



FRAIT Project

Free Route implementation in Italy



Brussels, 29-05-2019

enav.it

Free Route Airspace Definition

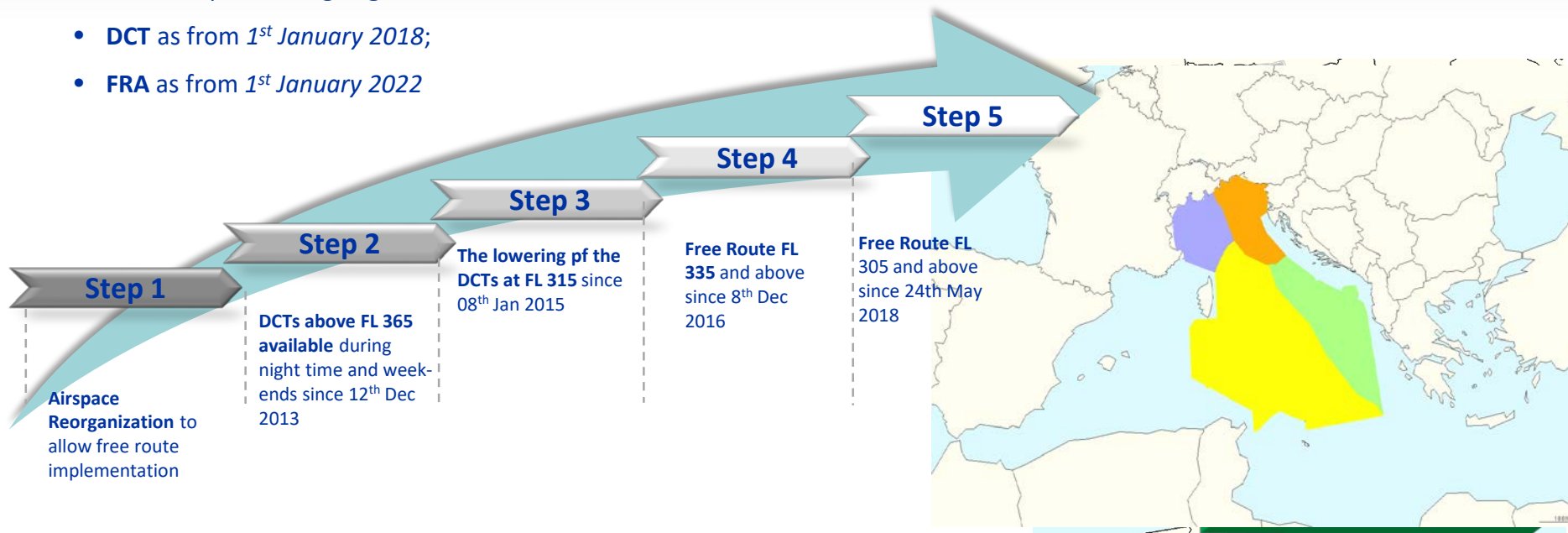
*“A **specified airspace** within which users may freely plan a route between a defined entry point and a defined exit point, with the possibility to route via intermediate (published or unpublished) waypoints, without reference to the ATS route network, subject to airspace availability. Within this airspace, flights remain subject to air traffic control.”*



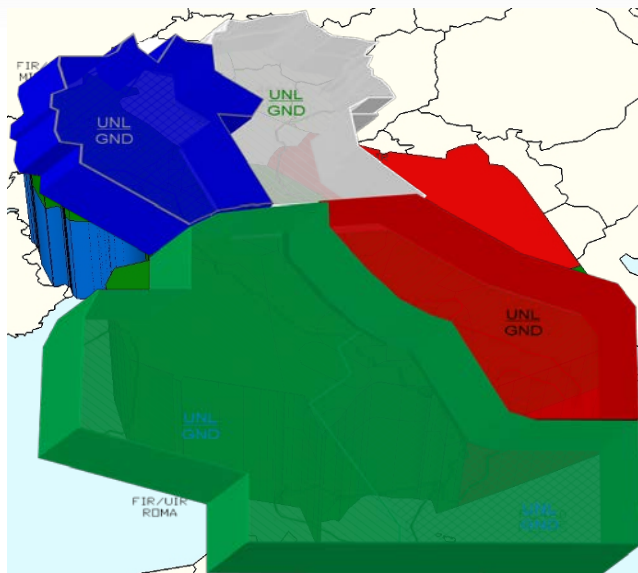
Commission implementing **Regulation № 716/2014**:

- **DCT** as from *1st January 2018*;
- **FRA** as from *1st January 2022*

Remodelling the Italian scenario



Remodelling the Italian scenario



As a **prerequisite** to the implementation of the free route project, the **reorganization** of the national airspace was necessary to permit to accomodate the configurations to the variation of traffic flow.

