



Emerging Issues for Air Navigation Services

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The role of civil / military coordination in respect of ANS Performance

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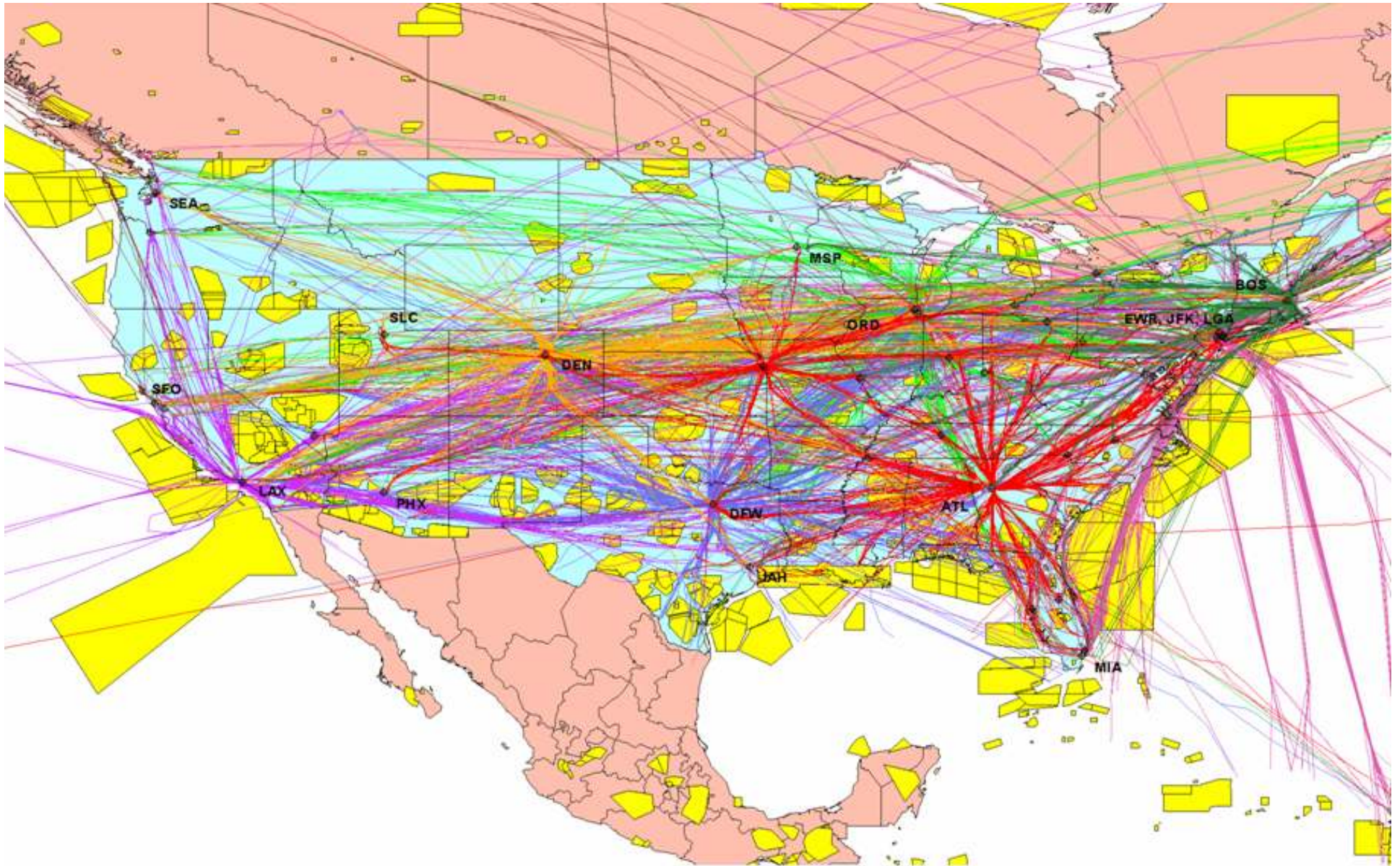


Shortcomings of the present ANS system

- The Air Navigation Services system worldwide has been stretched to its limits in many respects
- Overcoming the limitations of the present system will require new approaches under the ICAO CNS/ATM vision
- Operational and technical solutions alone will not solve the shortcomings of the current system.
- Built-in institutional deficiencies also need to be addressed, including the civil-military relationship

