MINISTÈRE CHARGÉ DES TRANSPORTS

Liberté
Égalité
Fraternité

dgac direction générale de l'Aviation civile

Green Operations

VFE FABEC
07/12/2022
NICE

Pierre BEROLATTI
DSNA Deputy COO

Adrien EMERAUX
Air France

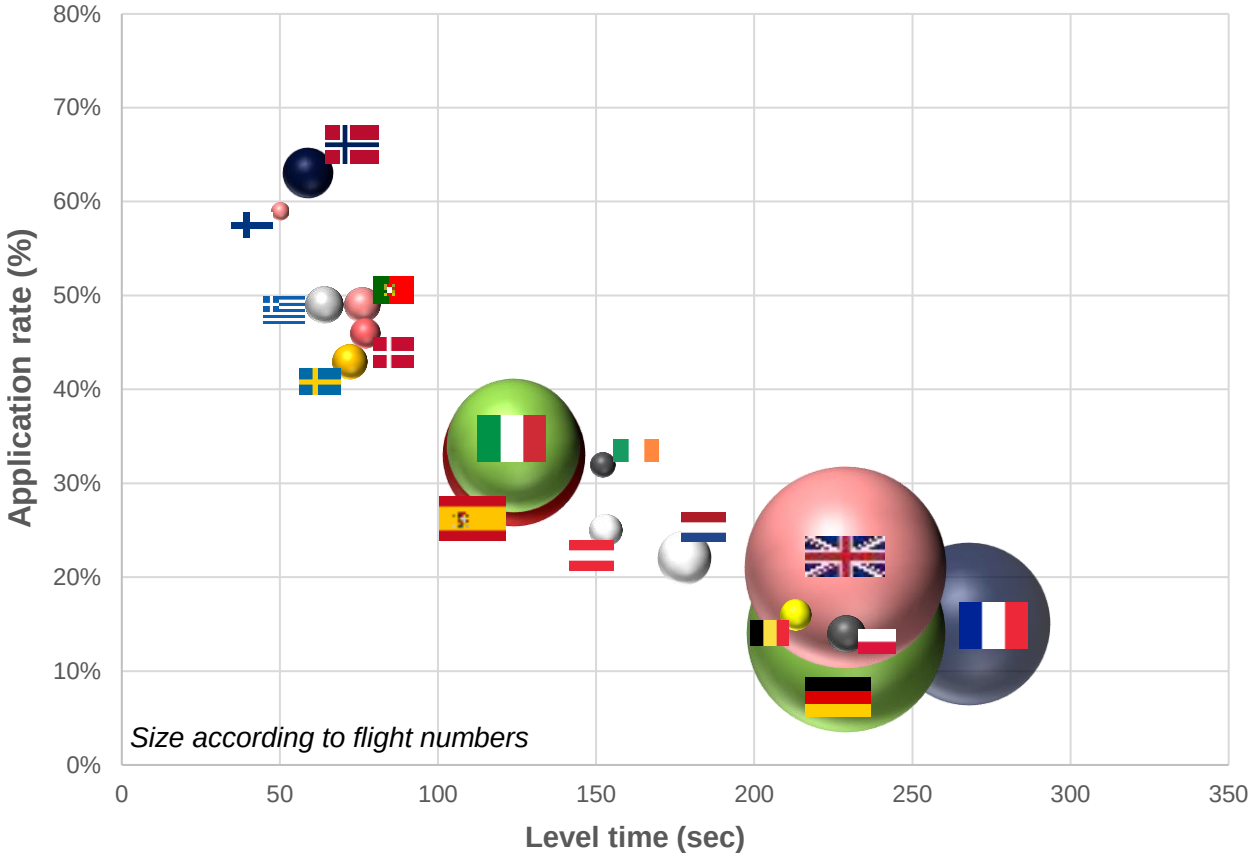
PART 1 : Green Operations

10h25-10h55

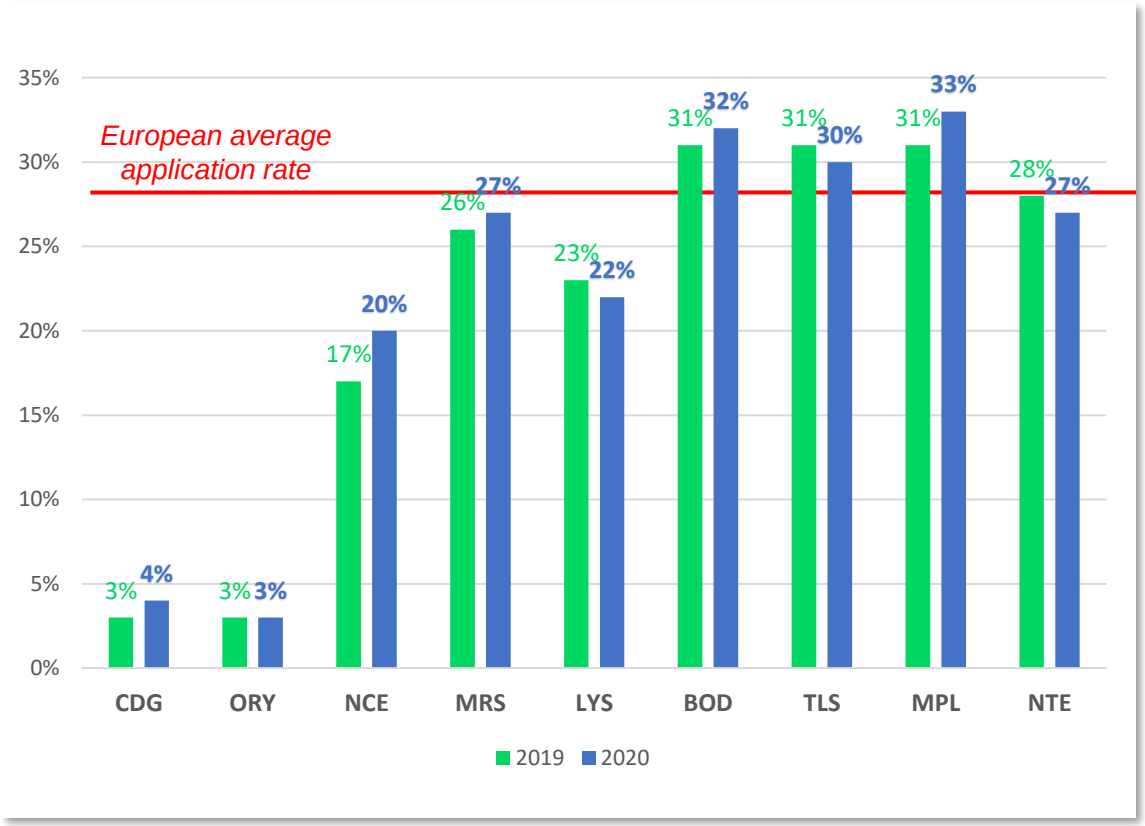
Major NAS user : Air France Analysis

