



SUPPORTING
EUROPEAN
AVIATION

Introduction to Exercises

Review basic principles of FUA

Jan SCHOLZ
Civil-Military Cooperation Division



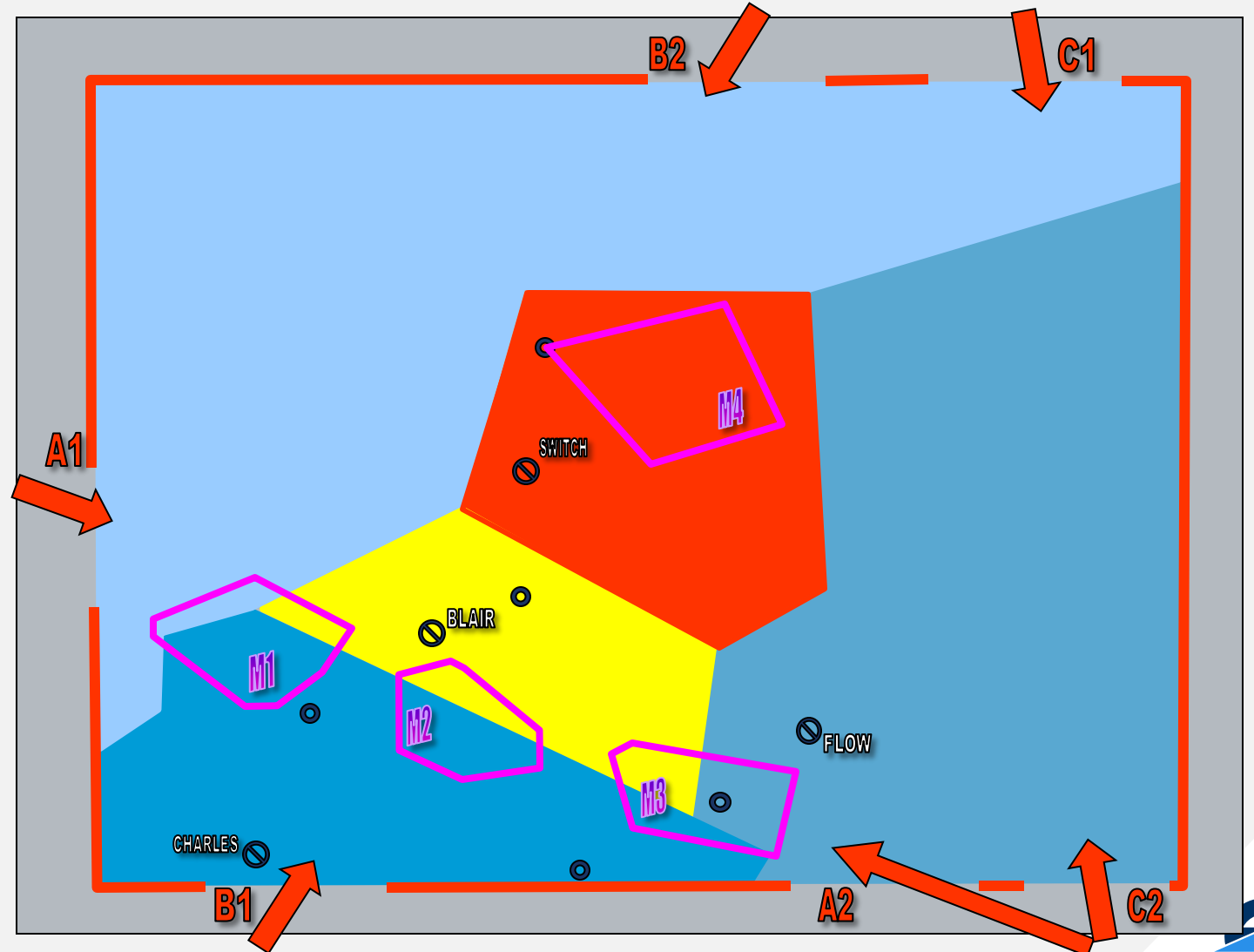
Wednesday 21 January

Presentations

- Introduction to FUA

FUA Exercise I

- Static Airspace Plan
- Group Work
- Negotiation and conclusion



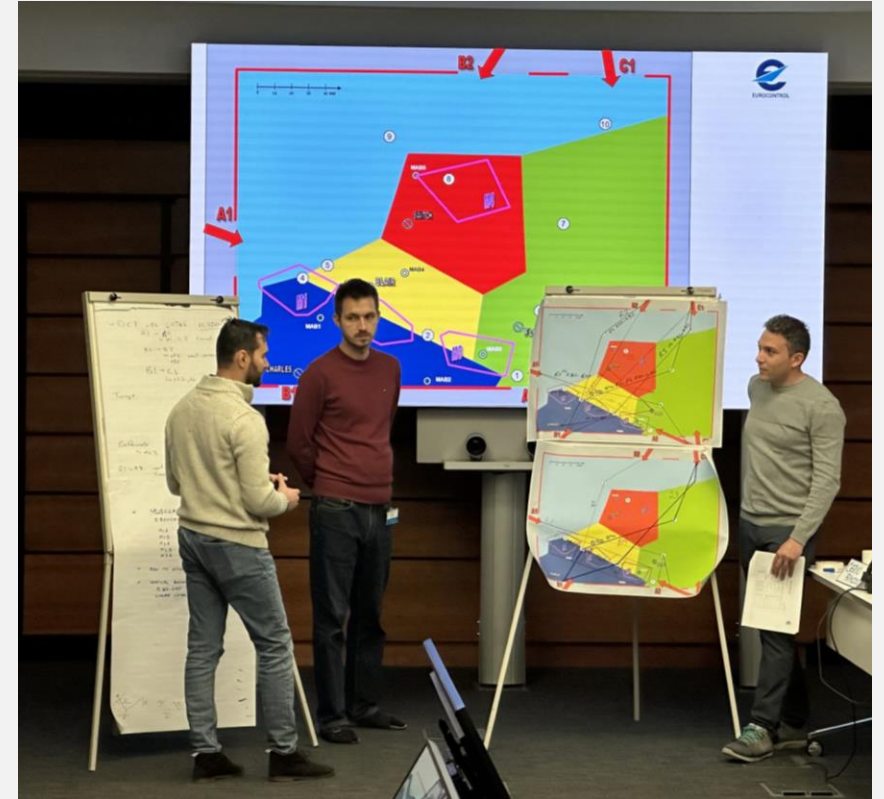
Thursday 22 January

FUA Exercise II

- Dynamic Airspace Plan
- Group Work
- Negotiation and conclusion

System Support

- Presentation on ASM System Support
- Presentation and Demonstration LARA
- Presentation and Demonstration CIMA CT





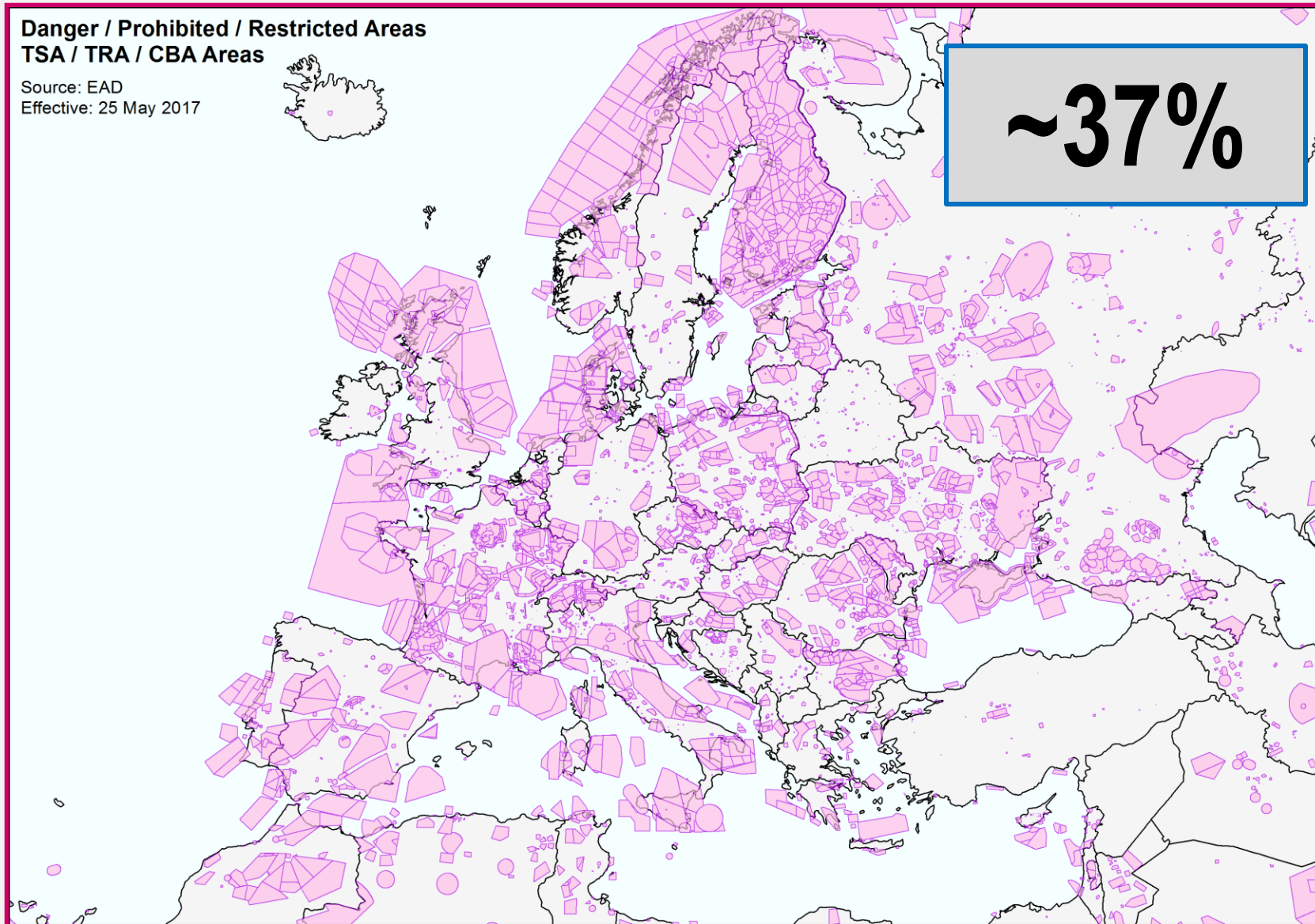
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Introduction to FUA

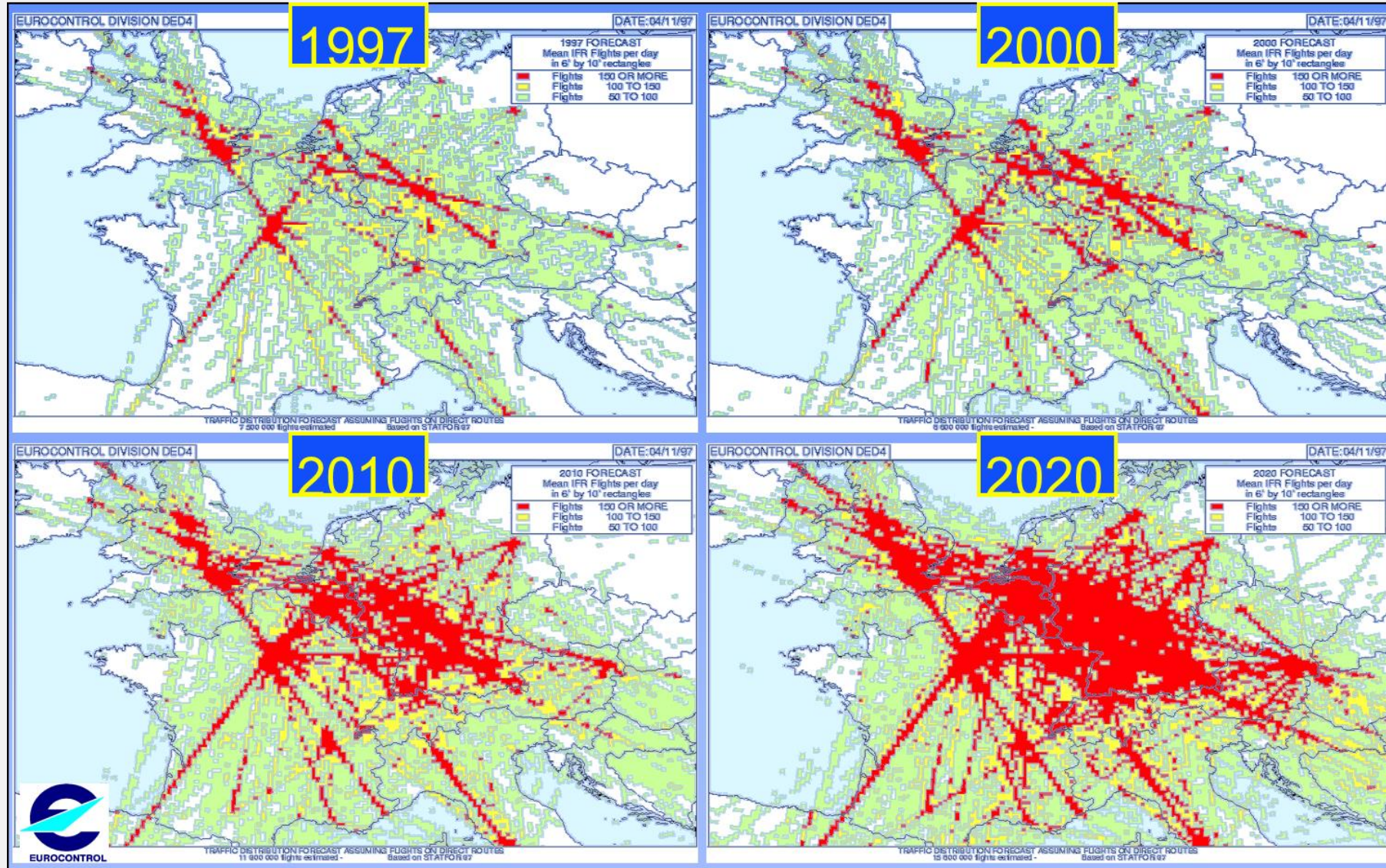
Why manage Airspace?



Why Manage Airspace?



Traffic prediction 1996

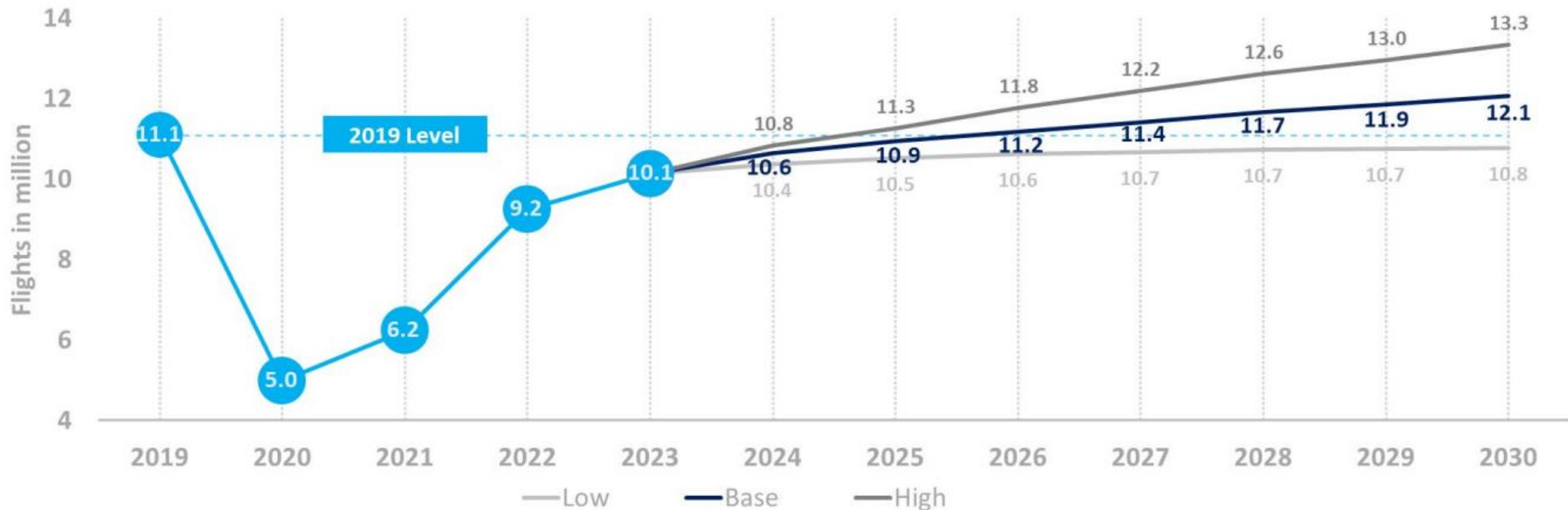


Why Manage Airspace?