With this purpose the Italian airspace was so structured:

- 1) Reassignment of entire portions (from GND to UNL) of airspace to the 4 ACCS and standardization of the DFLs used by ACCs.
- 2) Creation of **multiple volumes** of airspace to be aggregate;
- 3) Consequently the realization of **flexible configurations** to react to the variation of traffic demand;





Current Organization: 49 sectors
Required Organization: 16 sectors

LIPP ACC							
LIPP ACC				LIPP ACC			
NTL		CTT					
375/460	NW7	NE7	CW7	SW7	CE7	SE7	SD7
375/460	NW6	NE6	CW6	SW6	CE6	SE6	SD6
375/460	NW5	NE5	CW5	SW5	CE5	SE5	SD5
375/460	NW4	NE4	CW4	SW4	CE4	SE4	SD4
375/460	NW3	NE3	CW3	SW3	CE3	SE3	SD3
375/460	NW2	NE2	CW2	SW2	CE2	SE2	SD2
375/460	NW1	NE1	CW1	SW1	CE1	SE1	SD1

Sectors shape optimisation: a sample



FRA Concept

FRAIT
Implementation
Phases

Mitigation measures

Technical
improvement

Fine tuning

Final results

1st and 2nd phases by a system of DCTs within Italian ACCs



Free Route implementation in Italy

Phase 1

(AIRAC 11-2013 – e.d. 12-12-2013)

from **FL365** and above

MON-FRI **2100-0600** (winter)

MON-FRI **2100-0500** (summer)

Weekend and Holidays: **H24**

Phase 2

(AIRAC 12-2014 – e.d. 08-01-2015)

from **FL315** and above

MON-FRI **2100-0600** (winter)

MON-FRI **2100-0500** (summer)

