


EXERCISE 4 / Simulation
Potential Improvement Measures




The European Organisation for the Safety of Air Navigation



Objective

Present a selection of additional improvement measures for enhanced civil-military coordination for consideration and discussion.



Outline

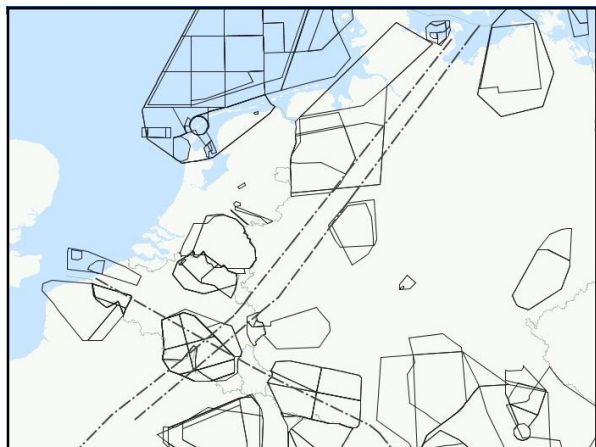
Improvement Measures


- Common Awareness
- Dynamic Process
- CDR Concept and Manageable Areas
- Variable and Dynamic Areas
- Analysis, Prediction, Optimization
- Questions and Discussion

Demonstration of the concepts using the Local and sub-Regional Airspace Management Support System (LARA)



Improvement 1
Common Awareness

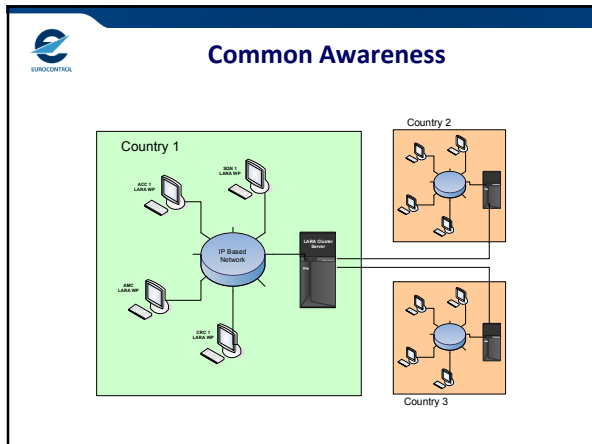


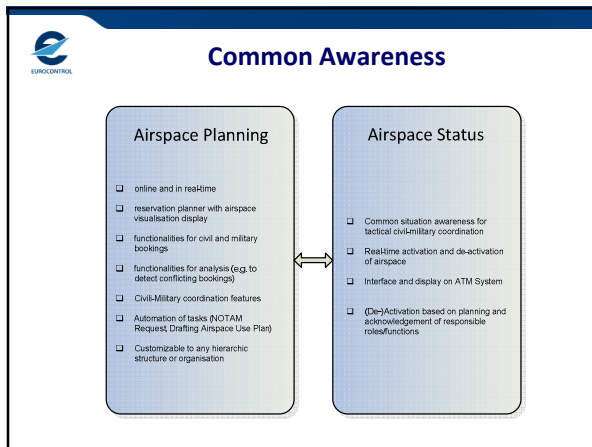


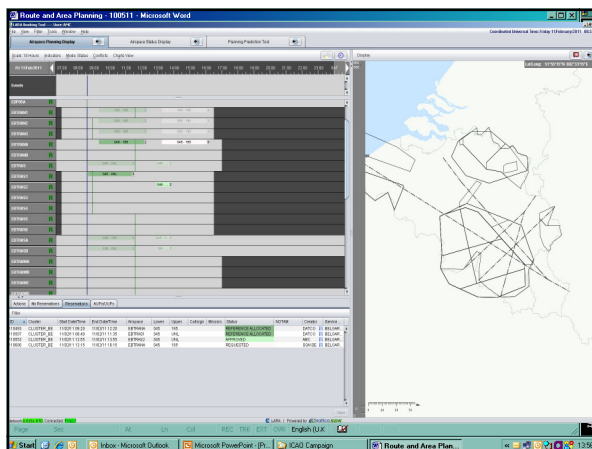
Common Awareness


Civil and Military airspace requests are available in real time and to all involved through network based system support

- ❑ Online distribution of data
- ❑ Easily manageable format and presentation
- ❑ New requests can be based on already available information









