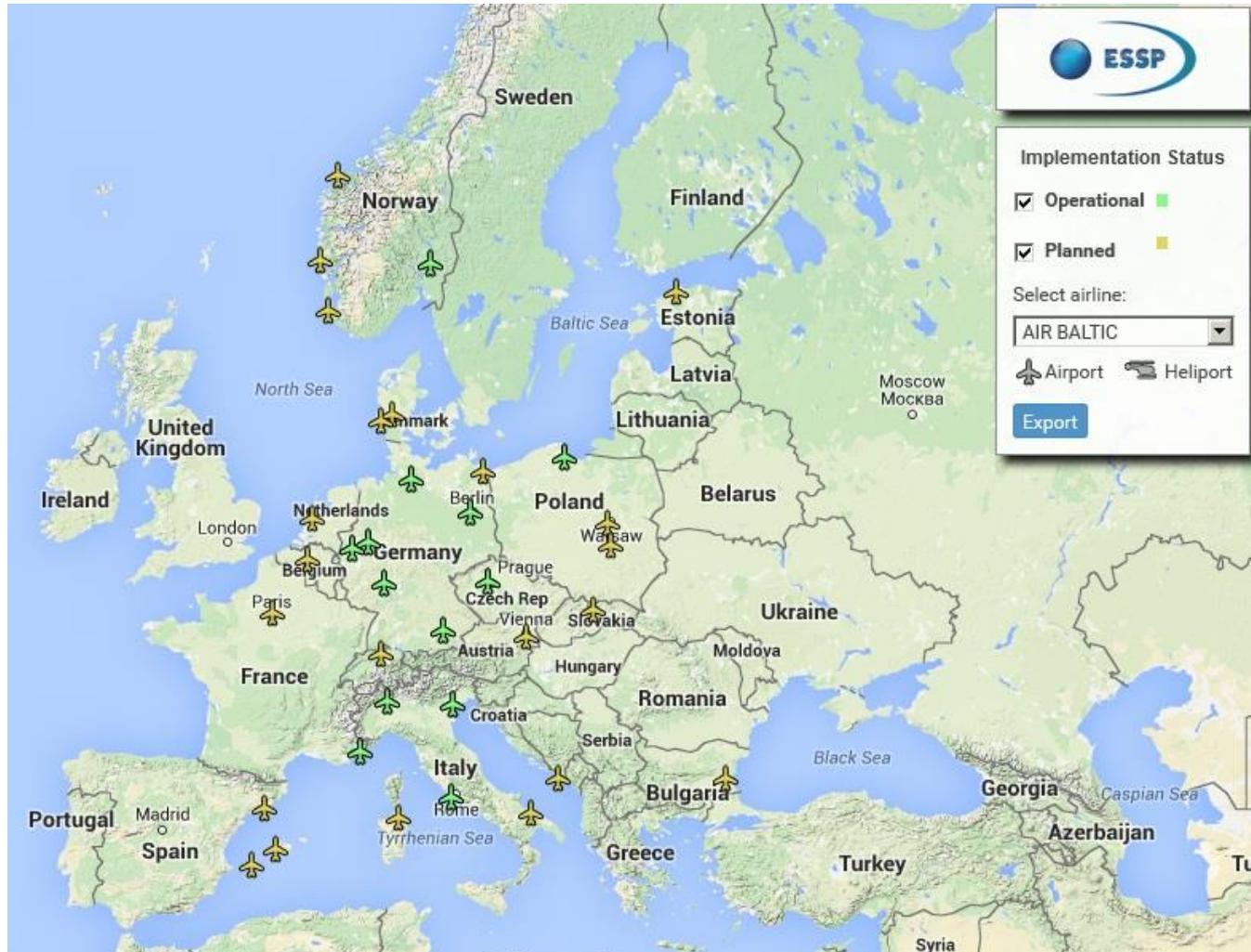
- Launch customer of Bombardier CS300
- Start operations Q4 2016



EGNOS LPV capable from EiS! ✓

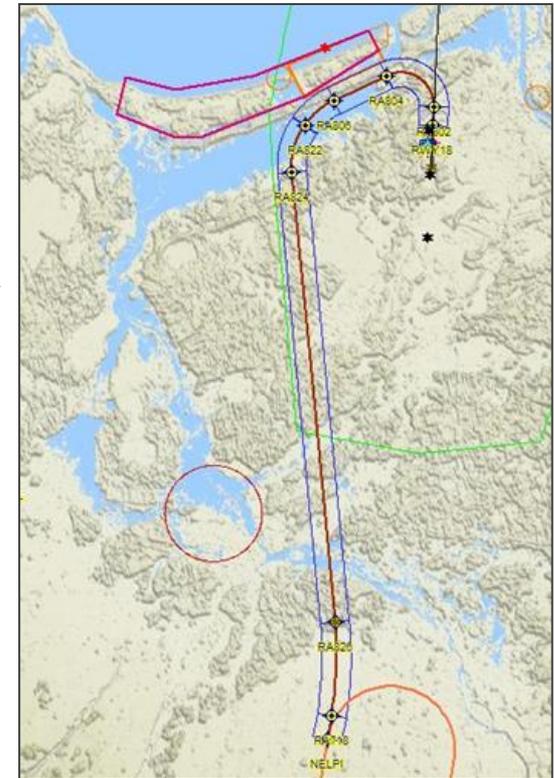
airBaltic LPV environment

- 13 route network airports with published LPV
- 30 airports by 2018 ?



AMBER experience

- SESAR funded project 2012-2014
- RNP arrivals in RIX
- Partners: airBaltic, ANSP, Airbus ProSky
- Flight testing on Q400s
- 120+ approaches flown
- Documented +ve impact
 - Time, fuel, emissions, noise



Arrival **M**odernization **B**etter **E**fficiency **R**iga

EGNOS Enabled North



→ Co-financing from European GNSS Agency



E-GEN Goals

- Retrofit Q400 fleet for LPV capability
- Q400 crew training for LPV
- Operational approval by 2018



E-GEN Timeline

- E-GEN selected for co-financing APR 2015
- Agreement signed AUG 2015
- STC design and certification MAR 2016
- 1st Q400 retrofit NOV 2016
- All retrofits complete DEC 2017
- Operational approval JAN 2018
- Project completion MAY 2018

E-GEN Technical

- STC development
- FMS hardware upgrade 8 a/c
- FMS software upgrade 12 a/c
- Antenna upgrade
- Display and warning upgrade
- Work during heavy maintenance



E-GEN Operational

- Flight Crew: procedure and manual revision
- Flight Crew: training (ground and simulator)
- Dispatch and Engineering: procedure revision
- Operational approval from Authority



Challenges

- No off-shelf technical solution available
- Patchwork vs complete solution
- Certification risks due FAA/EASA regulation differences
- Critical to have close cooperation with Authorities
- Limited RNP take up in Europe
- Procedure re-design in Riga required



Success opportunities

- Homogenous, LPV capable fleet
- Recognition potential for leading LPV in Europe
- Safety (workload, predictability)
- Efficiency (time, cost, environment, best served)
- Upgraded avionics for latest gen navigation:
 - RNP APCH, RNP AR APCH, ADS-B Out
- Preparedness for future airspace





E-GEN project

airBaltic