EUROCONTROL STATFOR 7-YEAR FORECAST UPDATE FOR EUROPE* 2024-2030 (Spring 2024)

Actual and future IFR movements





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Introduction to FUA Airspace User Requirements



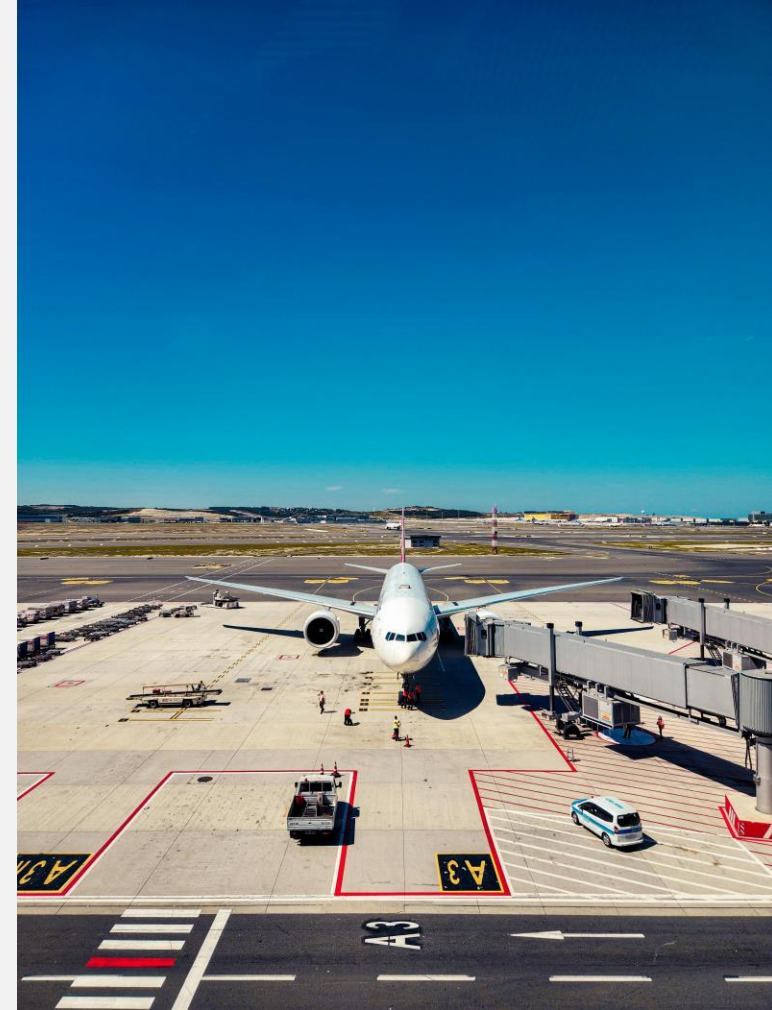
Type of Airspace Users

- General Aviation (VFR);
- Commercial Aviation (VFR);
- Commercial Aviation (IFR):
 - Scheduled;
 - Charter;
 - Cargo;
 - Business;
 - Training.
- State Aircraft:
 - ICAO compliant (IFR);
 - Other.



Civil (IFR GAT) Requirements for the Use of Airspace

- Highest level of safety
- Maximum route availability
- User preferred routes
- Minimum fuel consumption to minimize cost and CO2 emissions
- Predictability and stability of planning
- Quality of ATC service



Military Operational Requirements for the Use of Airspace

- Adequate level of safety
- Adequate airspace for training missions
- Proximity to the air base and ground installations
- Flexibility of planning and timing
- Quality of ATC service
- Most efficient use of airborne time

→ Ensure mission effectiveness



State Aircraft Roles

- Passenger
- Cargo
- Aerial firefighting;
- Aeromedical evacuation;
- Airborne operations;
- Airlift;
- Airpower contribution to land and maritime ops;
- Air-to-air refuelling;
- Counter air;
- Experimental / trials;
- Geographic and hydrographic support;
- Intelligence, surveillance and reconnaissance;
- Maritime operations;
- Meteorological support;
- Police/customs;
- Search and rescue;
- Space operations;
- Special air operations;
- Unmanned aircraft systems.

Why is Airspace Divided?



Types of Military Missions

- Operational missions;
- Training:
 - Initial;
 - Recurrency;
 - Operational work-up;
- Single aircraft;
- Formation / multi-aircraft;
- Mixed package;
- Combined air operations;



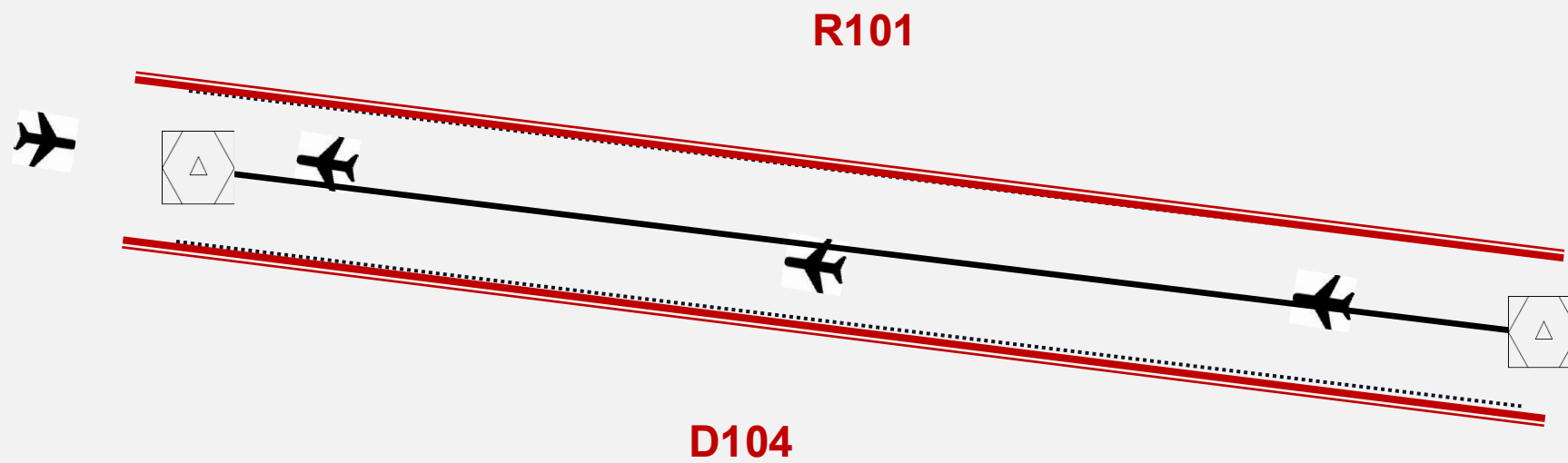


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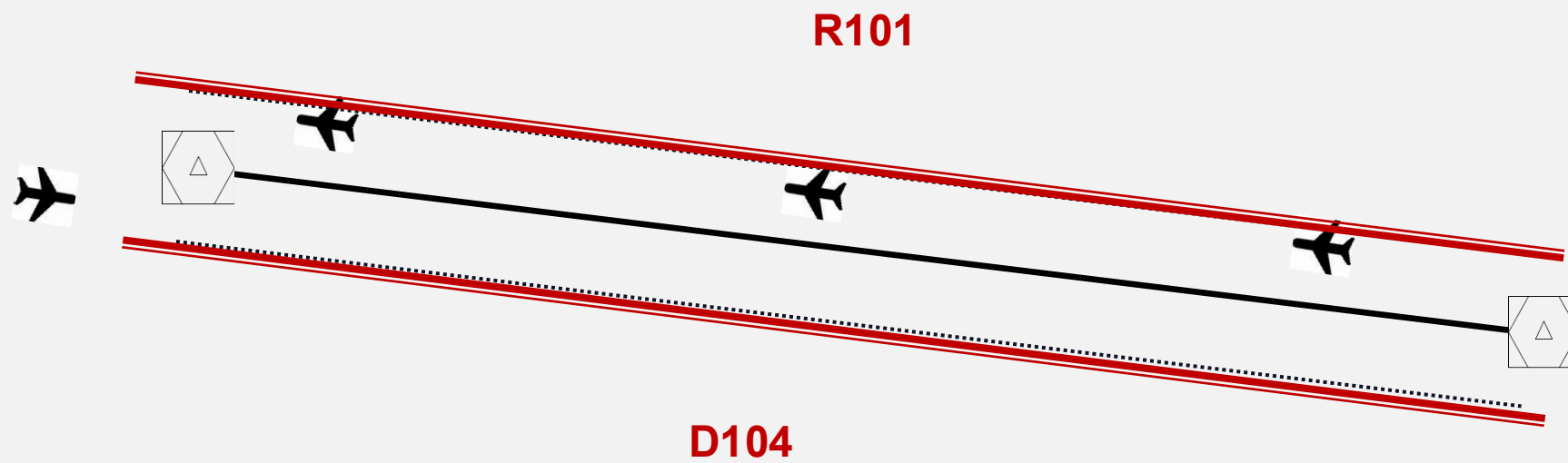
Operational Challenge



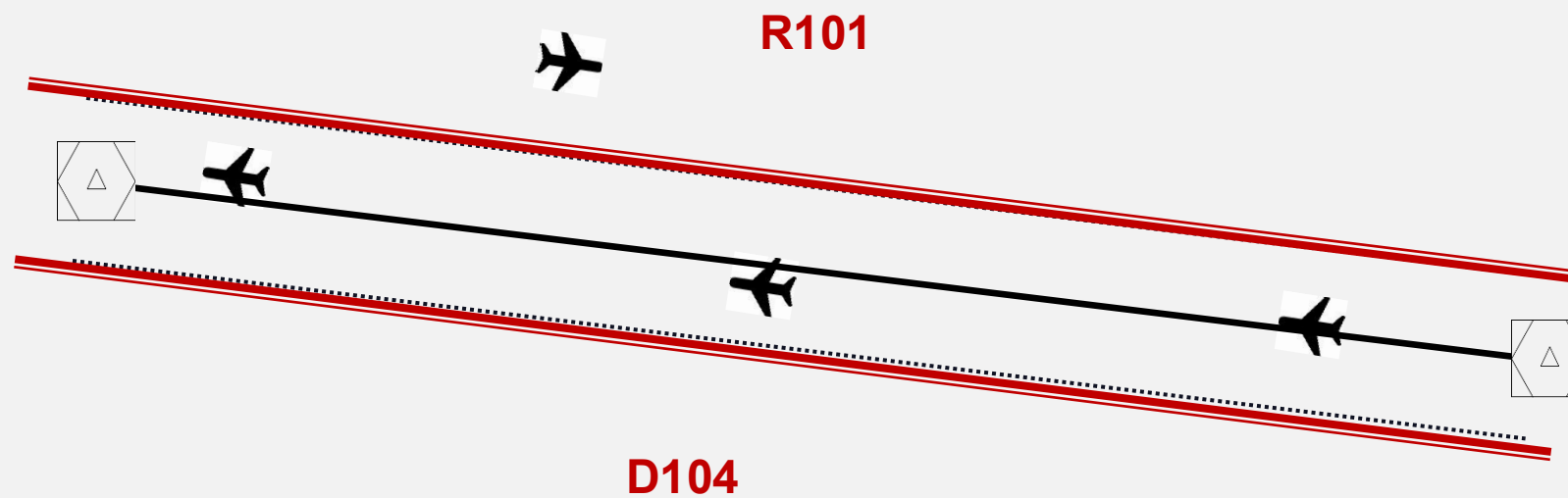
Operational Challenge



Operational Challenge



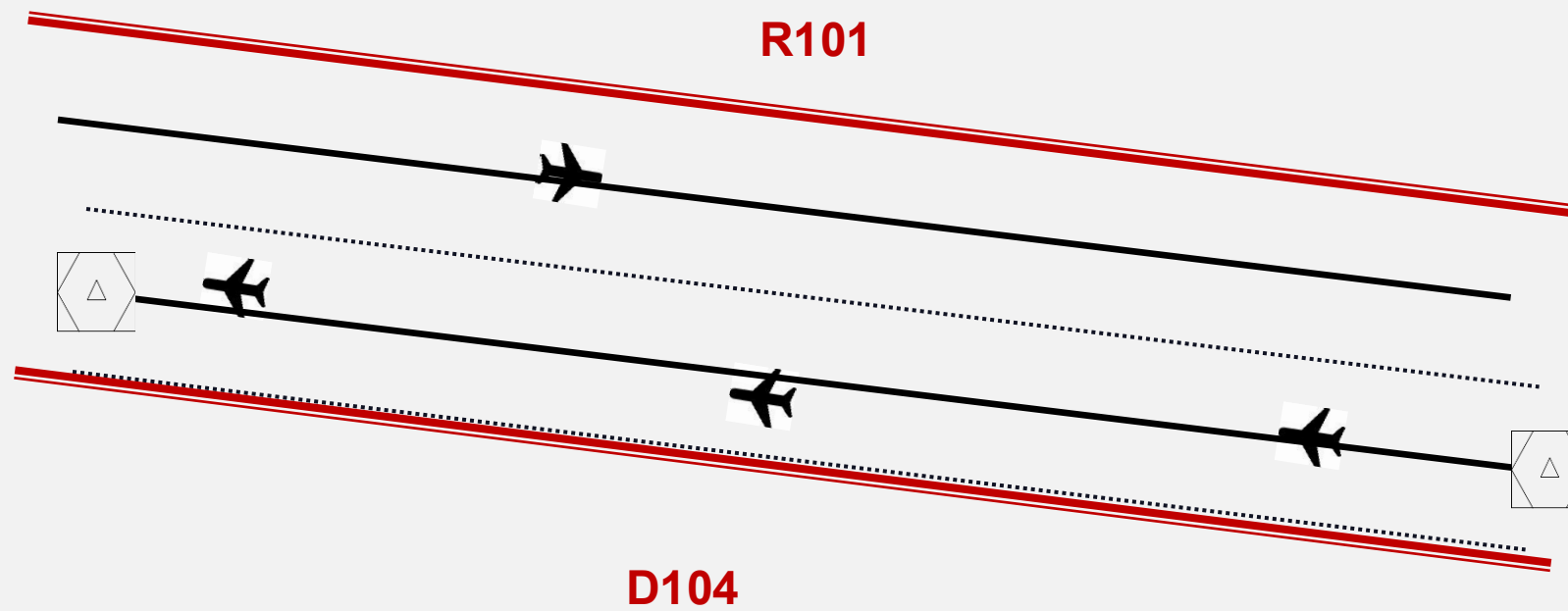
Operational Challenge



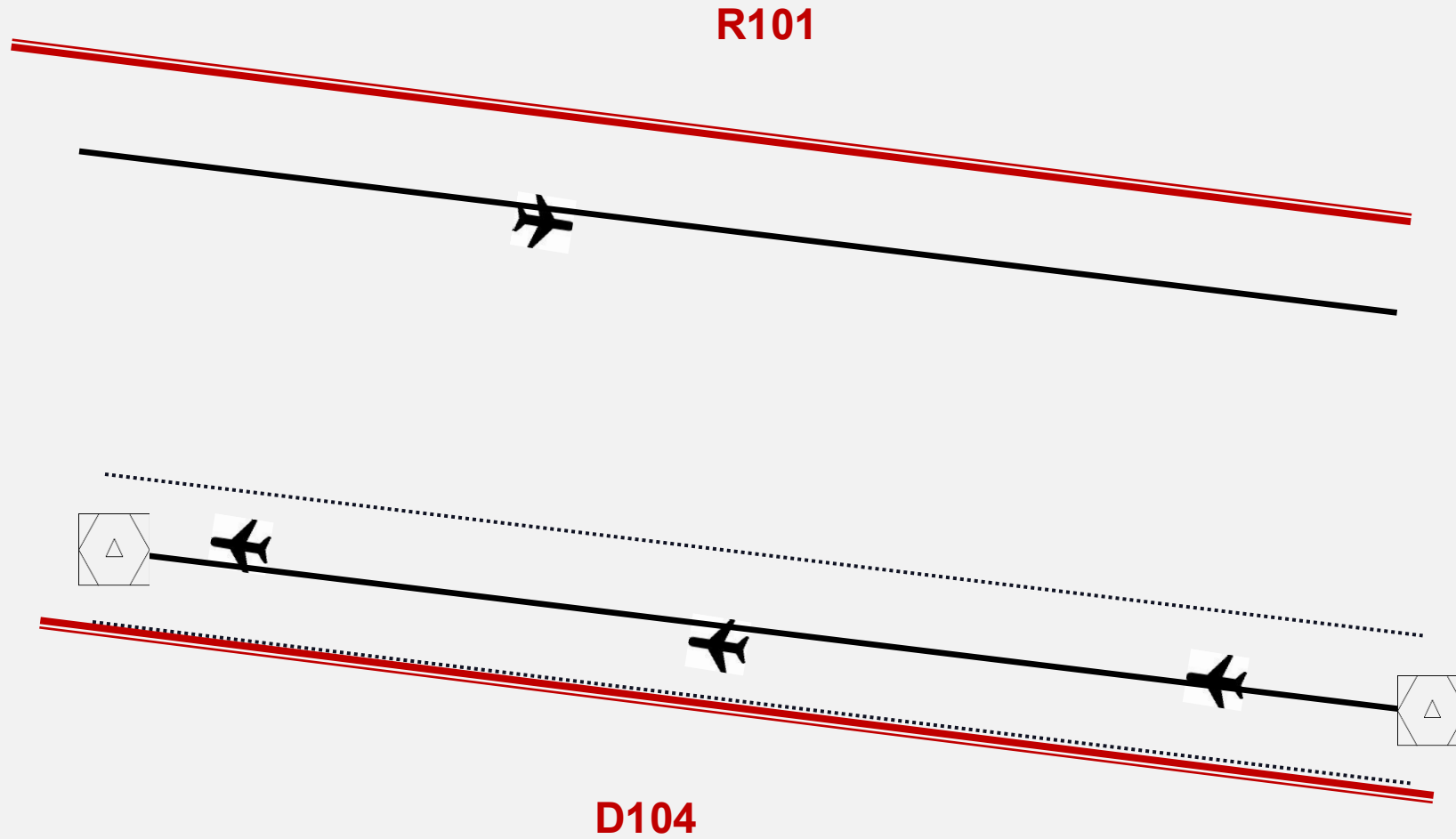
Issues

- What does OK mean?
- What is the airspace classification?
- How do uncontrolled military aircraft know the aircraft is in the area?
- What about other activities - rockets, shells, etc?
- What is the future trajectory?

