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ASSEMBLY — 41ST SESSION

TECHNICAL COMMISSION

Agenda Item 33: Other issues to be considered by the Technical Commission

IMPROVING AIRPORT EFFICIENCY IN INDONESIA

(Presented by Indonesia)

EXECUTIVE SUMMARY	
This paper outlines the importance of the Aviation Industry within Indonesia and expected growth rate by the year 2030.	
Strategic Objectives:	This information paper relates to the Safety Strategic Objective.
Financial implications:	This information paper has no financial implications.
References:	ICAO Doc 9971, *Manual on Collaborative Air Traffic Flow Management* ICAO Doc 9854, *Global Air Traffic Management Operational Concept* APAC Airport Collaborative Decision Making (A-CDM) Implementation Plan Airport Collaborative Decision Making ACDM) Manual - ANGKASA PURA

1. INTRODUCTION

1.1 The phenomenal growth of air traffic in the decade and a half before the pandemic caught the aviation world by surprise. The Asia Pacific region accounted for more than 30 per cent of the global air transport market, with Indonesia forecasted to be the fourth biggest travel market in the world by 2030 according to IATA. Considering the fleet acquisition of aircraft operators in the Asia Pacific (APAC) Region, this figure is expected to grow even further.

1.2 To avoid future air traffic delays, Indonesia decided to implement the airport collaborative decision-making (A-CDM) process at several of the more than 600 national airports. A-CDM optimizes operations at these airports by taking into consideration air traffic flow management (ATFM) programs. In a scenario where local and regional networks of A-CDM and/or ATFM units are set up and inter-connected, key stakeholders now have the capability to exchange useful departure and arrival information to further improve event predictability (as compared to standalone A-CDM or ATFM).

2. DISCUSSION

2.1 Indonesia implemented an A-CDM program that vastly improved the operational efficiencies of airports (most specifically the Jakarta Soekarno-Hatta airport) by optimizing resources and improving the predictability of events. This action is achieved via real-time information-sharing between airport operators, aircraft operators, ground handlers, and air traffic control units, and it involved the implementation of a set of operational procedures and automated processes.

2.2 A-CDM works on the premise of best-planned best-served actions, with more accurate and timelier target off-block times (TOBT). The process enables proactive decision-making in the air traffic system and replaces the current centralized system of air traffic management with collaborative decision-making in respect to the airport's airside operations. Airports, air traffic control (ATC) and airlines are the main stakeholders in this system.

2.3 Airport CDM includes a whole new set of procedures and training phases that are implemented to familiarize personnel with new features and the advantages of information exchanges. This joint approach into new working procedures provides multiple perspectives of activities by individuals and organizations, and at the same time, assesses both the individual and collective impact of the new procedures.

2.4 The successful A-CDM implementation not only improved airport efficiencies, but capacity and environmental protection performance as well. The ability to gather data and measure how expectations are being met showed the return on investment, not only for the initial cost of A-CDM implementation, but also for the ongoing improvement of A-CDM at these airports. The focus shifted from the point of origin to a destination or network perspective where A-CDM is the connector.

2.5 A-CDM implementation has also reduced delays and resulted in improved system predictabilities while optimizing resource utilization. Airports in Indonesia are only considered CDM compliant when A-CDM information sharing (ACIS), turn-around process (TRP) and variable taxi time calculation (VTTC) concept elements are successfully applied.

2.6 The implementation of airport CDM transformed many of the communication policies and procedures that have historically dominated the airport operations environment, bringing substantial

improvements to all partners. Airport CDM information sharing further required that the information that was shared was made available through a common system, connected via proper interfacing to all partners' systems and databases. This common system is the main infrastructure, known as the Airport CDM Platform. Engineers played a major role in the integration of the existing technology and the development of automation applications that identified the technical impact on the different parties. The format of the data was essential for avoiding inconsistencies and recognition problems. Since the different partners had various formats, filters and converters were developed in order to ensure interoperability between the different systems.

2.7 Information sharing is the first element of this system and therefore, it was essential that it was implemented as a first step. After this, the TOBT prediction by the aircraft operator or ground handler was the second major step implemented. In this approach aircraft operators, air traffic controllers and ground handlers would be able to anticipate in advance, the resources required for traffic planning purposes. With the prediction of TOBT in place, improved prediction of target start-up times, taxi-time and take-off times became a reality

2.8 Once information sharing was implemented, variable taxi time (VTT) was the next step in this process. Sequencing does not make sense when the standard taxi time values are applied, as is used in today's air traffic management operations. However, with VTT in place, the link between off-block time and take-off time becomes transparent to all parties of the network, and a proper prediction of the take-off time can be communicated.

2.9 Once all of these steps were in place, the final phase was implemented. Off-block sequencing is often required in order to regulate the traffic flows at our large airports, complex aprons, taxiways, or bottleneck at the runway or parking stands. With this function, the target start-up approval time (TSAT) is calculated, and the target take-off time (TTOT) at the runway is predicted. The sequence of predictions automates this process and provides early TSAT and TTOT transparency to all partners.

2.10 With the above elements in place, the last step was to implement CDM in adverse conditions. Using sequencing in situations where different bottlenecks occur enabled air traffic control to keep the traffic at the maximum level. This process further assisted to speed-up the process where maximum capacity is required during the capacity recovery period.

2.11 With the local airport and CDM Elements successfully implemented, airports now connect with the network operations to adjust the network operations derived calculated take-off time (CTOT). Network operations can now react to predictions received from the aircraft operator, rather than impose restrictive and inflexible constraints on airlines, which is currently the case.

2.12 This collaborative management of flight data updates is considered the main achievement of Jakarta Soekarno-Hatta airport where it provides services to the aircraft operators. At the same time, this enhances predictions on flow and capacity management, enabling the network to become better utilized, with a potential higher capacity.

2.13 A-CDM is now embedded in the ATM operational concept as an important enabler that will improve operational efficiencies, predictability and punctuality in the ATM network and with airport stakeholders. It is expected that A-CDM will have an impact on the operating efficiencies of airport partners, and may eventually contribute to further reduce buffer times for resource planning and flight times due to enhanced predictability.

3. CONCLUSION

3.1 Indonesia's A-CDM approach of active participation of ATC and airports is considered one of the fundamentals that will guide aviation in the coming years. It is of vital importance, particularly with the management of air traffic services, airports, and operational areas of airlines where they interact operationally with air traffic control and airport operational areas. This A-CDM process has provided a positive response to reduce congestion at these airports.

3.2 The Assembly is invited to note:

a) airport collaborative decision-making (A-CDM) at Indonesian Airports;

b) improved system predictabilities while optimizing resource utilization; and

c) A-CDM is also embedded in the ATM operational concept.

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