 **Common Awareness**

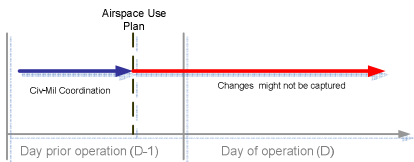
Availability of additional data

- Additional Information available (Airspace Information, Usability, Relationship between areas and other airspace structures, NOTAM, WX, Events)
- Predicted Traffic Information (Flow Management Data)
 - System Support


 **Improvement 2
Dynamic Process**

 **Dynamic Process**

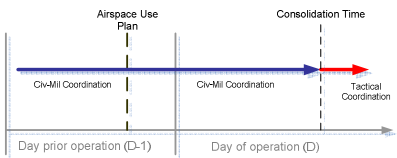
- Airspace Management Process used in the previous exercises stopped coordination at D-1 with the publication of an Airspace Use Plan.
- Changes after publication might not be captured, e.g. weather changes, cancellations of missions etc, which can lead to a waste of resources
- Static process:




The diagram shows a horizontal timeline. A vertical dashed line marks the transition from 'Day prior operation (D-1)' to 'Day of operation (D)'. A blue arrow labeled 'Civ-Mil Coordination' spans from the start to the dashed line. A red arrow labeled 'Airspace Use Plan' starts at the dashed line and continues to the right. Below the red arrow, the text 'Changes might not be captured' is written.

 **Dynamic Process**

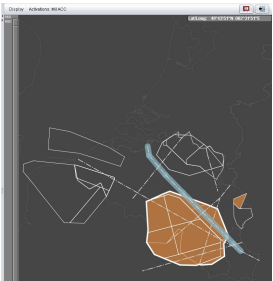
- Processes can be more dynamic and flexible if information is shared and decisions are taken collaboratively compared to a static exchange of information (Airspace Use Plan etc)
- Continue coordination until closer to the time of operation for more accurate data, increased benefit, leading to a better utilization of resources, while maintaining full flexibility for military ops.
- Dynamic Process:



The diagram illustrates a timeline for dynamic process coordination. It is divided into two main periods: 'Day prior operation (D-1)' and 'Day of operation (D)'. In the D-1 period, 'Civil-Mil Coordination' is shown as a blue bar, and 'Airspace Use Plan' is indicated by a vertical dashed line. In the D period, 'Civil-Mil Coordination' continues as a blue bar, followed by a red arrow labeled 'Consolidation Time' and 'Tactical Coordination'.


 **Dynamic Process**

- Consolidation Time is useful to give all involved players a stable plan prior operations for capacity planning, route allocation, flight planning etc.
- Coordination process continues into the tactical phase managing and coordination real-time airspace activations and de-activations.




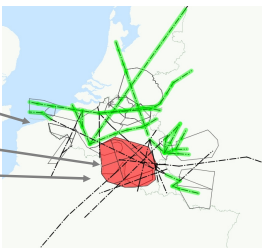
The screenshot shows a software interface with a dark background. It features a map with various colored regions (orange, blue, grey) and lines representing flight paths or boundaries. The interface includes a title bar with 'Airspace MANO' and a status bar at the bottom.

 **Improvement 3**
CDR Concept and Manageable Areas

 **CDR Concept and Manageable Areas**

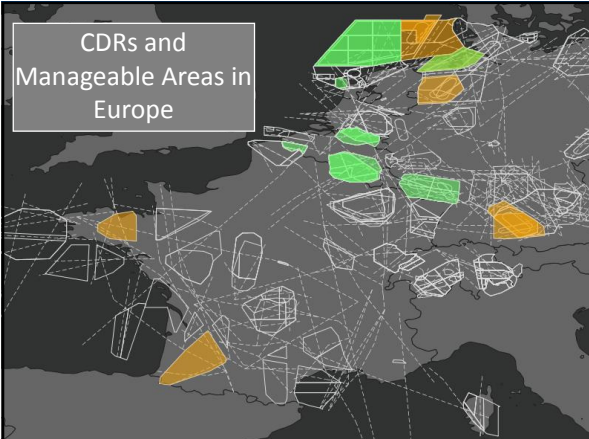
- Potential offered by flexible airspace structures and procedures as demonstrated in the exercises.
 - Maintain flexibility for Military Exercises
 - Allow shorter routes / increased capacity for civil traffic
 - Environmental Factor
- Conditional Route (CDR) is a non-permanent Air Traffic Services Routes which can be planned and used under specified conditions.
- With the aim to use available airspace as efficiently as possible.