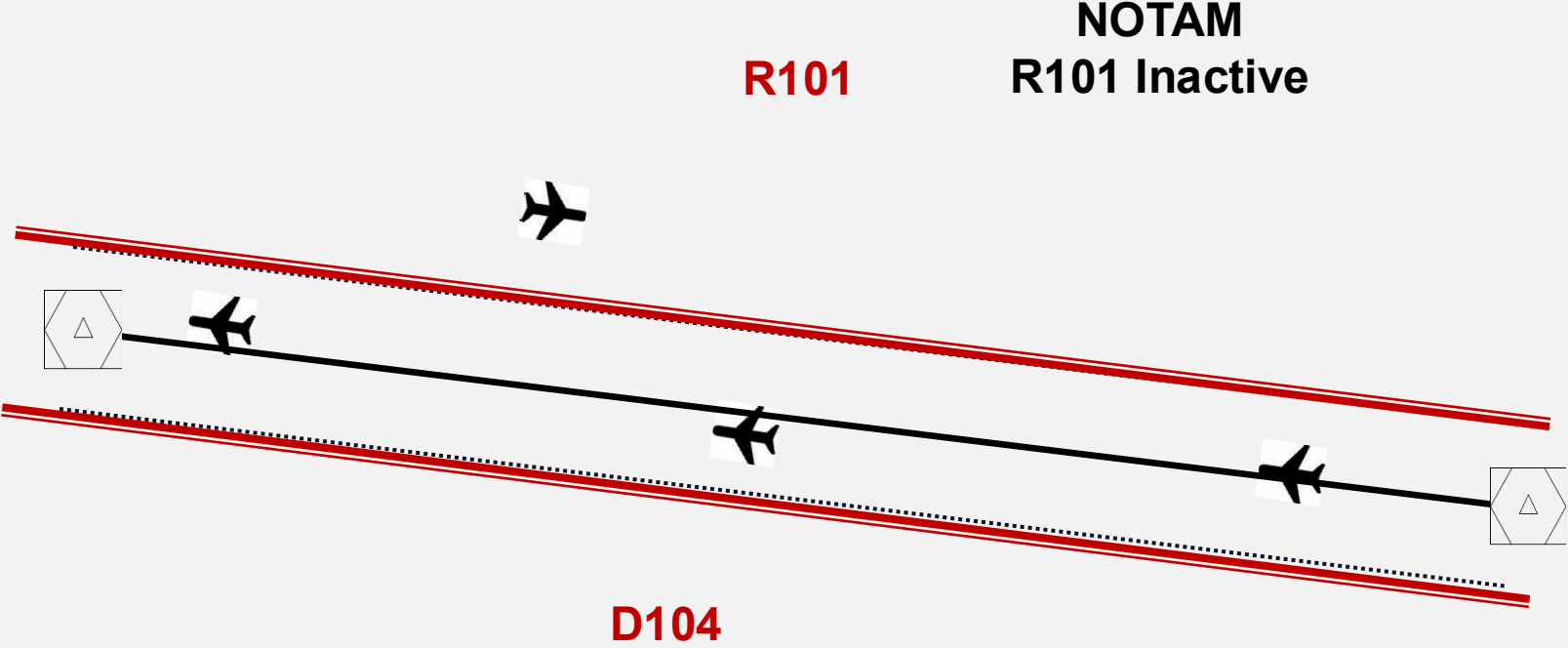
Possible Solution



Possible Solution



Possible Solution



Problem

- Strategic solution;
- GAT traffic needs difficult to predict;
- Military cannot recover area at short notice;
- Airspace classification

Operational Requirements

- Allocate airspace dynamically according to need;
- Priorities;
- Ensure safety;
- Ensure ATS classified airspace;
- Avoid 7-day NOTAM requirement;
- Avoid 1 AIRAC cycle requirement.

FUA Notification Solution

- Daily notification of shared airspace;
- Airspace Use Plan:
 - Active areas for military;
 - Closed routes;
 - (Available routes)
 - Closed areas;
- Update through the UUP.

AMC : LFFAZAMC - FRANCE -
 VALIDITY : 13/09/2008 06.00 - 14/09/2008 06.00
 TIME OF TRANSMISSION : 12/09/2008 13.30

LFFFUIR

A) Unavailable ATS Routes and CDR1s:

Nr	Route	Portion	FL Min	FL Max	From	Until	Remarks
1	UN858	ABRIX CGC	FL195	FL460	10:00	12:30	NOTAM A2238

B) AMC-Manageable Areas (AMA) and associated FBZs:

Nr	Area	ft Min / ft Max	FL Min	FL Max	From	Until	Resp. Unit	Restrictions	Remarks
1	CBA1A	ft 11200/UNL	FL115	UNL	07:15	08:15	LFYA	YES	LFFFFIR, CBA1AR
2	CBA1A	ft 11200/UNL	FL115	UNL	08:30	09:30	LFYA	YES	LFFFFIR, CBA1AR
3.	CBA1B		FL225	UNL	07:15	0815	LFYA	YES	CBA1AR
4	LFTSA10A		FL195	FL315	07:15	10:00	LFXO	NO	ARA
5.	LFTSA10B1		FL195	FL315	07:15	10:00	LFXO	NO	ARA
6	LFTSA20A		FL195	UNL	07:15	07:45	LFYA	NO	
.....									
41	LITSA9B		FL285	UNL	06:00	10:00	LFXO	YES	LITSA9BR

C) Non AMC-manageable areas (NAM) and associated FBZs:

Nr	Area	ft Min / ft Max	FL Min	FL Max	From	Until	Resp. Unit	Restrictions	Remarks
1	CER BORD		FL205	FL450	08:00	17:30	LFFAZAMC	NO	
2.....									

D) Unavailable SIDs and STARs:

Nr	Area	FL Min	FL Max	From	Until	Resp. Unit	Remarks
NIL							

E) AUP/RAD Restrictions

Nr	Restriction ID	From	Until	Resp. Unit / Remarks
1.....	LF2001	17:00	21:00	LFFF

F) Additional information

NIL

The Goal

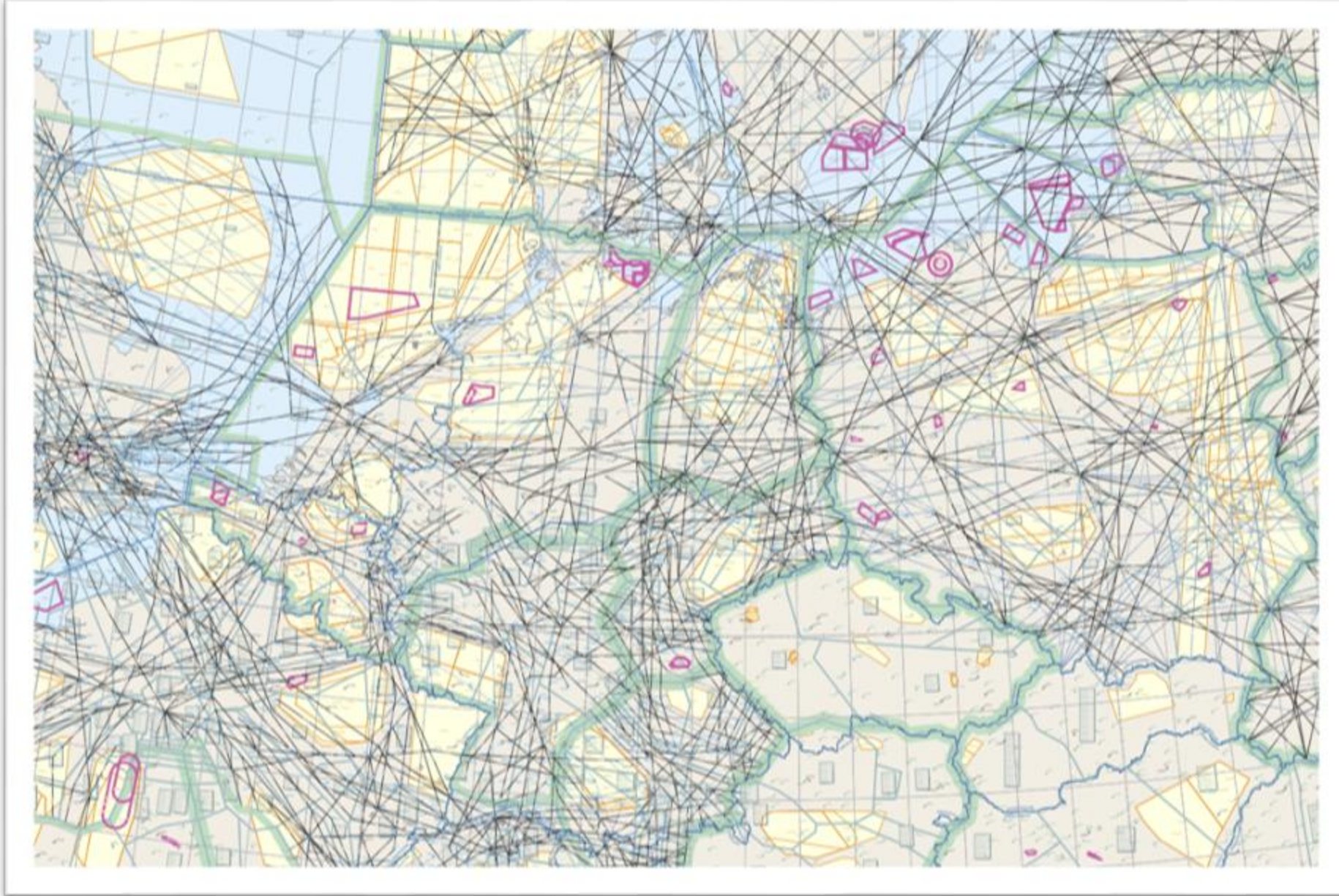
Implementation of the most optimal airspace configuration to accommodate civil and military requirements to

- Increase flight efficiency and sustainability
- Increase mission effectiveness

through

- Enhancing civil/military coordination through all phases of FUA
- Fine-tuning airspace segregation needs to actual military requirements
- Increasing the performance of the ATM System

Why create and share Airspace Use Plans?

