



ICAO

INTERNATIONAL CIVIL AVIATION ORGANIZATION

Fifth Meeting of the African Air Navigation Services Providers

(Lomé, Togo, 28 March - 1st April 2022)

Agenda Item 2: African Air Navigation Services Providers (ANSPs) Peer Review mechanism.

Title of the Paper **Performance evaluation in an airspace**

(Presented by par Farid ZIZI, Director of France Aviation Civile Services)

SUMMARY

This working paper presents focuses on the monitoring and performance of ANSPs or ATC services in the most objective way possible on the basis of recorded traffic situations or samples. The performance of ANSPs can no longer be limited to the sole examination of safety and capacity indicators and it is important at least to take into account the environment, emissions, noise, consumption, or even to consider economic aspects.

The working method envisaged with DIADEME proceeds by a multi-criteria diagnosis. The definition of a common catalogue of indicators for all African ANSPs could make it possible to enter into a concrete approach of measurement and exchange between the different ANSPs and to measure the good practices of one or the other.

The meeting is invited to initiate work on the establishment of a catalogue of performance indicators capable of characterizing an air situation.

The meeting is invited to launch a feasibility study on control airspaces in order to clarify the use of DIADEME and the expected benefits for ANSPs and airspace users.

REFERENCE(S)

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| <i>Strategic Objectives</i> | B-Capacity and efficiency of air navigation |
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1 INTRODUCTION

- 1.1. Monitoring and measuring the performance of ANSPs or ATC services rendered in a given airspace is inherently complex and challenging. This presupposes knowledge of air traffic and having defined performance indicators reported daily in a monitoring table of local, regional or national performance indicators as the case may be.
- 1.2. One possible method if the daily reporting of performance remains difficult would be to proceed by sampling and, on the basis of situations or recorded traffic samples, to evaluate the performance of the latter.

- 1.3. The acquisition of traffic samples in a number of airspaces without the surveillance function remains a problem in a number of countries. Nevertheless, the generalization of ADS-B, ADS-B by satellite in particular, will make this problem easier to solve. In the meantime, an approach combining PLN knowledge of traffic with that of surveillance where it exists can make it possible to create the corresponding samples.
- 1.4. Finally, the performance of ANSPs can no longer be limited to the sole examination of safety and capacity indicators and it is important at least to take into account the environment, emissions, noise, consumption, or even to consider the economic aspects of the situation for both air operators and ANSPs.
- 1.5. Technology now makes it possible to consider these measures through existing models, internationally recognized, which, combined with platforms supporting the traffic in question, allow an analysis of it according to the performance criteria that will have been previously set.

2. DISCUSSION

- 2.1. The DIADEME platform for "Digital Airspace Design and Performance Modelling Environment" has been designed with a view to optimizing airspace design without prejudging the overriding performance criteria to be taken into account. Indeed, if capacity and safety were the almost unique criteria to consider in the past, the environmental impact is now taking an increasing place in the evaluation of an airspace system. Under economic pressure or environmental pressure, fuel consumption also becomes an important criterion to consider. In fact, it is important to leave the choice of performance criteria and their respective weighting to decision-makers and strategists, political, operational or technical.
- 2.2. The working method envisaged with DIADEME proceeds by an initial multi-criteria diagnosis of the situation which makes it possible to pose the problem to be optimized or modified or simply to produce a performance measure that can be assessed and analyzed by the experts of the domain.
- 2.3. The ideal remains to be able to collect daily performance indicators that can be compared to those of a reworked situation. On the other hand, in the absence of a daily collection, the diagnosis that can be established with DIADEME, remains a safe bet that makes it possible to establish a reference whether on the "good" days of traffic or the more "chaotic" situations that local, regional or international air traffic may experience.
- 2.4.1. The definition of a common catalogue of indicators for all African ANSPs could make it possible to enter into a concrete approach of measurement and exchange between the different ANSPs and to measure the good practices of one or the other.
- 2.5. The use of the DIADEME platform could lead to the development of a common method of performance diagnosis with progressively increasing ambitions. It could also make it possible to measure the contributions of new methods or procedures such as the implementation of the PBN or the continuous descents and climb on the continent's airports and more generally of any development implemented, thus demonstrating to airspace users that the developments undertaken by the ANSP create benefits for them.

- 2.6. Beyond these first possibilities, the implementation of DIADEME should make it possible to establish the strategy of ICAO and African ANSPs in their ambition to progress and improve performance. The questions related to the heterogeneity of the different airspaces considered will have to be resolved, but work and studies carried out in full collaboration can make it possible to acquire the means of measurement and evaluation without waiting for a total coverage of African airspace by surveillance means. Their widespread deployment will naturally be welcome, but the approach of generalized measurement and evaluation of performance may precede.
- 2.7. France Aviation Civile Services has the know-how and expertise to adapt DIADEME to the African context and work on the feasibility of performance studies in this context. The capture of reference situations will be an important point of the strategy to be developed but it seems possible to categorize situations to progress in terms of shared methods and move forward.
- 2.8. DIADEME remains a flexible system whose entire bricks have not yet been fully developed. It is therefore possible to adapt it to the specific needs of African ANSPs. Operating as a web service, DIADEME allows continuous collaborations without setting up specific means for different users. It will therefore be possible to collaborate and progress together without heavy investment other than the financing of the studies to be conducted.

3 ACTION BY THE MEETING

- 3.1 The meeting is invited to take note of the present working paper and to benefit from a presentation-demonstration of DIADEME during the time of the conference.
- 3.2. The meeting is invited to initiate work on the establishment of a shared catalogue of performance indicators capable of characterizing an air situation in Africa.
- 3.3. The meeting is invited to launch a feasibility study on control airspaces in order to clarify the use of DIADEME and the expected benefits for ANSPs and airspace users.