



north european functional airspace block

**NEFAB** General presentation – Avinor ANS

# NEFAB General

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- ⬆ Background and objectives
- ⬆ The programme
- ⬆ Target concept
- ⬆ Effects and benefits
- ⬆ Future developments



## FAB definition in SES2

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“FAB (Functional Airspace Block)

An airspace block based on operational requirements and established regardless of State boundaries, where the provision of air navigation services and related functions are performance-driven and optimized with a view to introducing, in each functional airspace block, enhanced cooperation among air navigation service providers or, where appropriate, an integrated provider.”



# NEFAB establishment

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- ▲ Foundation for establishment based on NEFAB Project Feasibility Study (1.3.2009 – 4.12.2012)
- ▲ State level agreements signed June 2012
- ▲ ANSP Agreement signed June 2012
- ▲ State level agreements ratified per state in November 2012
- ▲ NEFAB Programme established 4 December 2012, at the same time NEFAB Project formally ended
- ▲ State level agreement entered into force 23 December 2012
- ▲ **NEFAB formally established per 23. Dec. 2012**
- ▲ NSA level agreement entered into force 30 days after SL agreement enforcement
- ▲ NEFAB Council and Committees established January 2013



# Objective of NEFAB

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The overall objective of NEFAB is to improve performance and contribute to European wide performance in areas of

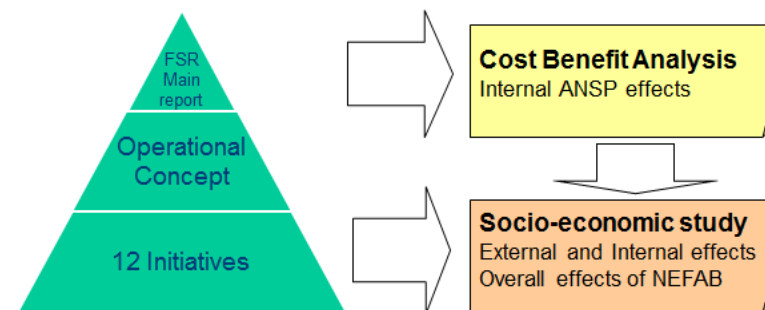
- ▲ Economic
- ▲ Capacity
- ▲ Environment
- ▲ Operational
- ▲ Safety



# NEFAB Feasibility study

Benefits of NEFAB will be stemming from:

- ▲ internal ANSP effects (cooperation, harmonization, integration, sharing of resources and data, joint development and procurement) demonstrated in the Cost Benefit Analysis,
- ▲ and through improvements in airspace and service provision (FRA, optimized route structure, cost efficient operations) demonstrated in the Socio-economic analysis.



The financial and operational improvement potential in NEFAB is demonstrated in the NEFAB Feasibility Study Report.

# Expected benefits (FSR study 2012)

## Main airspace users benefit drivers

- ▲ **Reduced route extensions**, flight time, fuel burn, emissions and costs as a result of improvement in airspace structure and sectorisation by implementation of Free Route Airspace, optimisation of ATS route network and ATS provision

## Main ANSP benefit drivers

- ▲ **Optimised use of ATCOs** as a result of airspace and sectorisation improvements. Foreseen capacity increase until 2020 can be managed with a reduced future recruitment of ATCOs
- ▲ Possible **integration and centralisation** of tasks and functions, reducing overhead. This is a main benefit area that drives savings.
- ▲ **Common procurement of services**, increasing the bargaining power and enabling lower procurement costs.
- ▲ Rationalisation of CNS infrastructure.

2015 Scenario	Effect category	Per day (all flights)	Per year (all flights)
	Reduced route extensions	6 321 NM	2 307 256 NM
	Reduced flight time	1 020 Minutes	372 139 Minutes
	Reduced fuel burn	37 928 kg of fuel	13 843 358 kg of fuel
	Reduction in CO <sub>2</sub> Emission	126 425 kg of CO <sub>2</sub>	46 145 125 kg of CO <sub>2</sub>

2020 Min Scenario	Effect category	Per day (all flights)	Per year (all flights)
	Reduced route extensions	8 584 NM	3 133 317 NM
	Reduced flight time	1 385 Minutes	505 375 Minutes
	Reduced fuel burn	51 507 kg of fuel	18 799 901 kg of fuel
	Reduction in CO <sub>2</sub> Emission	171 689 kg of CO <sub>2</sub>	62 666 339 kg of CO <sub>2</sub>