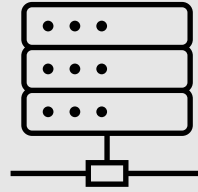




Aviation Community

EAUP
EUUP

Network Manager



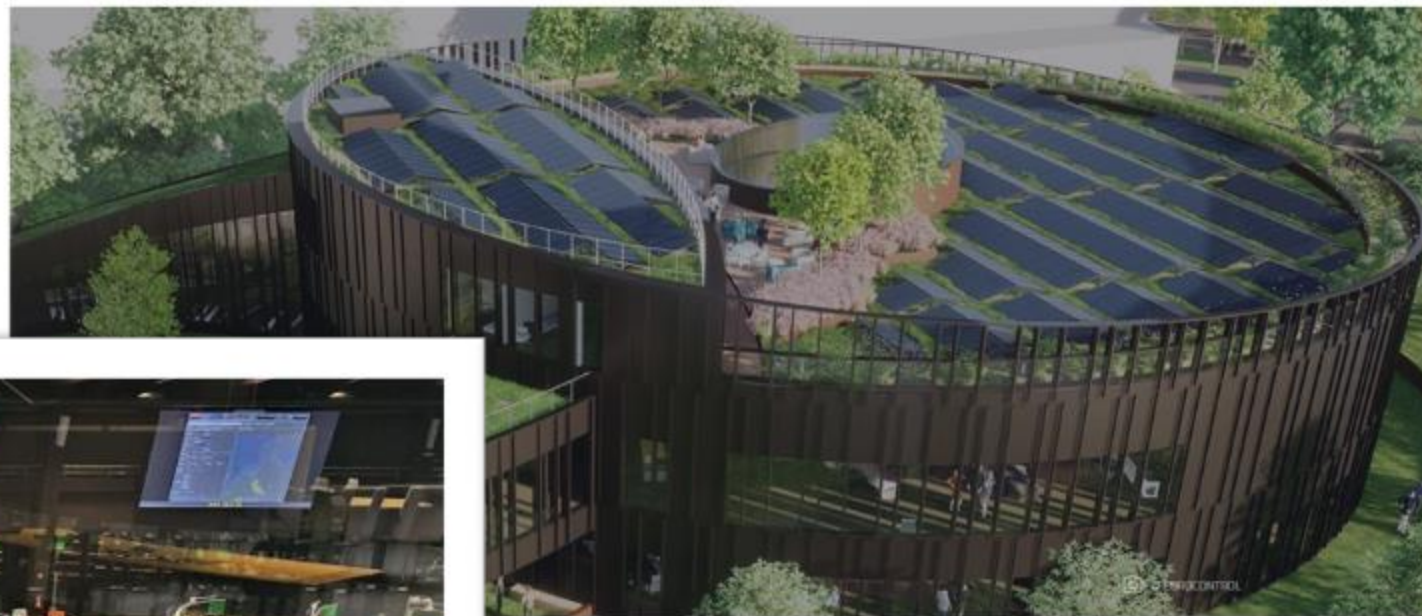
Network Manager Systems



Airspace Use Plan

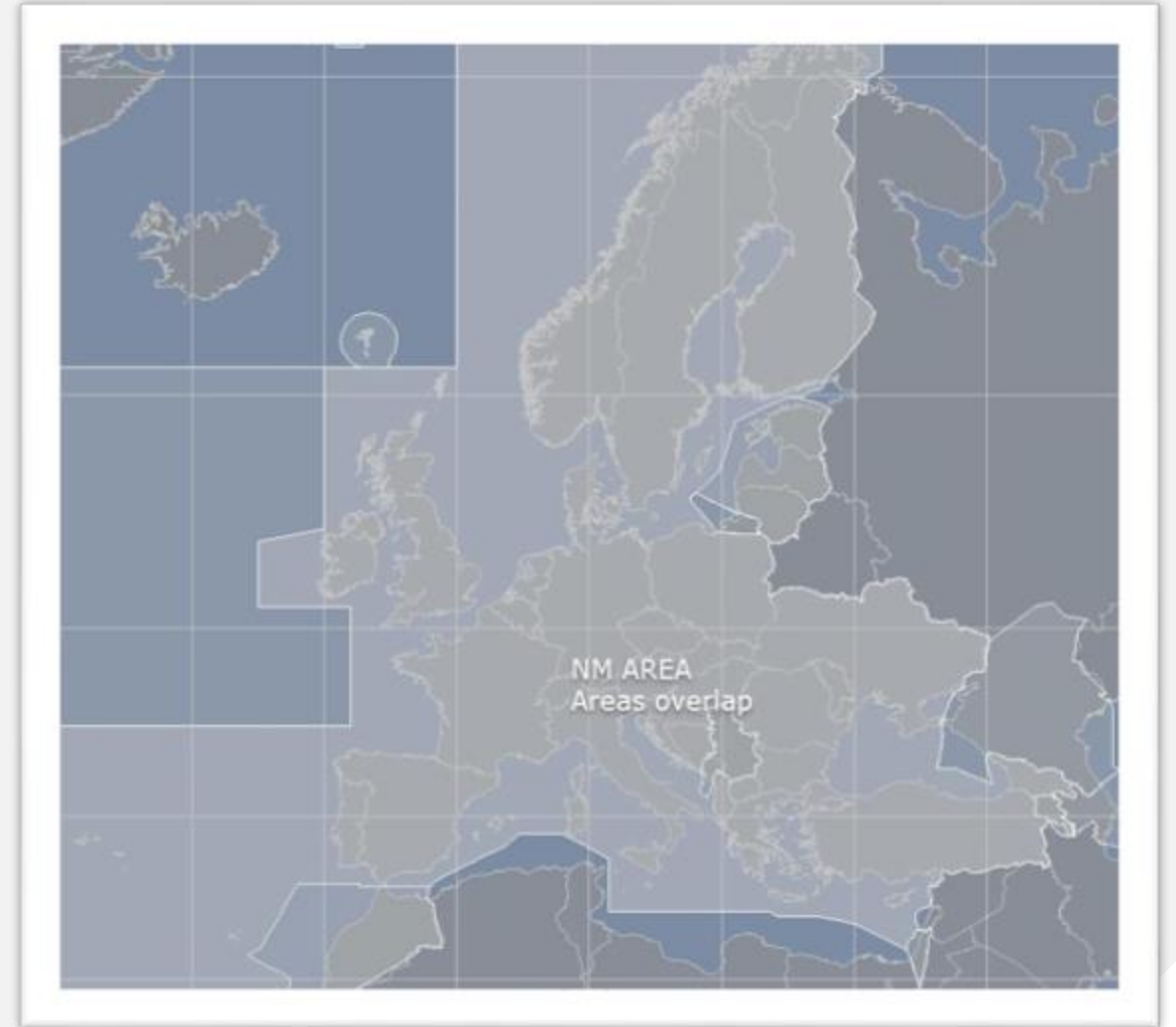


The NETWORK MANAGER

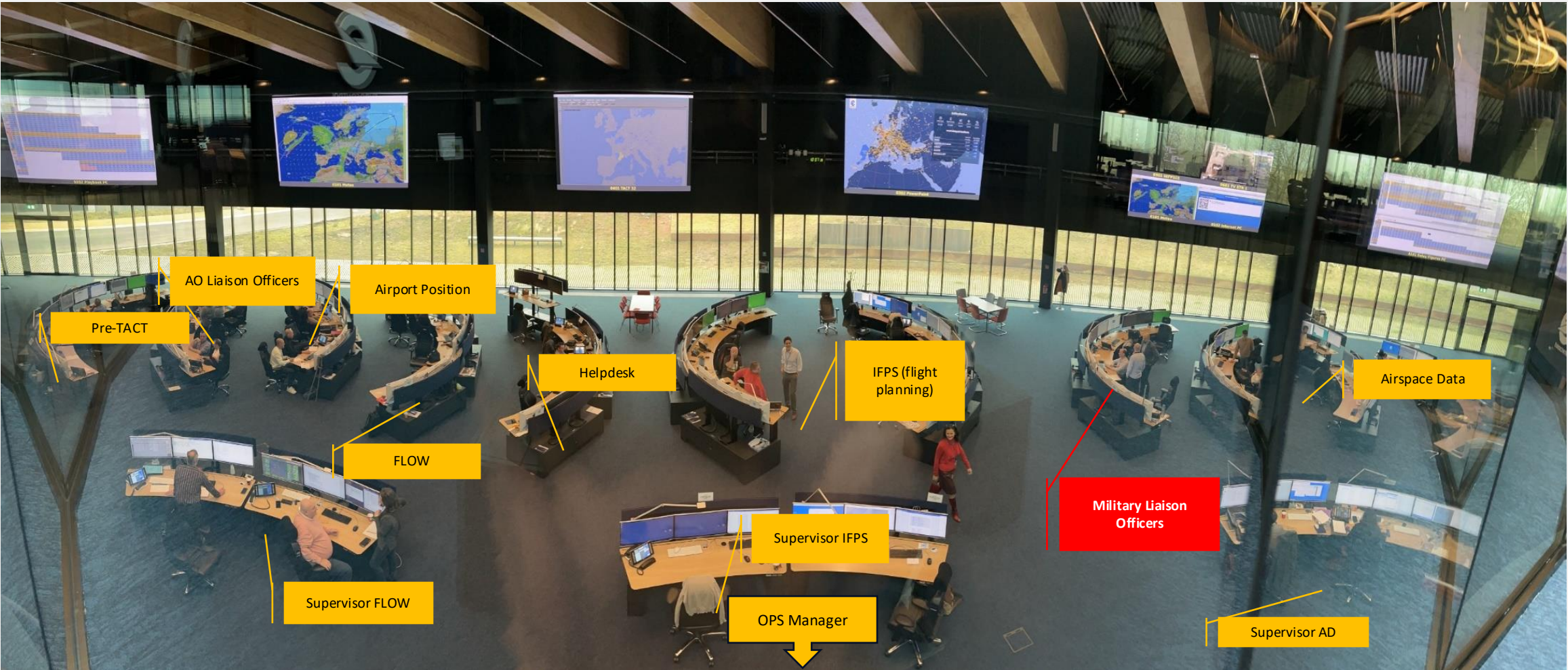


The NETWORK MANAGER

- Centralized IFR Flight planning
- Flow and Capacity Management
- Airspace Management

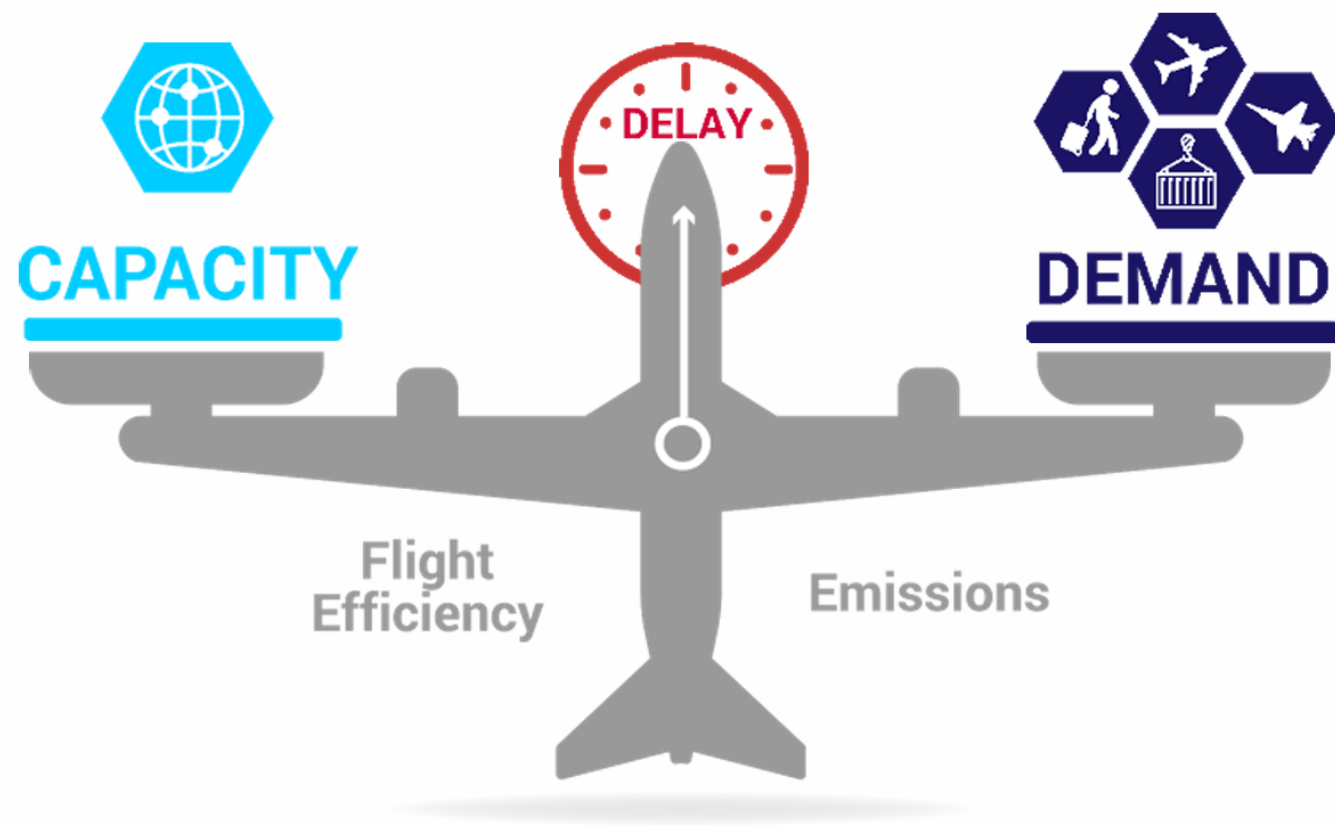


ORGANISATION OF THE NM OPS ROOM

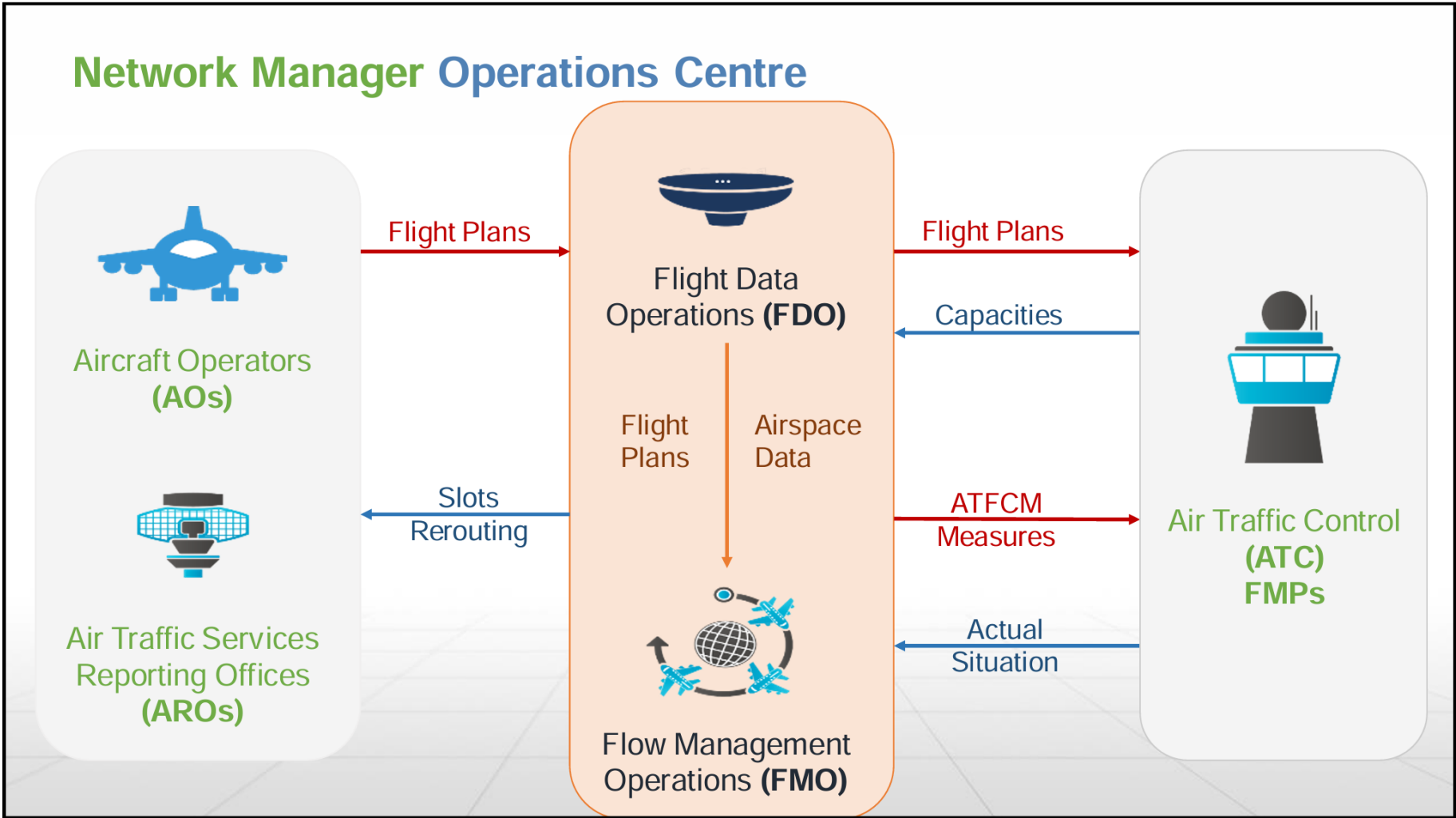


Collaboration across all operational domains and ensures that military needs are efficiently coordinated alongside civil aviation priorities.

NETWORK OPERATIONS



NETWORK MANAGER



MILITARY LIAISON OFFICER

Cumulatively perform the **CADF** (Centralised Airspace Data Function)

Main tasks include:

1. **Airspace Allocation Optimization** - collating, validating, and publishing the eAUP/UUP;



European AUP/UUP		
EUUP	28/04/2025 15:00	29/04/2025 06:00
EUUP	28/04/2025 14:30	29/04/2025 06:00
EUUP	28/04/2025 13:00	29/04/2025 06:00
EUUP	28/04/2025 12:00	29/04/2025 06:00
EUUP	28/04/2025 11:30	29/04/2025 06:00
EUUP	28/04/2025 09:30	29/04/2025 06:00
EUUP	28/04/2025 08:00	29/04/2025 06:00
EUUP	28/04/2025 07:30	29/04/2025 06:00
EUUP	28/04/2025 07:00	29/04/2025 06:00
EUUP	28/04/2025 06:30	29/04/2025 06:00
EUUP	28/04/2025 06:00	29/04/2025 06:00
EAUP	28/04/2025 06:00	29/04/2025 06:00
EUUP	27/04/2025 06:30	28/04/2025 06:00
EAUP	27/04/2025 06:00	28/04/2025 06:00

<https://www.nm.eurocontrol.int/PORTAL/gateway/spec/index.html>

2. **Daily Operations Support:**

- Collecting the national AMCs' AUPs on D-1 to compile and publish the eAUP;
- Supporting national AMCs in their routine FUA;
- Acting as the first line of support for resolving operational issues with CHMI-CIAM or other local ASM tools like LARA.

MILITARY LIAISON OFFICER

MILO & LNO Support to Military Operations

- Since the Ukraine invasion, NATO air forces increased presence in the eastern Alliance.
- Highlighted critical need for effective military missions across Europe.
- Emphasized the necessity for robust civil-military Air Traffic Management (ATM) cooperation.



MILITARY LIAISON OFFICER



- Initial MILO secondments to AIRCOM (rotation scheme).
- Need for continuous support → Creation of permanent LNO position at HQ AIRCOM in Ramstein.
- **LNO** and **MILO** functions complement each other to enhance civil-military cooperation in Air Traffic Management.

EUROCONTROL NOP Portal

The screenshot displays the EUROCONTROL Network Operations Portal (NOP) interface. At the top, the logo and name 'NOP Network Operations Portal' are visible. The current date and time are shown as 04/08/2022 09:35 57 UTC. A 'TARGET DATE' of 04/08/2022 is set, and the user is logged in as 'guest'. The interface is divided into several sections:

- Initial Network Plan:** A map of Europe showing various operational areas like ACCs, NAT, and weather hotspots.
- Network Headline News:** A list of recent news items, including tactical updates, information related to Ukraine, volcanic eruption updates, and seasonal NOP rolling.
- Current Network Situation:** A map showing the current network status with color-coded areas representing different delay or operational states.
- Static Map:** A detailed map of the network.
- ATFCM Situation Data:** A table showing flight statistics and delays.

Flights	
Total	25,980
Landed	6,668 (26%)
Airborne	4,460 (17%)
Expected	14,852 (57%)
Delays (in minutes)	
Cumulated	58,586.0
Average/Flight	2.3
En-route	50,488 (86%)
Airport	8,098 (14%)



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Airspace Restrictions

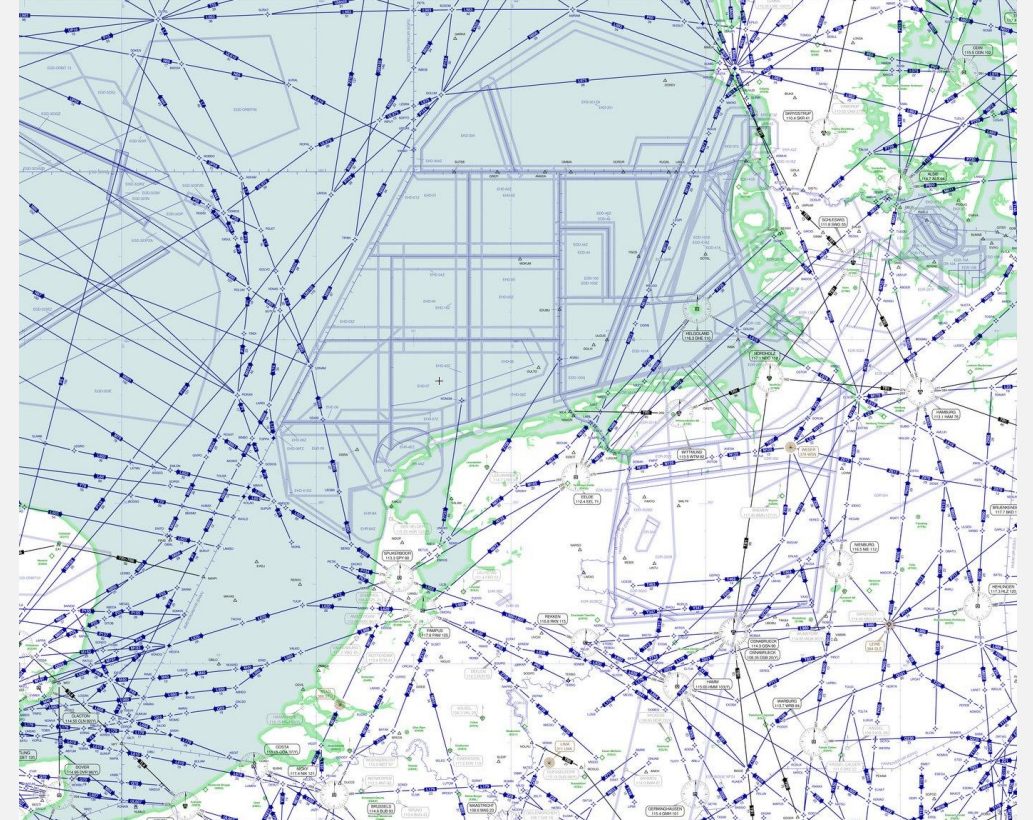


Airspace Restrictions

- Can safety and flight efficiency / mission effectiveness be assured by ATS alone?
- Yes:
 - Tactical ATS
- No:
 - FUA Level 2
- Reservations and restrictions manageable via the FUA Concept (AMA)
- Published in Airspace Use Plan (AUP) or
- Update Airspace Use Plan (UUP)

Airspace Restrictions

- FUA structures:
 - Temporary Reserved Area (TRA)
 - Temporary Segregated Area (TSA)
 - Cross-border Areas (CBA)
 - AMC Manageable Restricted Areas (R)
 - AMC Manageable Danger Areas (D)
- Two options:
 - Airspace by default active (NAM)
 - Airspace by default not-active (AMA)



AMA and NAM

NAM

Non AMC-Manageable Area is an area not subject to the management in terms of negotiation and allocation decision of an AMC at Level 2. This area is eligible to be processed and notified via AUP/UUP according to its conditions described in AIP/AIS publication and reflected in CACD.