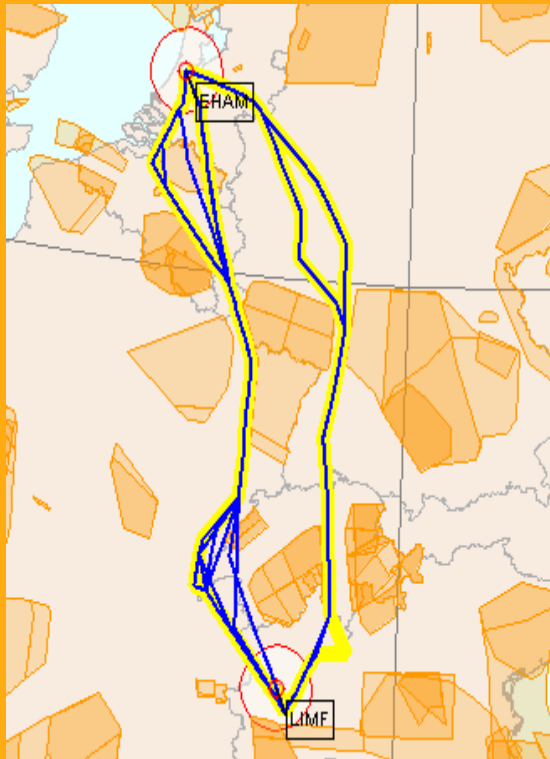


Source EUROCONTROL PRR 8

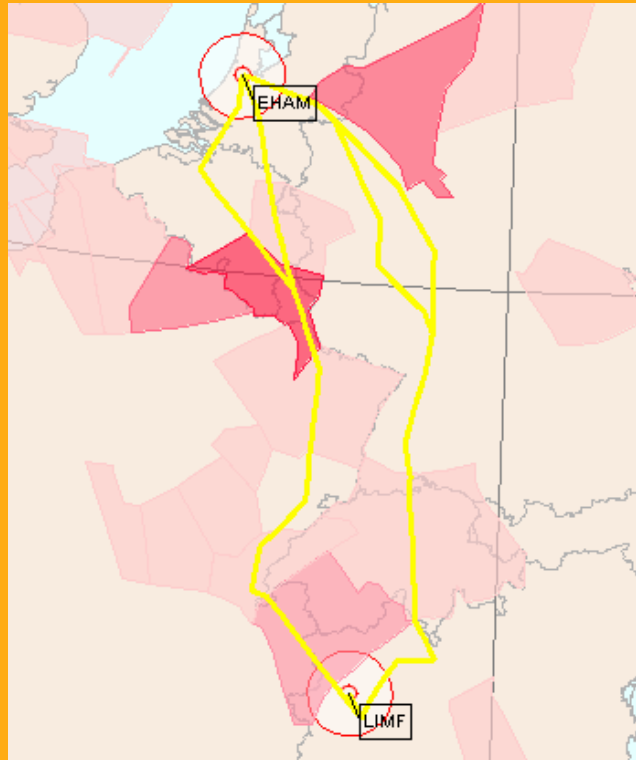


Source John Walker Group

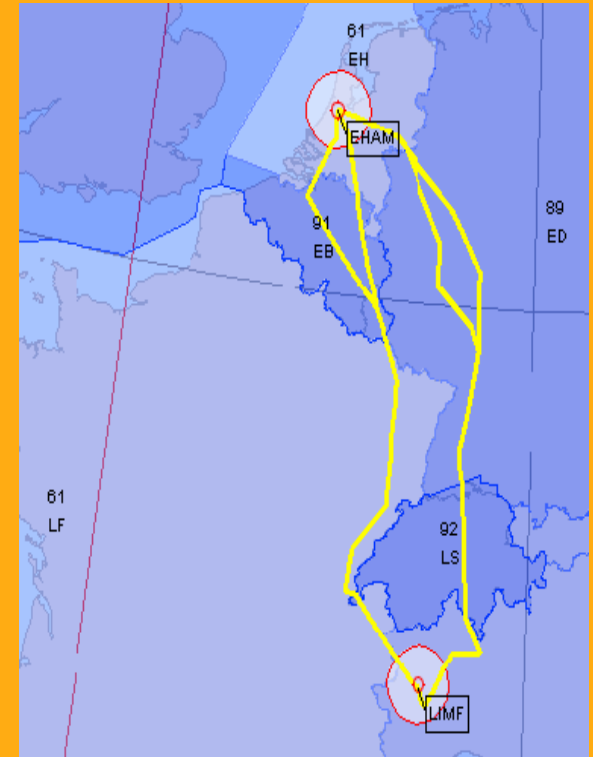
Flight-efficiency: Example: Amsterdam to Turin