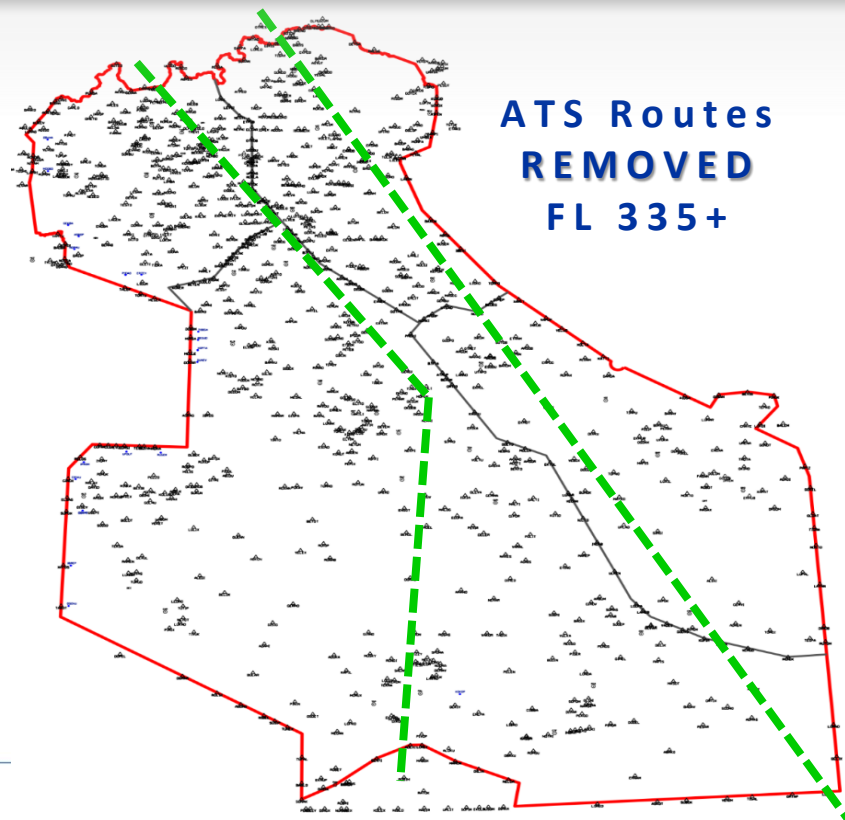
Weekend and Holidays: **H24**

FRA IT

AIRAC 08.12.2016

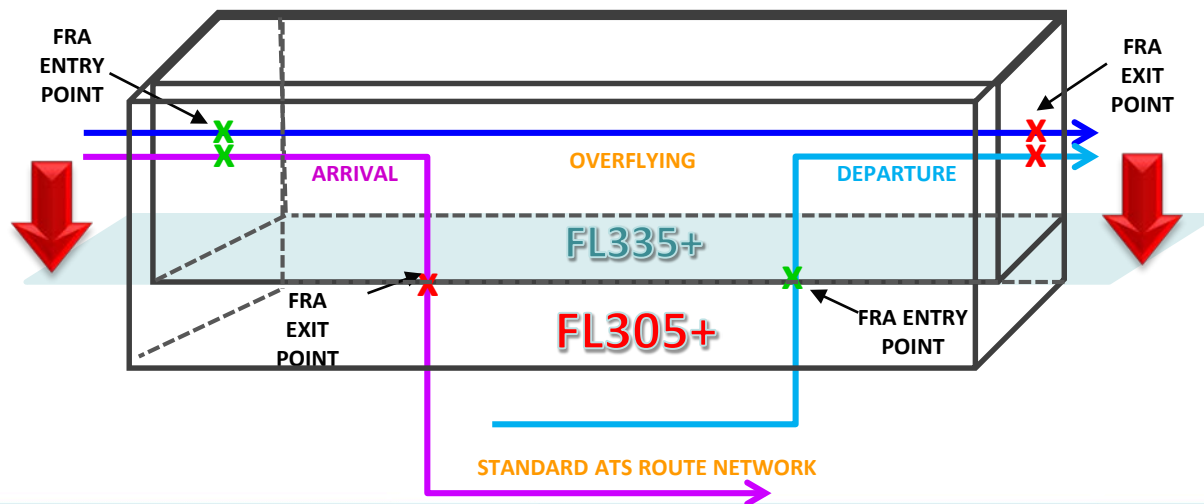
H24 / FL335+

- Airspace Users may plan a **direct** route between **entry** and **exit** points taking into account the **availability** of restricted areas and the **preferred** route.
- **Available** for all airlines that intend to fly a portion of their flights **above FL335**.



