



ATFCM

Air Traffic Flow and Capacity Management



Obiettivi della conferenza



RIFERIMENTI

- ICAO Doc 9971 Manual on Collaborative Air Traffic Flow Management
- Eurocontrol ATFCM Users Manual
- Eurocontrol Operations Manual
- AIP Italia ENR 19 ATFCM



ATFCM: definizione

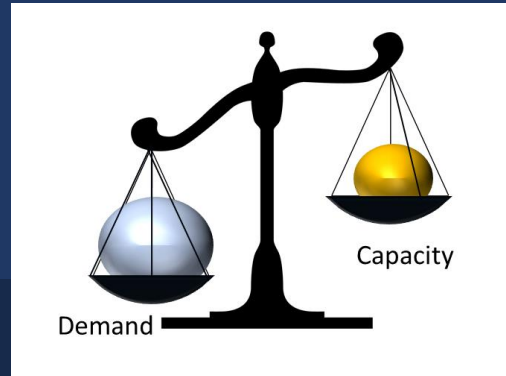


L' ATFM è una delle parti che costituiscono l' ATM (Air Traffic Management). L' ICAO definisce l' ATM come l'insieme del:

- Airspace Management (ASM);
- Air Traffic Flow Management (ATFM);
- Air Traffic Services (ATS)

Il Network Manager (NM) è responsabile della fornitura del servizio ATFCM.

ATFCM...



...il bilanciamento tra domanda di traffico e capacità

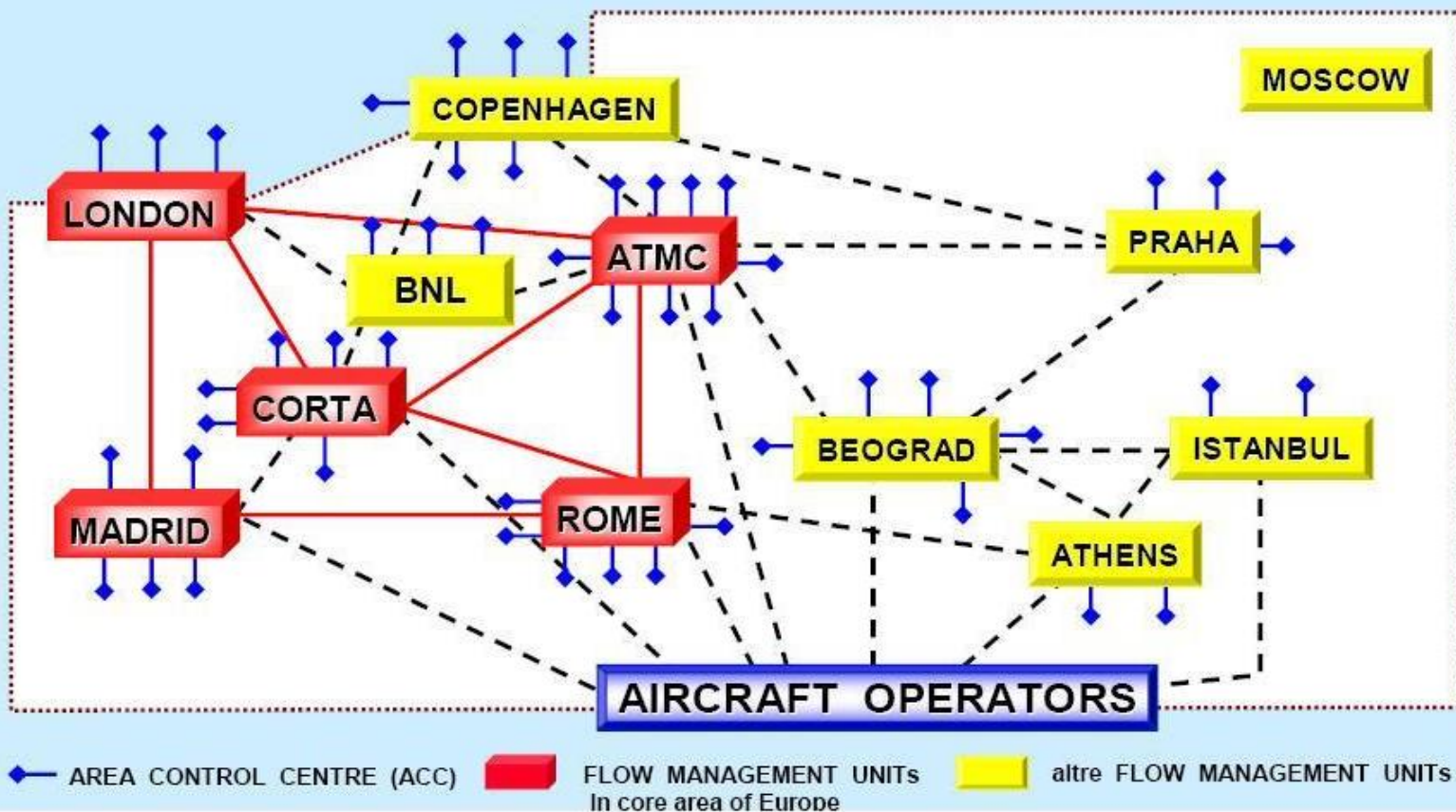
A set of interlinked operational ATM regions



Central Flow Management Unit

Nel corso degli anni '80 un elevato incremento del traffico aereo in Europa, determinò un significativo aumento dei ritardi. Questo portò all'organizzazione del servizio ATFM.

Inizialmente il servizio prevedeva due CFMU(Est – Ovest) ed alcune unità FMP:



Central Flow Management Unit

L'istituzione della Central Flow Management Unit è stata decisa nell'ottobre 1988 dai ministri dei trasporti degli Stati aderenti alla European Civil Aviation Conference (ECAC).

Divenne full operational nell'aprile 1995.

Oggi, il Network Manager Operations Centre (NMOC) è l'erede della CFMU fornendo il servizio ATFCM all'interno dell'ECAC.

Integrated Initial Flight Processing System



L'IFPS nasce dall'esigenza di un sistema centralizzato per l'elaborazione e la distribuzione dei FPL.

E' operativo dal 1996:

Brussels-IFPU1

Bretigny-IFPU2

Network Manager Operations Centre

Il Network Manager Operations Centre svolge principalmente tre funzioni operative:

- Airspace Data Management
- Flight Plan Processing
- Air Traffic Flow and Capacity Management

NM defined by
EC regulation
N°677/2011

EASA common requirements regulation:
NM is a pan-European ANSP obliged to obtain
certification by January 2020

Nel dettaglio, il ruolo di Network manager è stato assegnato dalla Commissione Europea ad Eurocontrol con il compito di sovrintendere:

- alla gestione del flusso del traffico aereo (ATFM)
- allo sviluppo e alla progettazione della rete delle rotte europee
- alla gestione unitaria delle frequenze
- all'assegnazione dei codici dei radar secondari

ATFCM in Europa



Source: ECTL

Europe's current air traffic situation

Total flights

15,910

Airborne flights

2,803

Landed flights

2,411

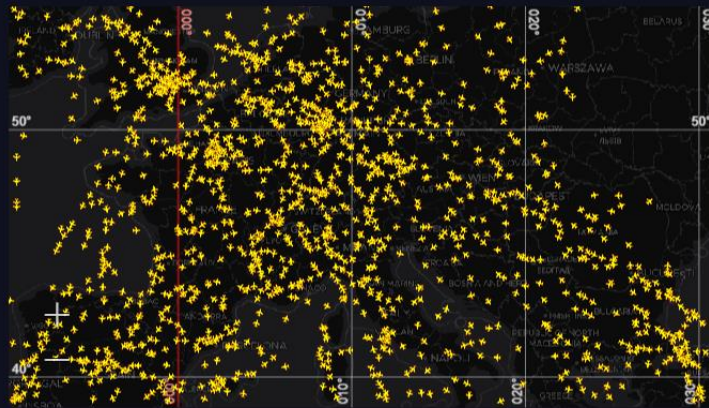
Planned flights

10,696

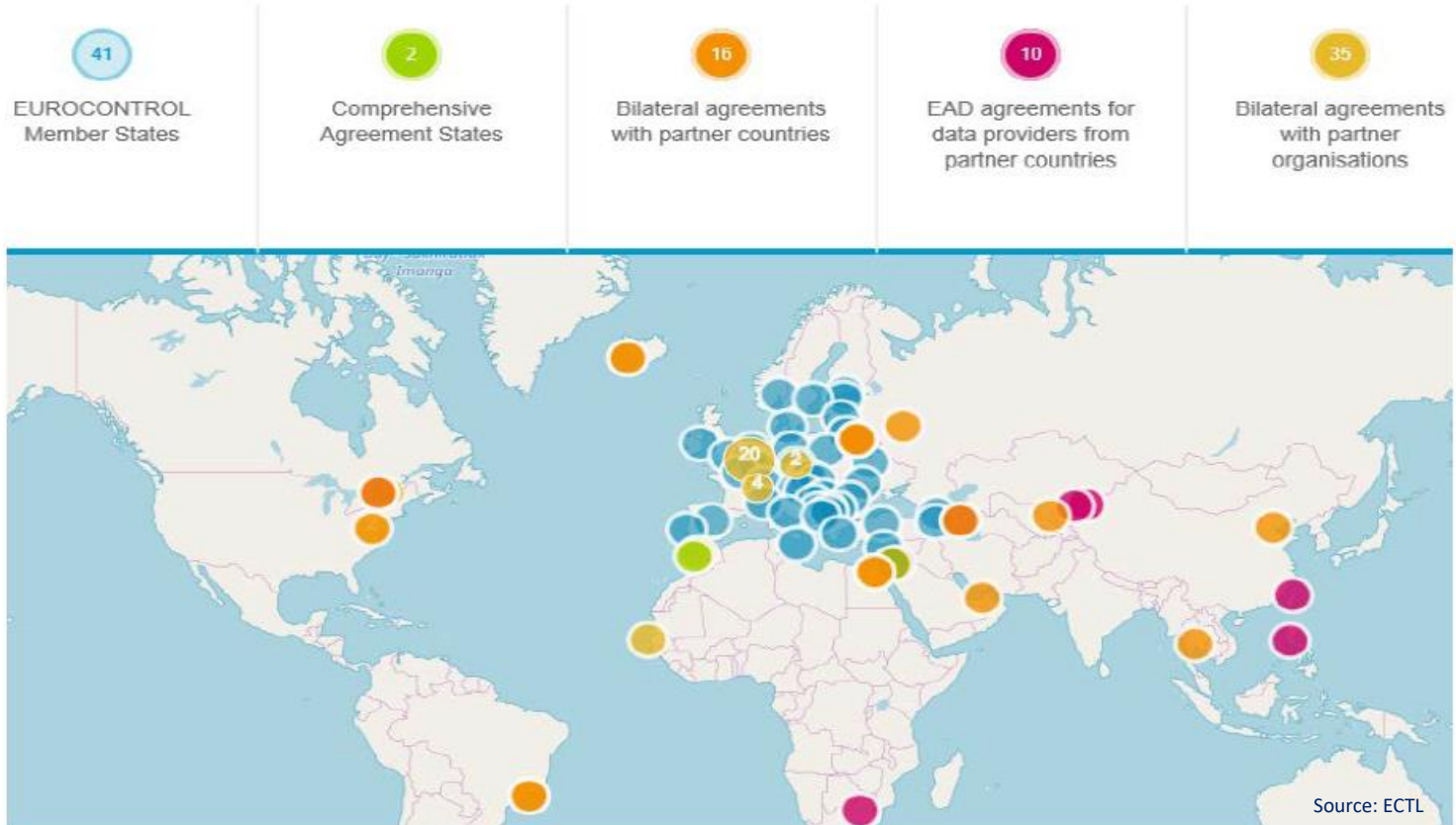
Delays (minutes)

1,119

[Visit the NOP](#)