FRANCE CDO SITUATION

CDO application rate and level time per country in 2019

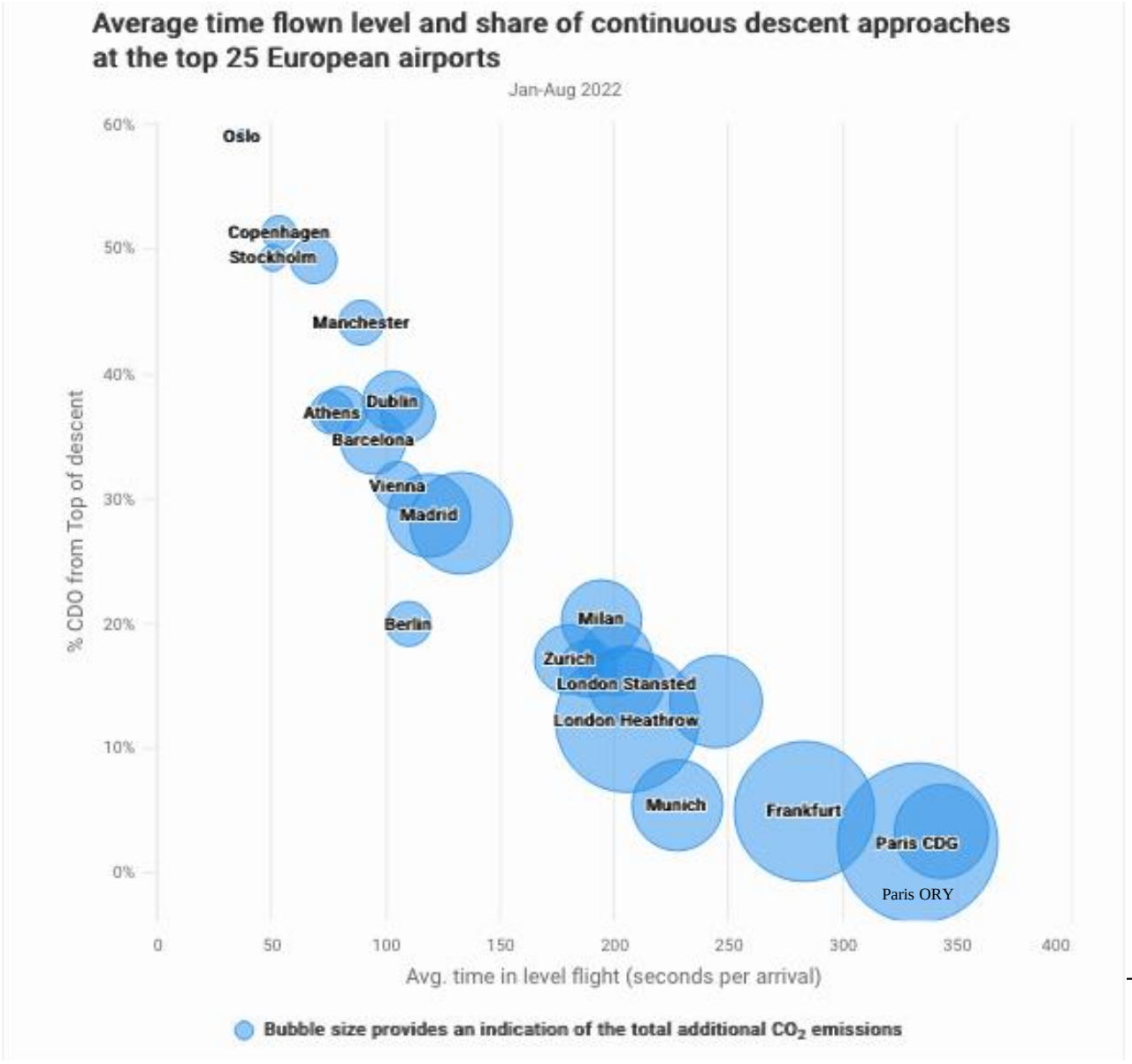


CDO application rate 2019 vs 2020



Source: Eurocontrol portal (data 17/03/21)

AIRPORTS CDO STATUS



MAIN POSSIBLE FACTORS

History and situation

Paris airspace designed mainly for capacity, fluidity

3 major airports CDG – ORY – LBG (+ BVA)