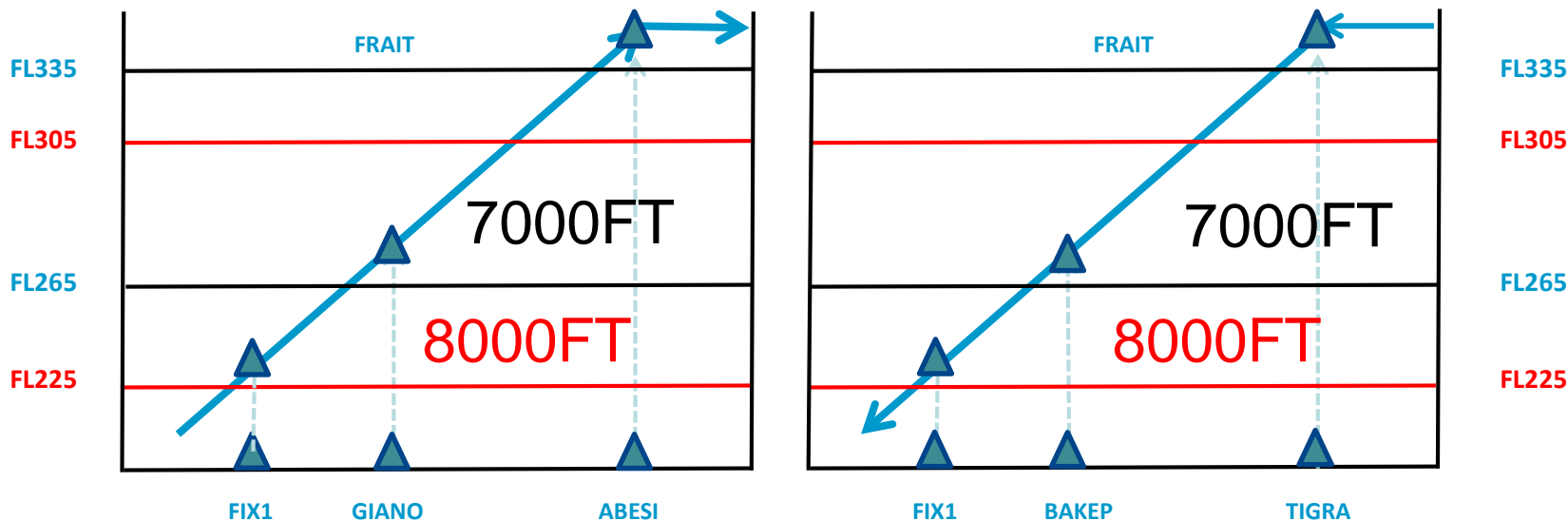
FRAIT Upgrade – 24th May 2018

- Change of the **lower vertical limit of FRAIT** airspace from **FL335** to **FL305**
- ATS routes withdrawn FL305+



Vertical Connectivity:

- close cooperation with the NM/IFPS for control and validation of the flight plan;
- two different vertical types of planning (network & free route)

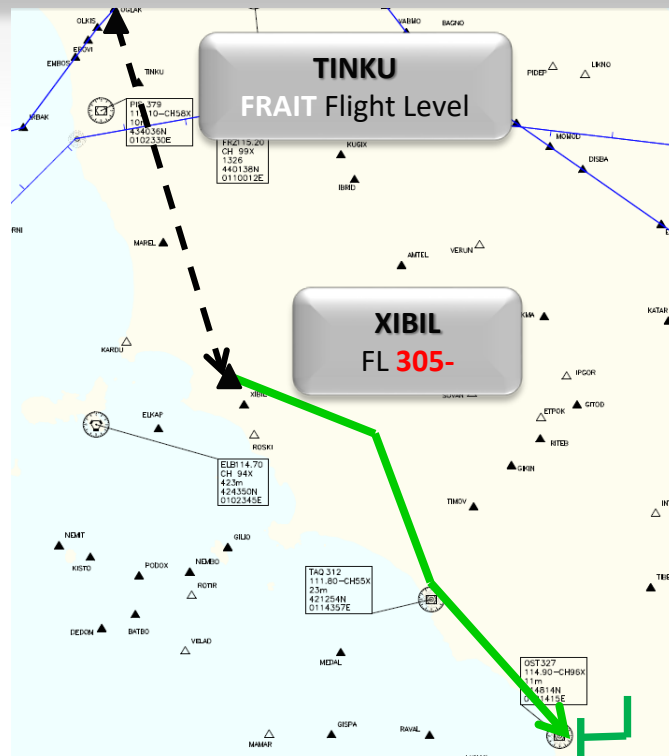
**Enhanced Transition Layer**

Arrival segments

“Arrival segments” have been defined (as RAD

(FPL-FPL205-IS-E75S/M-
SWY/C-LIMC1300-
N0428F350 EKPAL DCT
TINKU DCT XIBIL -
LIRF0100...)

- Venezia LIPZ
- Napoli LIRN



(FPL-IABCD-IS
-A320/M-SDFILORVWY/S
-LEBL0610
-N0436F320 VERSO UM24 LAPIT UN725 OSPOK/N0442F380 UN725
ORKUM UM603 ELSAG DCT ALG DCT TINTO DCT VALMA
-LIRF0115 LIRA
-DOF/190215...)



Actions taken**CONOPS**

Dialogue with NM to ensure harmonised FRAIT implementation

**AIRSPACE
DESIGN**

Appropriate changes to the airspace design:

- airspace volume (horizontal and vertical limits)
- Horizontal connectivity E/X/I points
- No plannable zone
- Transition segments to the network

**Technical
Improvement**

- Application of Cross Border Concept for the new functionality of Flight Data Processing System
- Definition and Implementation of the chosen Conflict Detection Tool

ATFCM

Organization of ATFCM procedures:

- Sector Configuration Management
- Sector and Traffic Volumes (Capacities / Monitoring Values)
- ATFCM Procedures