2020 Perf Scenario	Effect category	Per day (all flights)	Per year (all flights)
	Reduced route extensions	9 112 NM	3 325 712 NM
	Reduced flight time	1 470 Minutes	536 404 Minutes
	Reduced fuel burn	54 669 kg of fuel	19 954 273 kg of fuel
	Reduction in CO <sub>2</sub> Emission	182 231 kg of CO <sub>2</sub>	66 514 242 kg of CO <sub>2</sub>

	Minimum scenario		Performance scenario	
External cash effects per year (in mill. Euro)	2015	53,7	2015	53,7
	2020	73,0	2020	76,8
	2025	92,8	2025	97,6
Internal cash effects per year (in mill. Euro)	2015	0,6	2015	-1,9
	2020	4,3	2020	12,6
	2025	4,3	2025	12,6
Total external and internal cash effects per year (in mill. Euro)	2015	54,3	2015	51,7
	2020	77,3	2020	89,4
	2025	97,1	2025	110,2
NPV of internal and external effects	2012-2025	304,0	2012-2025	341,3

## NEFAB Key performance areas – strategic objectives

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- ▲ **Safety:** Incidents induced by ANSP's shall be at current level or lower
- ▲ **Cost efficiency:** NEFAB and the ANSP's shall deliver services consistent with the EU-wide targets, or better, for cost-efficiency
- ▲ **Capacity:** Services shall be provided in accordance with the EU-wide targets, or better, for capacity; with a NEFAB-wide capacity target established from 2015
- ▲ **Environment:** NEFAB contribution to improved flight efficiency is visible and well documented.





# NEFAB – The programme

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- ▲ Airspace and Services optimization
  - ▲ Target Concept 2015
  - ▲ Target Concept 2020+
  
- ▲ Business development for improved cost efficiency
  - ▲ Training
  - ▲ Safety
  - ▲ AIS and AIM
  - ▲ CNS
  - ▲ Operations



# NEFAB Target Concept

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- ▲ **Target Concept 2015 (NEFAB CONOPS)** an essential element of Scenario 2015 described in Feasibility Study Report
- ▲ 2015 is a **step towards** performance scenario in **2020 and beyond**
- ▲ The NEFAB 2015 Target concept is **in line with European development strategies** and will fulfill a number of SES requirements stated in:
  - ▲ ATM Master Plan
  - ▲ ESSIP/LSSIP Plan
  - ▲ Network Strategy Plan
  - ▲ Interim Deployment Programme



# NEFAB Target Concept

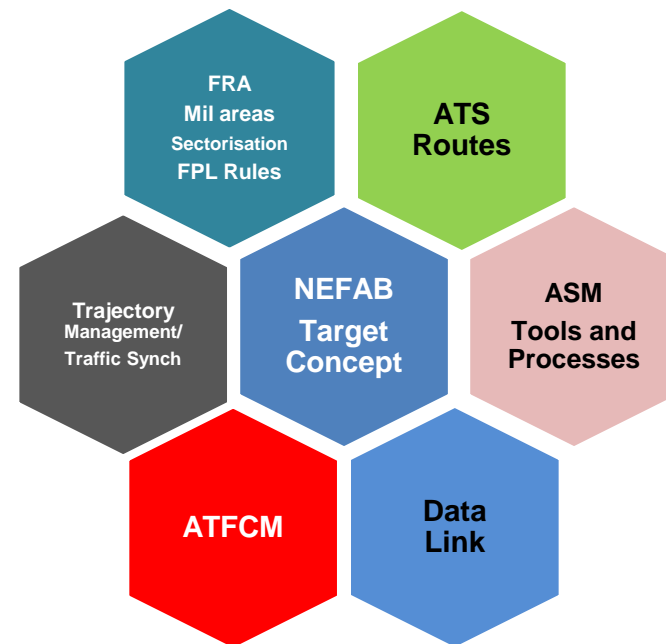
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- ▲ **User preferred** trajectories in **Free Route Airspace (FRA)**
- ▲ ATS-route network **maintained**
- ▲ **Common** NEFAB FRA flight planning rules
- ▲ Sectors will be adapted to **accommodate the changes in traffic flows.**
- ▲ The military airspace structures designed to **accommodate the military user requirements.**
- ▲ ATFCM processes through national FMP`s will be **maintained**
- ▲ Automated flight coordination and **ATM-system interconnectivity enhancements**
- ▲ Data link **implementation**
- ▲ Rules, regulations and ATC-procedures to **support the FRA operations**