Priorisation

Climb profiles above descent profiles

Lateral optimisation - vertical optimisation

Lack of awareness on vertical efficiency

Data not available for descent profiles from TOD to landing

No fuel figures available to measure the vertical inefficiency

ATC Software not developped for vertical optimisation between centers

Complexity of the flows

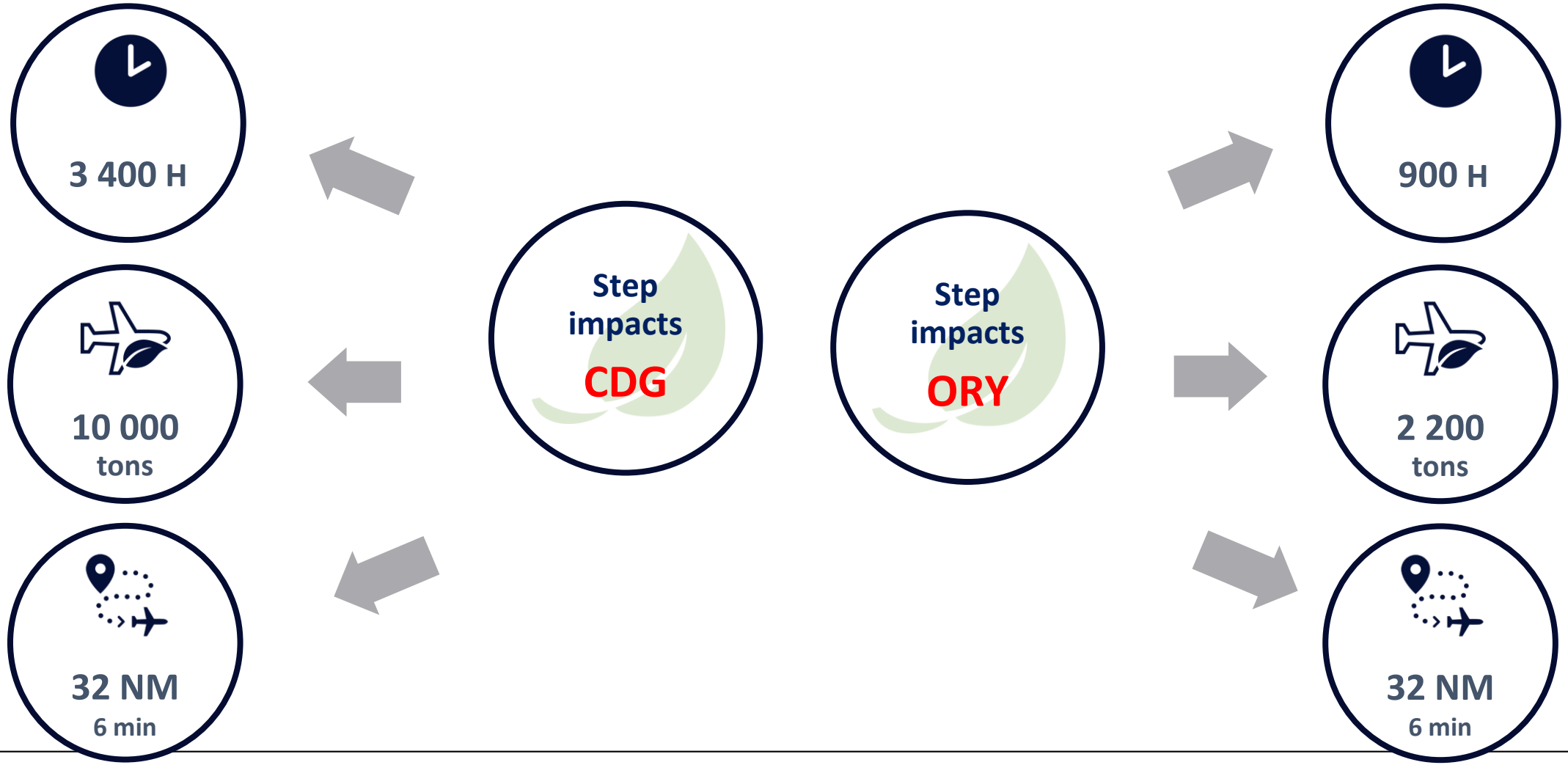
Any change in the airspace structure could unbalance the fluidity