Actions taken

AIS_RAD publication

- Harmonised AIS Publication
- RAD complete review

NM Pre- validation

Operational validation
with NM

Fine-tuning

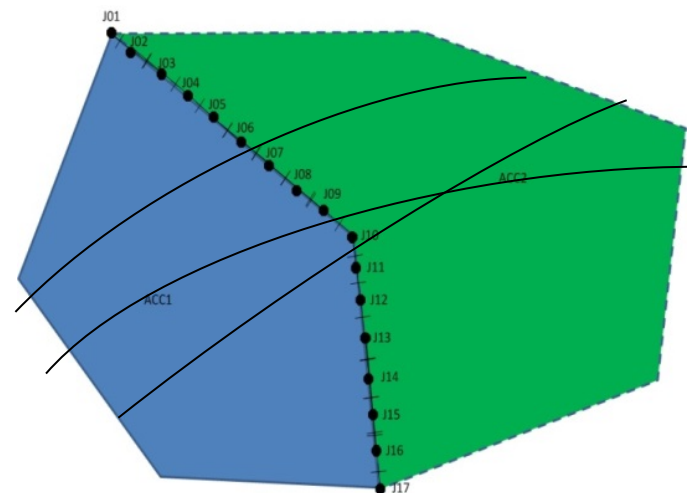
Traffic flow analysis and
allignment of line of
responsanility to the
new flows



Cross border: changes on FDP

Enhanced FDP functionality calculates automatically the intersection between the trajectory and the InterACC LoR