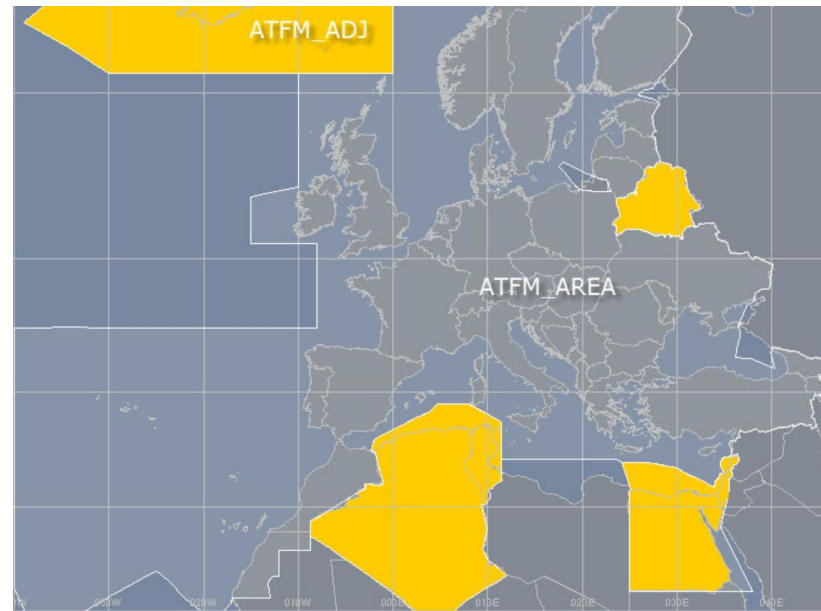
NM Network Operations collaboration and partners

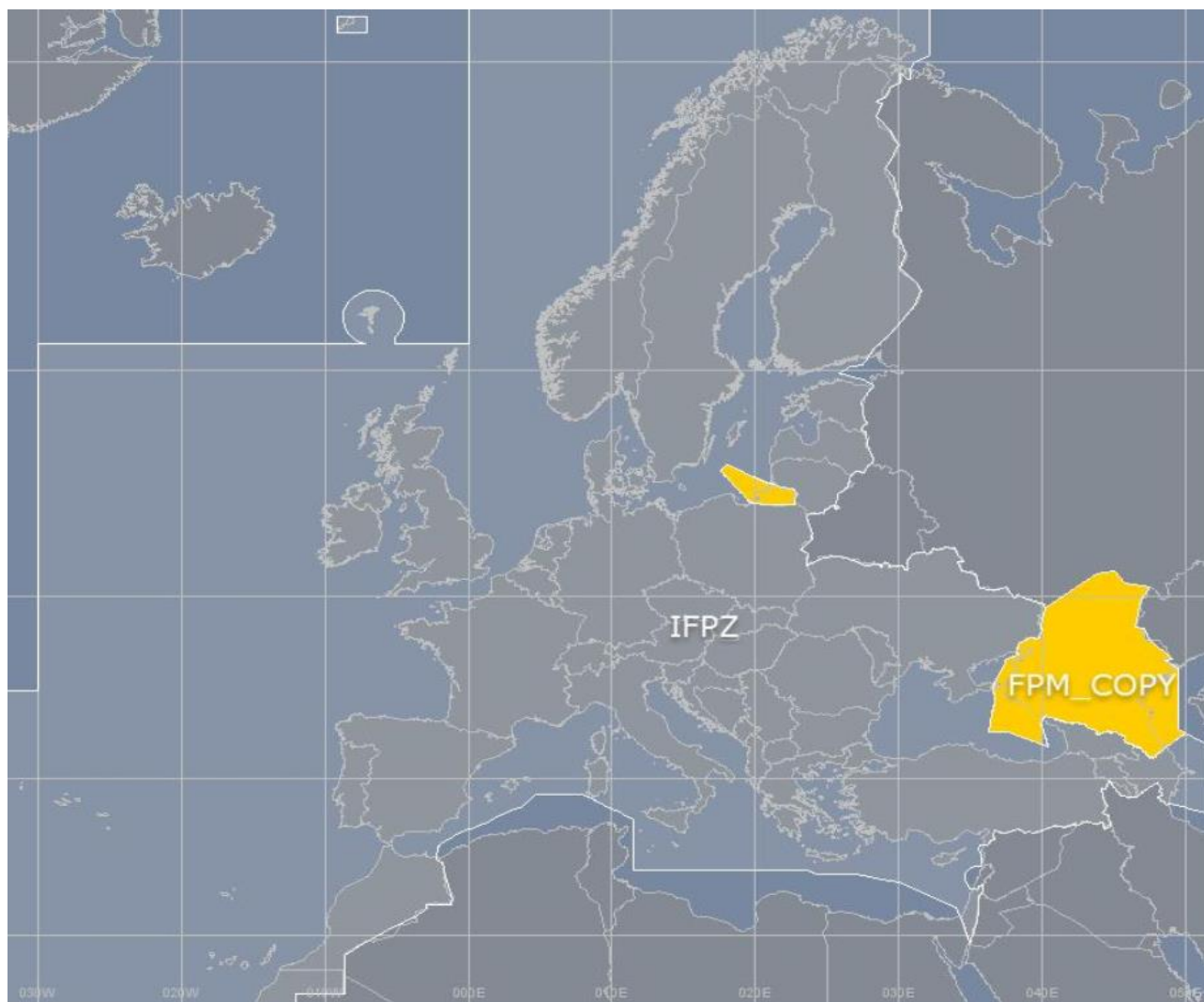


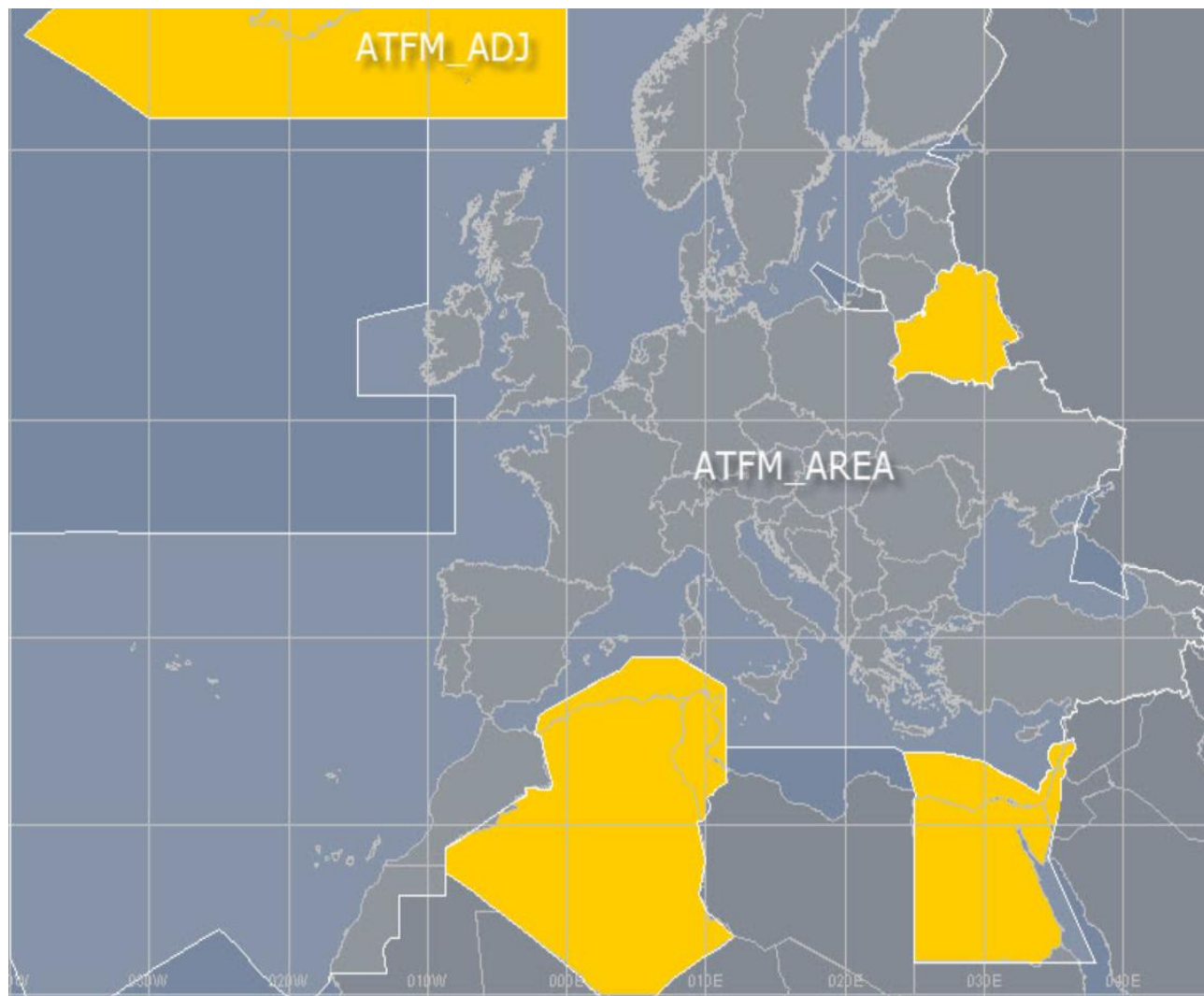
- Zona IFPS – Area dove il NM è responsabile per la distribuzione dei Piani di Volo e dei messaggi associati

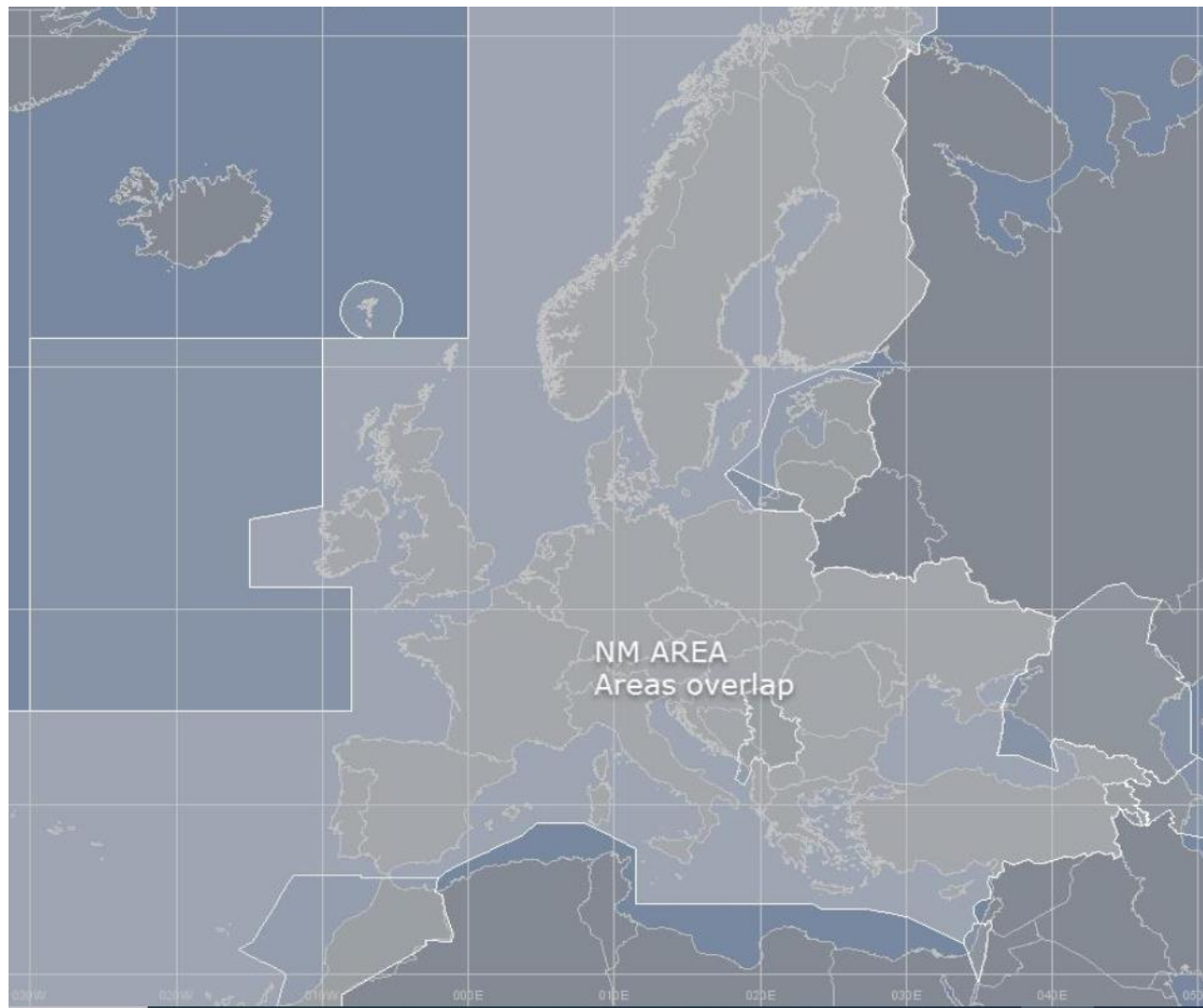
- Area ATFM – Stati che ricevono tutti i servizi ATFM dal NM