Airspace structure



En-route congestion



Route charge differentials

Flight inefficiencies: € 1.0 – 1.5 billion

Source EUROCONTROL

Airspace Management

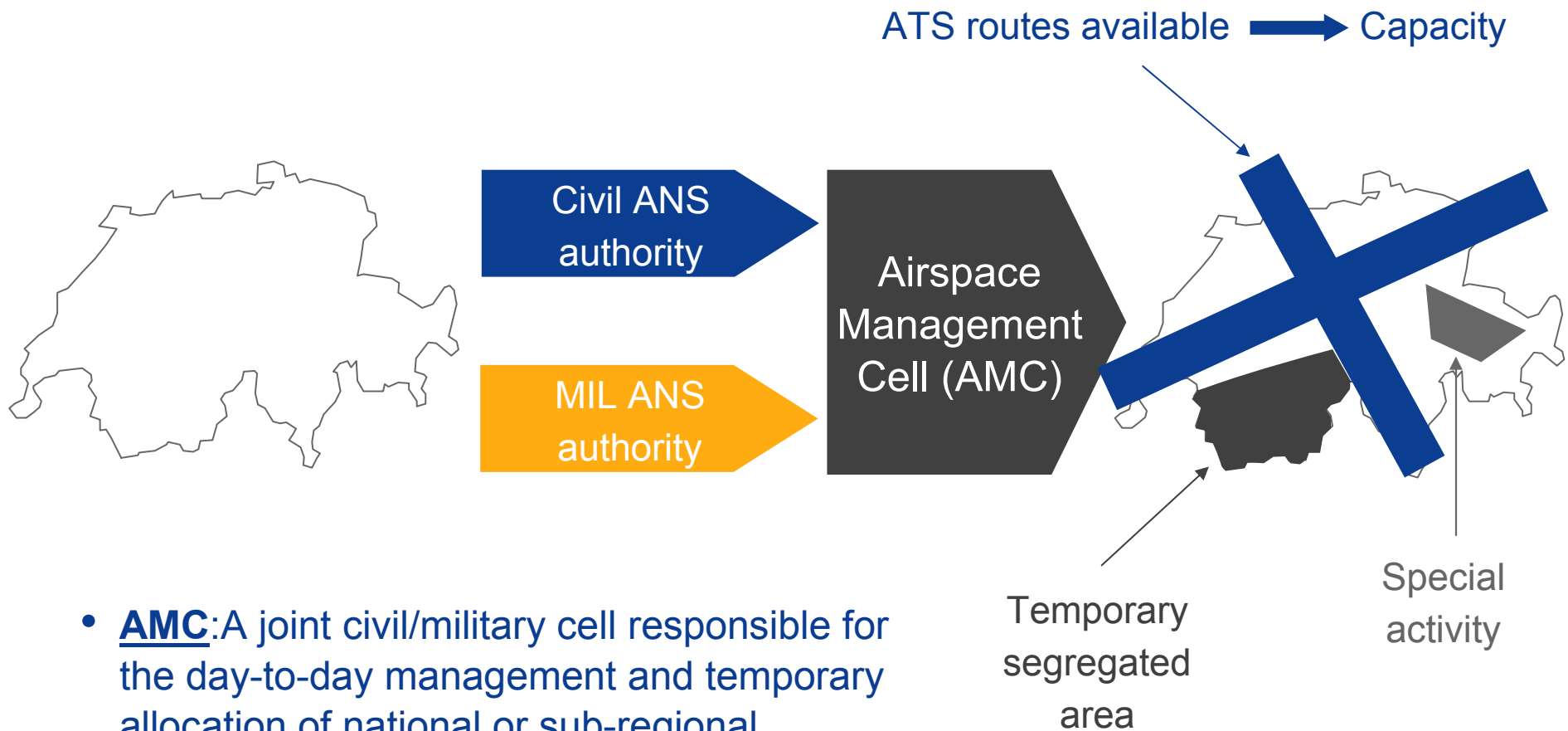
- "**Airspace Management** means a planning function with the primary objective of maximising the utilisation of available airspace by dynamic time-sharing and, at times, the segregation of airspace among various categories of users based on short term needs."
- "**Flexible Use of Airspace (FUA)** is an airspace management concept which determines that airspace should not be designated as either pure civil or military airspace, but rather considered as one continuum in which all users requirements have to be accommodated to the maximum extent possible."