Complexity to address LOAs and airspace volumes for VFE

CAPACITY — OPTIMISATION

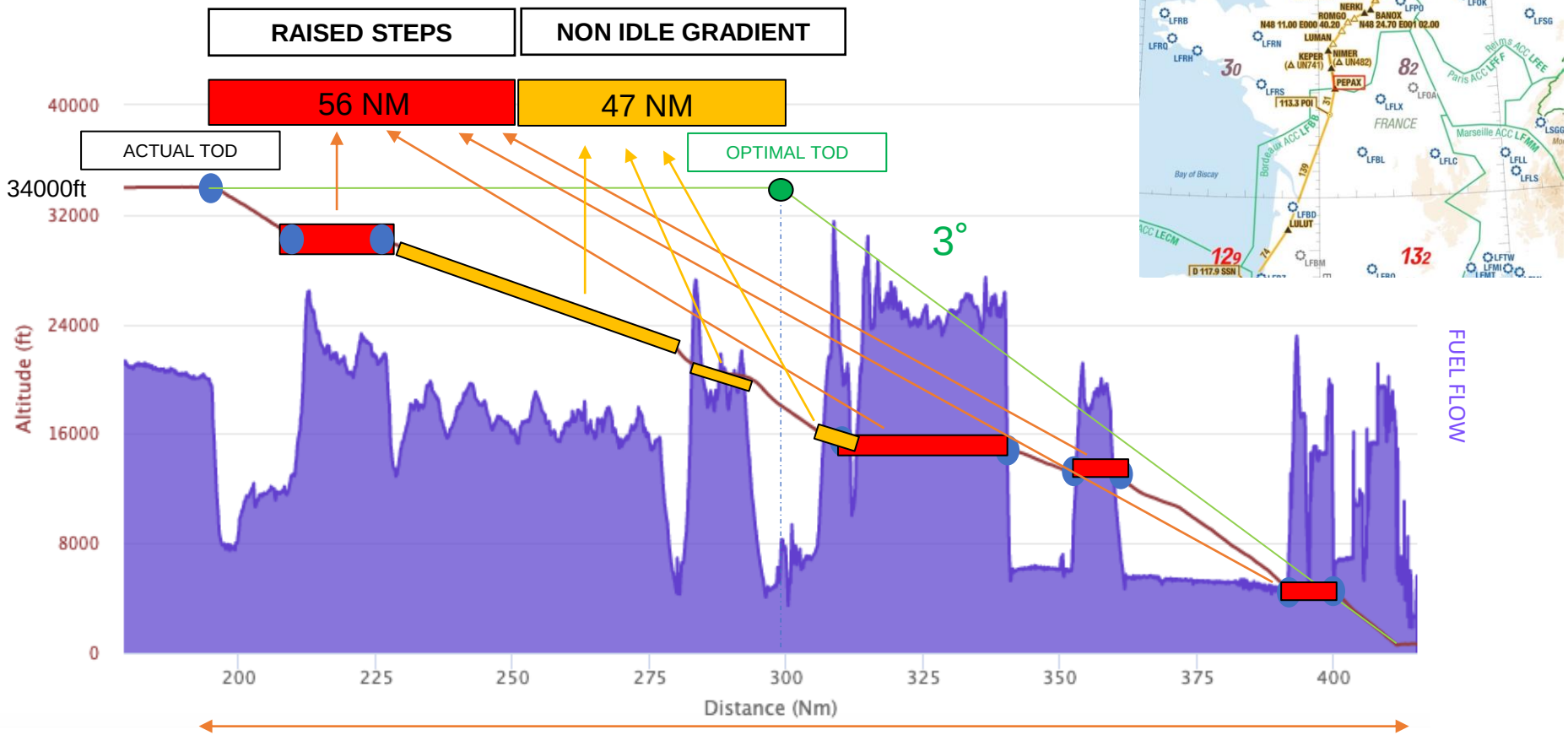
CDO IMPACT FOR AIR FRANCE

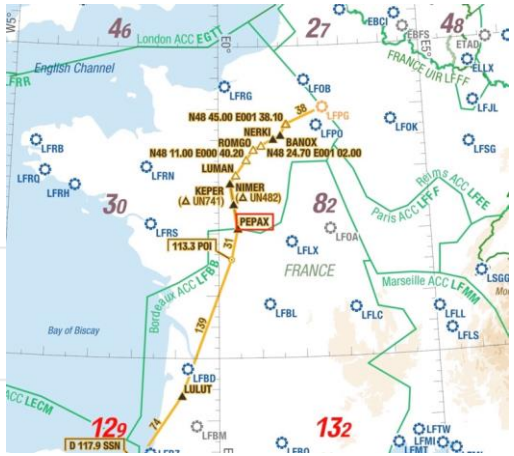
INEFFICIENCIES EVALUATED FOR 2019



CDG ARRIVAL SAMPLE

VERTICAL PROFILE OF AN ARRIVAL VIA SOUTH WEST IAF





217NM

ROD 156 ft/NM

32 NM
6 min

10000
tons

3 400
Hours

2700
tons

Objectives of the TF

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Improve environnemental performance of ATM

- Address short term ENV benefits / “quick wins”

- Implement green ops concepts (CDO ; RAD-dynamic ; FRA ; dynamic LOA etc.)