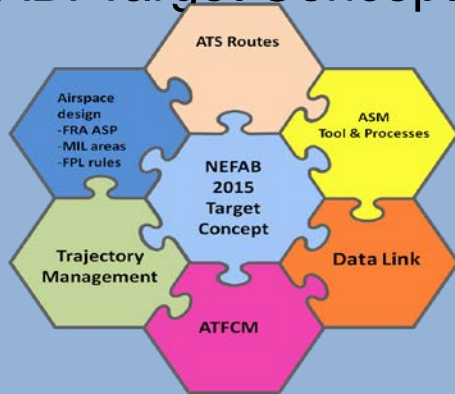


# NEFAB Network plan

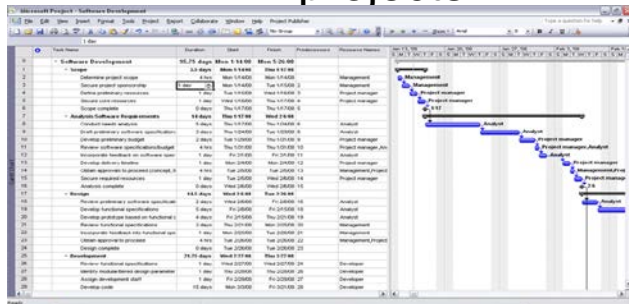
- ▲ The **Network Plan** provides an elaboration and adaption of the **NEFAB 2015 target concept**
- ▲ The NEFAB Network Plan shall secure a **harmonized, synchronized and timely implementation of the FAB concept** of operations to be implemented and fully functional in November 2015.
- ▲ The target concept is built on **individual modules** as shown in illustration.



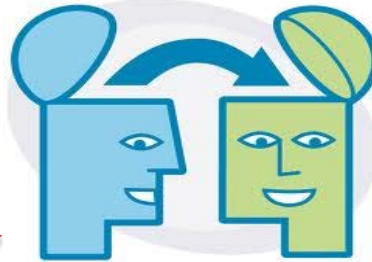
# NEFAB: Target Concept Design



Local ANSP Implementation projects



Training



ANSP



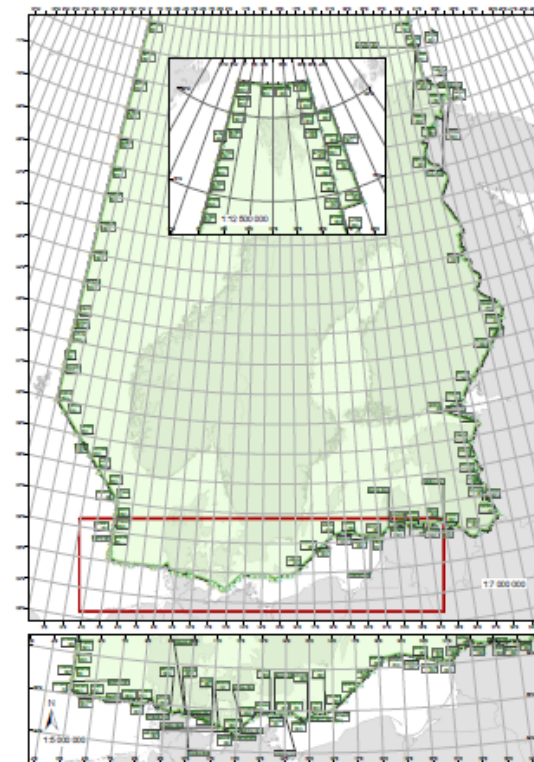
NSA Approval



NEFAB 2015 in operation

# 2015 In progress

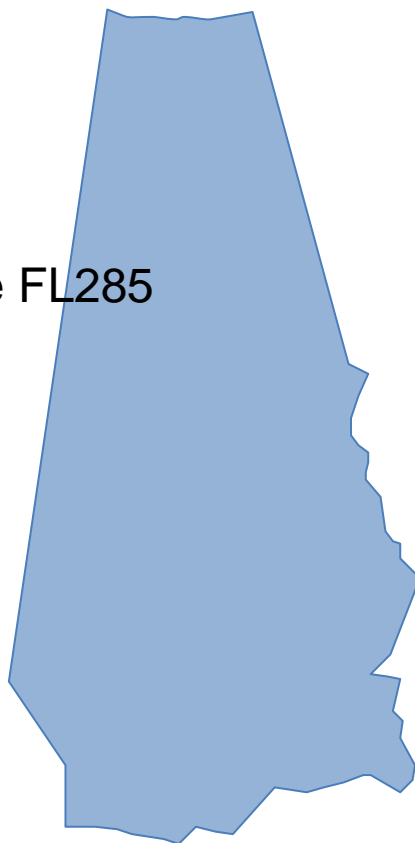
- ▲ NEFAB implement FRA
- and..
- ▲ DK/SE FAB and NEFAB seamlessly connected above FL 285 (NEFRA)



