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WORKING PAPER

ASSEMBLY – 38TH SESSION

TECHNICAL COMMISSION

Agenda Item 35: Air Navigation – Implementation Support

MODERNIZING REGIONAL AIR TRAFFIC MANAGEMENT – INNOVATION AND COLLABORATION

(Presented by the Republic of Singapore)

EXECUTIVE SUMMARY

ICAO's Aviation Systems Block Upgrade (ASBU) is a timely development, providing a framework for a harmonized approach to air traffic management (ATM) modernization that will ensure global interoperability. The Asia Pacific Seamless ATM Plan, which was endorsed by APANPIRG/24 and DGCA/50 and incorporates key modules and elements of the ICAO ASBU framework, underscores the Asia Pacific region's ATM modernization efforts. Timely implementation of the Asia Pacific Seamless ATM Plan, with innovation and collaboration among States, ANSPs, ATM research and development (R&D) entities and specialised technical agencies to achieve synergy and harmonised ATM solutions, is essential to deliver the capacity and capability to support the significant growth of air traffic anticipated in the Asia Pacific.

Singapore is committed to further contributing to ATM modernization in the Asia Pacific region through innovation and collaboration. For example, Hong Kong (China), Thailand and Singapore are developing a virtual, multi-nodal air traffic flow management concept based on collaborative decision-making. Singapore is also building a Centre of Excellence for ATM R&D for the development of ATM solutions for the region.

There is also a need to coordinate ATM modernization efforts across regions for global harmonisation and inter-operability. A framework needs to be developed to facilitate such coordination.

Action: The Assembly is invited to:

a) urge Contracting States to actively participate in and support ATM modernisation in the regions through innovation and collaboration; and

b) discuss the need for a framework to coordinate ATM modernisation efforts across regions for global harmonisation and interoperability.

Strategic Objectives:	This working paper relates to the Safety Strategic Objective.
Financial implications:	Not applicable.
References:	ICAO 50th DGCA Conference – Action Item 50/4 Asia/Pacific Seamless ATM Plan Version 1.0

1. INTRODUCTION

1.1 Uncoordinated and unharmonised air traffic management (ATM) modernisation efforts and divergence in ATM technological developments will lead to sub-optimisation in ATM, with impact on capacity and capability. At the same time, States and Air Navigation Services Providers (ANSPs) worldwide face a major challenge in introducing new ATM systems, technologies and procedures while ensuring cross-boundary harmonisation and interoperability. ICAO's Aviation Systems Block Upgrade (ASBU) is hence a timely development, providing a framework for a harmonised approach to ATM modernisation that will ensure global interoperability.

1.2 Air traffic in the Asia Pacific (APAC) region is projected to grow significantly in the coming years. Recognising the need for capacity and to ensure the safety and efficiency of the increasing air traffic amidst increasing operational complexities, the APAC Seamless ATM Plan Version 1.0 has been developed and endorsed by the 24th Meeting of the Asia Pacific Air Navigation Planning and Implementation Region Group (APANPIRG/24) and the 50th Conference of the Directors General of Civil Aviation, Asia and Pacific Regions (DGCA/50), following two years of collaborative work by APAC States and the ICAO APAC Regional Office. The Plan, which incorporates key modules and elements of the ICAO ASBU framework, underscores the Asia Pacific region's ATM modernisation efforts.

2. INNOVATION AND COLLABORATION

2.1 Timely implementation of the Asia Pacific Seamless ATM Plan is essential to deliver the capacity and capability to support the significant growth of air traffic anticipated in the Asia Pacific. This requires innovation and collaboration among States, ANSPs, ATM R&D entities and specialised technical agencies to achieve synergy and harmonised ATM solutions. This includes ATM concepts and technologies that meet the specific, even unique, circumstances in the Asia Pacific and States in the region.

2.2 Singapore is committed to further contributing to ATM modernisation in the Asia Pacific region through innovation and collaboration. For instance, Hong Kong (China), Singapore and Thailand, which manage some of the busiest international air hubs in the APAC region, face a common challenge of balancing demand and capacity at their hub airports which handle predominantly international air traffic. In view of the need for optimisation, Hong Kong, Singapore and Thailand are working together to develop a virtual, multi-nodal Air Traffic Flow Management (ATFM) concept, leveraging on Collaborative Decision Making (CDM). As part of the concept development, Airbus ProSky was engaged for an ATFM-CDM Proof-of-Concept project and has been engaging several stakeholders to seek their inputs in order to derive a solution which is robust and readily adopted by many. The project has been progressing well and initial work has been encouraging.

2.3 As stated in the APAC Seamless ATM Plan, a long term view in planning and carrying out the work necessary to support the development of the ASBU modules beyond Block 0 is necessary to ensure ATM modernisation and long term sustainability of ATM developments. Towards this end, it is important for States and ANSPs to work together on ATM developments, including ATM R&D efforts, such as under NextGEN and SESAR. Collectively, ATM R&D efforts can expedite development of the ASBU Blocks 1 to 3 solutions. Given that States and ANSPs worldwide have limited resources and bandwidth for longer term ATM development, resources could be pooled to work on harmonised solutions.

2.4 At the Twelfth Air Navigation Conference in Montreal in 2012, Singapore shared our plan to establish a Centre of Excellence for ATM with a primary focus on ATM R&D. As a first step under this initiative, an ATM Research Institute (ATMRI) has been set up at a local university in Singapore for the development of ATM solutions for Singapore and the Asia Pacific region. An initial tranche of ATM research projects has been launched, such as initiatives to improve airport surface traffic management and the study of wake vortices and its impact on runway operations that could lead to new sequencing algorithms useful for optimising an airport runway capacity. Singapore is keen to collaborate with other States and entities on ATM R&D projects to develop ATM solutions that benefit the larger community.

3. HARMONIZING ATM MODERNIZATION ACROSS REGIONS

3.1 Through active participation by States and entities, multi-disciplinary research talents can exchange valuable knowledge and expertise to augment and complement R&D efforts in diverse areas. As such, efforts from various regions converge, resulting in the formulation of suitable solutions to tackle challenging ATM problems in a more holistic manner, enhancing chances of ATM R&D success.

3.2 Inter-regional cooperation in ATM modernisation is key to ensure global harmonisation and interoperability. This requires coordination of ATM modernisation efforts across regions. To facilitate cross-regional ATM development collaborations, a framework needs to be developed, which can include plans for sharing expertise and resources. Such a framework should also facilitate deeper cooperation between participants which can potentially lead to discovery of new ideas and better conceptualisation of future ATM, conceivably beyond current imagination.

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