- Area ATFM adiacente – FIR adiacenti all'area ECAC dove il NM può anche fornire limitati servizi ATFM, ma solo nella forma di restrizioni ATFM su fix/punti di ingresso nei loro confini o aeroporti e solo per il traffico diretto verso l'area ATFM

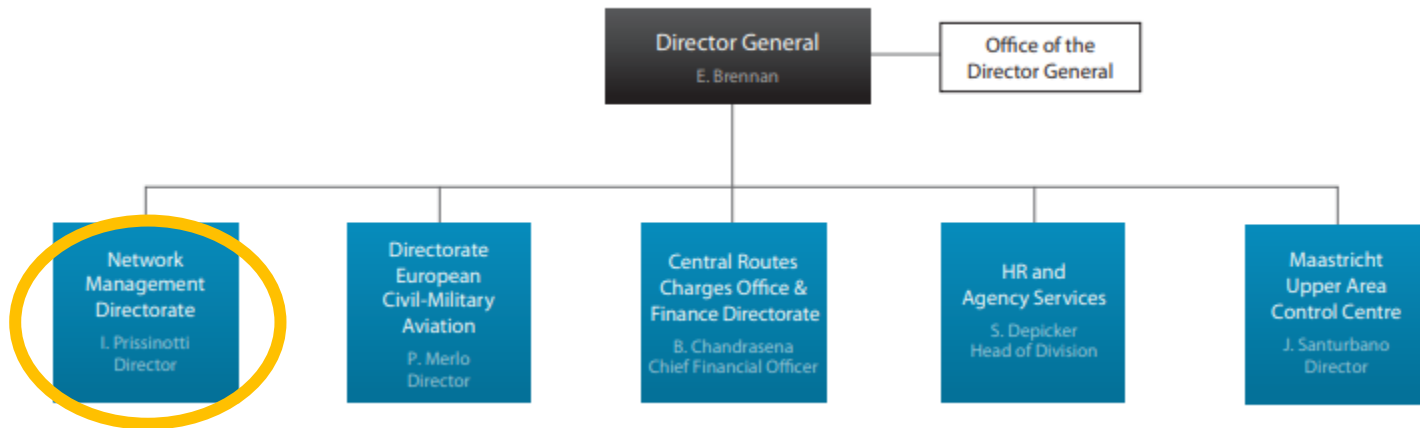


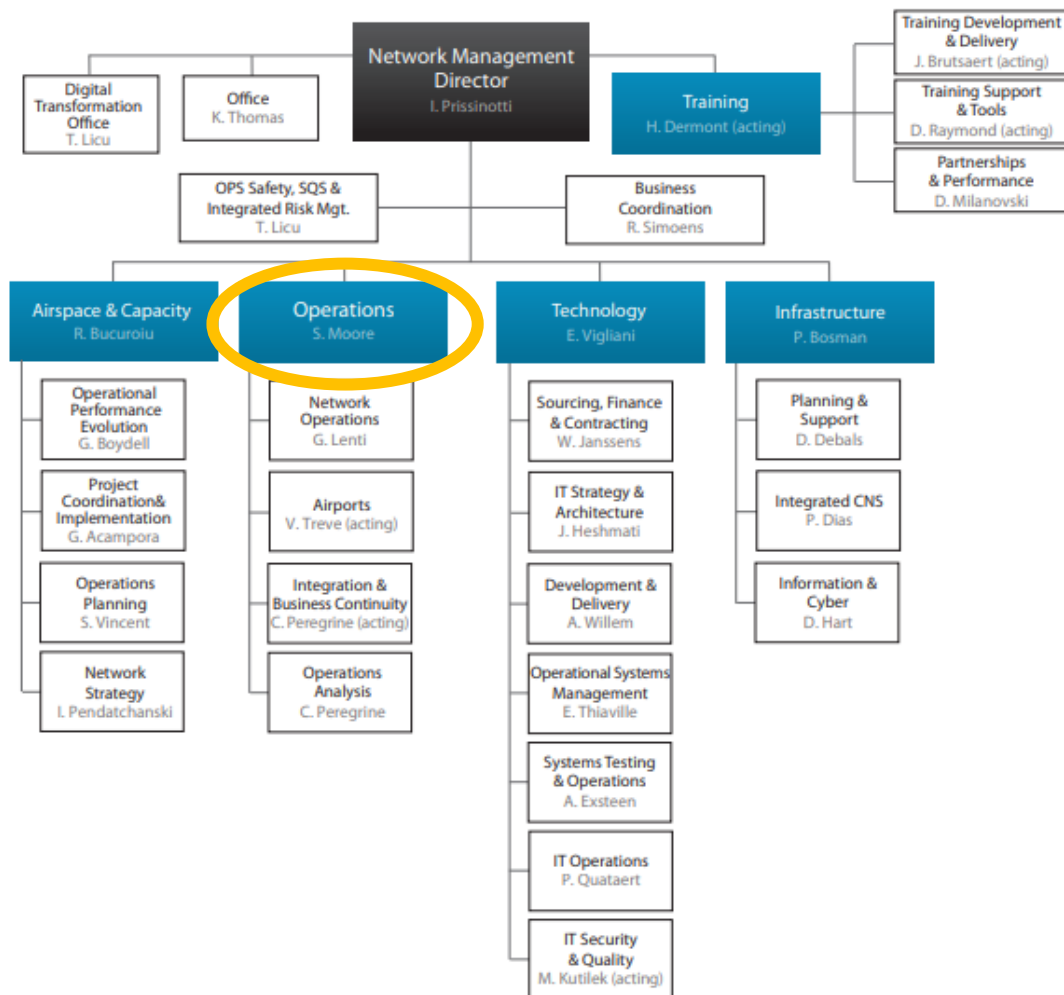




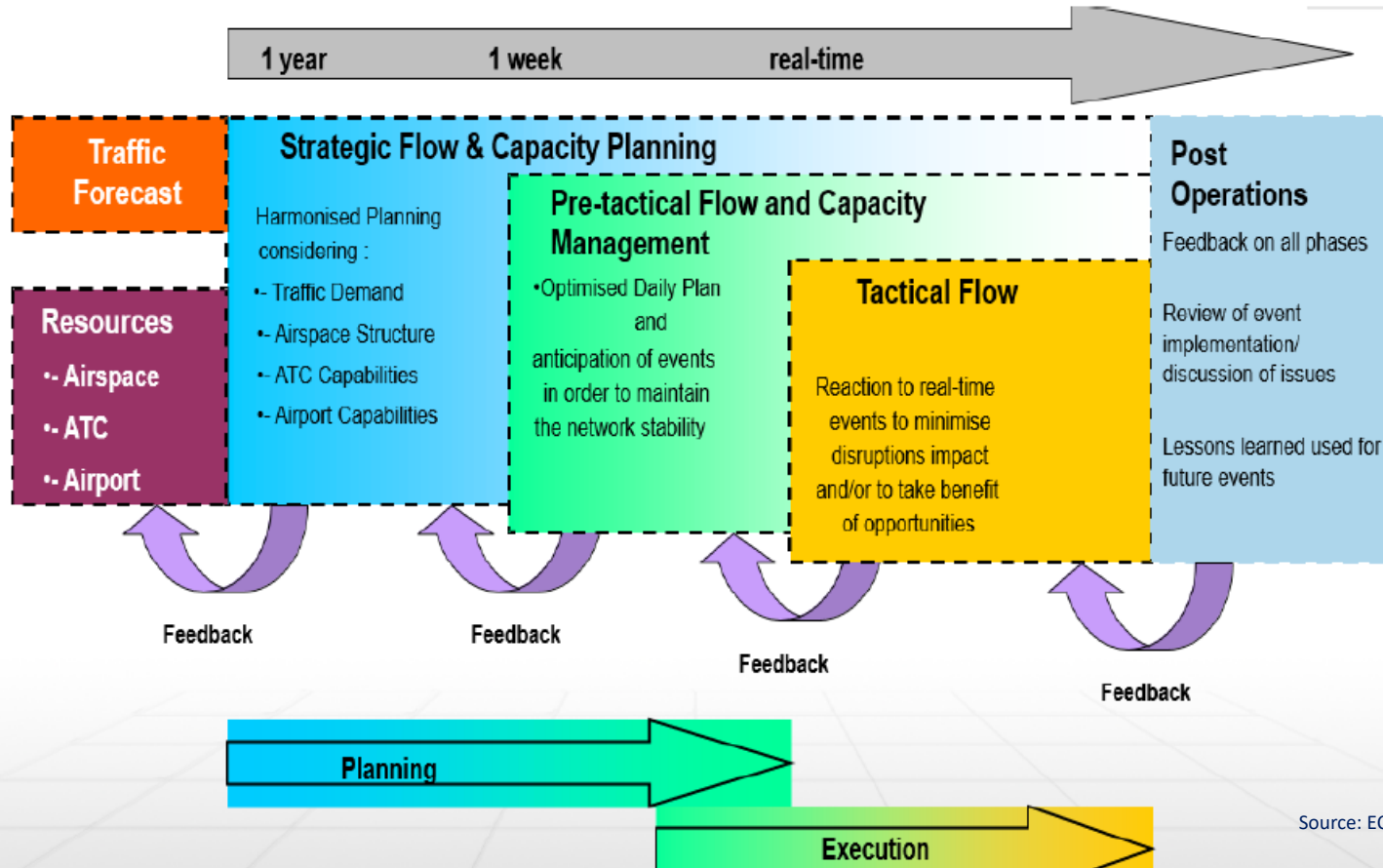


Eurocontrol: Network Manager



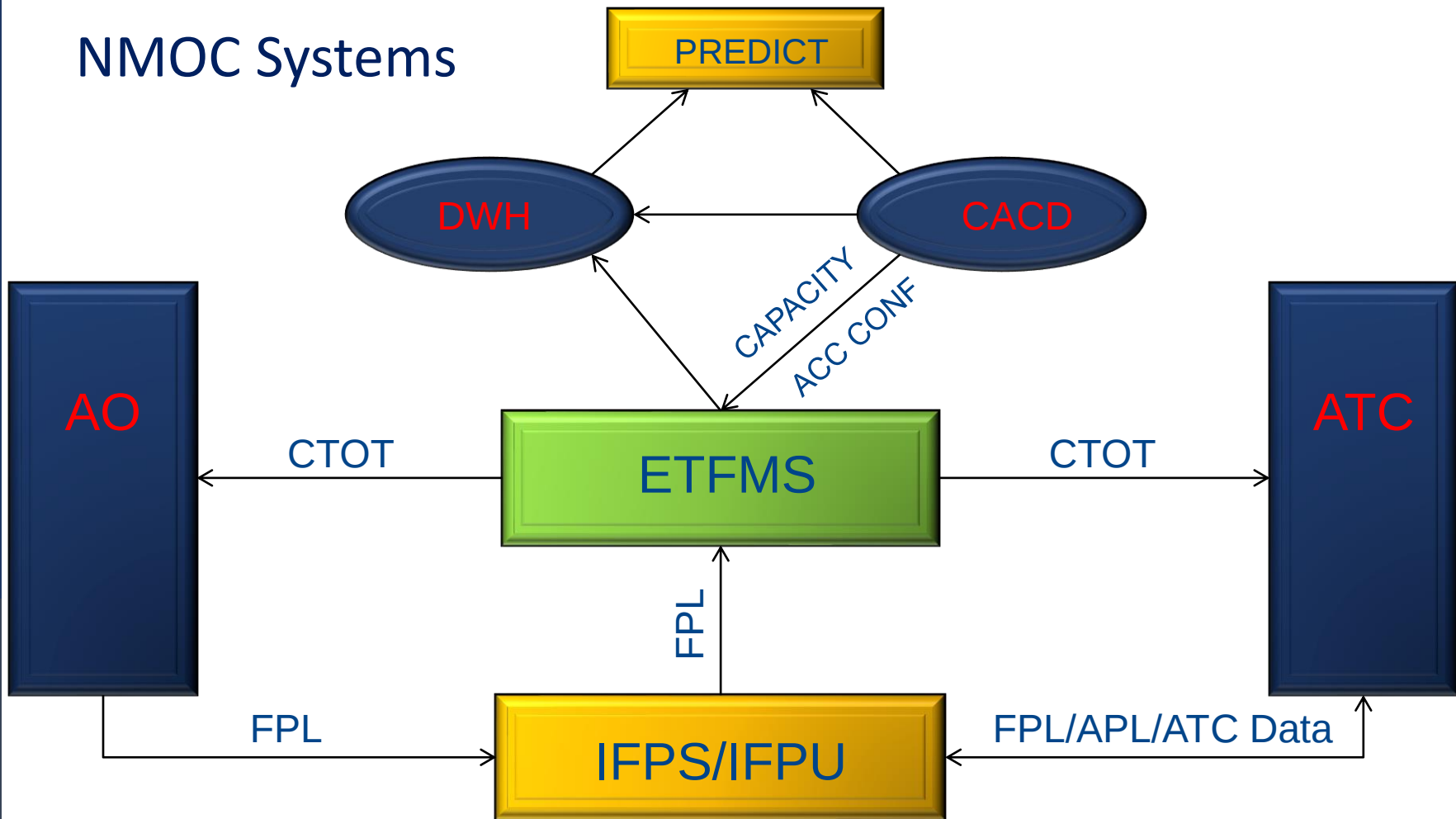


ATFCM: le fasi

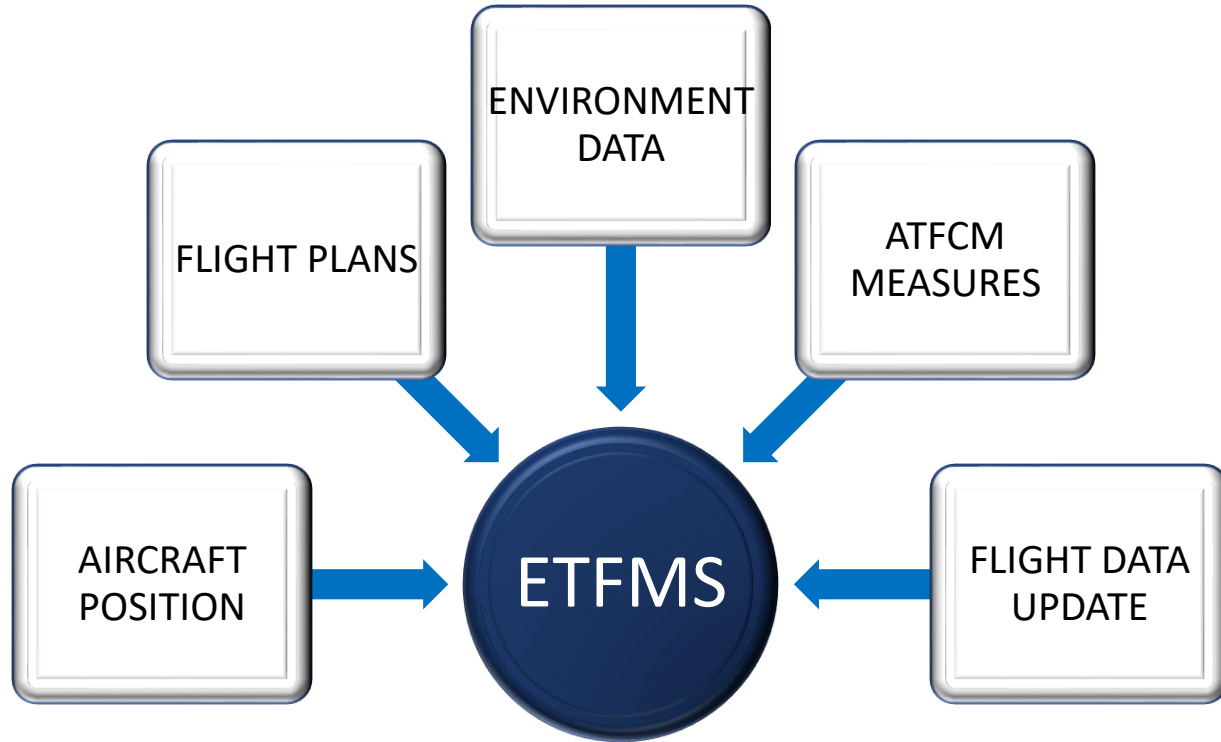


Source: ECTL

NMOC Systems



ETFMS – Data input



ETFMS - details

L'ETFMS lavora inizialmente su informazioni previste dai piani di volo, arricchita in tempo reale da messaggi di aggiornamento che migliorano l'accuratezza della situazione del traffico



- **CPRs** (Correlated Position Reports) which are surveillance data collected from the ACCs,
- **FSAs** (First System Activation) which are flight plan activation messages sent by the ACCs,
- **AFPs** (Airborne Flight Plan) which are flight plan change messages sent by the ACCs,
- **APRs** (Aircraft Operator Position Reports) which are messages provided by participating AOs,
- **DPI** (Departure Planning Information) which are messages provided by the airports,
- **FDI** (FAA Departure Information) which are messages provided by FAA

Initial Network Plan

Network Plan

Headline News

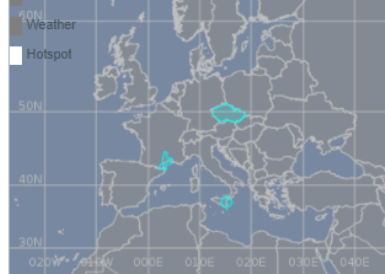
Events

ACCs

NAT

Weather

Hotspot



Network Static Map

ATFCM Measures (Scenarios)



Scenarios aim at the optimisation of capacity across the European Network of ACCs. NM Strategic Operational Planning works actively to minimise the number of ATFCM regulations, consistent with the protection of ATC sectors. Find the scenario request form [here](#)

Scenario List

Network Axis Management

Involvement of ACCs in the axes processes

Read the NM Axes Meetings [Terms of Reference](#).

Axis Weekly Management

SE weekly debriefing

SE Axis statistics week 24

Contingency

The status of the Network Manager operations is **NORMAL**.

[ATFCM Procedural Contingency Plan Winter 2021/2022](#)
Valid 31/10/2021

These documents address the contingency procedure to be carried out in the event of a long term failure of Network Operations systems.

The following document is for use in the event of a CCAMS contingency:
[CCAMS Contingency Plan 2.5 - valid 01/11/2021](#)

Network Headline News

Latest News

Ongoing News

- 23FEB 11:52 **Tactical Update**
- 23FEB 11:30 **COVID NOTAM Summary valid 23rd February 2022**
- 18FEB 08:48 **Network Operation Plan - Rolling Seasonal NOP - 21 February - 3 April 2022**

[more](#)

Network Events

Wednesday, 23 February 2022

Month Day

☐ Show only starting events

Select Types

- LECMFIR, LECBFIR
- Military exercise TLP 2022-1
- 21/02/2022 00:00 - 04/03/2022 23:59
- LFPG
- North East End-Around (perimeter)Taxiway construction
- 01/01/2020 00:00 - 31/12/2022 23:59
- LPPT
- ATC Clearance via DCL
- 25/02/2021 00:00 - TBD
- EDDF
- Construction of Terminal 3 - Concourse G (2nd construction phase)
- 21/02/2022 00:00 - 21/02/2022 23:59

[Search](#)

[List](#)

Tele/WebEx conferences



NM may invite Customers via AIM or Headline News to join a specific Operations Briefing targeted towards *ad hoc* situations as they occur.

The Briefings connect operational stakeholders via *conference* as part of a strengthened coordination process to jointly achieved better operations.

The conferences may be in the form of a web conference via WebEx or a teleconference via InterCall.

* For the teleconference dial +32 2891 0103. The required PIN and/or additional details will be published via AIM and/or Headline News.

Claims

Central Claim Management System (CCMS) Log in