No needs to identify a set of COPs between Italian ACC



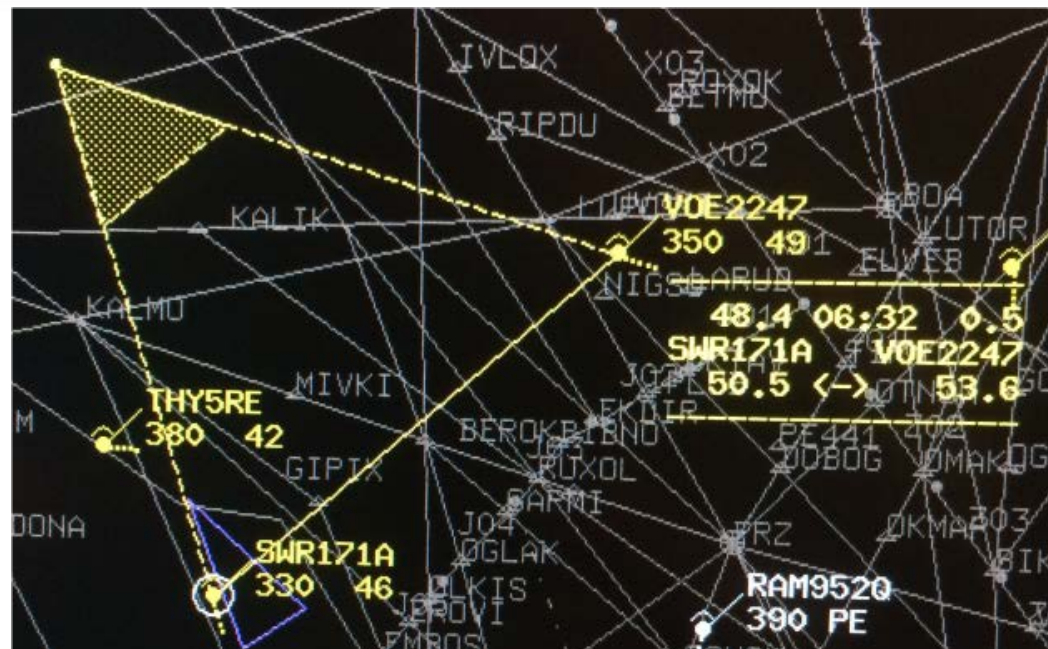
Cross border: changes on FDP

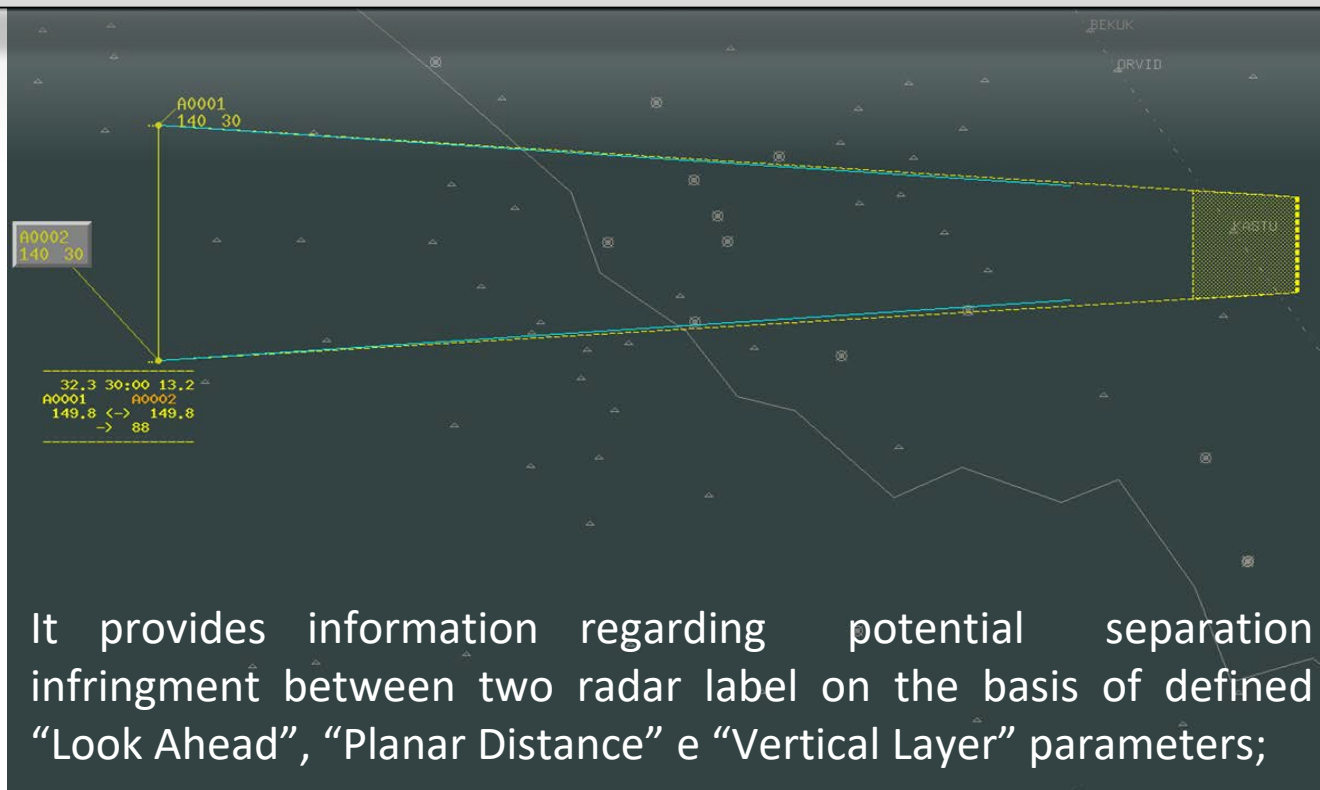
OLDI messages among Italian ACCs is sent on the exact point where the flight paths cross the InterACC LoR