AMA

AMC-Manageable Area is an area subject to management in terms of negotiation and allocation decision of an AMC at ASM Level 2.

Temporary Segregated Area (TSA)

- TSA is a defined volume of airspace normally under the jurisdiction of one aviation authority and temporarily segregated, by common agreement, for the **exclusive use by another aviation authority** and through which other traffic will not be allowed to transit.

Temporary Reserved Areas (TRAs)

- TRA is a defined volume of airspace normally under the jurisdiction of one aviation authority and **temporarily reserved**, by common agreement, **for the specific use** by another aviation authority and **through which other traffic may be allowed to transit**, under ATC clearance.

Cross-Border Areas (CBA)

CBA is an airspace restriction or reservation established over international or FIR boundaries for specific operational requirements.



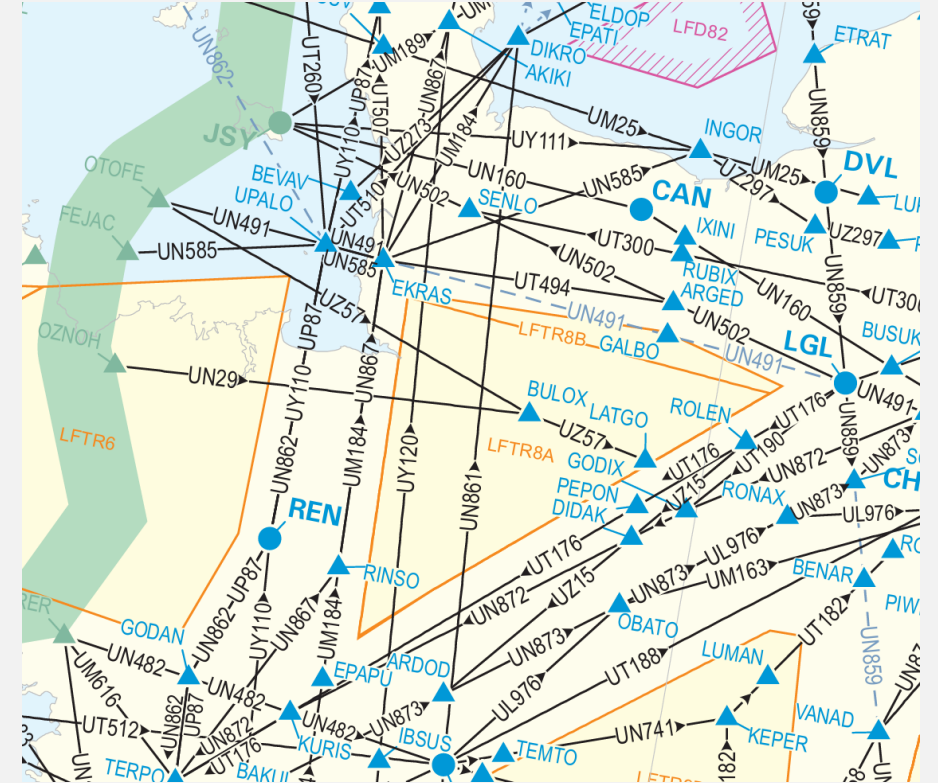
Airspace Restrictions (High Seas)

- Danger Areas (D)
 - Published in AIP
 - (De-)Activated by NOTAM



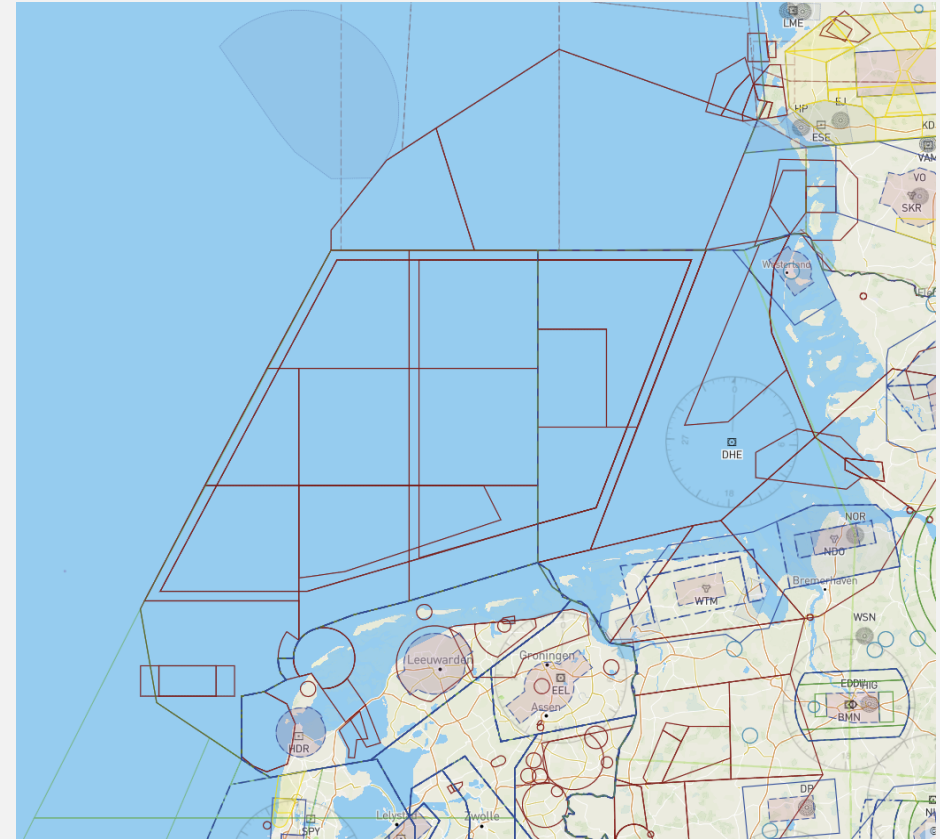
(GAT) Air Traffic Routes

- ATS Route:
 - Published.
 - Permanently available.
 - Only closed via NOTAM.
- Conditional Routes:
 - Single Category CDR:
 - CDR1 - Available unless closed in AUP/UUP)
 - CDR2 - not used in Europe anymore



Variable Profile Areas (VPA)

- “New” concept.
- Airspace divided into building blocks.
- Military request combination of blocks to meet operational needs.



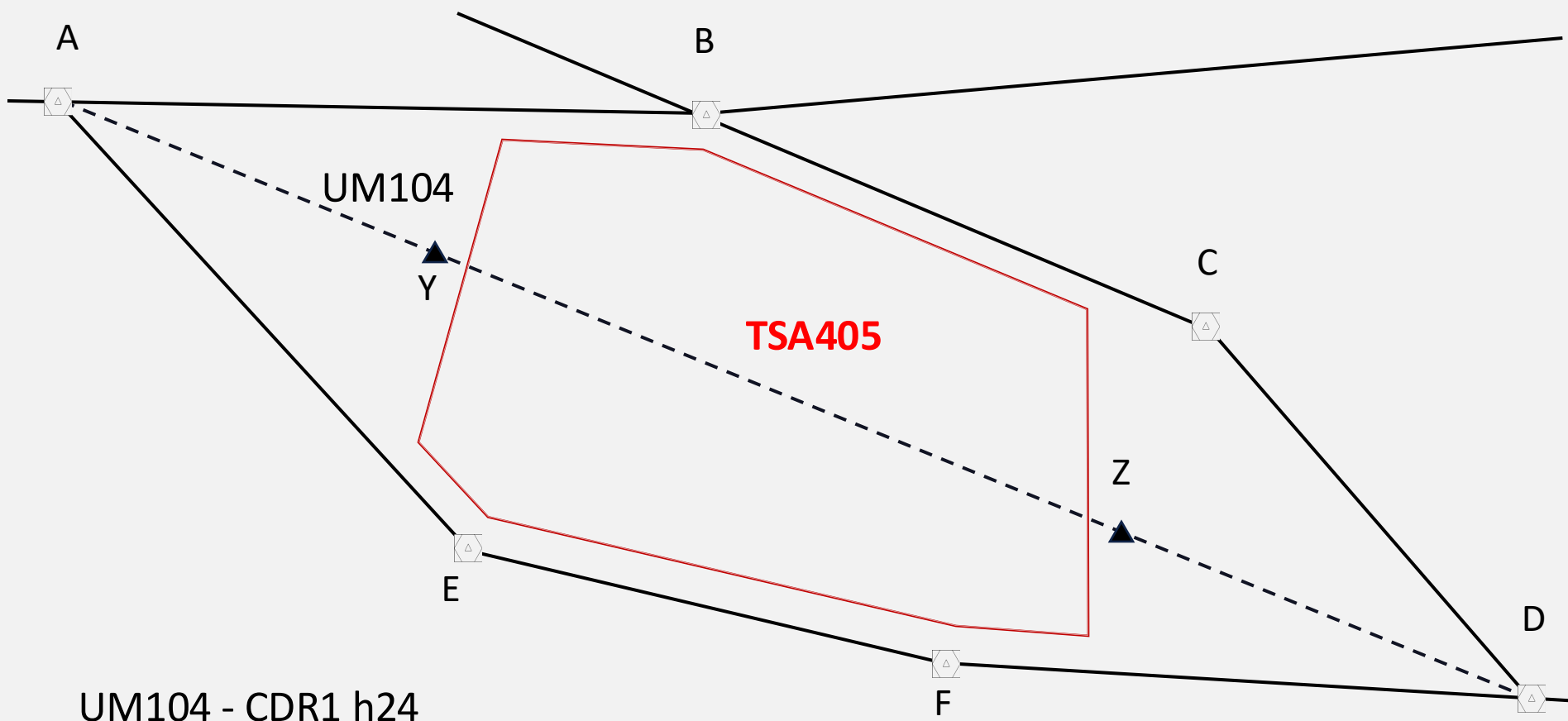


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ASM in an ATS Route Network Environment