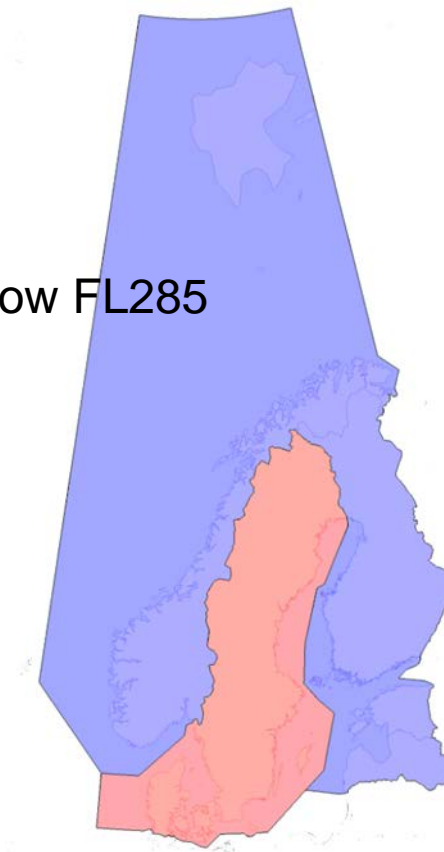
# Free Route Airspace –NEFAB and DK-SE FAB (NEFRA)