- “Customer-centric” approach

How ?
Dynamicity ! / “Not all the time” / DSNA-AU collaboration

Methodology

Identify areas of ENV inefficiencies **with airlines data/feedback**

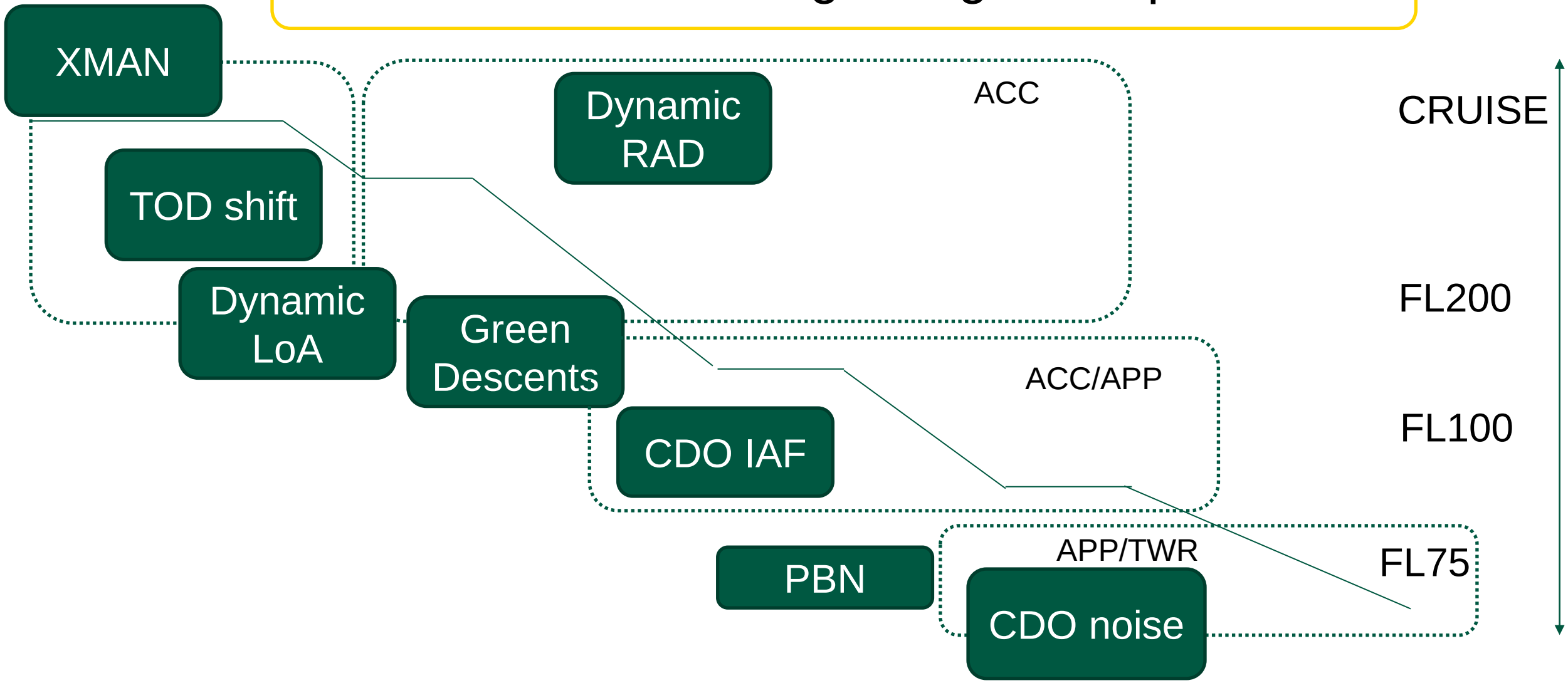
Feasibility assessment made by DSNA

If possible -> perform live trials winter 2022 / 2023

Common indicators to promote the work done

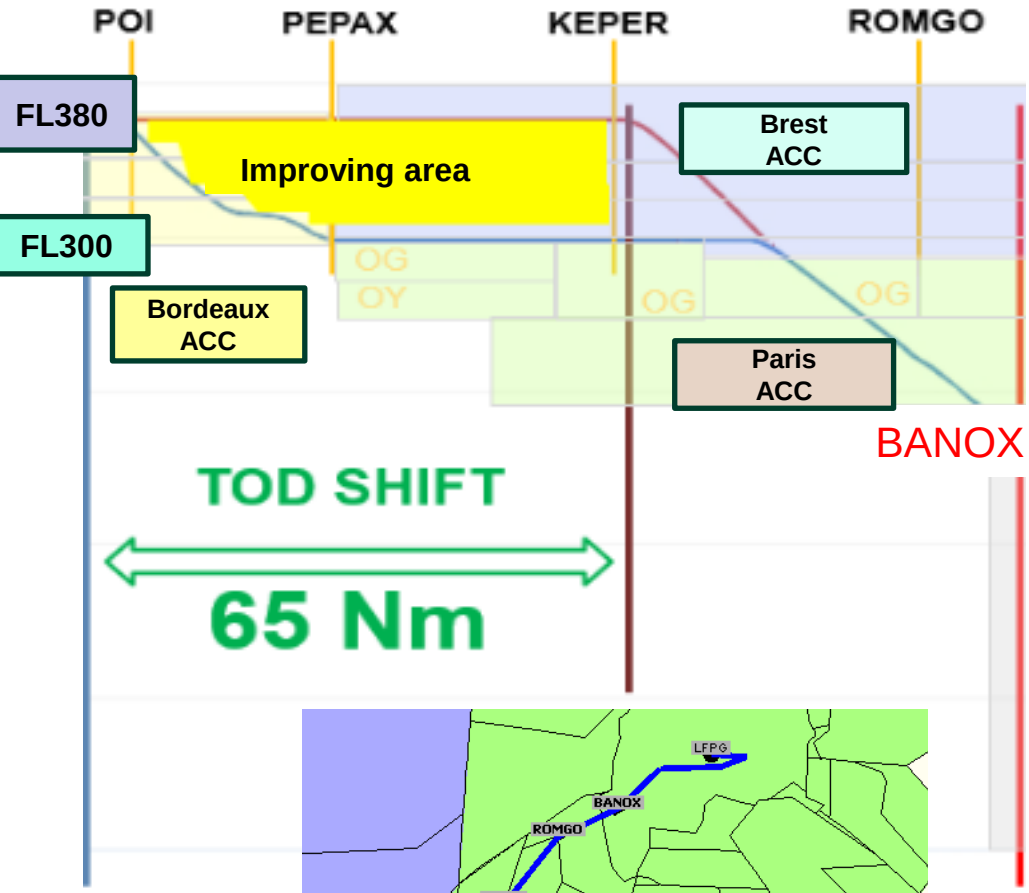
Prioritize studies by potential gain

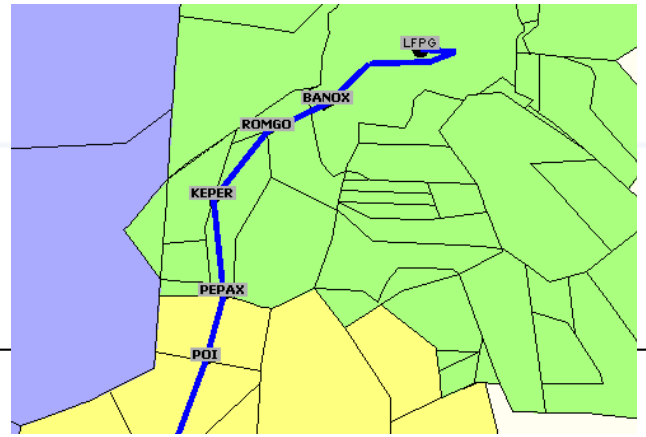
Solutions for DSNA regarding ATC operations



Upper Airspace : example of dynamic LOA to improve TOD

LFPG west arrival flow TOD optimisation





Estimated reduction of 0.750 t of CO2 per flight (long haul)