— Draft European Commission Directive laying down the implementation rules for the Flexible Use of Airspace (December 1, 2004, ed. 1.6)

Airspace Management Levels



Airspace allocation



- **AMC:** A joint civil/military cell responsible for the day-to-day management and temporary allocation of national or sub-regional airspace under the jurisdiction of one or more State(s)

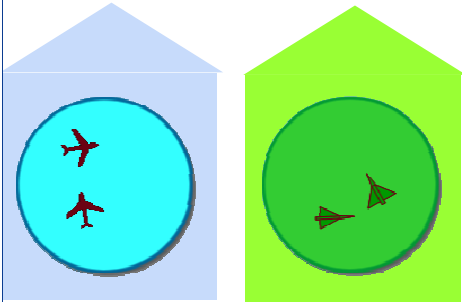
Airspace Management: Terminology

- **‘airspace reservation’** means a defined volume of airspace normally under the jurisdiction of one aviation authority and temporarily reserved, by common agreement, for exclusive use by another aviation authority.
- **‘airspace restriction’** means a defined volume of airspace taking the form of:
 - danger area: an airspace of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times; or
 - restricted area: an airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is restricted in accordance with certain specified conditions; or
 - prohibited area: an airspace of defined dimensions, above the land areas or territorial waters of a State, within which the flight of aircraft is prohibited.
- **‘conditional route’ (CDR)** means an ATS route or a portion thereof which can be planned and used under specified conditions.
 - Draft European Commission Directive laying down the implementation rules for the Flexible Use of Airspace (December 1, 2004, ed. 1.6)

Type of Area	Definition	Potential Class of Manageability
Temporary Reserved Area (TRA)	Defined volume of airspace temporarily reserved for specific activities, but through which civil and other traffic may be allowed to transit under ATC clearance	AMC-manageable
Temporary Segregated Area (TSA)	Defined volume of airspace temporarily segregated for specific activities, through which civil and other traffic will not be allowed to transit	AMC-manageable
Cross Border Area (CBA)	TSA established over international boundaries	AMC-manageable
Restricted Area (R)	Airspace volume of defined dimensions within which the flight is restricted in accordance with specific conditions	AMC-manageable Non-AMC-manageable Non-manageable
Danger Area (D)	Airspace volume of defined dimensions within which activities dangerous to the flight of aircraft may exist at specified times.	AMC-manageable Non-AMC-manageable Non-manageable
Prohibited Area (P)	Airspace volume of defined dimensions within which the flight of aircraft is prohibited	Non-manageable

Conditional Route Level	Availability for Flight Planning AND ATC Purposes	Available to ATC ONLY (e.g. airborne rerouting)
CDR-1	Always available during published times in the national AIP, unless closed during the pre-tactical phase	Available when closed for flight planning – subject to coordination with the military controlling unit
CDR-2	NOT available for planning unless it is opened during the pre-tactical phase. The route is available for flight planning during the CDR-2 periods when published in CRAM messages issued by CFMU one day in advance	
CDR-3	Never available for flight planning	

Segregated systems



2 ATC systems

Poor data exchange and different functions.

MIL ATC unit co-located with Air Defence Unit.

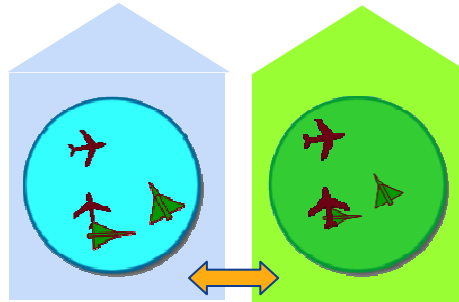
CIV ATC Unit located remotely.

Displayed radar data differs between MIL and CIV units.

No direct communication between MIL and CIV positions.

Coordination ensured through third party.

Integrated system Segregated units



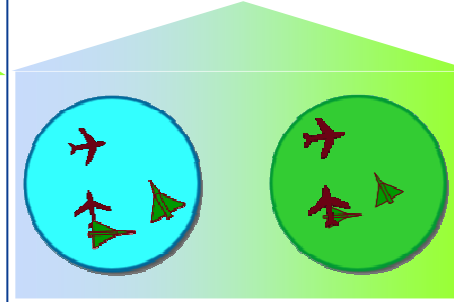
MIL ATC Unit stand alone, located remotely from CIV ATC Unit.