CCMS allows users to raise claims at the Network Manager: operational problem reports, user requirements or general requests. The preferred media is the CCMS-Web secured application. Alternatively, a web form is

Current Network Situation

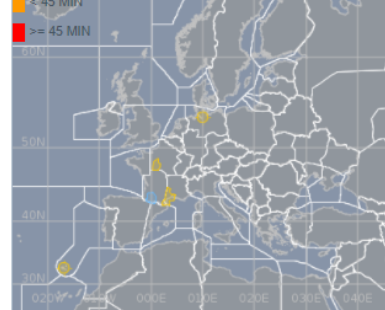
Last update: 23/02/2022 12:08

< 15 MIN

< 30 MIN

< 45 MIN

>= 45 MIN



Static Map

ATFCM Situation Data

Last update 23/02/2022 12:07

Flights

Total	16,673
Landed	6,113 (37%)
Airborne	2,937 (18%)
Expected	7,623 (46%)

Delays (in minutes)

Cumulated	1,534.0
Average/Flight	
En-route	1,388 (90%)
Airport	146 (10%)
>= 30 min	13

Delay Causes

Reason	Delay	Delay (%)
ATC Capacity	1073	70%
ATC Staffing	315	21%
Environmental Issues	74	5%
Aerodrome Services	64	4%
Weather	8	0%
Accident / Incident	0	0%
De-icing	0	0%
Aerodrome Capacity	0	0%
ATC Ind Action	0	0%
Airspace Management	0	0%
Ind Action non-ATC	0	0%

ANM

Valid On 23/02/2022
Last Released 23/02/2022 11:33

AIM

Description	Released on
CDM MAINTENANCE AT LEMD	23/02/2022 09:26
XCD NON-AVAIL EDDH FCM NO	23/02/2022 09:24
CDM MAINTENANCE AT LEBL	21/02/2022 12:45
PRAHA ACC NEW ATM SYSTEM IMPLEMENTATION	18/02/2022 14:51

more

European AUP/UUP

EUUP	23/02/2022 12:00	24/02/2022 06:00
EUUP	23/02/2022 10:00	24/02/2022 06:00
EUUP	23/02/2022 09:00	24/02/2022 06:00
EUUP	23/02/2022 08:30	24/02/2022 06:00
EUUP	23/02/2022 08:00	24/02/2022 06:00
EUUP	23/02/2022 07:30	24/02/2022 06:00
EUUP	23/02/2022 07:00	24/02/2022 06:00
EUUP	23/02/2022 06:30	24/02/2022 06:00
EUUP	23/02/2022 06:00	24/02/2022 06:00
EUUP	23/02/2022 06:00	24/02/2022 06:00
EUUP	22/02/2022 18:00	23/02/2022 06:00
EUUP	22/02/2022 17:30	23/02/2022 06:00
EUUP	22/02/2022 15:00	23/02/2022 06:00
EUUP	22/02/2022 14:00	23/02/2022 06:00
EUUP	22/02/2022 11:00	23/02/2022 06:00
EUUP	22/02/2022 10:30	23/02/2022 06:00
EUUP	22/02/2022 10:00	23/02/2022 06:00
EUUP	22/02/2022 09:00	23/02/2022 06:00
EUUP	22/02/2022 08:00	23/02/2022 06:00
EUUP	22/02/2022 07:00	23/02/2022 06:00
EUUP	22/02/2022 06:00	23/02/2022 06:00
EAUP	22/02/2022 06:00	23/02/2022 06:00

more

RAD

The RAD is designed as a part of the Network Manager (NM) ATFCM operation. The objective of the RAD is to facilitate flight planning, in order to improve ATFCM, while allowing aircraft operators flight planning flexibility.

[RAD Homepage](#)

[Increment File](#)

[RAD Application](#)

[2203 - 24 Mar 2022](#)

[2202 - 24 Feb 2022](#)

[2201 - 27 Jan 2022](#)

[Additional Documentation](#)

[EU/EURO](#)

[FRA DCT Restrictions](#)

[PTRs](#)

CCMS Web

application. Alternatively, a web form is available.

[More info on CCMS](#)

Contacts

Depending on the nature of your enquiry you can get direct contact with NMOC or make a search to send a message to NM on different topics.

Network Operations & NM Contacts

Portal Assistance

If you have an urgent Operational request in relation to a flight, please follow the procedure in place to reach the Network Manager Operations Center **NMOC**.

If you experience login or other technical urgent problems please contact our **Technical helpdesk (CSO)**.

To provide non-urgent feedback on your user experience or any question in relation to the NOP Portal please send an email to **NOP Portal Support**.

To understand a little more how the NOP works, you can access **Video Tutorials via NM Flight Management Zone**.

Network Operations Weather Assessment

Network Operations Weather Assessment objective



To support ANSPs and AOs in anticipating, identifying, monitoring and planning for potential severe weather events that may impact ATM capacity.

[Daily Update \(click here\)](#)

Incident Management Tool

You are not authorised to see IMT

EVITA

For more information on the European Crisis Visualisation Interactive Tool for ATFCM (EVITA), please consult the **EVITA web page**.