00h-4h UTC
01/12/22 – 23/03/23

Dynamic LOA between LFBB-LFRR-LFFF

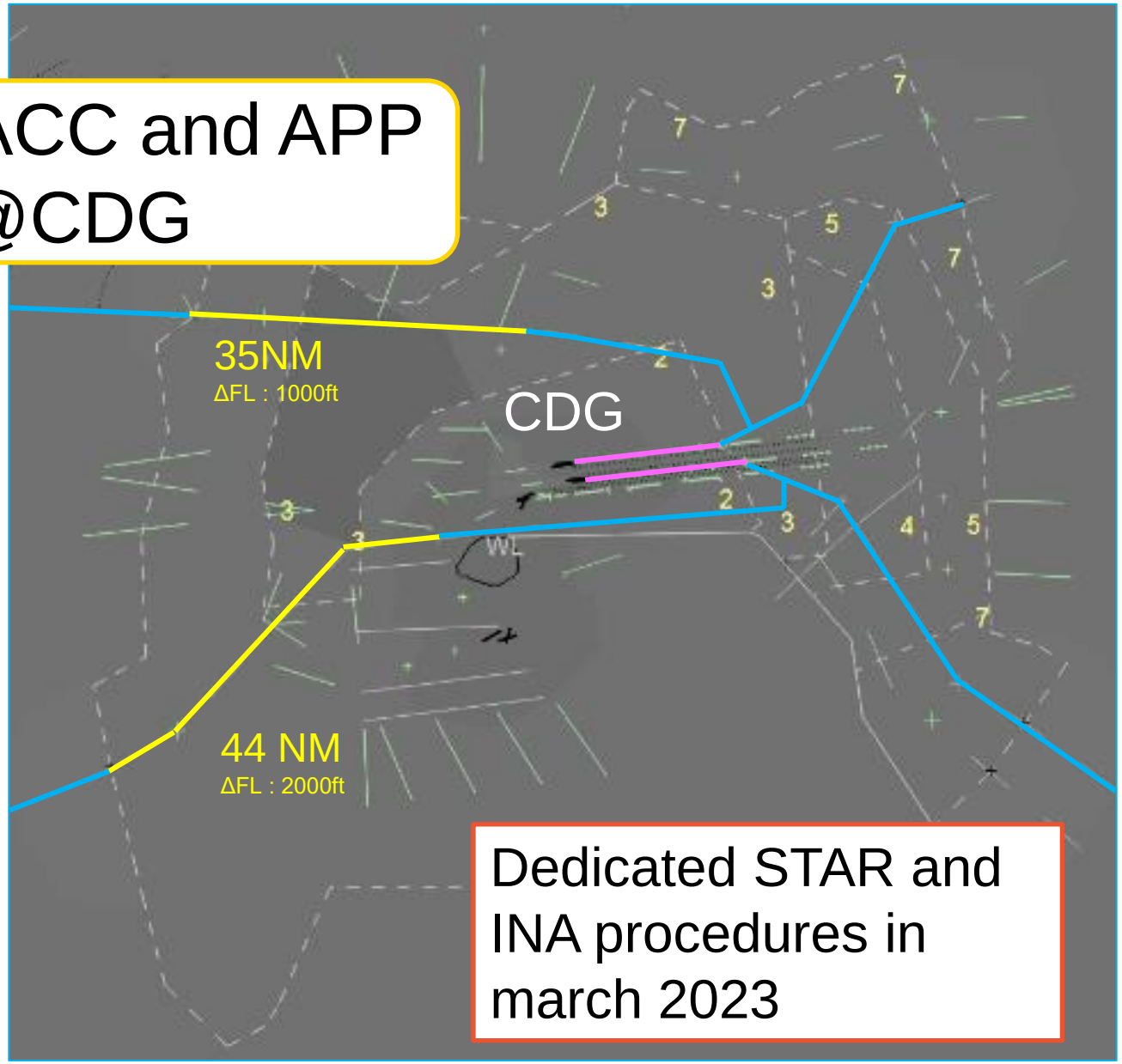
- Coordination between 3 ACC to relax FL constraint
- **« AFR782, expect descent to cross BANOX FL150, maintain FL380, report ready for descent »**
- 3 arrival points : PEPAX ANG INGOR

ACC and APP interface : example with Green Descent/optimized XFL

Dynamic LOA between ACC and APP Green descent @CDG

- Airspace designed for the most complex situations
- COVID crisis led to **test a Dynamic** LOA between PARIS ACC and LFPG APP to optimize XFL
- Actual Method : no modification of STAR and INA, SUP AIP
- In medium-low trafic