- Free Route Airspace
- Fixed Route Network

Above FL285

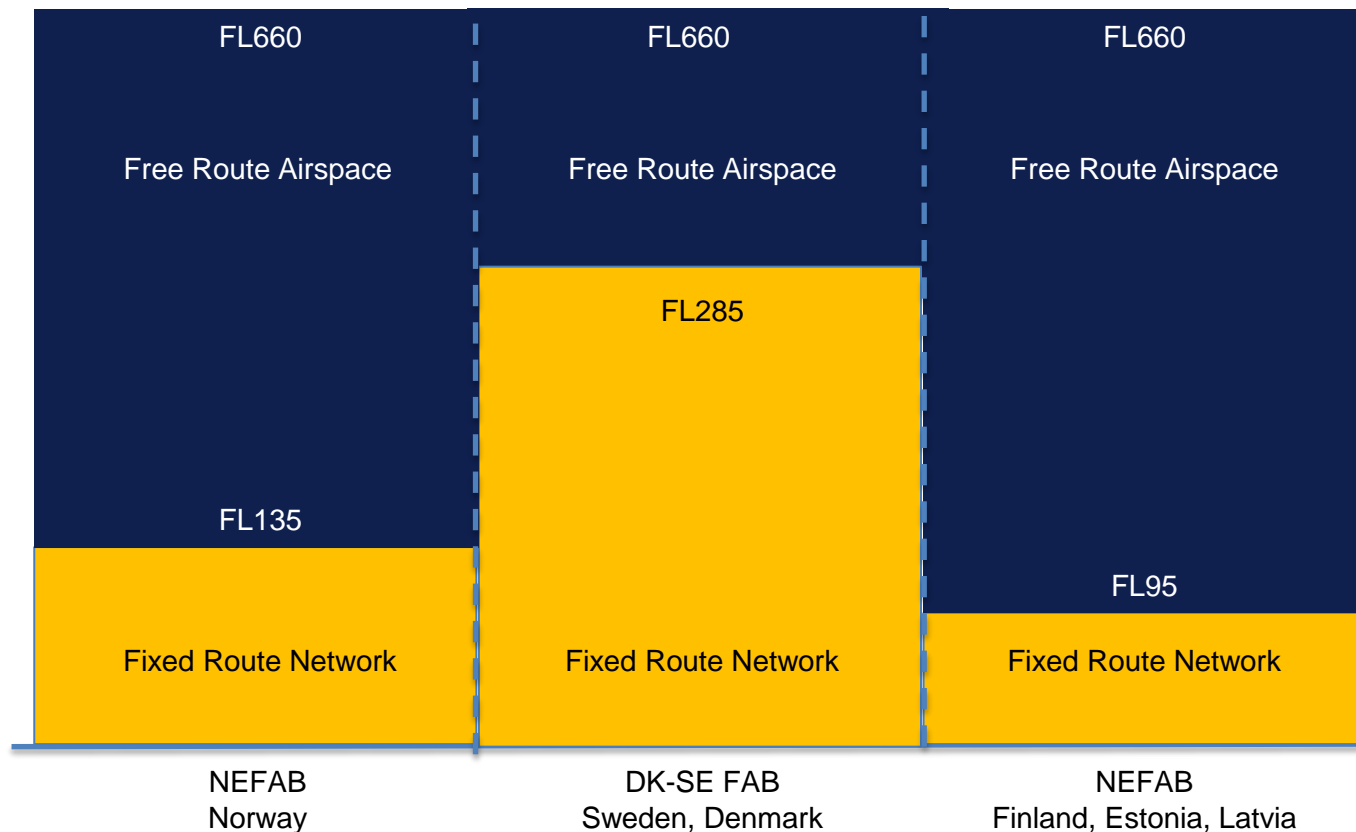


Below FL285



## Free Route Airspace – Extension NEFAB and DK-SE FAB(NEFRA)

NEFRA is the **interface** between FRAs in NEFAB and DK-SE FAB **above FL285**



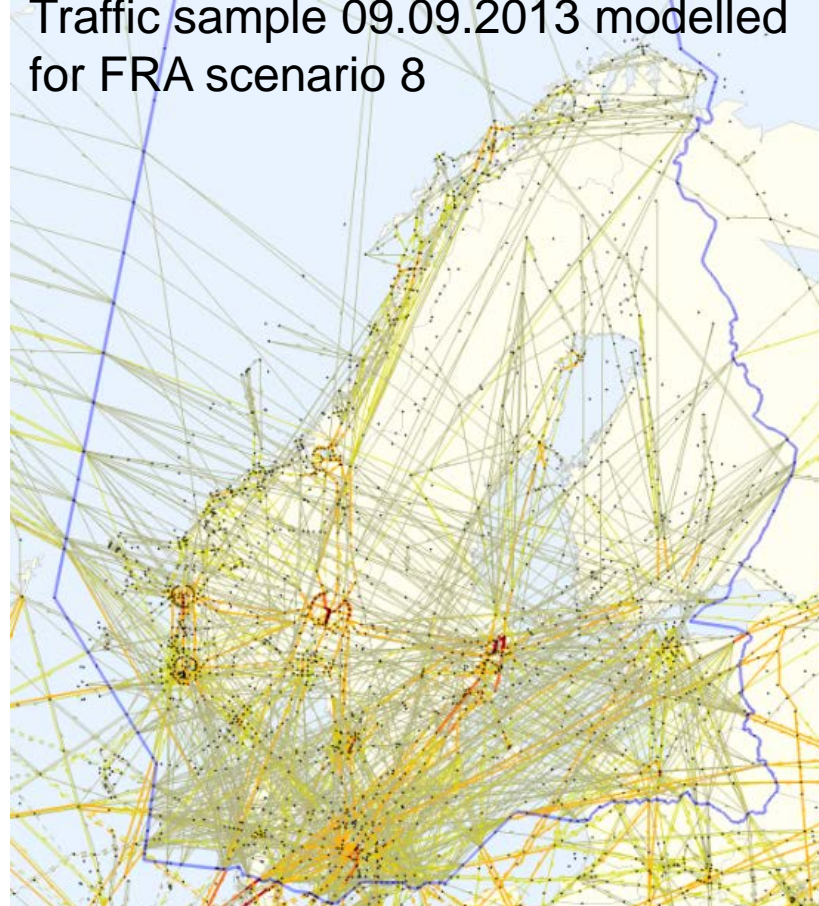


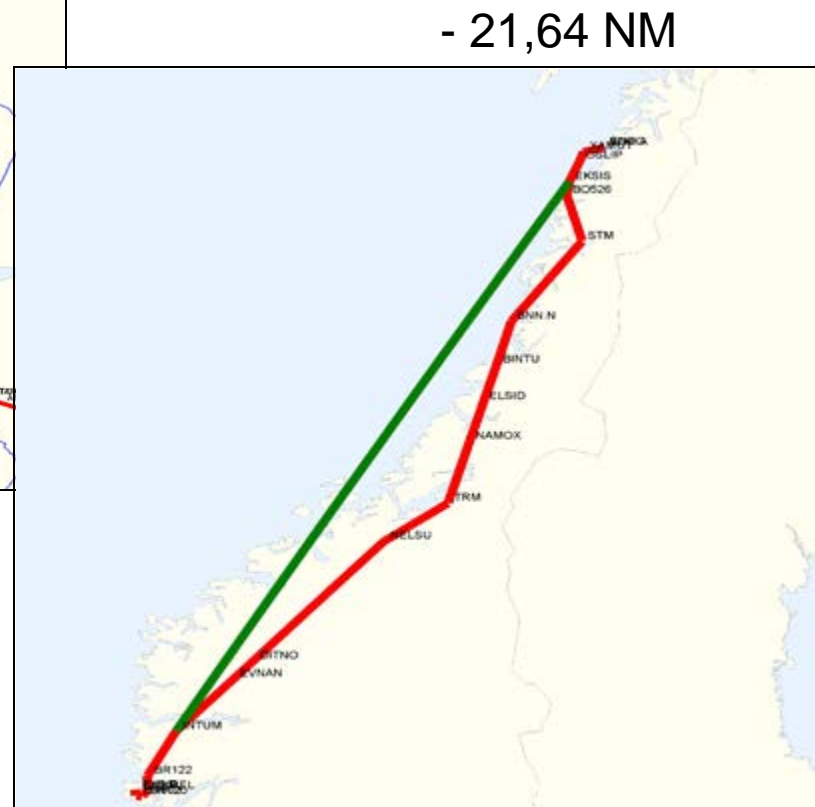
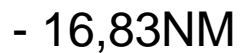
# Effects - Before and after