E-Helpdesk

To request access to the E-Helpdesk please fill in the **NM information request form**.

Flights

Access to Flights is restricted to NOP (Protected) Portal Users. For more information on this function consult the online help through the ? button on the right of the title. To read the instructions for subscription please visit the **NM Operational services and products** page of our website.

Measures

Access to Measures is restricted to NOP (Protected) Portal Users. For more information on this function consult the online help through the ? button on the right of the title. To read the instructions for subscription please visit the **NM Operational services and products** page of our website.

Traffic Counts

Access to Traffic Counts is restricted to NOP (Protected) Portal Users. For more information on this function consult the online help through the ? button on the right of the title. To read the instructions for subscription please visit the **NM Operational services and products** page of our website.

Airspace Data

Access to Airspace Data is restricted to NOP (Protected) Portal Users. For more information on this function consult the online help through the ? button on the right of the title. To read the instructions for subscription please visit the **NM Operational services and products** page of our website.

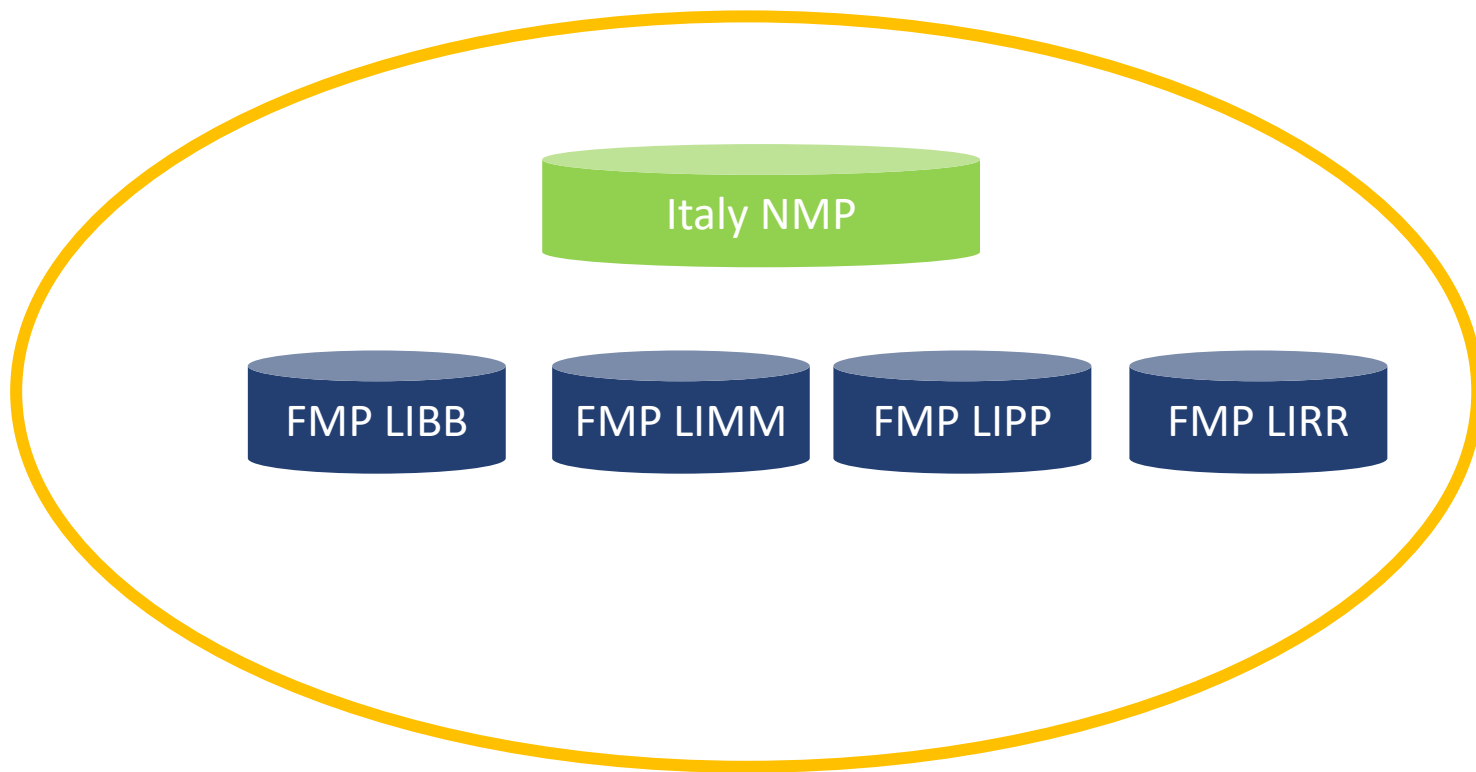
Flight Planning

The Network Manager Flight Planning area provides a flight plan validation service as well as a flight plan management and route finding service for secure access users.

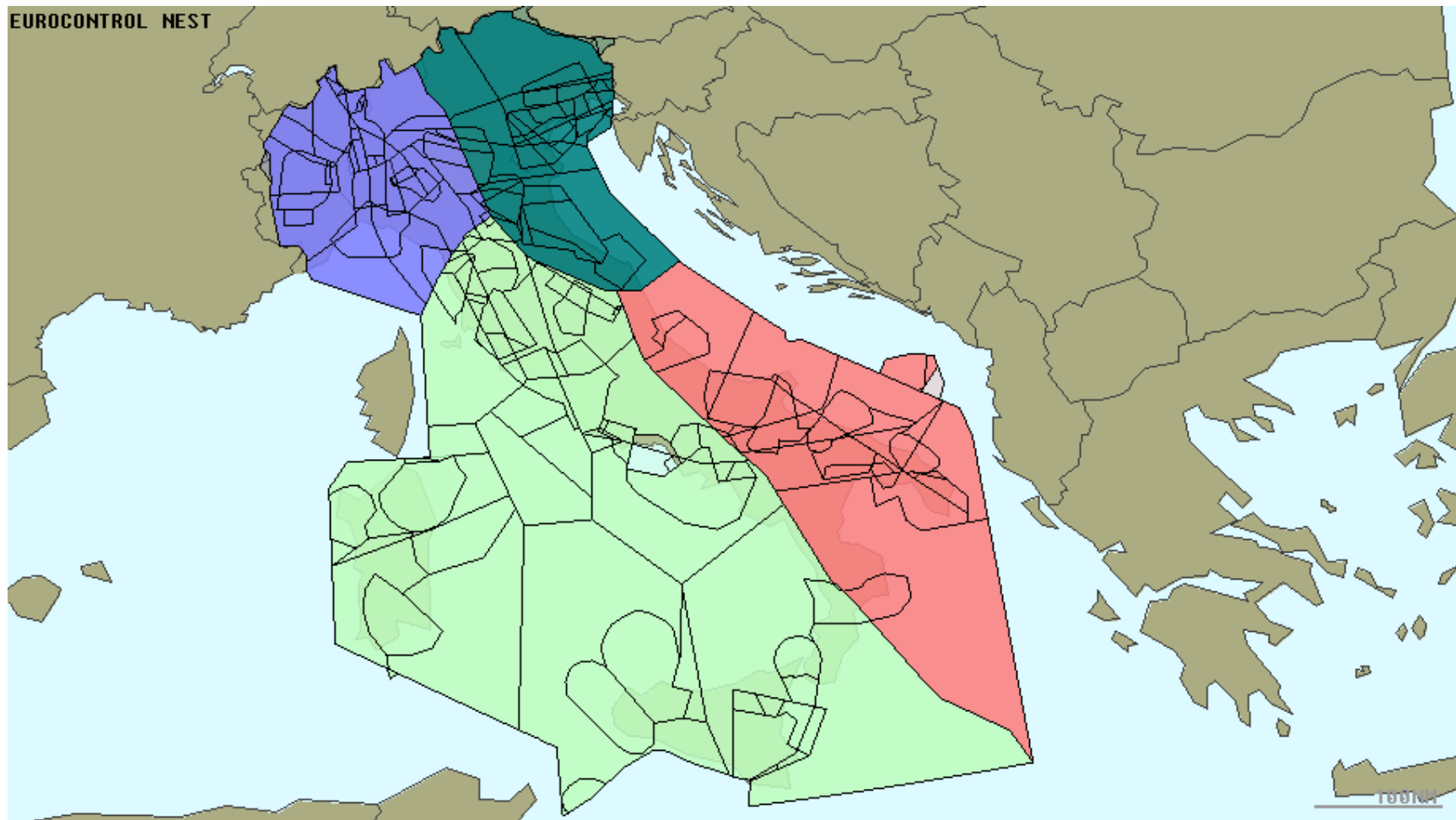
Access our video tutorials in the **NM Flight Management Zone**

Flight Plan Validation can also be performed on Next AIRAC data (normally available 14 days before the AIRAC switch) via the **NEXT AIRAC** link, or on adhoc AIRAC data (only during pre-validation exercises) via the **ADHOC AIRAC** link.

ENAV: gestione ATFCM



EUROCONTROL NEST





How ATFM works

SECTOR CONFIGURATION

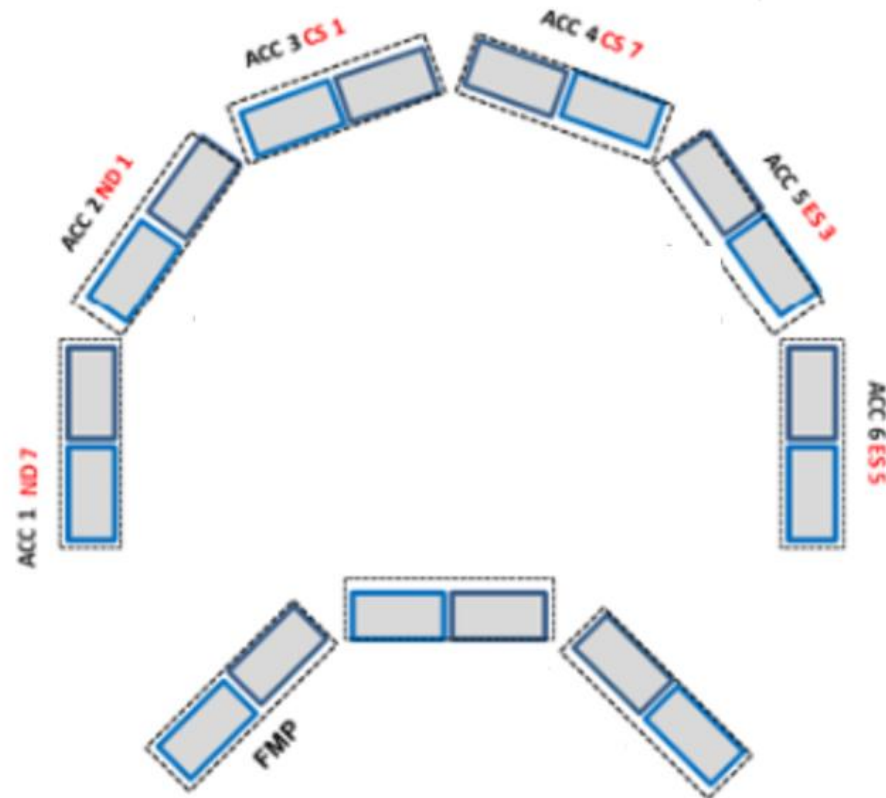
REROUTING – LEVEL CAPPING

STAM (Short Term ATFCM Measures)