~15% of CDG arrivals can fly green descents



Green descent @CDG : profile

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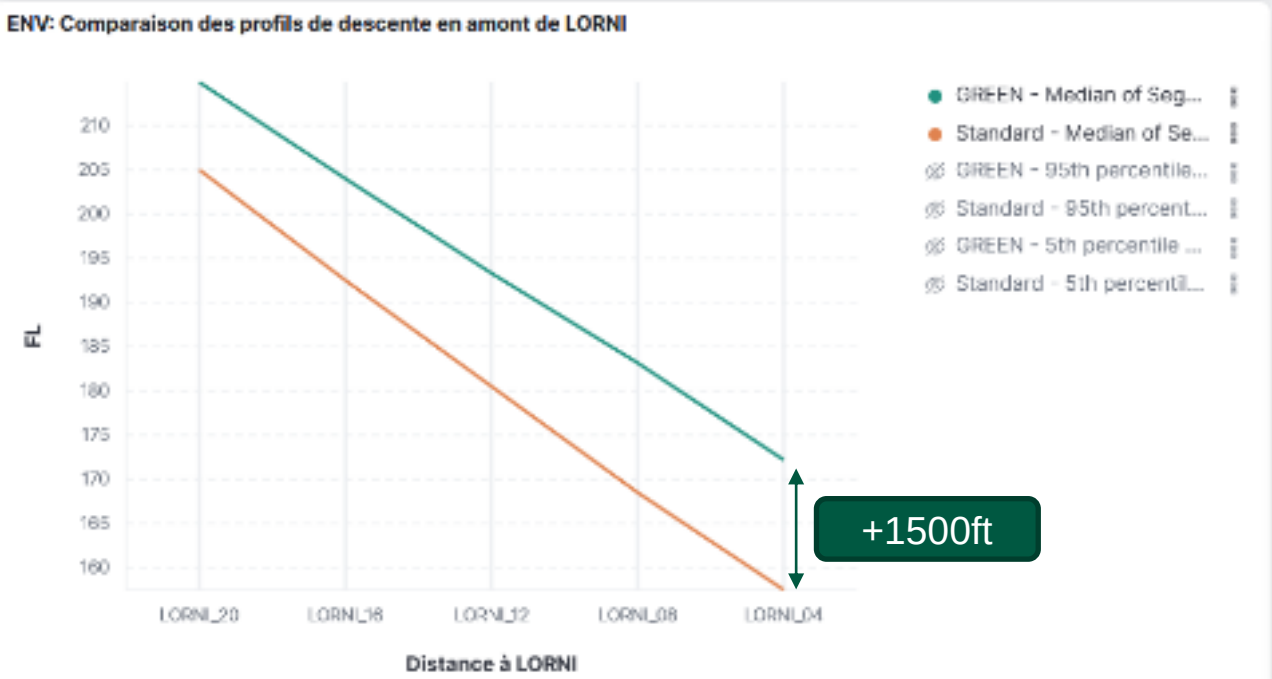
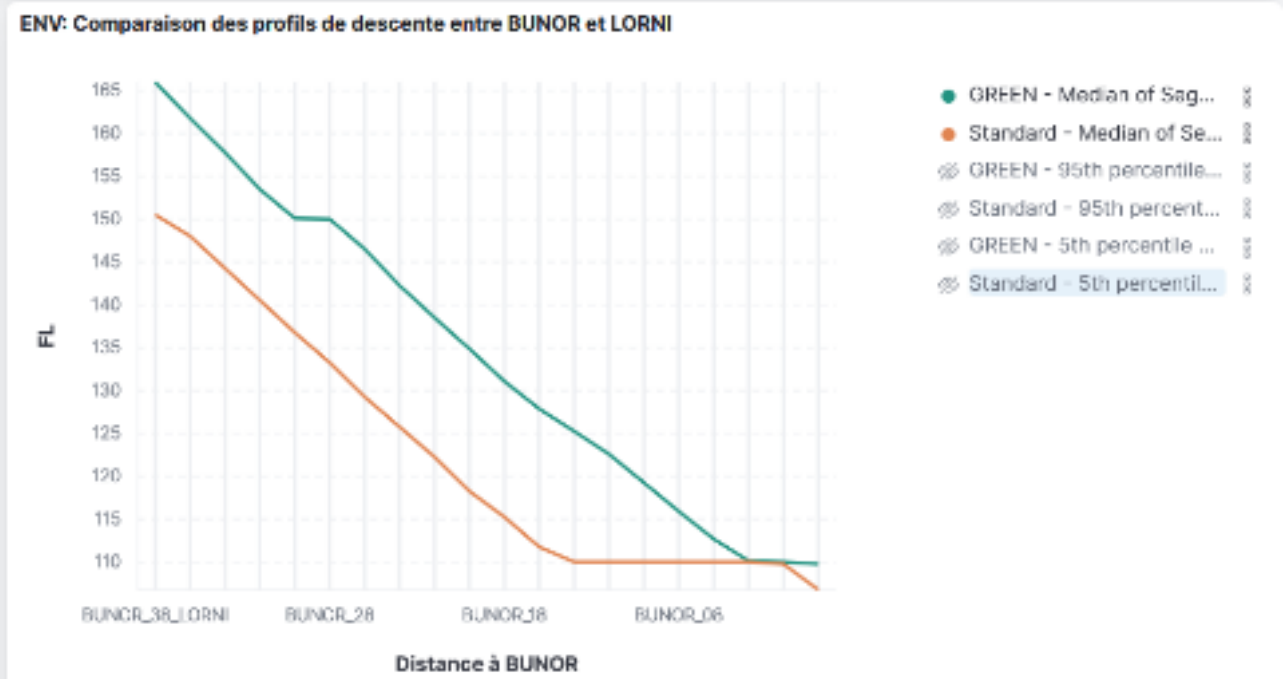
LORNI - BUNOR





Others IAF: up to 4000ft

Estimated reduction of 5500 t of CO2 per year

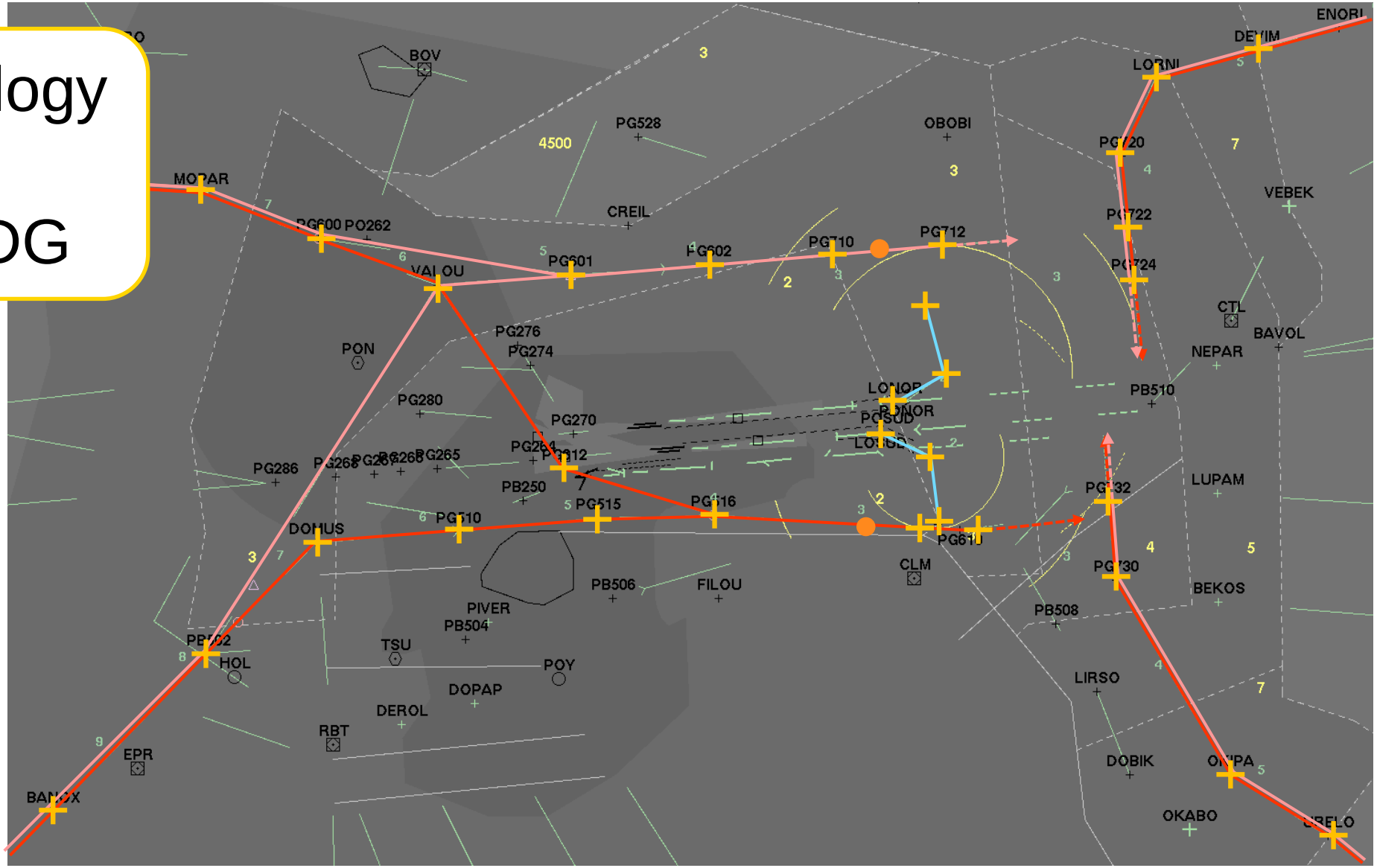
APP to Final : example with PBNtoFinal airspace management