MIL and CIV ATC systems have similar functions.

Good level of data exchange.

Displayed radar data same between MIL and CIV ATC Units

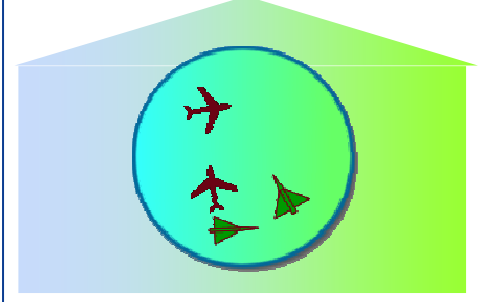
Single ATC system Co-located units



One ATC system

MIL and CIV sectors co-located in same OPS room or same building

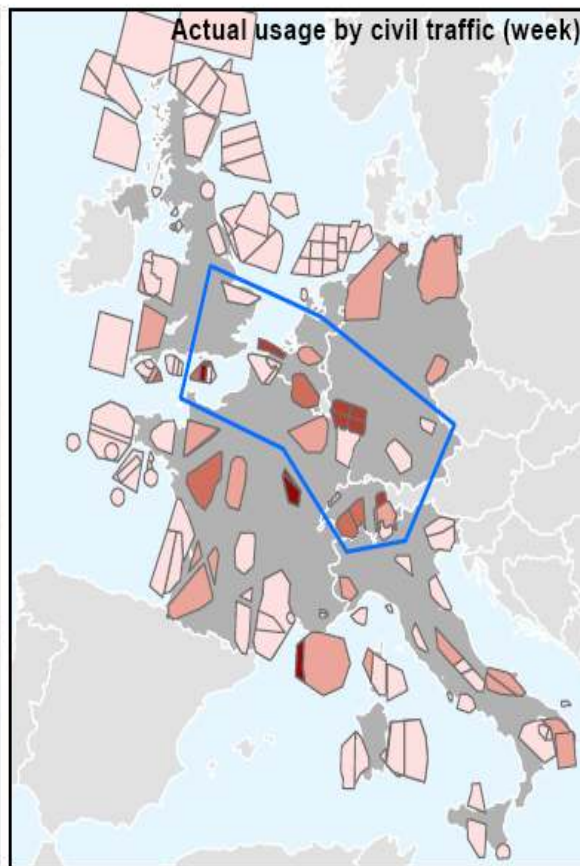
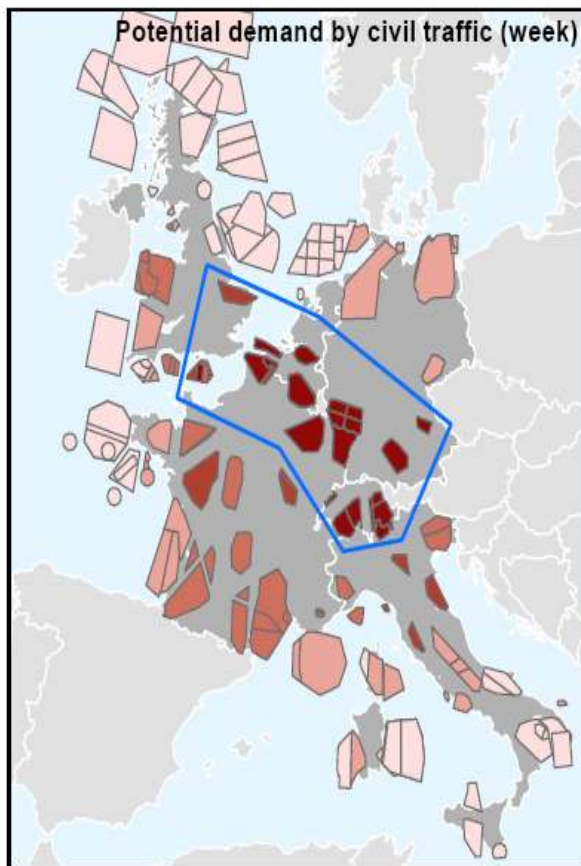
Single ATC system Single ATC unit



ATC service to MIL and CIV traffic provided by the same ATC sector

Effectiveness of Flexible Use of Airspace

EUROCONTROL / Performance Review Commission
 Evaluation of civil/military airspace utilisation
 November 2007



traffic density
 very low low medium high very high Core area