Reference traffic sample 09.09.2013



Traffic sample 09.09.2013 modelled for FRA scenario 8

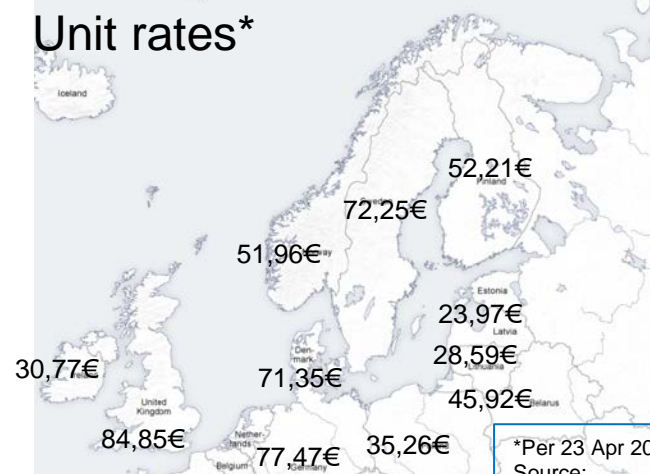




## Effects – Where to fly

In a FRA operators have the option to plan their flight trajectories with optimum cost effects based on several variables, including:

- Route length and time flown impacting fuel costs and route charges for air navigation services (unit rates)
- Winds affecting flown length and time in air and amount of fuel
- Unit rates impacts costs per flown NM.



\*Per 23 Apr 2014  
Source:  
EUROCONTROL and  
EANS



# Effects - economics:

	Per day	Per year (*365)
Flights	4 785	1 746 525
Route length	-5 030 NM	-1 835 895 NM
Flying time	-828 min	-302 220 min
Fuel	-28 359 kg	-10 351 185 kg
Fuel cost	-19 446 €	-7 097 808 €
CO2	-89 620 kg	-32 711 475 kg
NOx	-393 kg	-143 463 kg

\* Route length reduction      Decrease for 2022 flights  
    Increase for 107 flights (modelling errors)  
    No change for 2656 flights (mainly those below FL285 and FRA in DK SE FAB)

\*\* Fuel cost reduction      Fuel cost based on IATA  
    Rate 949\$ per metric ton (4 Apr 2014)  
    949\$ =            685,7 € (16 Apr 14, Coinmil.com)



# Cooperation – future developments

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NEFAB ANSP partners cooperating with:

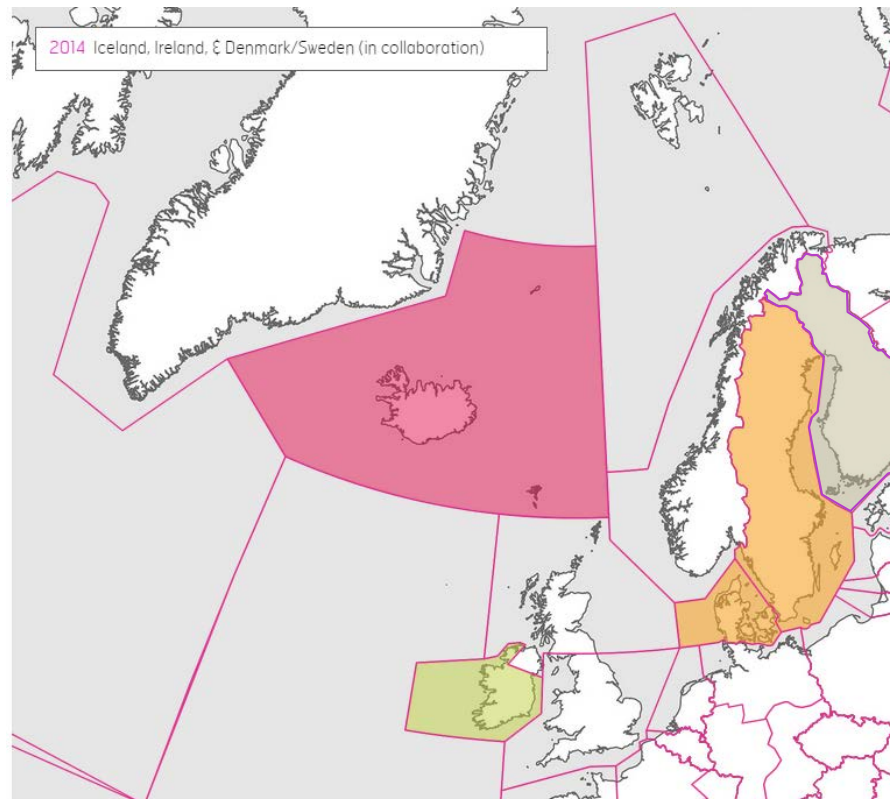
- LFV and Naviair in DK-SE FAB
- IAA and NATS in UK-Ireland FAB
- Isavia, Iceland:  
the **Borealis** alliance.



Key focus in the alliance is the Borealis  
FRA vision

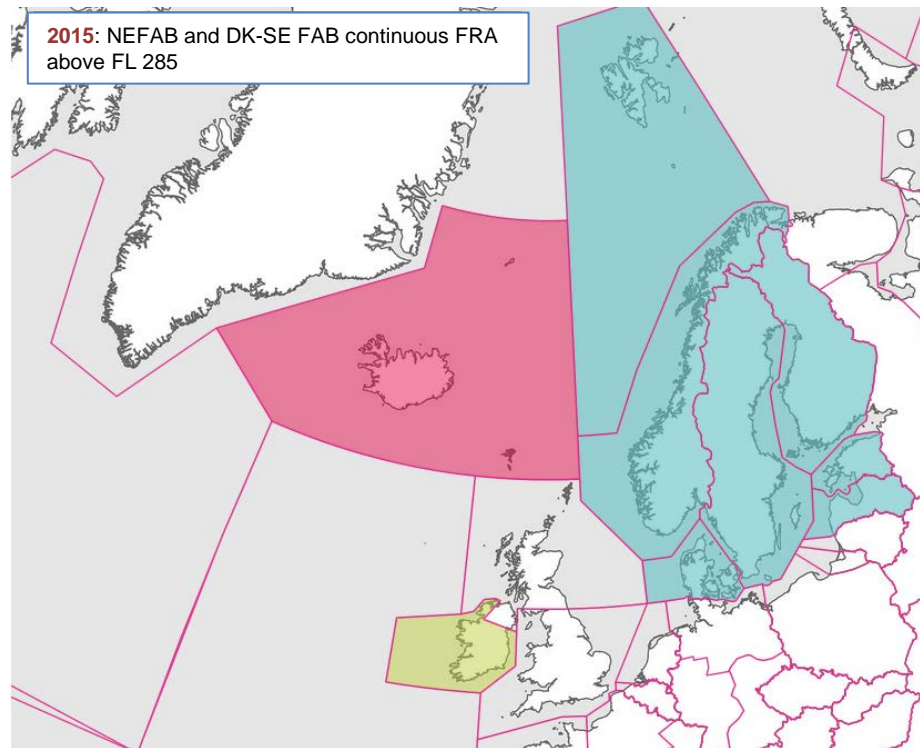
# Status 2014:

- DK/SE FRA implemented
- IRE FRA Implemented
- FIN night time FRA
- Icelandic airspace FRA compliant