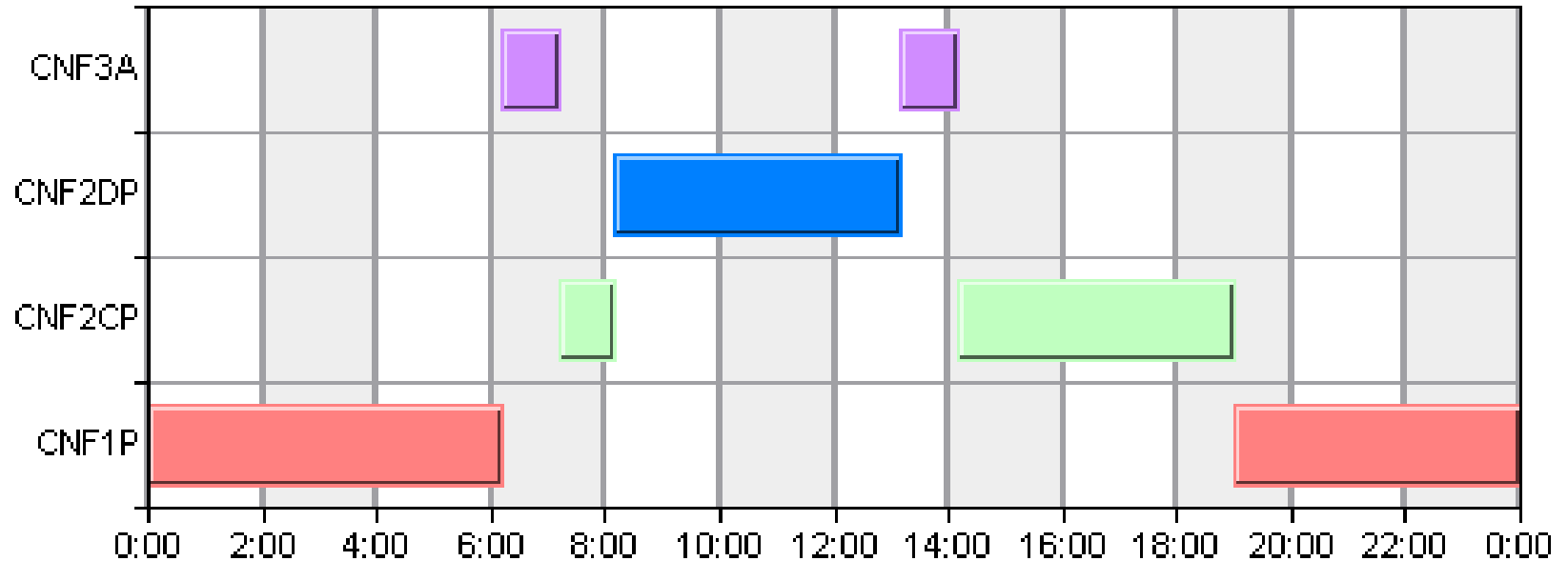
SLOT Allocation

Balance arrival/departure

SECTOR CONFIGURATION

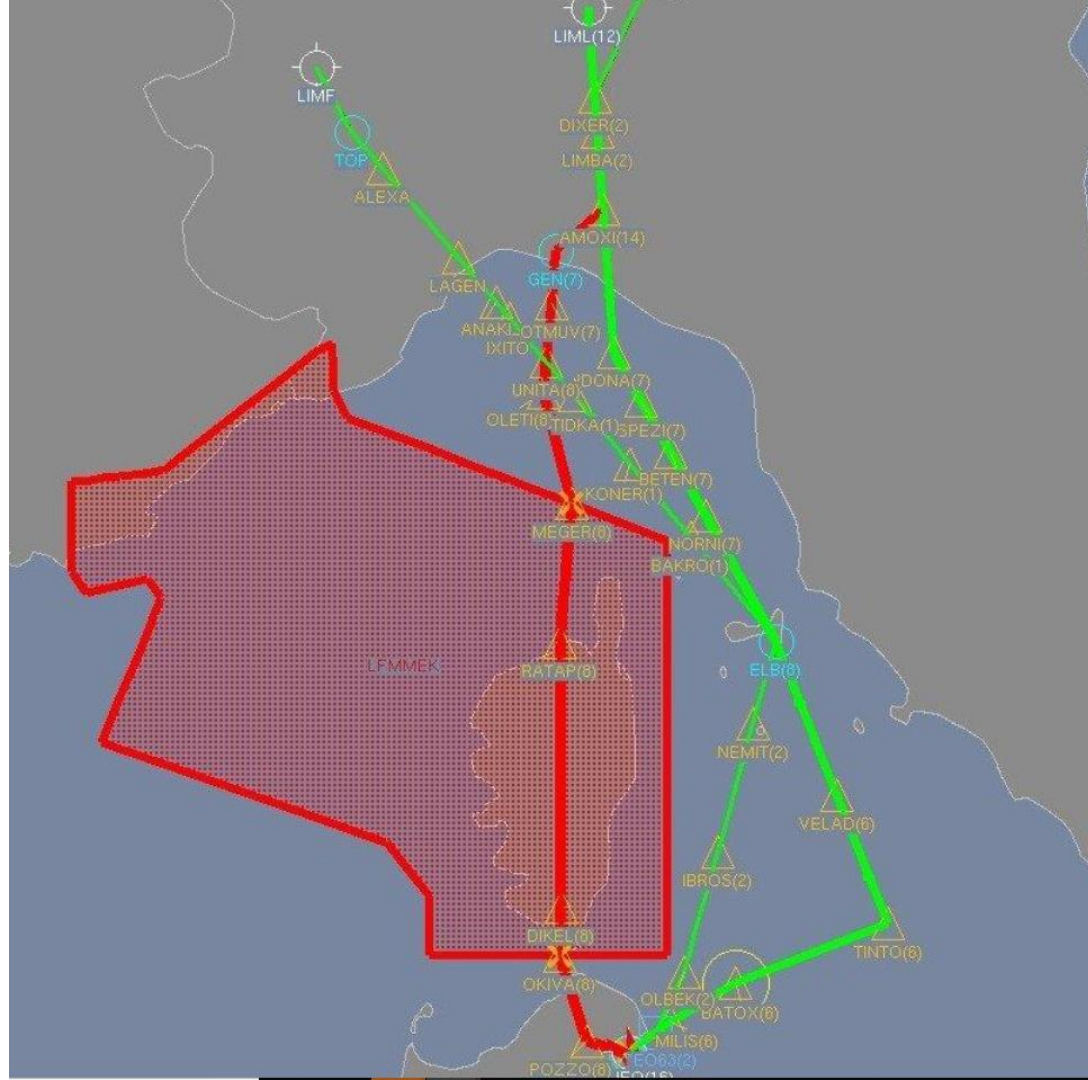


SECTOR CONFIGURATION



REROUTING – LEVEL CAPPING

Origin from LIEO
Destination to LIMC LIME LIMF LIML
Types RR
Conditions Not allowed via sector LFMMRAEE
Refile
Suggested Alternative Routes BATOX L5 TINTO L12 ELB/F300 M729 BETEN or OLBK/F300 Q125 ELB L50 UNITA
Comments
Location LFMMRAEE
On-load Areas LIRREWN03
Off-load Areas LFMMRAEE
Status Published
Applicability
Agreed Periods
Active Periods



REROUTING – LEVEL CAPPING

Origin from LIRA LIRF
Destination to EGHH EGHI EGHL EGKK EGLF EGLK EGLL EGTD EGTF EGVO
Types RR
Conditions Not allowed via sector LFMMRAE
Refile
Suggested Alternative Routes SOVAN L995 IBRID DCT CERVI UM872 MOLUS UT423 CLM or NEMBO T313 ELB L50 BAKRO DCT AOSTA UM729 MOLUS UT423
Comments
Location LFMMRAE
On-load Areas LIRRNWW6, LSAGL56, LIMMAWY37, LSAGL7, LFEEURMN, LFEELD, LIRRNW5, LFEEHD, LIRRN4A
Off-load Areas LFMMRAE, LFFFHP, LIRRAWL, LIRRAWM
Status Published
Applicability
Agreed Periods
Active Periods



STAM (Short Term ATFCM Measures)

