

**61ST CONFERENCE OF
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AGENDA ITEM 4: AIR NAVIGATION

**CROSS-BORDER COORDINATION IN AIR TRAFFIC
MANAGEMENT: LESSONS LEARNT FROM
EUROPEAN EXPERIENCE**

(Presented by France, and co-sponsored by Singapore)

INFORMATION PAPER

SUMMARY

This paper informs States about cross-border concept and deployment, considering lessons learnt during the past decade in the European implementation of this concept. A mix of governance and coordination of rules, system architecture and data, and human adoption and training strategy is essential to successfully implement cross border operations. This implementation in Europe has only been possible thanks to the excellent cooperation between units and across operational borders, under the close supervision of regulatory authorities (civil aviation authorities).

CROSS-BORDER COORDINATION IN AIR TRAFFIC MANAGEMENT: LESSONS LEARNT FROM EUROPEAN EXPERIENCE

1. INTRODUCTION

1.1 Cross-border management increases the ability of controllers to manage delays in the tactical phase of flight well before the top of descent. When the destination airport is congested, air traffic controllers can ask for pilots to slow down in the more efficient en-route phase of flight in order to minimise delays upon arrival. This service is only possible thanks to the excellent cooperation between units and across operational borders.

2. DISCUSSION

2.1 Implementation of ATM cross-border operations in Europe has followed a method which includes the four following operational steps:

- a) cross-border coordination mechanics suppose the establishment of formal coordination frameworks such as Letters of Agreement (LoAs) between air navigation service providers (ANSP). In France for instance, LoA updates or joint Concept of Operations (CONOPS) agreements have been signed between the French ANSP *Direction des Services de la Navigation Aérienne* (DSNA) and neighboring ANSPs to formalize cooperation topics. This framework is for instance activated in case of demand-capacity imbalance and / or runway congestion (possibly due to weather, runway works for instance). Demand-capacity imbalance is a trigger condition for initiating cross-border coordination. In this context, priority is determined by the arrival airport when multiple upstream ANSPs provide inputs on competing arrival flows into the same airport.
- b) operational procedures in en-route sectors need special attention since particular sectors must be targeted in advance for cross-border operations, with specific time horizons to be taken into account by upstream (receiving) controllers without degrading en-route capacity.
- c) once cross-border operations are activated, resequencing will only take place in terminal control area (TMA), and cross-border operations have an impact on arrival sequencing since arrival sequence needs to be continuously updated.
- d) the fourth operational step is to take into account integration of cross-border operations with wider ATM processes. If cross-border operations are independent from Air Traffic Flow and Capacity Management (ATFCM) measures, they are an extra tool to mitigate workload and pressure for air traffic controllers in terminal maneuvering area. Cross-border operations are an opportunity to better balance ground/airborne delay for arrivals combined with ATFCM regulations.

2.2 System deployment and data exchange are essential to implement cross-border operations. The following items should be taken into account:

- a) System-Wide Information Management (SWIM) should be distributed to ANSPs taking part in the cross-border operations. SWIM enables seamless information access and interchange between providers and users of ATM information and services. The implemented SWIM is able to reduce interoperability issues between different ANSP systems;
- b) data to be exchanged between participants for the sequencing of aircraft includes Time to Lose (TTL), Estimated Time of Arrival (ETA), Scheduled Time of Arrival (STA), using the SWIM framework.

- c) data management allows sequences to be optimized automatically to maximize runway capacity and calculates delay to be absorbed in terminal maneuvering area or in enroute;
- d) French DSNA in-house human machine interface has been developed to monitor operational constraints (landing rate, weather) in cross border operations to multiple airports; and
- e) one key performance indicator for cross-border operations is the number of cross border requests flown compared to the number of cross-border requests actually implemented.

Training, Human Factors and Air Traffic Controller Adaptation

2.3 The training design and delivery for cross-border operations is a classic one, including classroom and on-the-job training, and is included in the regular Paris Flow Manager position training.

2.4 Joint operational workshops or recurrent coordination training (e.g. using cross-border coordination scenarios) between DSNA and partner ANSPs are organized, when necessary, to address interoperability/alignment and harmonized coordination procedures.

2.5 Cultural and procedural differences between ANSPs in daily operations are anticipated and managed during the writing of letters of agreement.

Change Management and Transition

2.6 Deployment strategy should be carefully planned, using a gradual expansion center by center, sector per sector, from phone coordination to electronic coordination. It is useful to note that using such a gradual strategy for DSNA in France, no major operational risk has been identified during the transition to cross-border full deployment. However, recurrent training and practice are needed over time to keep cross-border operations efficient and useful for stakeholders.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to note the information contained in this Paper.

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