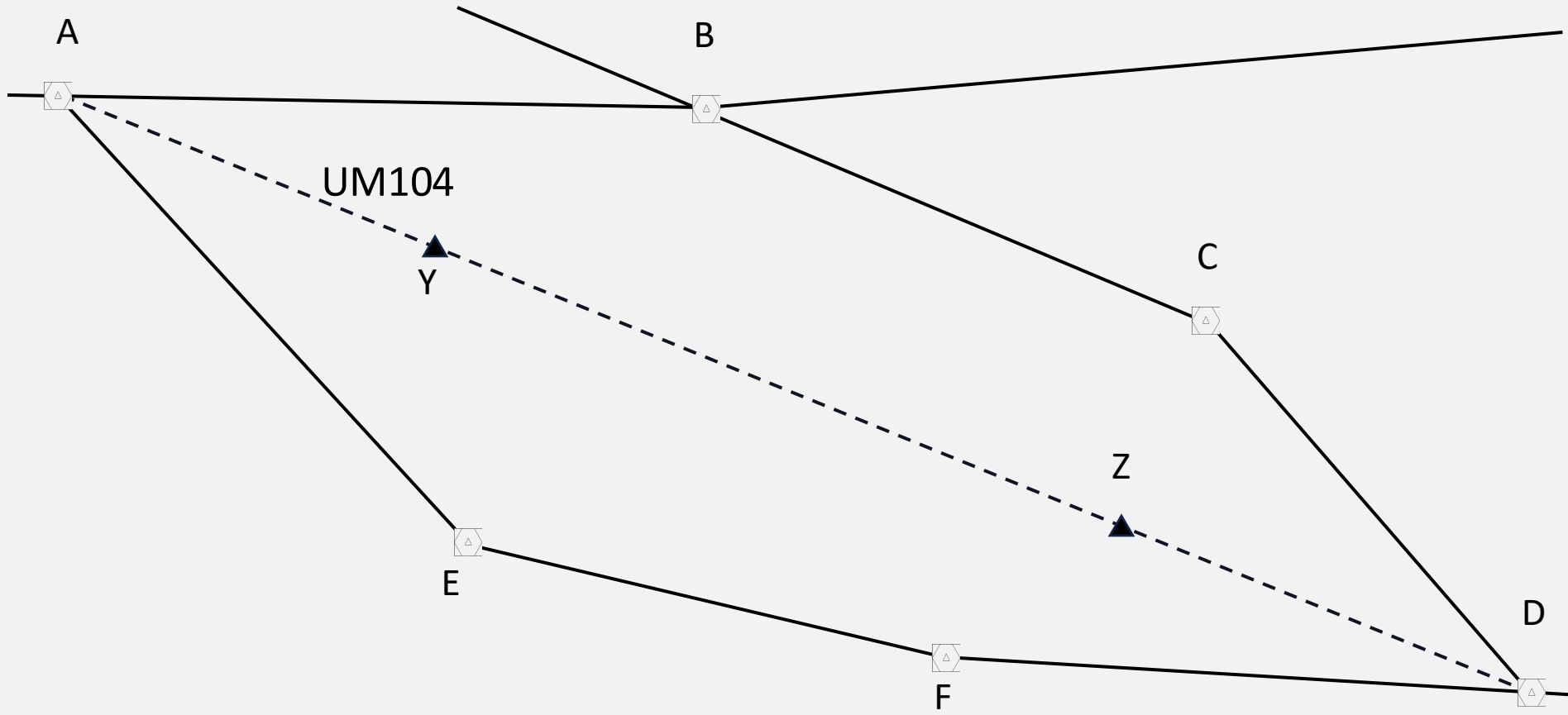


ASM in an ATS Route Environment

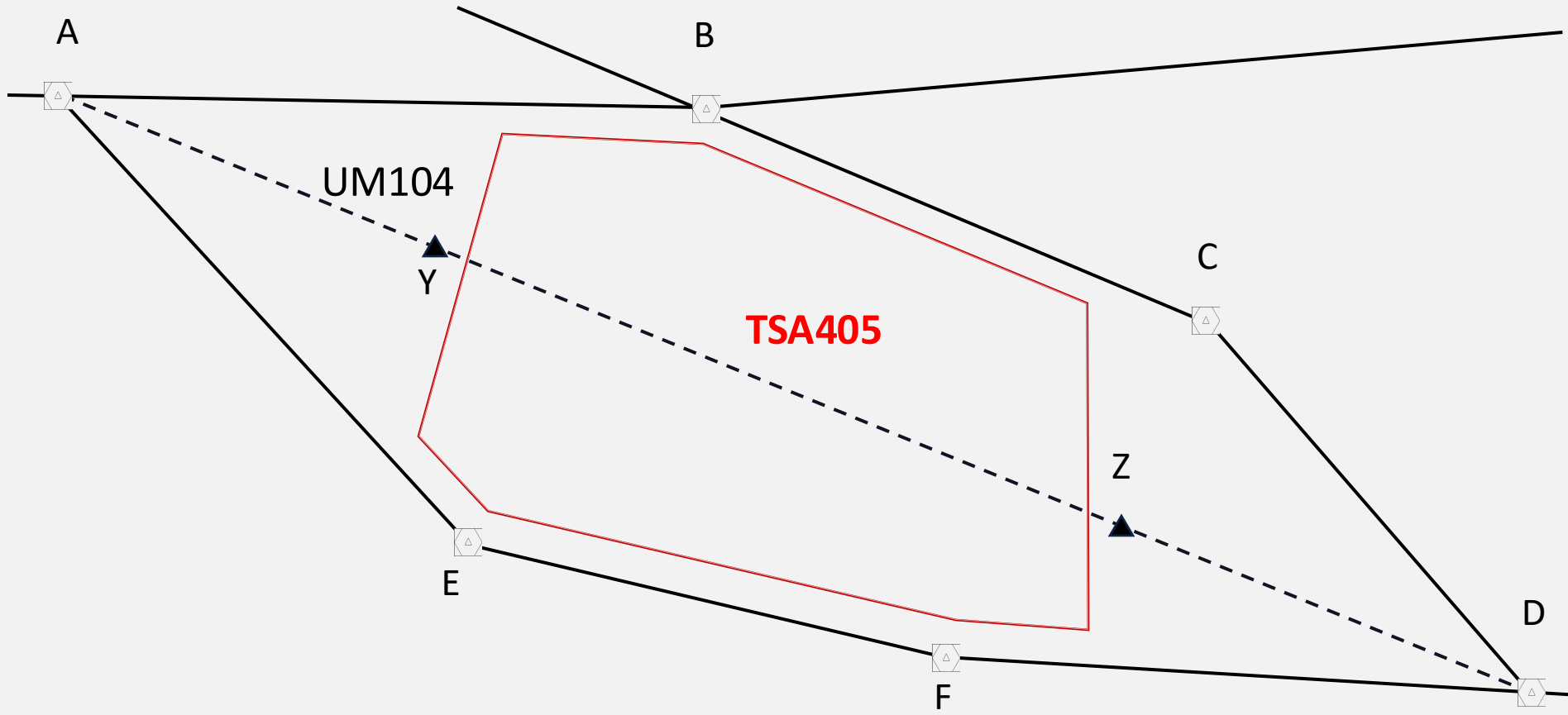


UM104 - CDR1 h24
TSA405 - Bookable h24

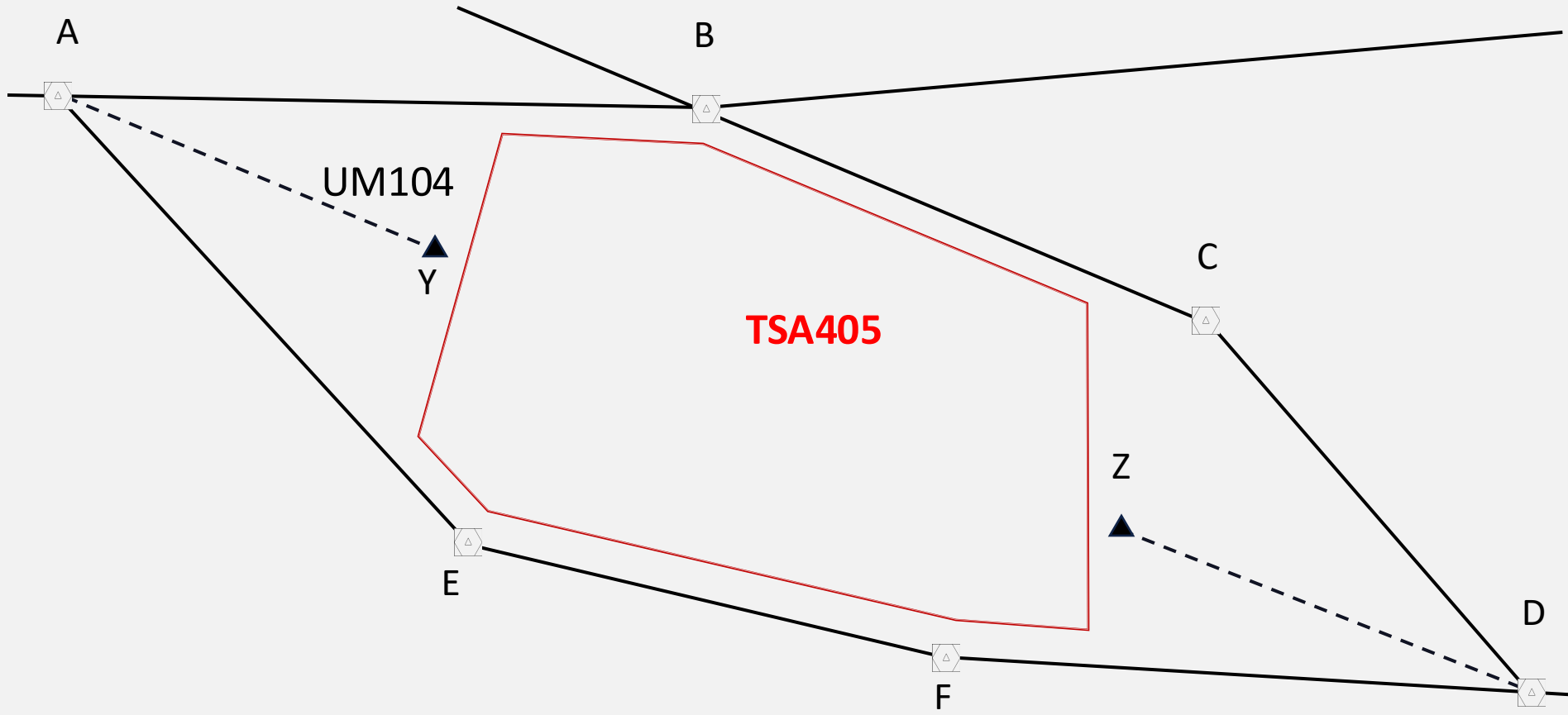
ASM in an ATS Route Environment



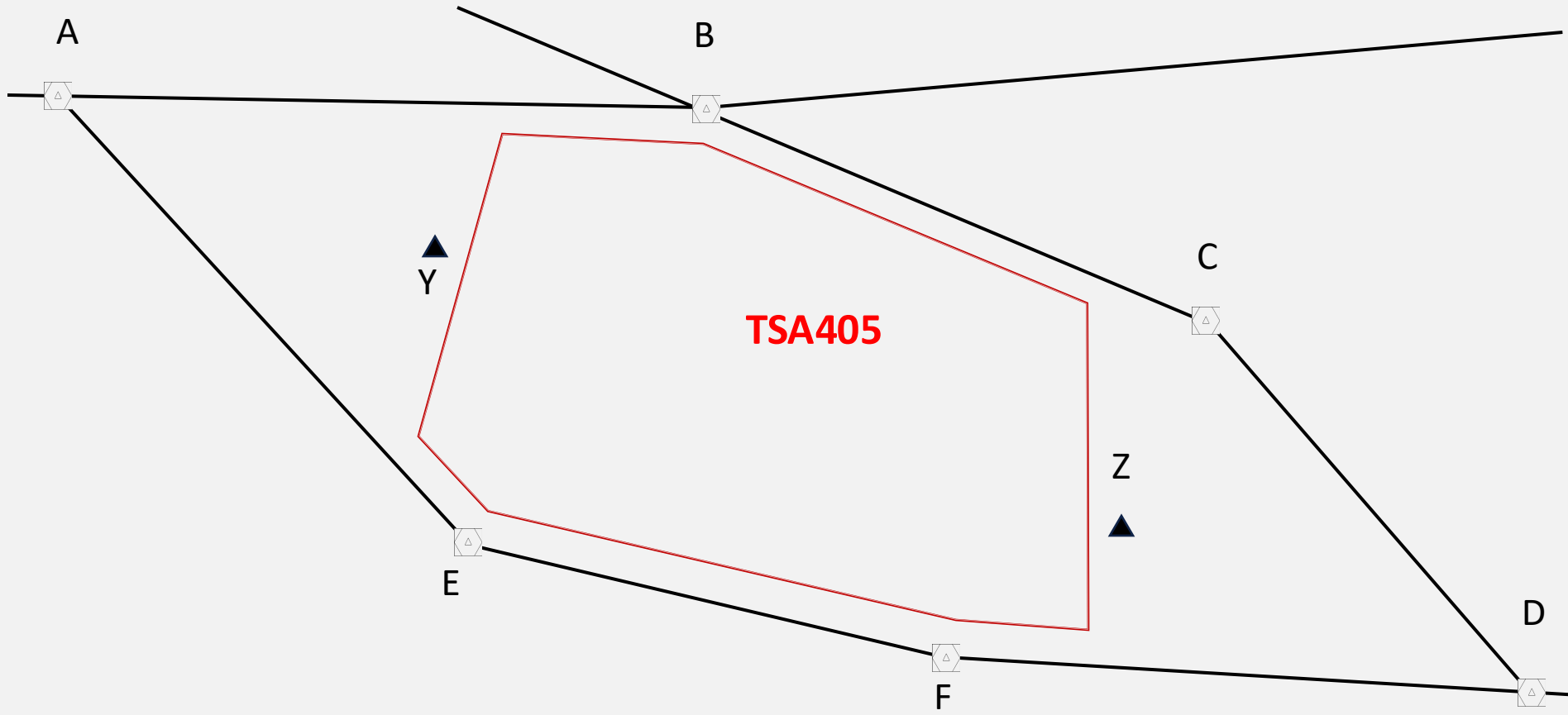
ASM in an ATS Route Environment



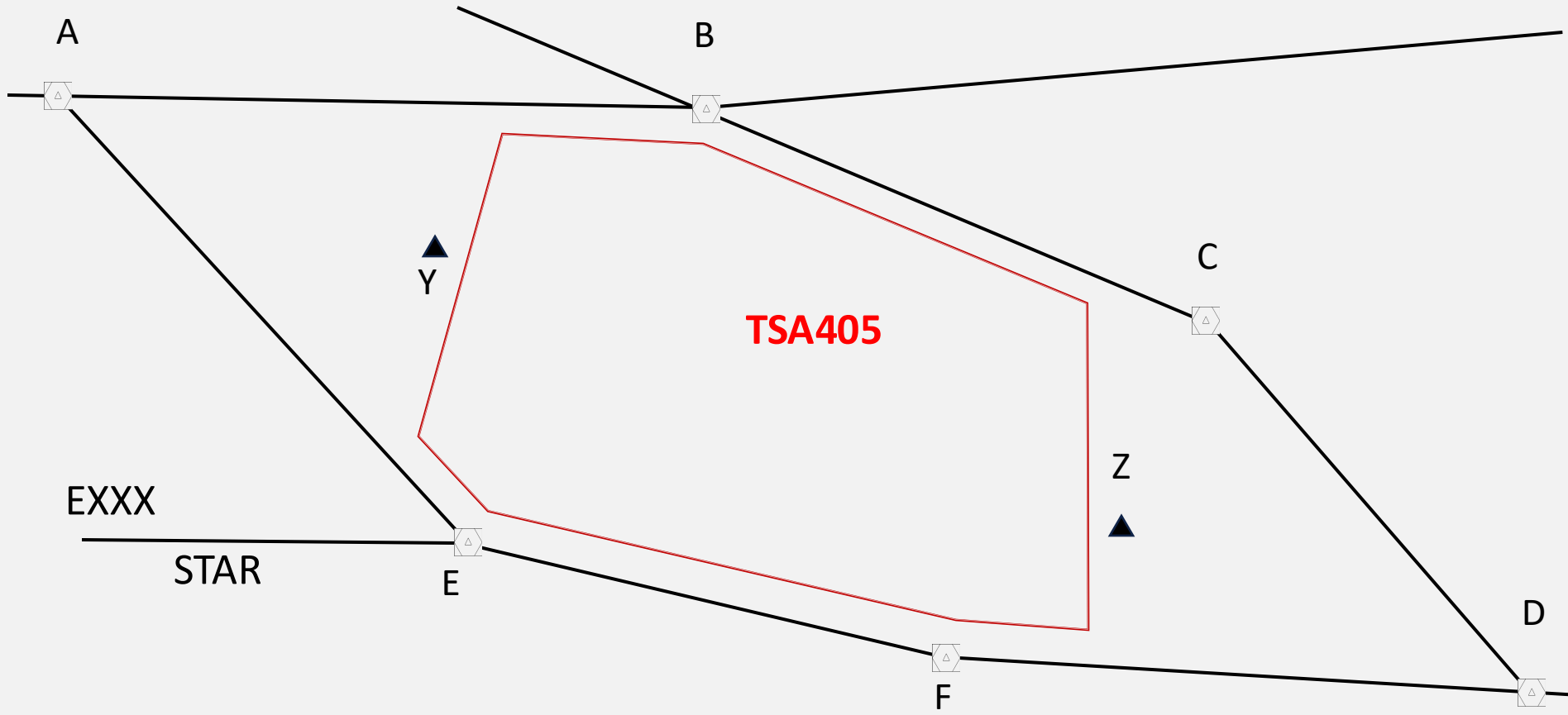
ASM in an ATS Route Environment



ASM in an ATS Route Environment



ASM in an ATS Route Environment





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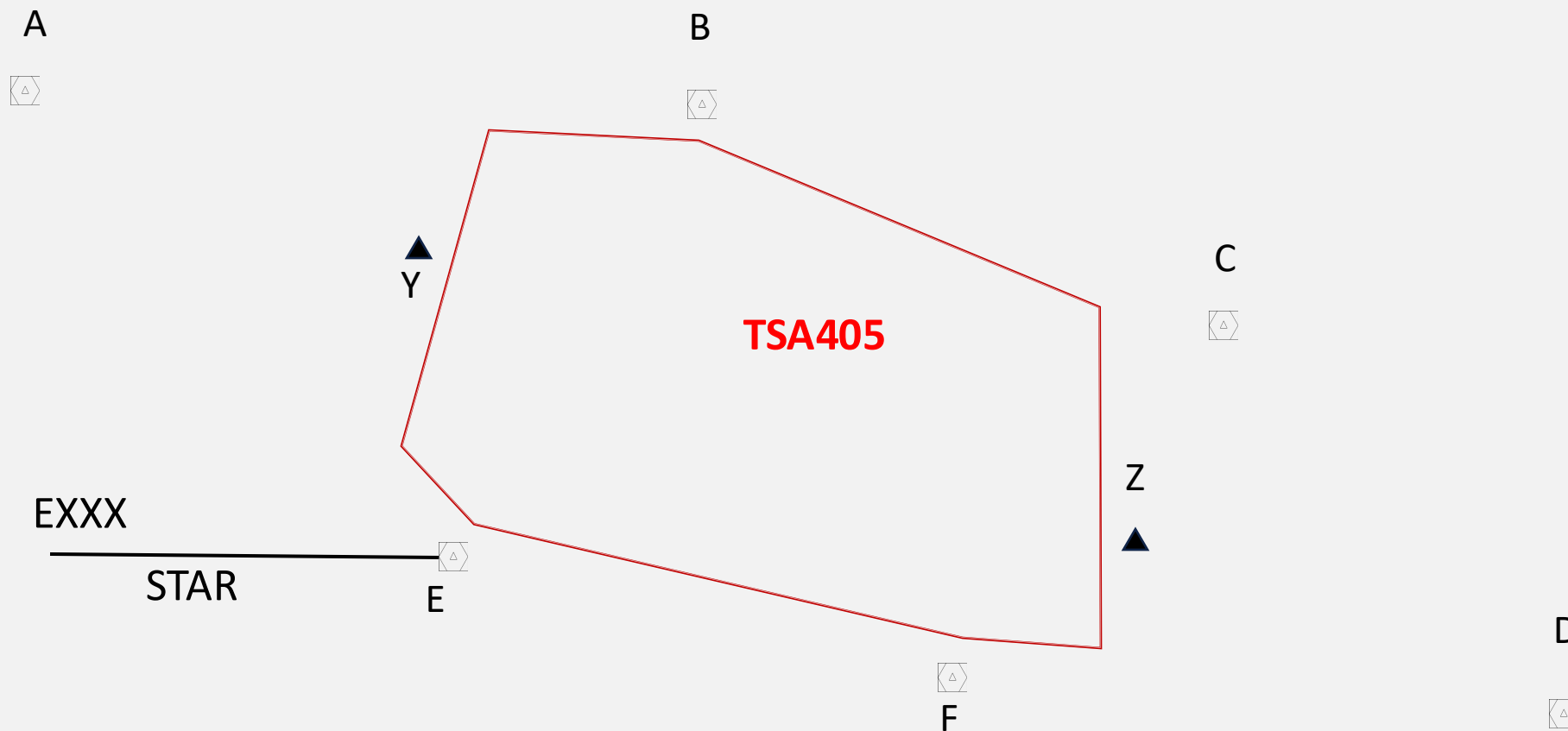
ASM in a Free Route Operations Environment