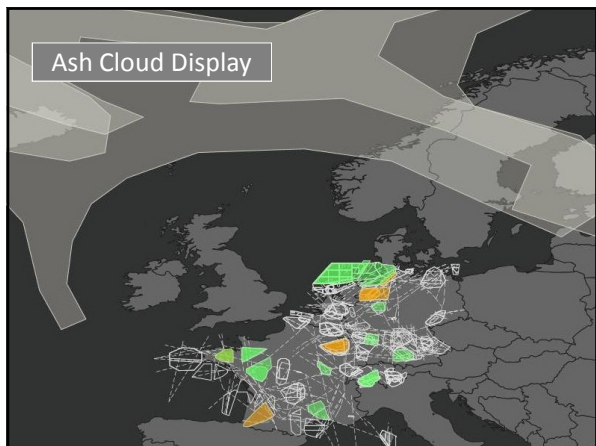
 **CDR Concept and Manageable Areas**




All CDRs are available
Temporary Reserved Area is active
Area is inactive
Temporary Reserved Area is active
Intersecting CDRs are closed


CDRs and Manageable Areas in Europe







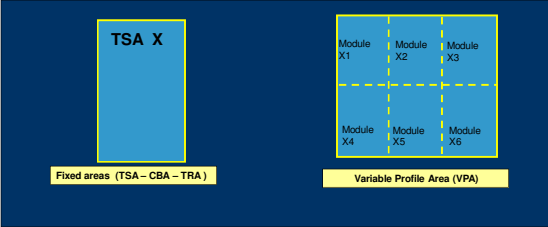
Improvement 4
Variable and Dynamic Areas



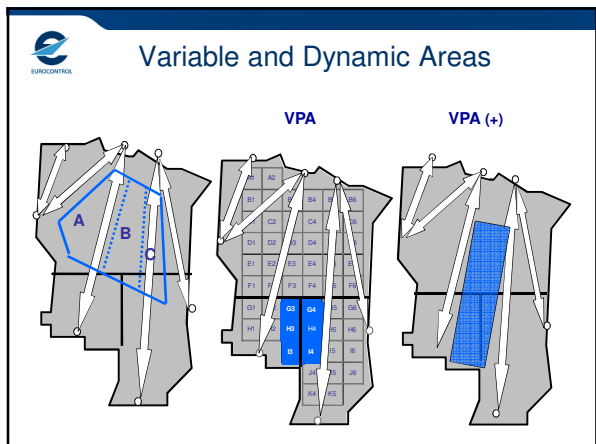
Variable and Dynamic Areas

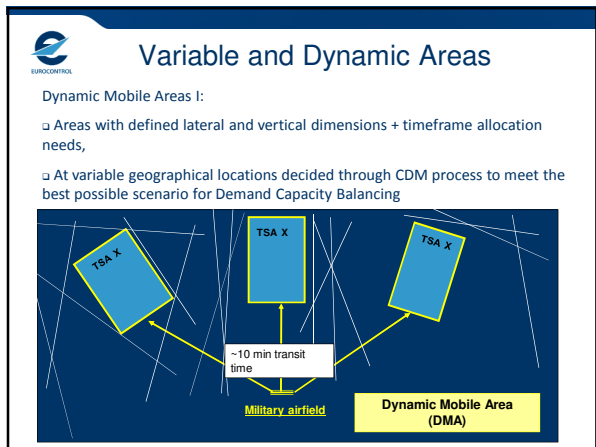
Variable Profile Areas :

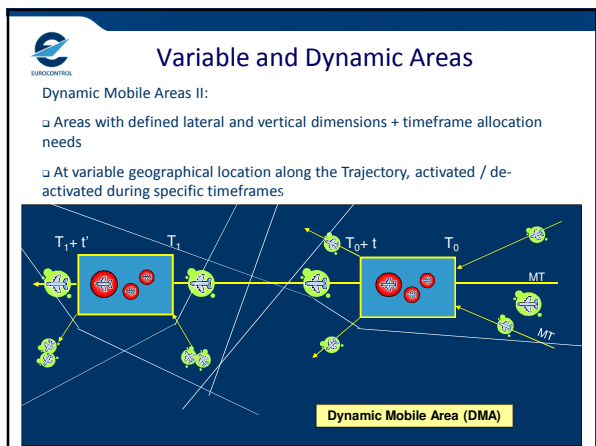
- Areas and sub-areas with defined lateral and vertical dimensions,
- At fixed geographical location published in the AIP
- Manageable in their lateral (VPA), vertical and temporal dimensions




The diagram shows two types of areas. On the left, a blue rectangle labeled 'TSA X' is shown above a yellow box labeled 'Fixed areas (TSA - CBA - TRA)'. On the right, a blue rectangle is divided into six smaller modules labeled 'Module X1' through 'Module X6' by dashed lines. This is shown above a yellow box labeled 'Variable Profile Area (VPA)'.



