



WORKING PAPER

THIRTEENTH AIR NAVIGATION CONFERENCE

Montréal, Canada, 9 to 19 October 2018

COMMITTEE A

Agenda Item 4: Implementing the global air navigation system and the role of planning and implementation regional groups (PIRGs)

4.3: Implementing ASBUs for performance improvement

**GUIDANCE DOCUMENT TO ASSIST STATES IN THE
IMPLEMENTATION OF PERFORMANCE MANAGEMENT**

(Presented by Japan, Singapore and the United States)

EXECUTIVE SUMMARY

To prioritise future investment and to improve system efficiency, ICAO has introduced the performance-based approach as part of the *Global Air Navigation Plan* (GANP, Doc 9750) and with a view to implementing the aviation system block upgrades (ASBUs). A list of potential key performance indicators (KPIs) proven to allow for meaningful performance assessments has been published and allows air navigation services providers (ANSPs) with differing maturity in their data management processes to measure their performance in differing resolution. However, as ANSPs will face many challenges in the establishment and implementation of KPI measures, it is recommended that a guidance document detailing the GANP KPI framework be produced to help ANSPs realise their performance-based approach to implementing the ASBUs.

Action: The Conference is invited to agree to the recommendation in paragraph 3.

1. INTRODUCTION

1.1 The fifth edition of the 2016-2030 ICAO *Global Air Navigation Plan* (GANP, Doc 9750) was published in November 2016 and introduced sixteen potential key performance indicators (KPIs). Of the sixteen, there are seven core and nine additional KPIs. The core KPIs allow States to assess the efficiency of their system while keeping data processing and data archiving requirements to a minimum, while the additional KPIs require flight trajectory information to produce and will require more extensive data processing. The responsibility of selecting the KPIs lies with the respective Planning and Implementation Regional Groups (PIRGs). The PIRGs can select suitable KPIs based on the maturity of the data in the region and the implicit and explicit costs of producing the said KPIs.

1.2 Adopting a performance-based approach to managing air traffic management (ATM) is paramount to level up the capability of ANSPs. For those States and regions which have neither matured data processing available nor a well-developed analyzing capacity, ICAO advises them to start with a

qualitative expert analysis and to develop policy statements (qualitative performance objectives), followed as soon as possible, by the implementation of a quantitative approach. In the future, once more States and regions contribute and exchange information, this will enable a global approach.

1.3 With the greater focus on performance-based management, a well-defined framework detailing the planning, implementation, and the regular monitoring of KPIs is important especially for the less advanced ANSPs. The KPI framework should include the uses and methodologies of the KPIs, the interconnectivity between the KPIs and the implementation and applicability of each KPI. As the initial development of the guidance material is to be done by ICAO but has not yet been prepared, it is expected that there will be inconsistencies in their existing methodologies across the States. The development of a guidance document would be useful for States and regions when implementing performance management to ensure harmonisation at the global level.

2. DISCUSSION

2.1 In July 2015, the Civil Aviation Authority of Singapore (CAAS), EUROCONTROL, and the Federal Aviation Administration (FAA) commenced performance benchmarking on two KPIs, namely KPI02 taxi-out additional time and KPI08 additional time in terminal airspace. This joint work effort is performed as a collaboration among the members. The first year was spent researching and testing a suitable methodology for each of the KPIs. As the work progressed, the methodology was refined and more conditions were developed to ensure statistical robustness. The first phase of the tripartite benchmarking concluded in September 2017. An example of the iterations made by the working group is hereby included.

2.2 Initially, the work group attempted to implement KPI08 using already established methodologies and best practices. The work group measured the KPI using both the 40NM and 100 NM whilst using the airport wide 20th percentile as the unimpeded time. It was then noted that 100 NM made for better comparison as it included the holding stacks for most airports. The 20th percentile at the airport level also resulted in very high standard error and the concept of grouping by engine type / wake turbulence category, arrival runway and entry points was introduced. After grouping, it was also noted that the groups should not be too small to account for statistical robustness. The groups should also not be too big such that each group only contains flights with largely similar characteristics. After grouping the flights by its flight characteristics, the work group tested means of determining the unimpeded time of each group. With the concept that unimpeded time should rightfully measure a flight with a smooth flight path without any delay due to air traffic control (e.g. speed control, vectoring, holding), it was decided that the unimpeded value should be low, stable and only achievable by flights during phases of non- or low-congestion at the airport (e.g. non-peak hours).

2.3 The work of the group was presented at various ICAO Asia Pacific fora, including the meetings of the Air Traffic Management Sub-Group and the Asia Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG). It has attracted the interest of States and Japan Air Navigation Services (JANS) joined the group in September 2017. The work group continues as a collaboration between the four organizations, and is not an ICAO work group nor is it affiliated to any other organization. At present, the work group is identifying additional operational KPIs for benchmarking and as a result, the methodologies for the KPIs are being refined. The work group aims to continue its work to include all the KPIs in the GANP. Without an existing KPI framework document, the work group is putting in place a system of developing, testing and implementing each KPI and has accumulated rich experience in this area.

2.4 The work highlighted earlier showed that it is important to have a common understanding of performance measurement. Thus, there is a critical need for the development of a GANP KPI guidance document. This development is very extensive and will require many iterations of reviewing and testing. There will also be a need to consider the inclusion of other key performance areas (KPAs) not currently addressed as part of the GANP KPIs and will therefore require coordination with other ICAO working arrangement or relevant guidance material. This task can best be given to a global work group who has extensively researched, refined and has assessed that the KPIs were indeed useful within the ANSPs.

2.5 The work group is therefore poised to offer assistance to ICAO in the development of the said document as it covers a good number of regions, namely Asia Pacific, Europe and North America. The work group has also spent many years researching and refining the methodologies and implementing the KPIs such that the KPIs produced can be used directly for monitoring performance by the ANSP.

3. CONCLUSION

3.1 To prioritise future investment and to improve system efficiency, ICAO has introduced the performance-based approach as part of the GANP and with a view to implementing the ASBUs. A list of potential KPIs proven to allow for meaningful assessments is published and allows ANSPs with differing maturity in their data management processes to measure their performance in differing resolution. However, as States can face many challenges in the implementation and execution of KPI measures, it is recommended that a guidance document detailing the KPI framework be produced to help ANSPs realise their performance-based approach to implementing the ASBUs. The conference is invited to agree to the following recommendation:

Recommendation xx/x – Develop key performance indicator (KPI) framework guidance document

The Conference is invited to:

- a) request ICAO to develop a KPI framework guidance document for the air navigation services providers (ANSPs);
- b) request ICAO to consider the inclusion of other key performance areas (KPAs) not currently addressed as part of the GANP KPIs;
- c) request ICAO to consider the work done by the work group in the guidance document; and
- d) request ICAO to accept the offer by the work group to assist in the drafting of the guidance document.

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