NETWORK
MANAGER

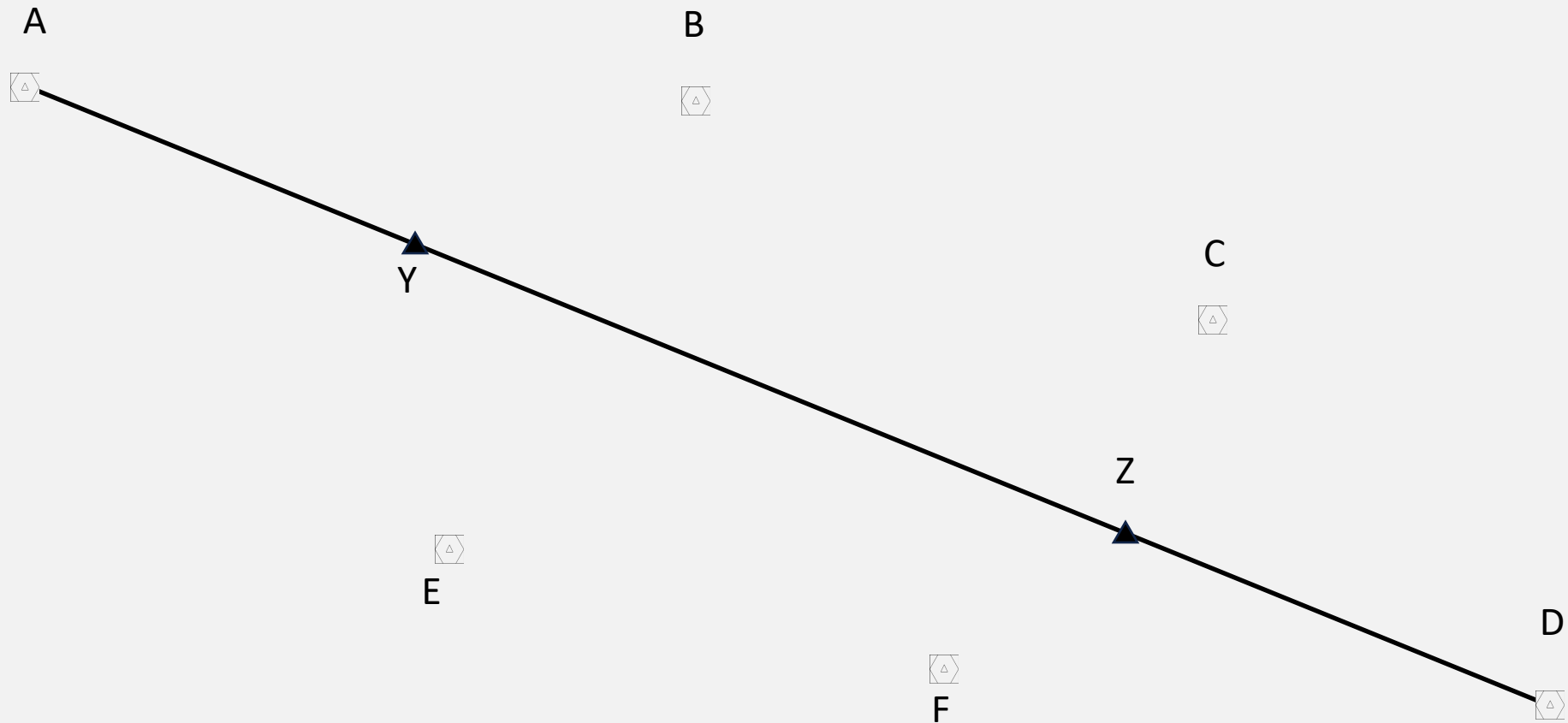


ASM in a Free Route Environment

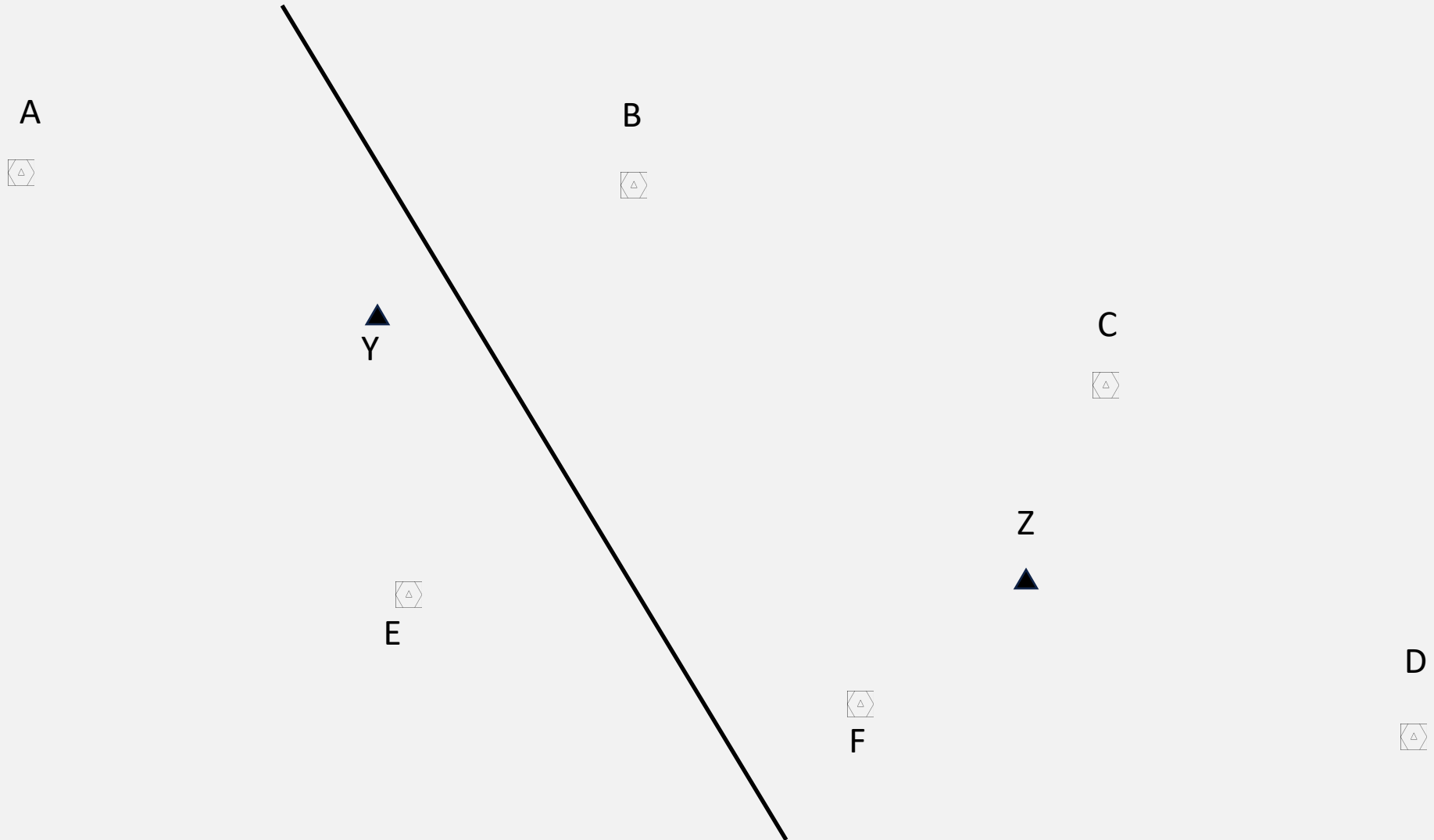


TSA405 - Bookable h24

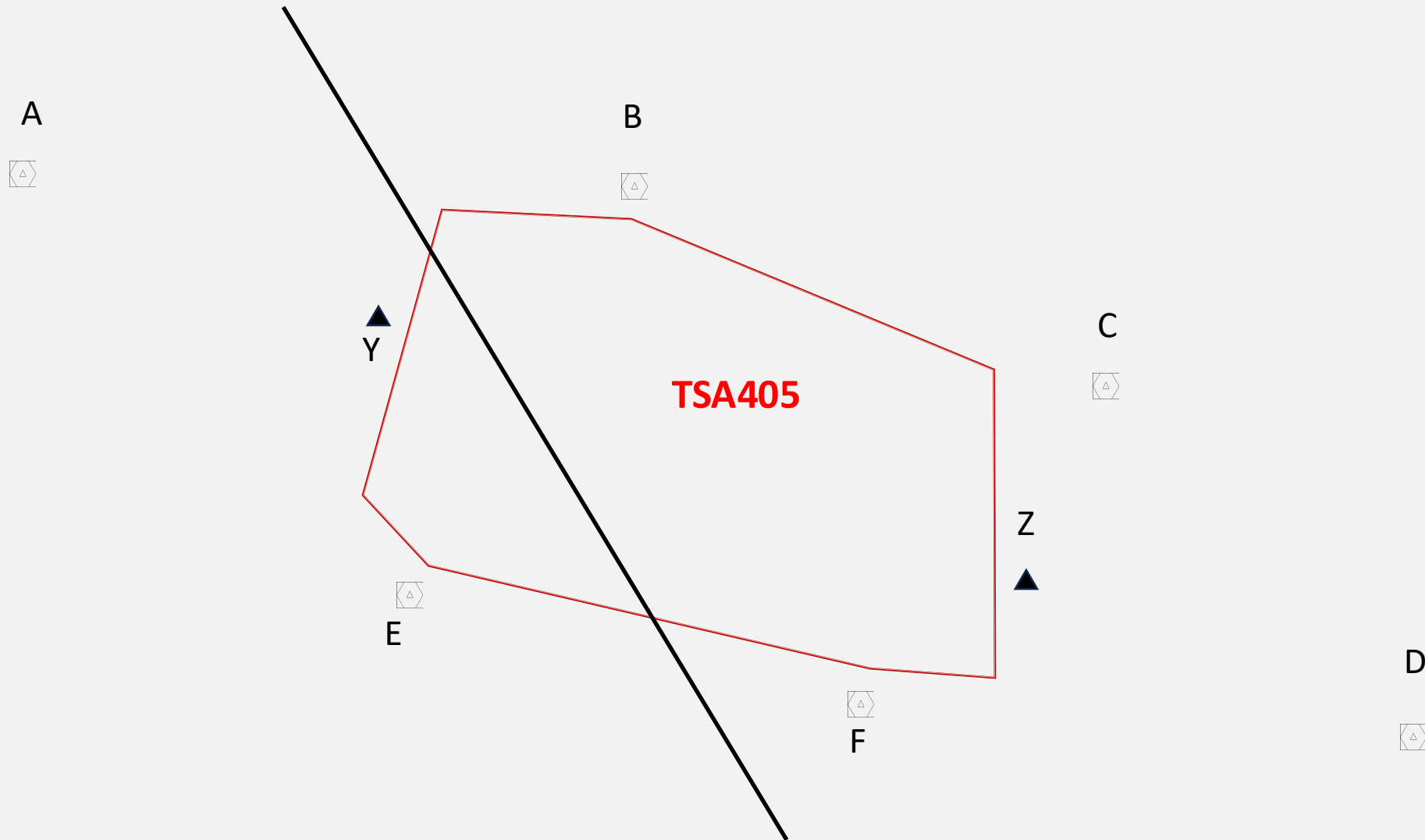
ASM in a Free Route Environment



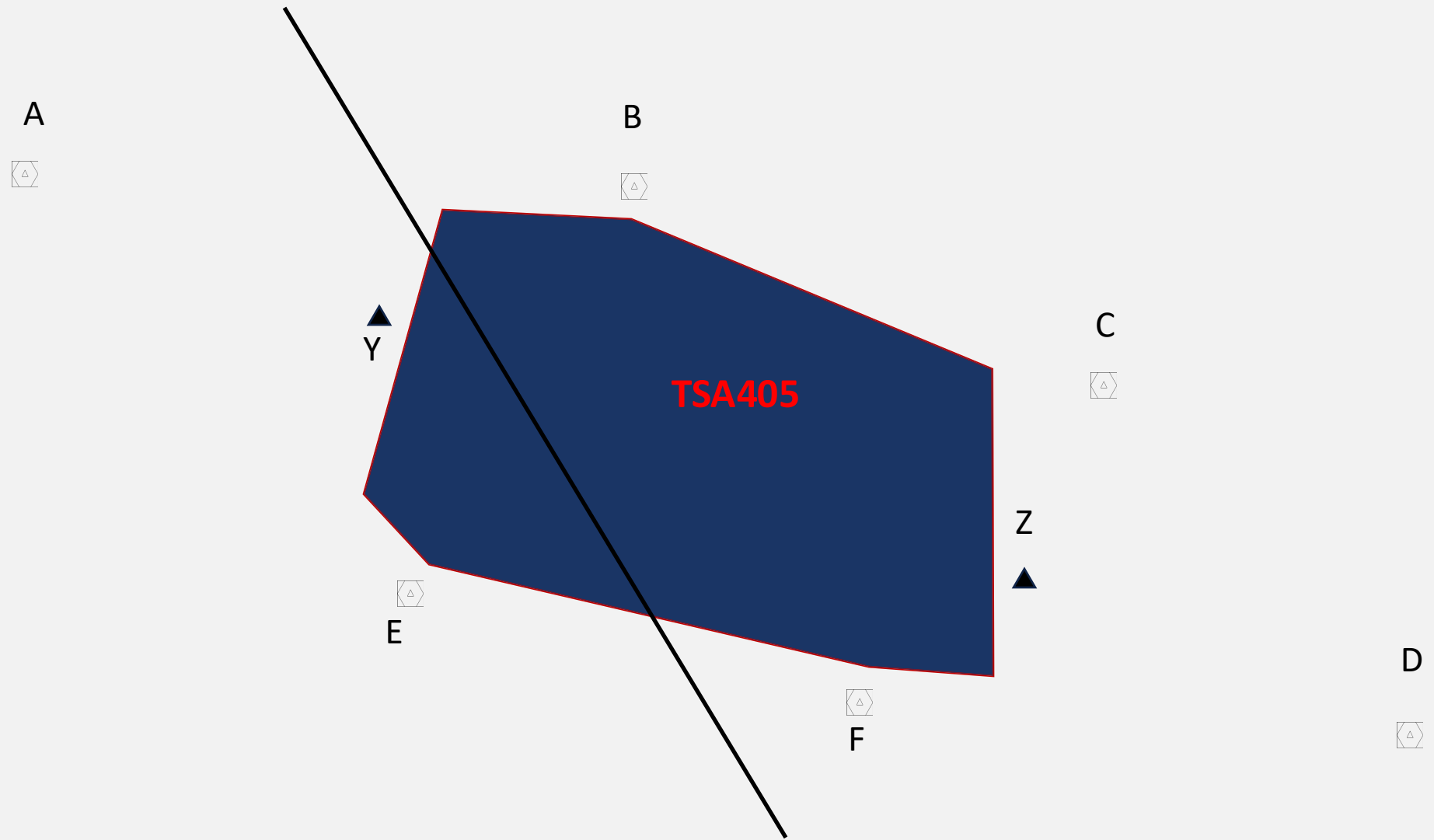
ASM in a Free Route Environment



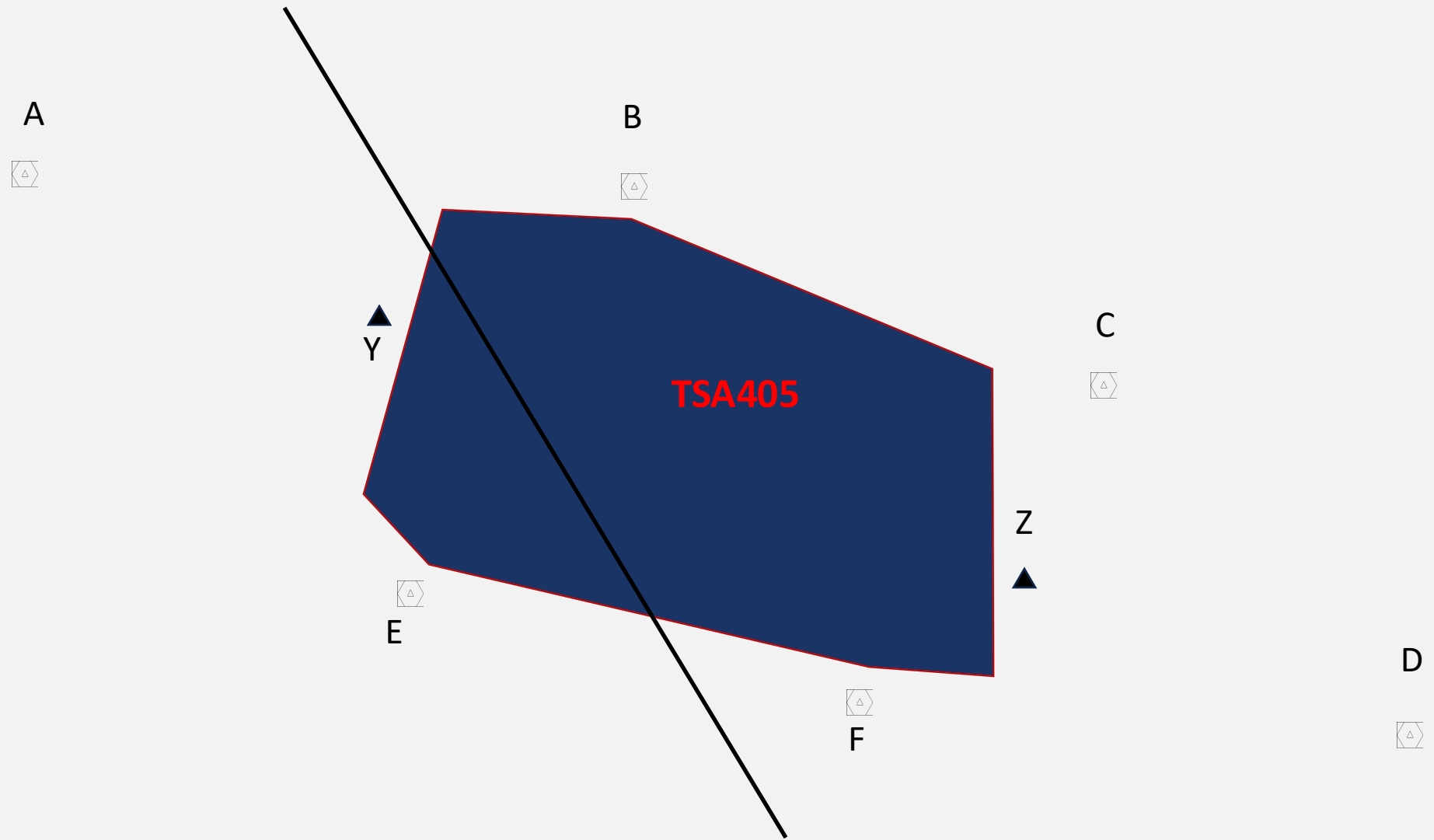
ASM in a Free Route Environment



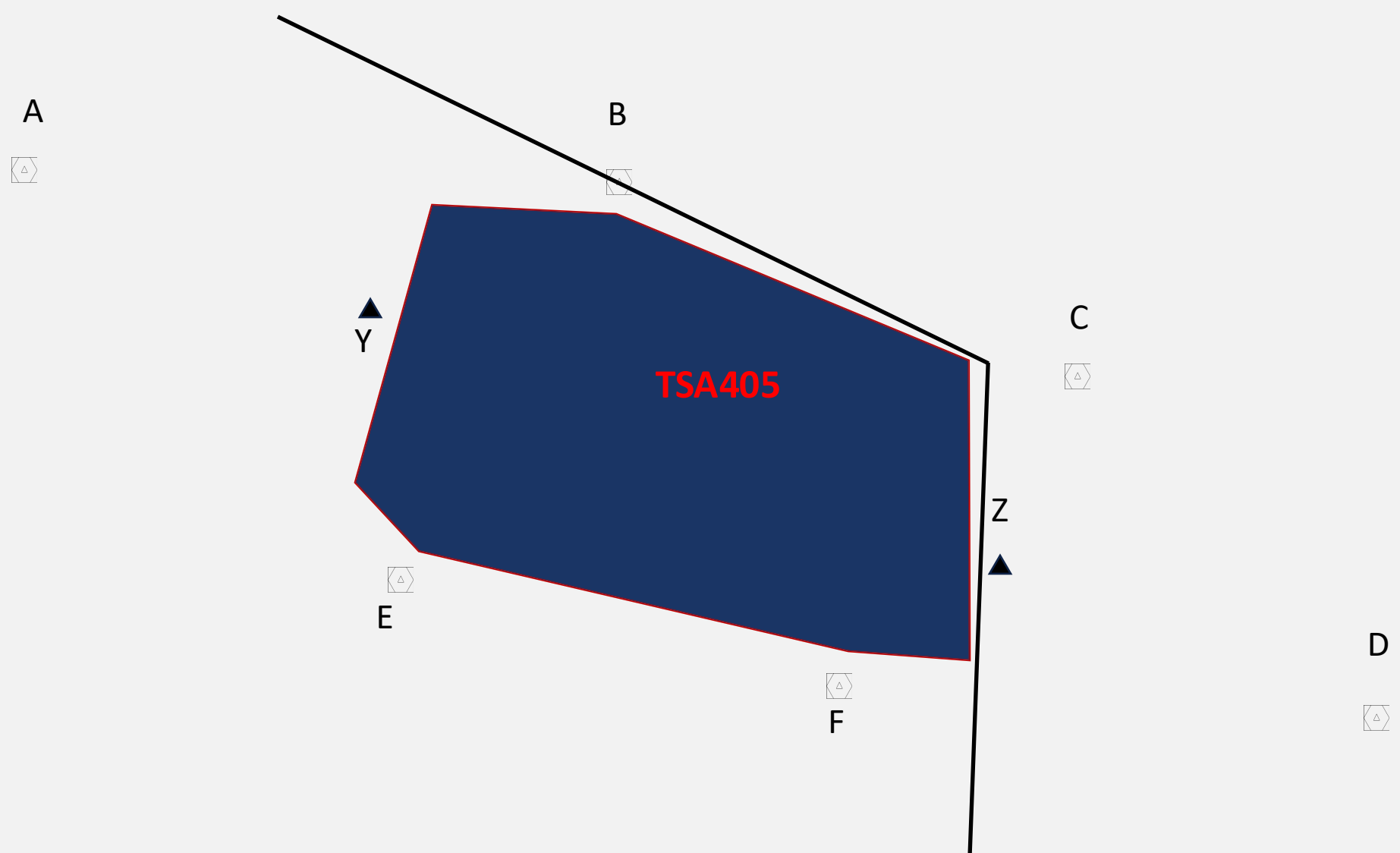
ASM in a Free Route Environment



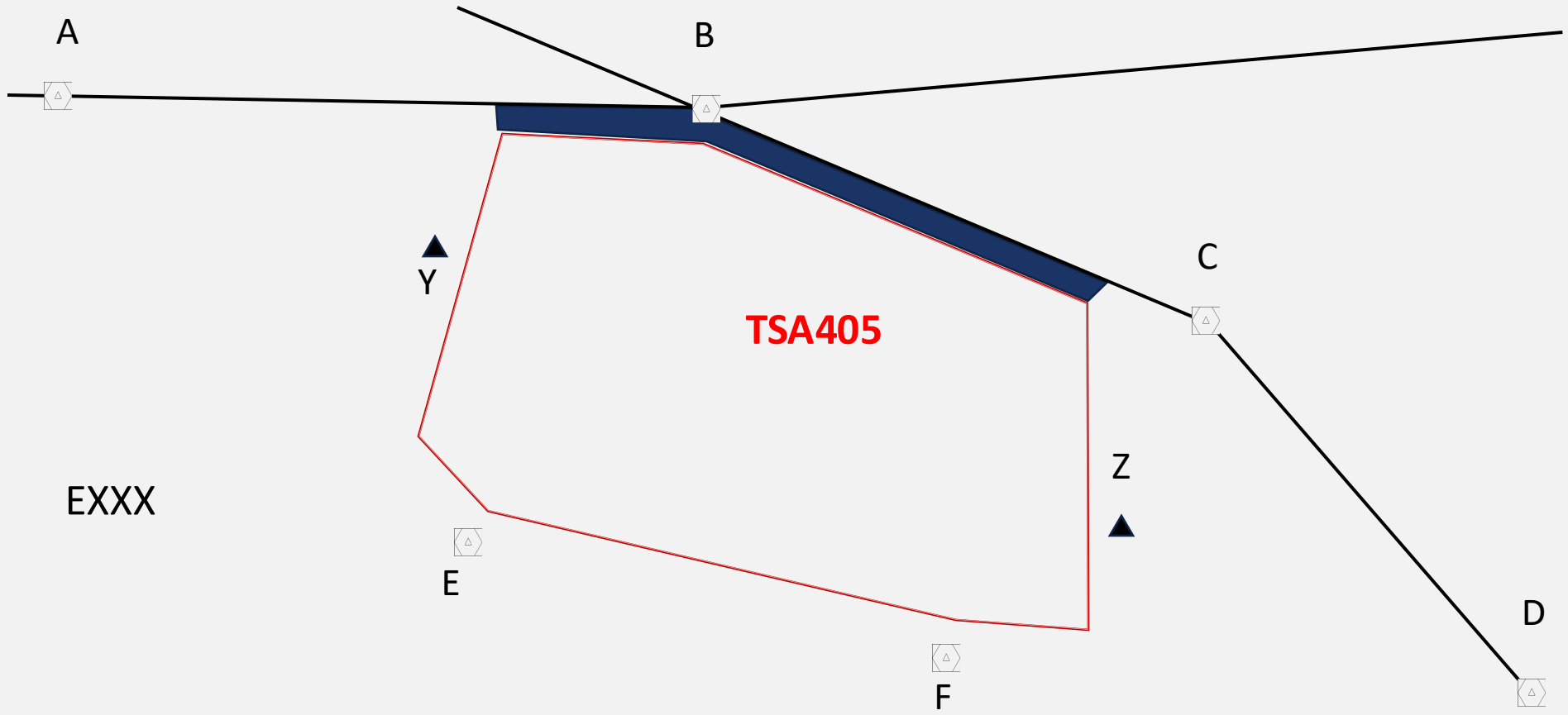
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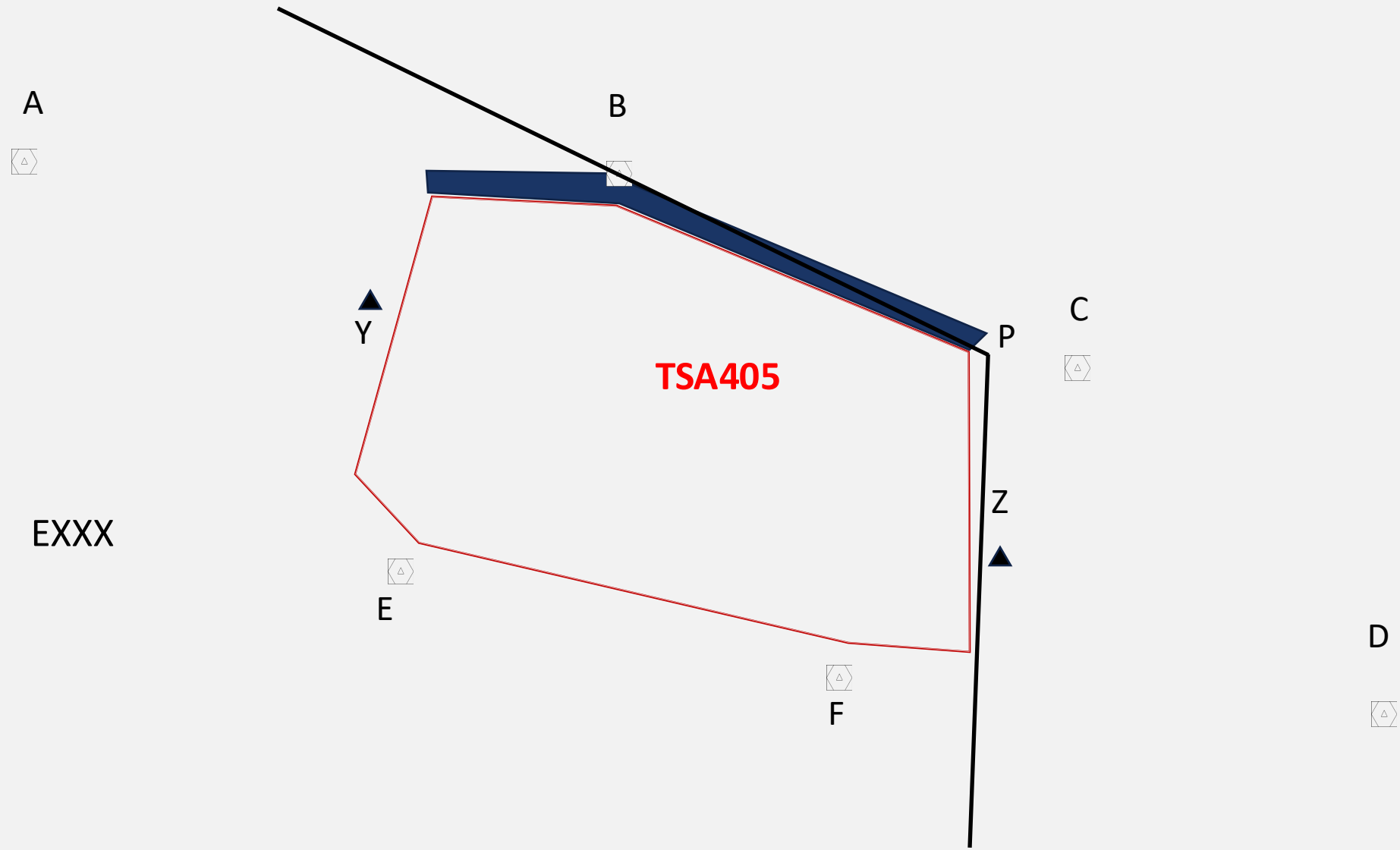
ASM in a Free Route Environment



ASM in a Free Route Environment



ASM in a Free Route Environment



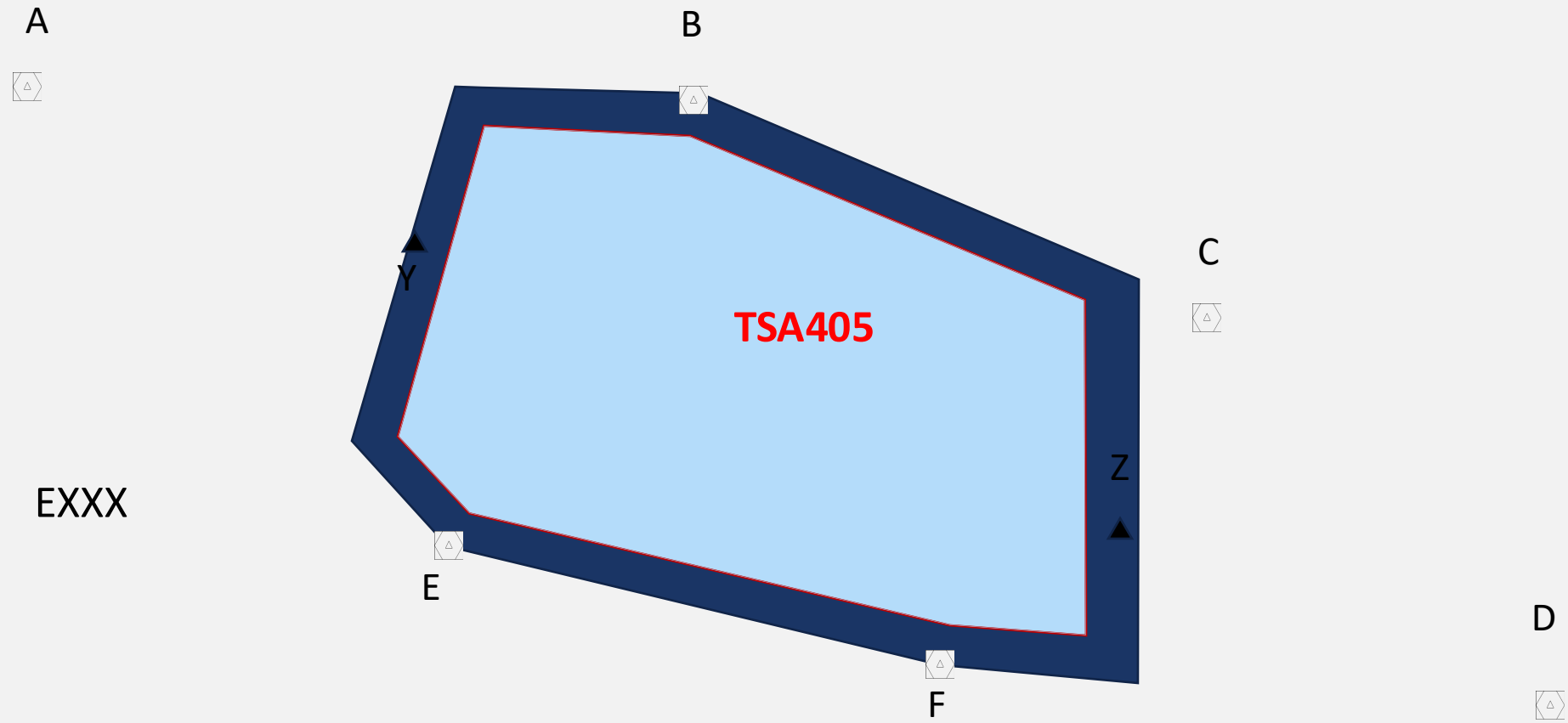


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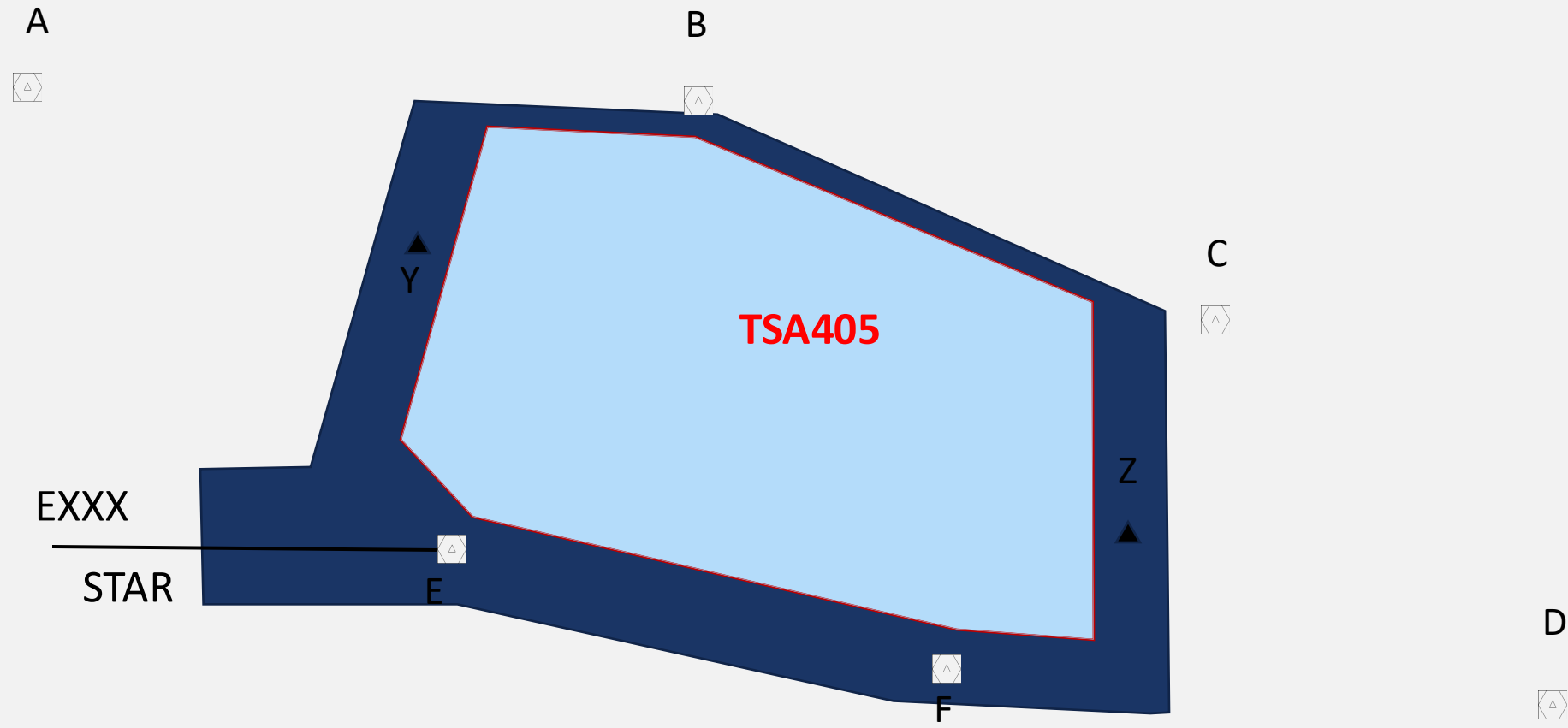
Flight Plan Buffer Zone



Flight Plan Buffer Zone (FBZ)



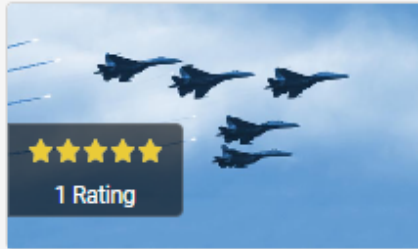
FBZ and FUA Restriction



FBZ Activation

- Impact the Flight Planning Process;
- Through AUP/UUP;
- TSA405Z;
- Time?
- Levels?
- FUA/EU Restriction.

EUROCONTROL Training Courses on ASM / CMAC



Civil - Military ATM Coordination [GEN-CIVMIL]

3 course dates available



1 Rating

 classroom course  HQ - Headquarters 



Operational Airspace Management [ASM-OPS]

5 course dates available



1 Rating

 classroom course  EUROCONTROL Aviation Learning Centre 



Airspace Strategy Virtual [ASM-STRAT-V]

1 course date available

 virtual course  15 Hours 



European Airspace Strategy [ASM-STRAT]

3 course dates available

 classroom course  EUROCONTROL Aviation Learning Centre 



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Thank you!

jan.scholz@eurocontrol.int

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