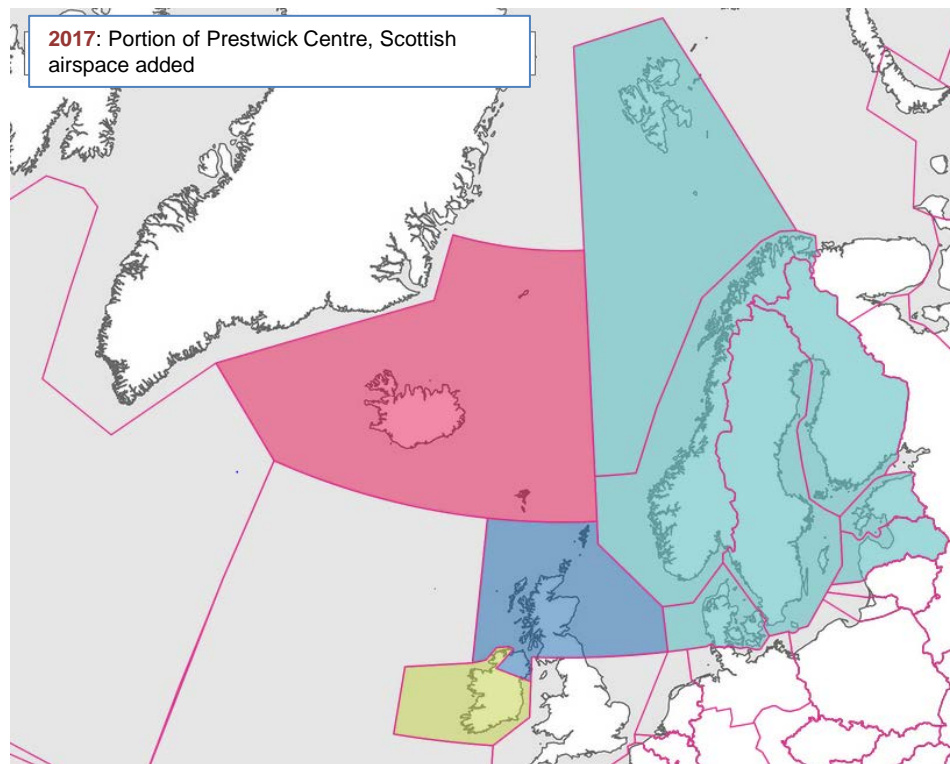
# 2015 In progress

- NEFAB implement FRA
- DK/SE FAB and NEFAB seamlessly connected above FL 285 (NEFRA)



# 2017 planned

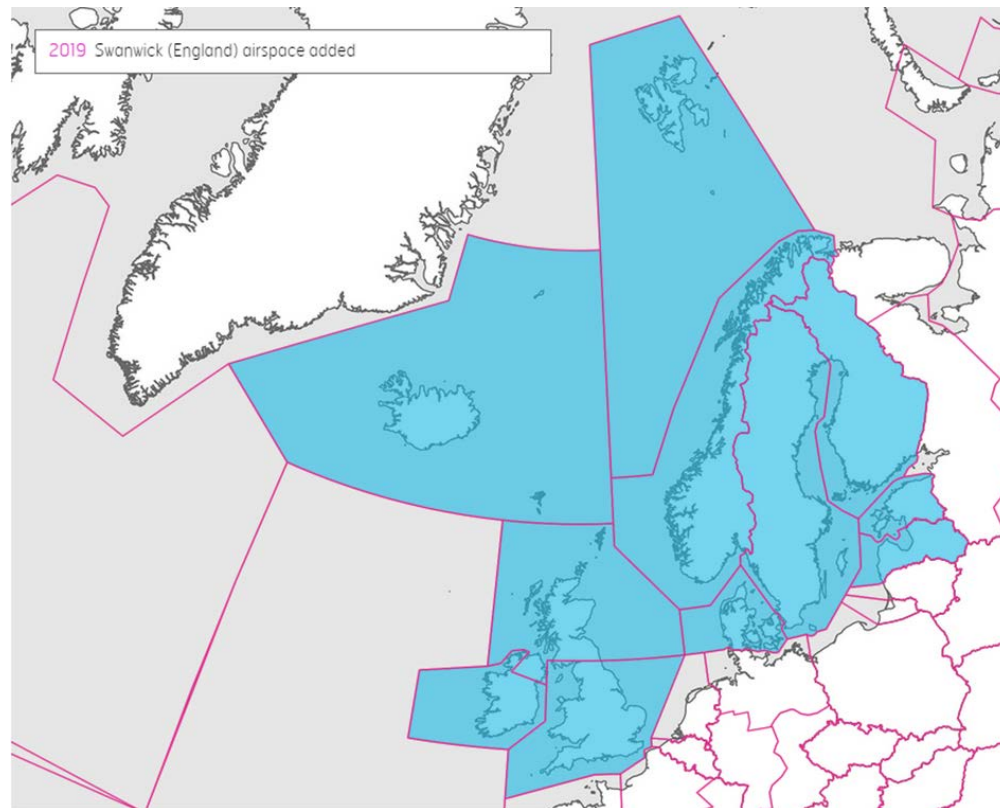
- UK Prestwick Airspace implements FRA





# 2019 The Borealis vision

- UK London FIR implements FRA
- Seamless FRA in Northern Europe



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Thank you for the attention