APP methodology and airspace : PBNtoILS@CDG

2025-2026

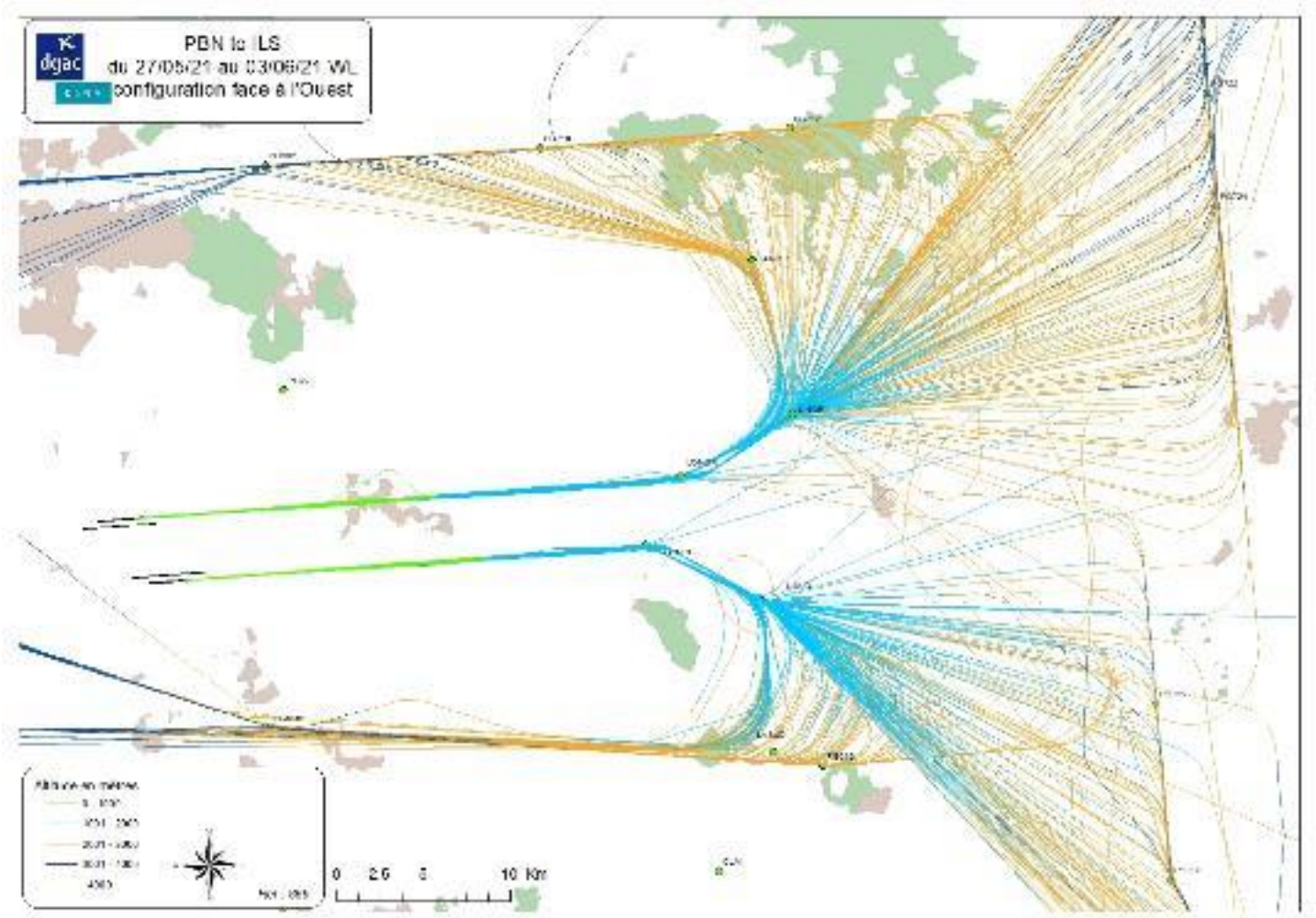
To be used H24, even in peak hours

Comes with a full airspace redesign



APP methodology and airspace : PBNtoILS@CDG

2025-2026

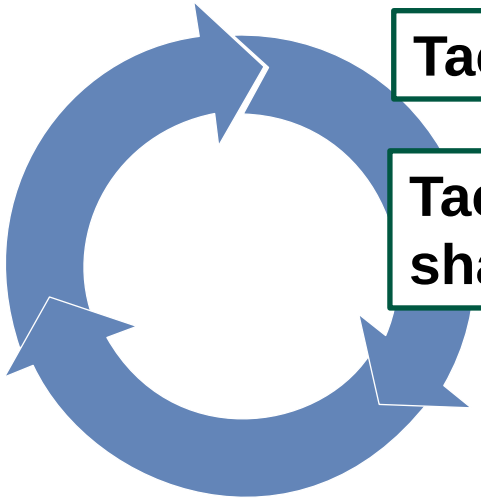


What’s next ?

HERON

DECOR

CONCERTO



Strategical: GREEN CAPACITY

Pre tactical : GREEN FLAG

Tactical : EPP from ADSC

Tactical : non critical data sharing

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Questions ?