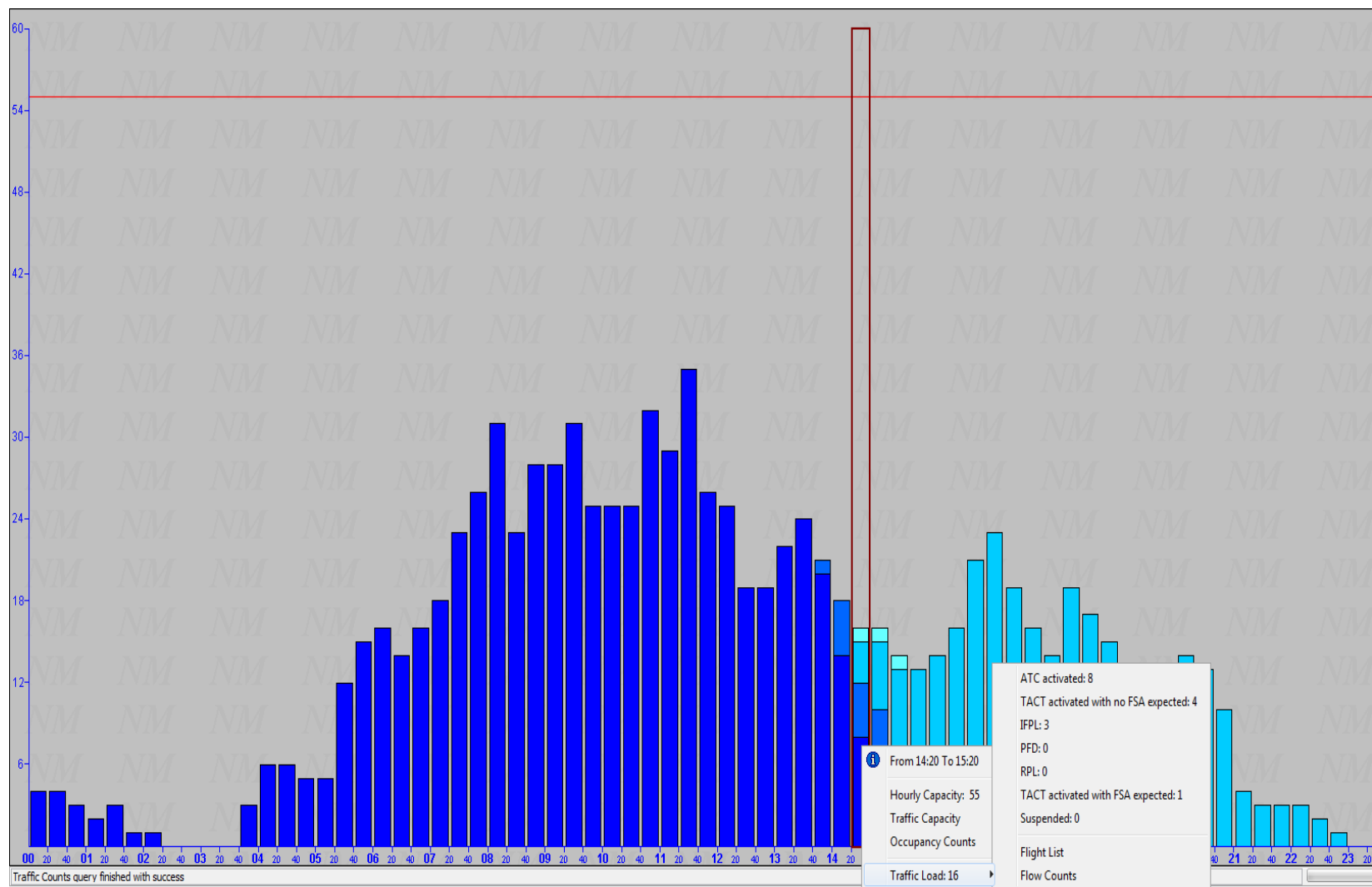
Last Minute Improvement Procedure

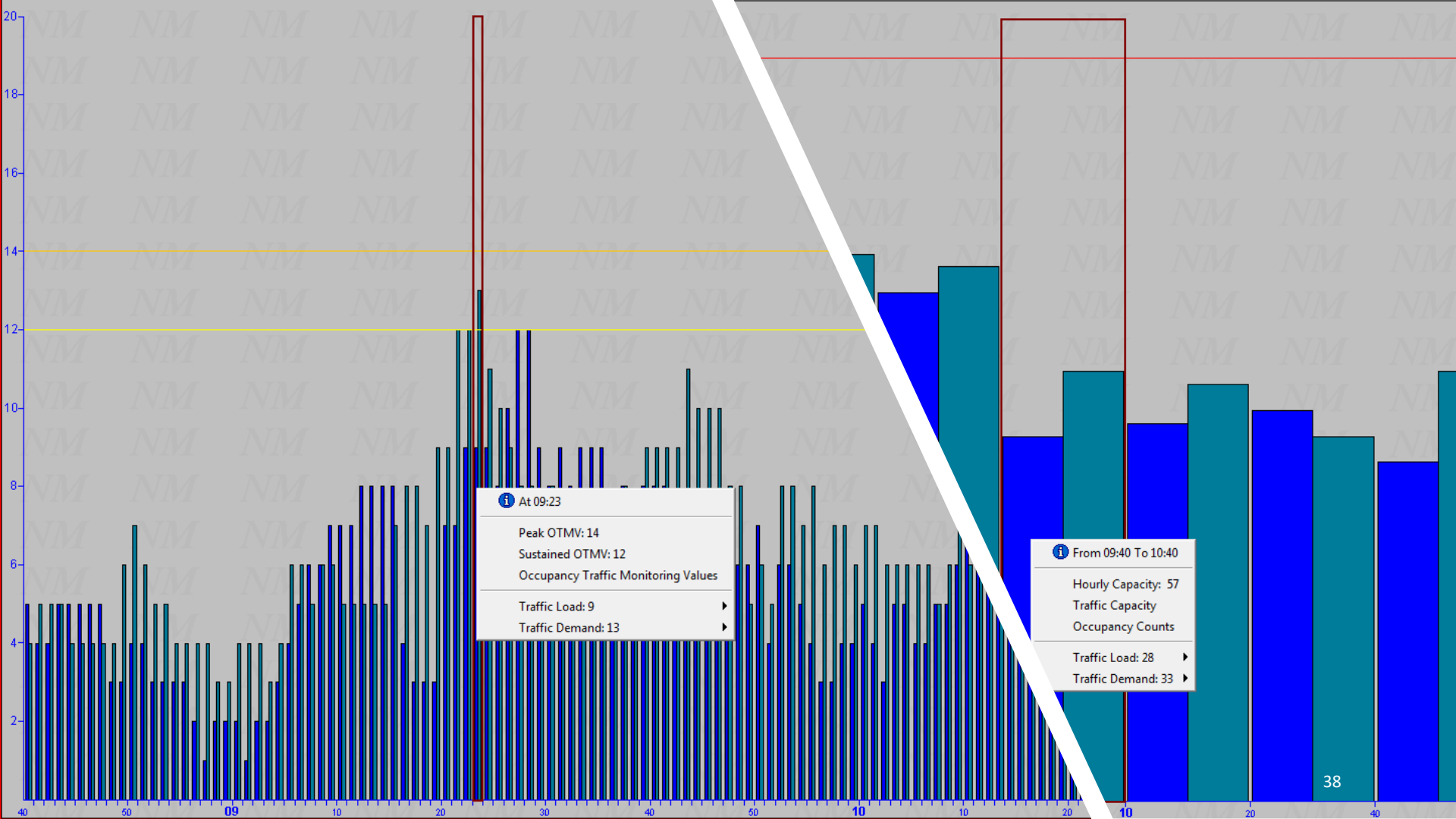
Mandatory Cherry Picking (MCP)

Airport Cherry Picking (ACP)

Collaborative Arrival Regulation Avoidance (CARA)

Minimum Departure interval (MDI)



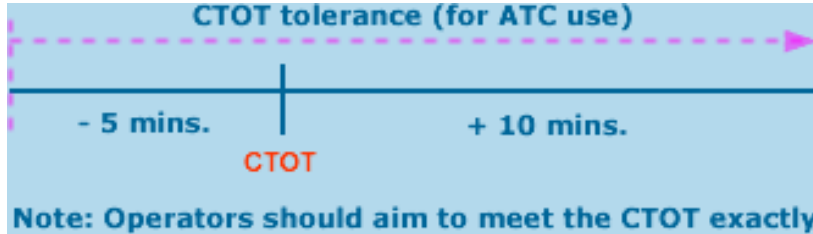


Regulation Cause

Regulation Cause	CODE	Regulation Location	Cause Descriptions Guidelines
ATC Capacity	C	D	Demand exceeds the ATC capacity; Planned staff shortage
		E	
		A	
ATC industrial action	I	D	Controllers' strike
		E	
		A	
ATC routings	R	E	Phasing in of new procedures; ATFCM scenarios; Network solutions
ATC staffing	S	D	Unplanned staff shortage
		E	
		A	
ATC equipment	T	D	Radar failure; RTF failure
		E	
		A	
Accident / incident	A	D	RWY23 closed due accident
		A	
		A	
Aerodrome capacity	G	D	Lack of parking; taxiway closure; areas (runways, taxiways) closed for maintenance; demand exceeds the declared airport capacity; runway configuration (winds)
		A	
		A	
Equipment NON-ATC	E	D	Runway or taxiway lighting failure
		A	
Industrial action NON-ATC	N	D	Firemen's strike
		A	
Airspace management	M	D	Airspace availability; Military exercise
		E	
		A	
Special event	P	D	European football cup; Heads of Government meetings; Upgrade of ATM systems ¹ ; Gliding activity
		E	
		A	
Weather	W	D	Thunderstorm; low visibility; Strong cross winds, CBs; de-icing
		E	
		A	
Environmental issue	V	D	Noise
		A	
Other	O	D	To be used only if no other reason can fit ² .
		E	
		A	



ATFCM products: TACT_PHASE (CTOT)



```
-TITLE SAM
- ARCID AFR3436
- IFPLID AA47163449
- ADEP LFML
- ADES EDDF
- EOBD 041130
- EOBT 1635
- CTOT 1651
- .....
- .....
```

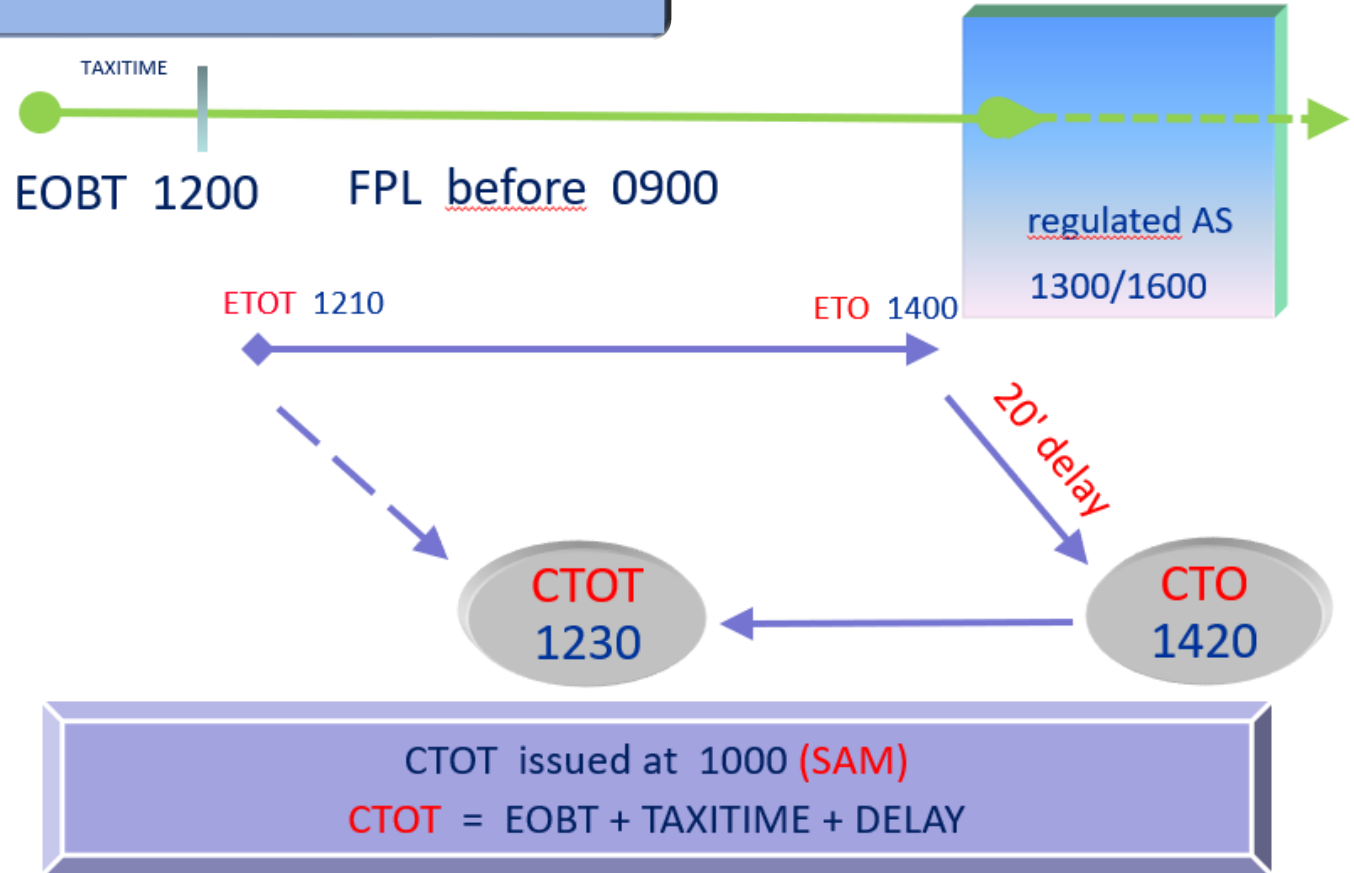
Il CTOT è parte integrante di una autorizzazione ATC.

È un orario definito al minuto.

La finestra temporale (CTOT -5' +10') è di esclusivo uso dell'ATC al fine di ottimizzare il flusso di partenze/arrivi.

Tale finestra temporale è identificata come “slot di partenza”.

SLOT Allocation



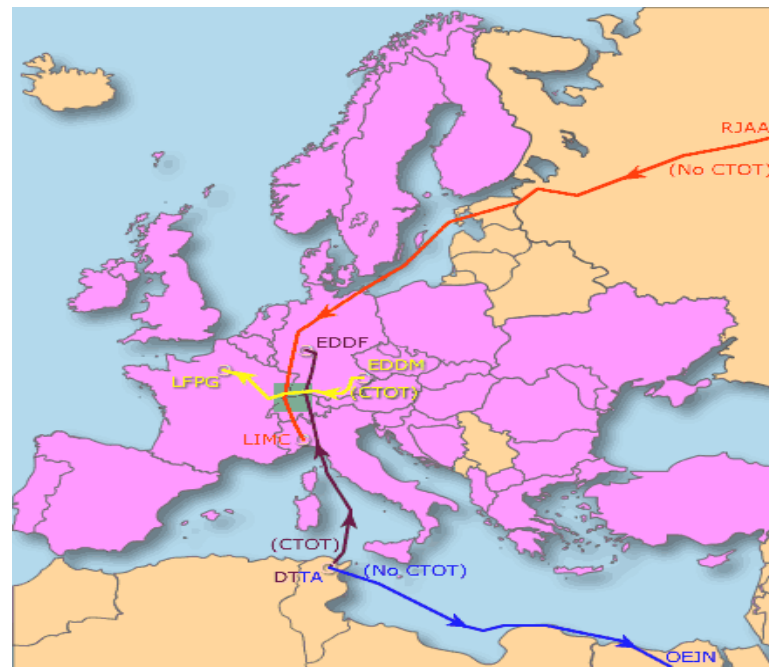
ZCZC IDX0730 091941
FF LIMCZTZL LIMLZPZX LIMMZDZX LIRRZDZO
091941 EUCHZMTA
→ -TITLE SAM
-ARCID BCS32E
-IFPLID AA26323415
-ADEP LIMC
-ADES EDDP
-EOBD 201109
-EOBT 2135
-CTOT 2205
-REGUL EDDPA09N
-TTO -PTID GOXLI -TO 2301 -FL F190
-TAXITIME 0015
-REGCAUSE WA 84
NNNN

1° caso: un a/m che decolla da ed atterra su un A/D all'interno dell'area ATFM

2° caso: un a/m che decollata un A/D nell'area ATFM adiacente ed atterra su un A/D all'interno della area ATFM