FLIGHT1
350 LICJ
468



CDT: Tactical Tool

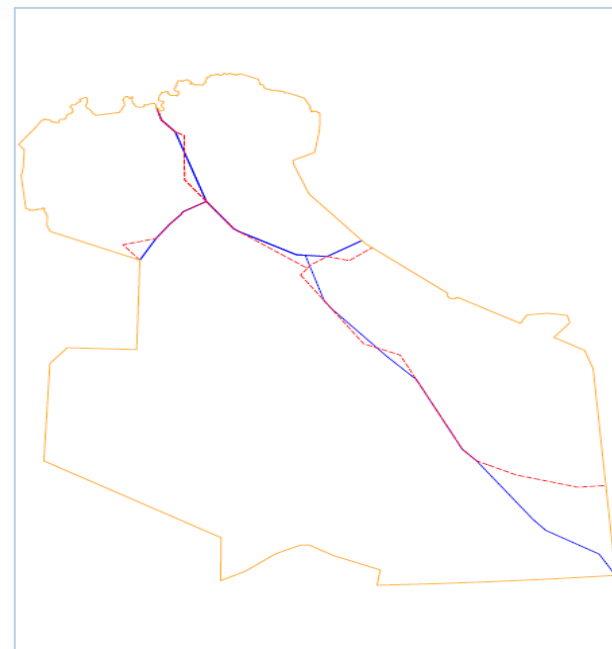




Traffic Flows Analysis

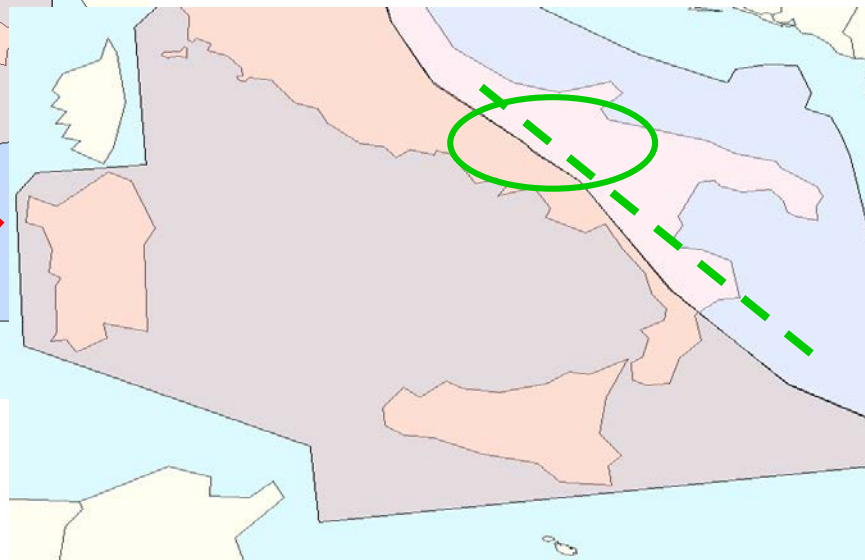
- Observation of new/changed traffic flows (summer 2017):
 - Change to lateral limits of the areas of responsibility of the individual ACC;
 - Avoid re-entering traffic