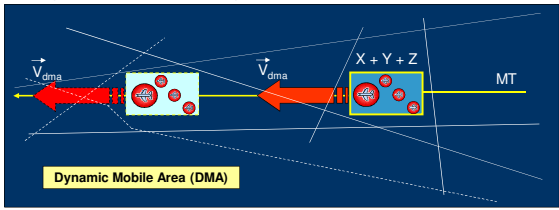





 **Variable and Dynamic Areas**


Dynamic Mobile Areas III:

- Areas with defined lateral and vertical dimensions around moving activity to be protected
- All elements are described + moving airspace dimensions
- Area should be "attached" to the leading aircraft position which should be in charge to share the real-time flight data.



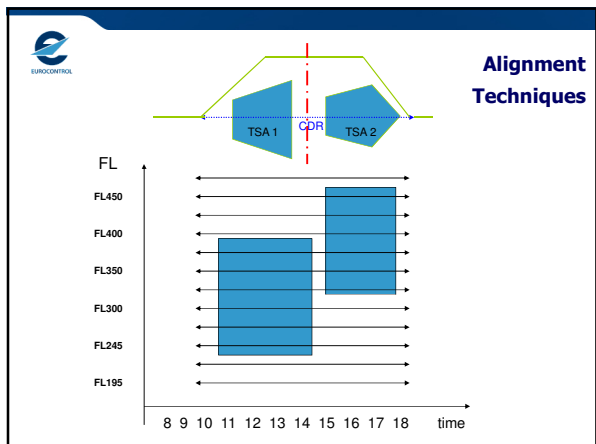
Dynamic Mobile Area (DMA)

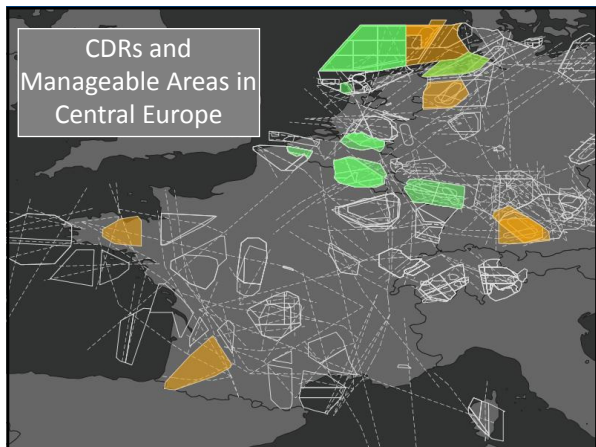
 **Improvement 5**
Analysis – Prediction
Optimization

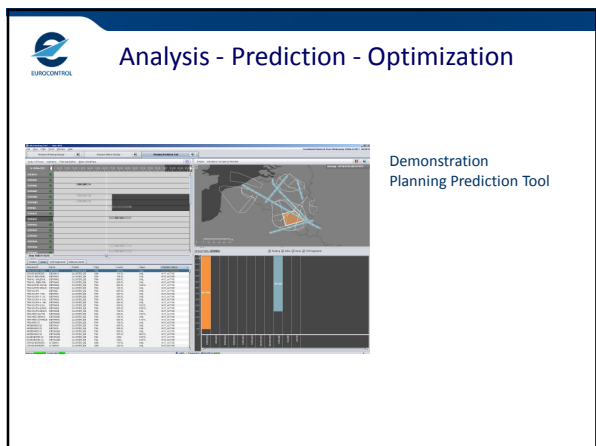
 **Analysis - Prediction - Optimization**


Aim is to:

- align airspace reservations in time, levels and/or geographical location without limiting mission effectiveness
- in order to enable a more efficient use of airspace
- Using tool and procedures like:
 1. Planning and Prediction Tools / Simulations
 2. Military Liaisons at network manager level
 3. Coordinate beyond national/FIR borders









Questions
&
Discussion