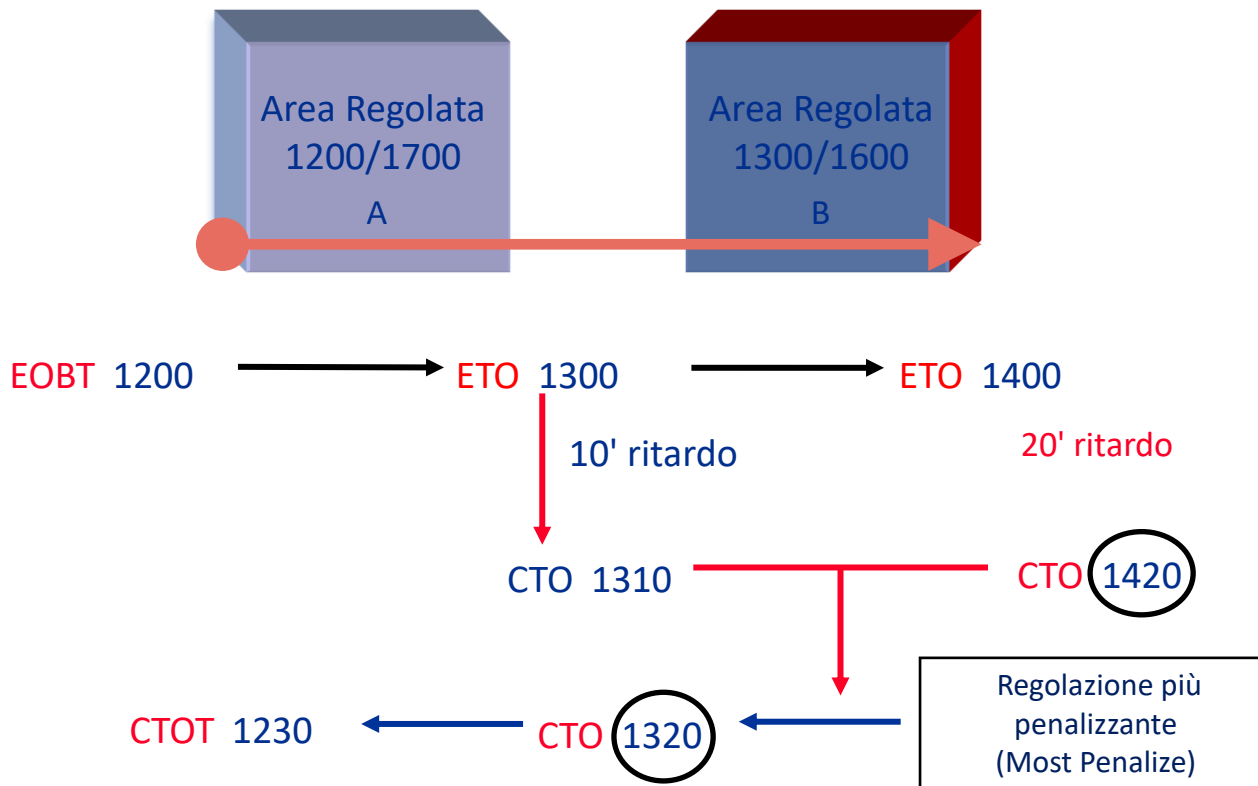
3° caso: un a/m che decolla da un A/D nell'area ATFM adiacente e che atterra su un A/D al di fuori dell'area ATFM

4° caso: un a/m proveniente da fuori area ATFM che atterra su un A/D all'interno dell'area ATFM

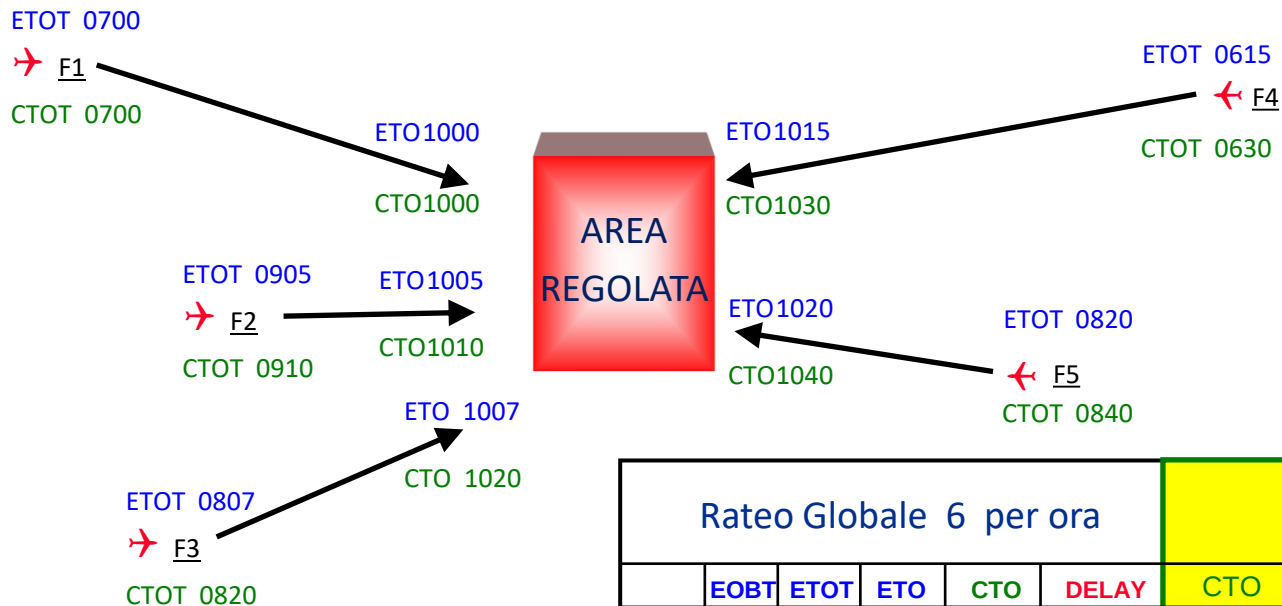


 = regulation

Volo soggetto a più penalizzazioni

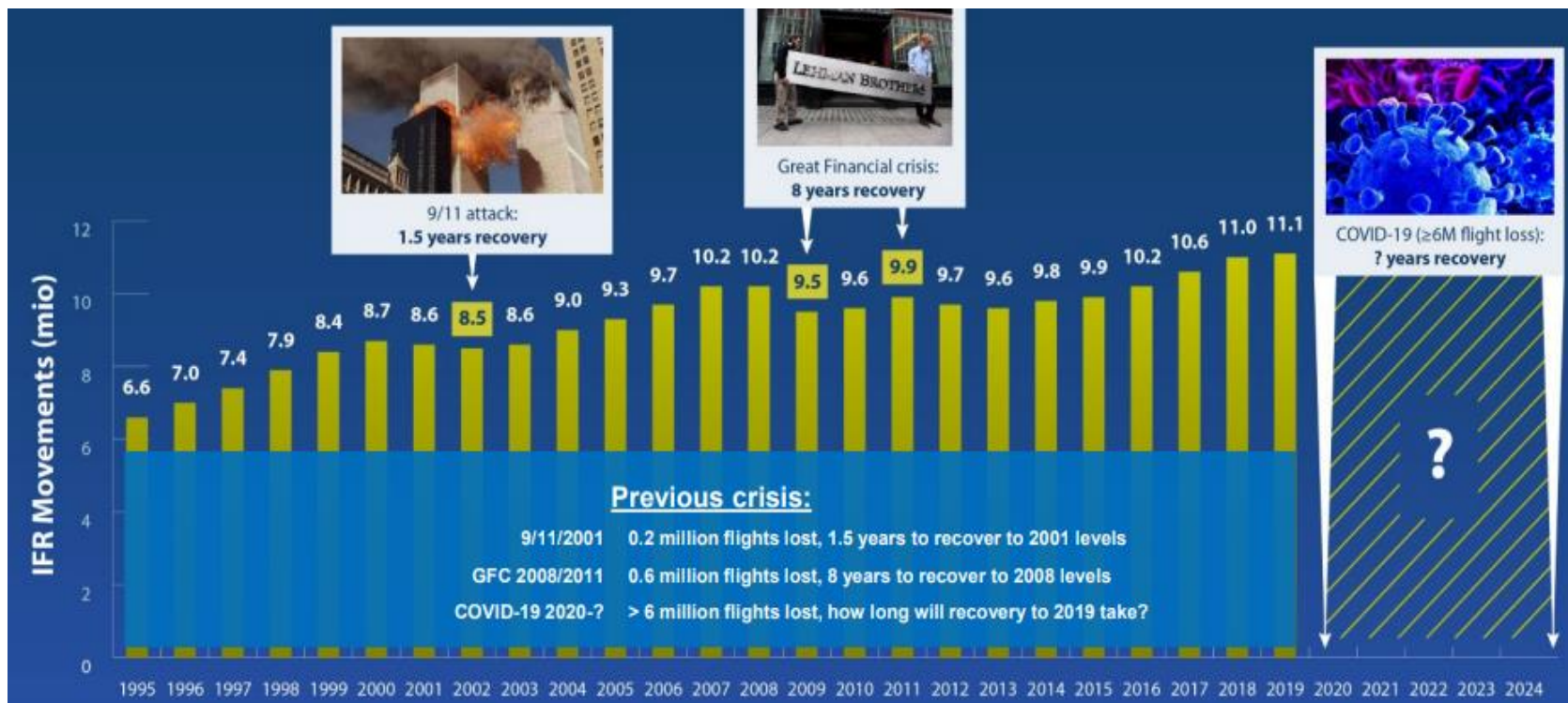


$$CTOT = EOBT + TAXITIME + DELAY$$



Rateo Globale 6 per ora							
	EOBT	ETOT	ETO	CTO	DELAY	CTO	SIT1
✈ F1	0650	0700	1000	1000	0000	0700	0450
✈ F2	0900	0905	1005	1010	0005	0910	0700
✈ F3	0800	0807	1007	1020	0013	0820	0600
✈ F4	0600	0615	1015	1030	0015	0630	0400
✈ F5	0800	0820	1020	1040	0020	0840	0600

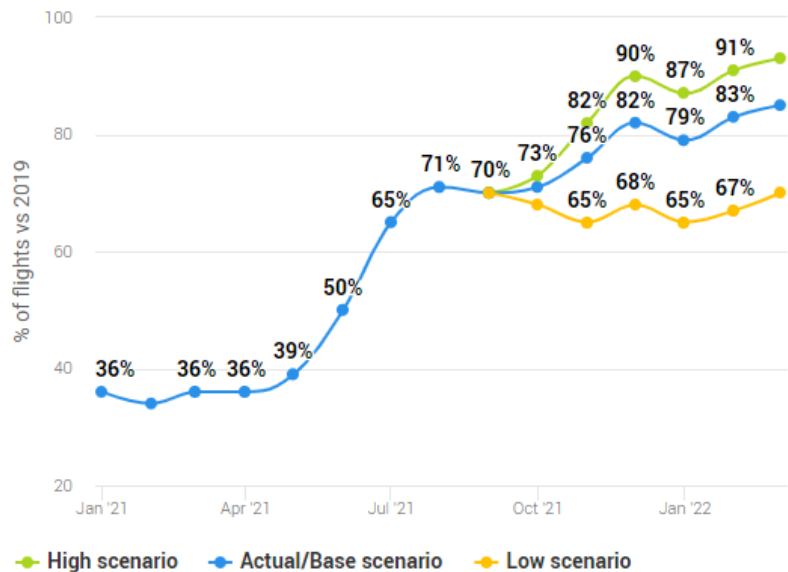
Traffic growth



Source: ECTL

EUROCONTROL short-term traffic scenario for *Europe

Traffic as a % of 2019

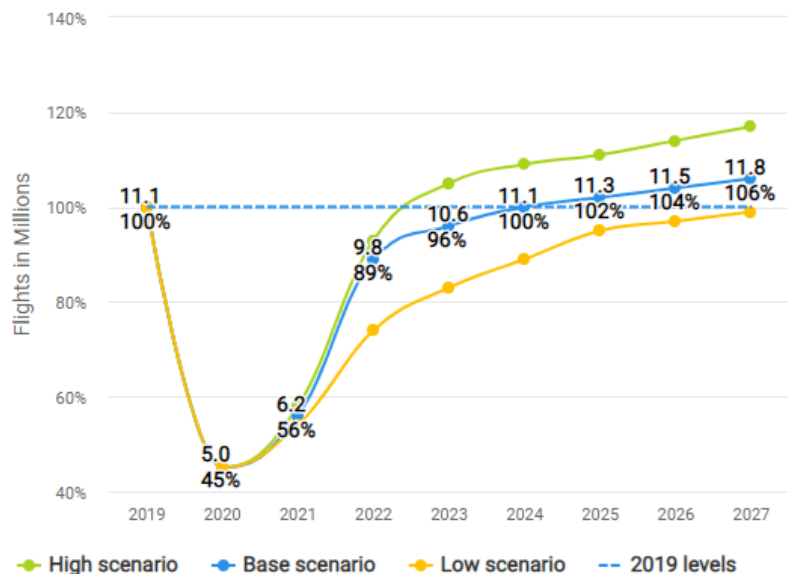


© EUROCONTROL

*Europe = ECAC 44 Member States

EUROCONTROL 7-year forecast for *Europe 2021-2027

Actual and future IFR movements, % traffic compared to 2019



© EUROCONTROL

*Europe = ECAC 44 Member States

Source: ECTL



Grazie!