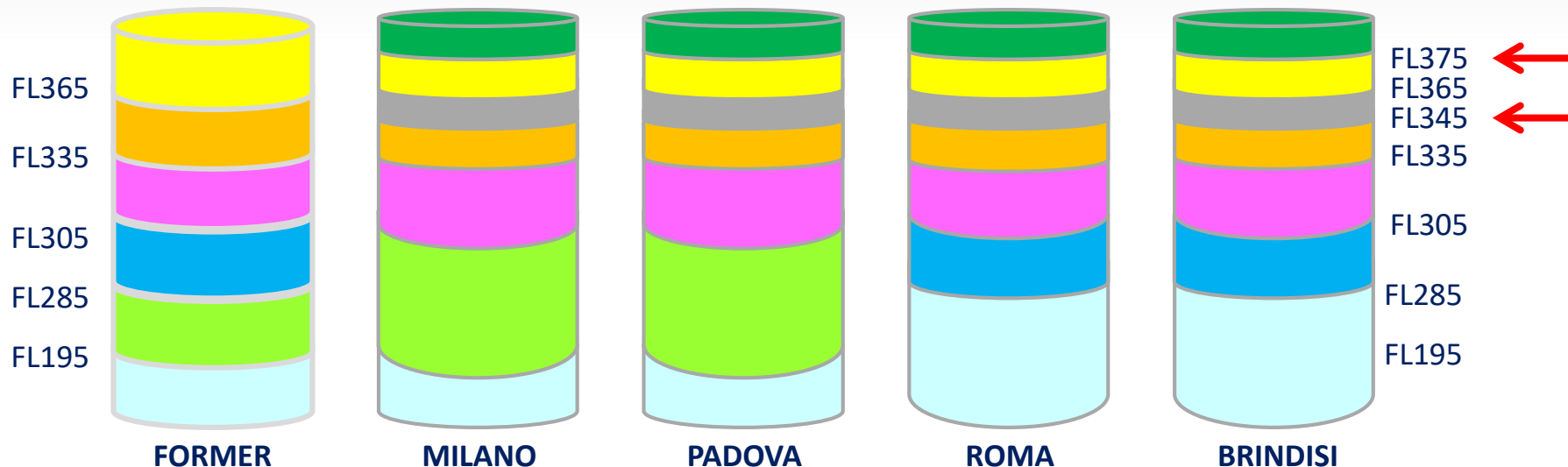
OLD LoR 
NEW LoR 





LoR LIBB/LIRR: flow sample

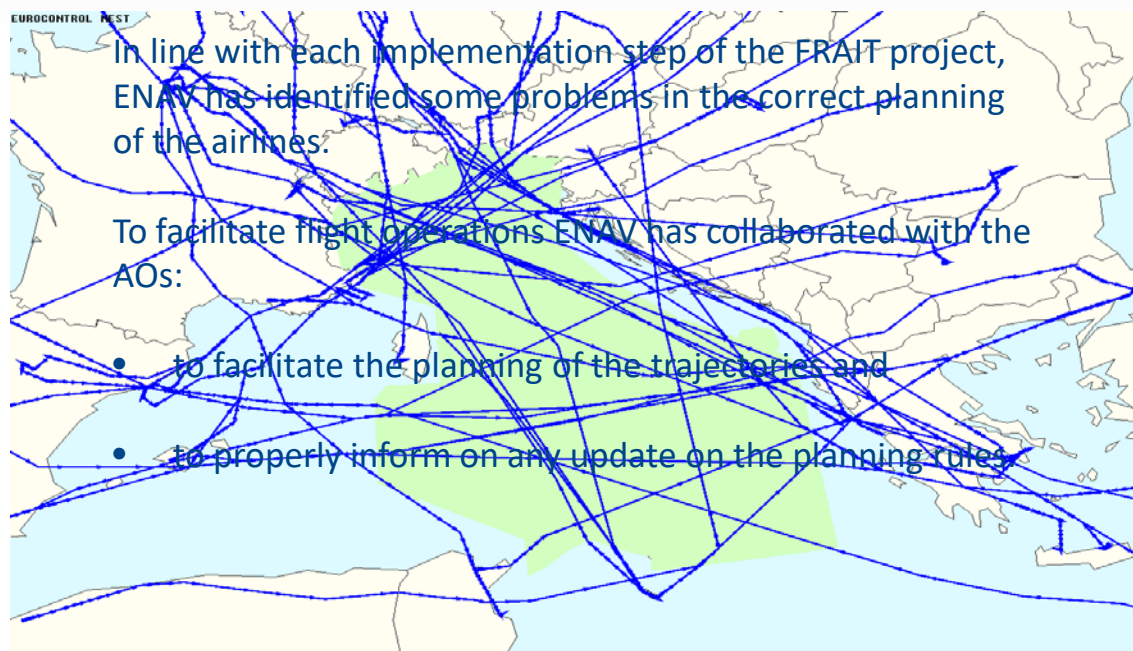




New Division Flight Levels (DFL)



ENAV & Stakeholders



FPL Catalogue

Besides it has been made a continuous monitoring of trajectories planning. In order to facilitate AUs in compilation of field 15 of FPL, it has been published on the NOP portal a **catalogue** containing previously verified trajectories together with IFPS.

FRA INFORMATION

Published Date	Effective Date	Description	
26/04/2018	24/05/2018	LI FRA No planning Zone (NPZ)	
18/06/2018	18/06/2018	LI Routing Information Catalogue	
26/04/2018	24/05/2018	LI FRA and Flightplanning (vertical connectivity)	
24/05/2018	30/05/2018	LI FRA https://www.youtube.com/watch?v=wRICWC-Gt68 https://www.youtube.com/watch?v=q0IDF6xbKBY	



Safety related:

no increment of minimum separation infringement;

Airspace related:

increase in available capacity thanks to reduction of:

- real crossing trajectories
- operational management complexity;

elimination of the bottlenecks determined by the infrastructure of the ATS route network.



Users related:

- in 2018 a total of 43 million kg of fuel saved for CO2 emissions reduction of approximately 135 million kg;
- from 8th December 2016 to 31 December 2018 a total of 75 million kg of fuel saved for CO2 emissions reduction of approximately 236 million kg thanks to 11.5 million NM of distance reduction.



спасибо
danke 謝謝
ngiyabonga
teşekkür ederim
tapadh leat
dank je
gracias
mochchakkeram
go raibh maith agat
arigatō
dakujem
merci
ευχαριστώ
감사합니다
terima kasih
sukriya
kop khun krap
grazie
sagolun
dziękuję
hvala
maururu
bedankt
obrigado

