



WORKING PAPER

TWELFTH AIR NAVIGATION CONFERENCE

Montréal, 19 to 30 November 2012

Agenda Item 1: Strategic issues that address the challenge of integration, interoperability and harmonization of systems in support of the concept of “One Sky” for international civil aviation

1.1: Global Air Navigation Plan (GANP) – framework for global planning

**ADVANCING AVIATION SYSTEM BLOCK UPGRADE (ASBU) THROUGH
COLLABORATION AND COOPERATION – SINGAPORE’S APPROACH**

(Presented by Singapore)

SUMMARY

Some ATM solutions and technologies may need to be further adapted to local and regional unique requirements. Such adaptation has to be done without compromising interoperability. The Civil Aviation Authority of Singapore (CAAS) has aligned its ATM modernization programme with the ASBU framework and is committed to invest extensively in ATM research and development including adapting new technologies to local needs. In response to the ASBU vision, Singapore is setting up a Centre of Excellence for ATM, where academia, industries and users will collaborate to develop and adapt the technologies, systems and procedures that will realise new concepts outlined in the block upgrades into operational solutions. While the focus will be on meeting the unique requirements of the Asia/Pacific region, global interoperability will be ensured through collaborations with SESAR, NextGen and relevant establishments. The solutions and technologies that will emerge will be shared with our regional and international partners to achieve the common goal of advancing ATM modernization.

Action: The Conference is invited to consider the recommendation in paragraph 4.1.

1. INTRODUCTION

1.1 With mounting demands on the aviation system, there is rising awareness that air traffic management (ATM) is the critical link that will provide the much needed capacity to cope with the burgeoning growth in air traffic. To transform the ATM system, States and air navigation services providers (ANSPs) have embarked on their respective ATM modernization programmes. Some of these programmes like SESAR and NextGen involve extensive developmental works. ICAO aviation system block upgrade (ASBU) initiative seeks to align global efforts by setting a framework to guide States and ANSPs on their modernization journeys. There is a need to adapt some of the solutions developed in the West to uniquely Asian requirements. Responding to the vision of ASBU, a Centre of Excellence for ATM is being established in Singapore to play this adaptive role, and advance ASBU in the region.

2. **“THINK GLOBAL, ACT LOCAL” APPROACH TO ATM MODERNIZATION**

2.1 To meet our long-term ATM goals of increased capacity, safety, robustness and world-class service standards, Singapore has developed an ATM Master plan that sets out the concepts, systems, and processes to deliver the future ATM system that will enable us to achieve a step change in our capabilities. The Master plan is also carefully aligned with the key objectives and the methodology of the ASBU to ensure global interoperability.

2.2 The modular and scalable structure of ASBU affords the flexibility for States and ANSPs to identify the specific operational requirements (and corresponding benefits) and implement the necessary solution sets. Nonetheless, there are no one-size-fits-all solutions. Each local and regional context is unique and will have its own distinct imperatives and requirements. The technology roadmaps of the GANP include emerging technologies and new concepts which will be continuously evolving according to users' dynamic operational and technological requirements. Furthermore, many of the solutions of the block upgrades are not readily available off-the-shelf. To deliver the necessary technological solutions, further research and development efforts with a certain degree of adaptation and customization will be required. Singapore is committed to invest extensively in ATM research and development that is focused on meeting the unique requirements of Singapore and the Asia Pacific region, while ensuring alignment with the ASBU framework for global interoperability.

3. **REGIONAL AND INTERNATIONAL COLLABORATION THROUGH THE CENTRE OF EXCELLENCE FOR ATM**

3.1 Singapore's Centre of Excellence for ATM will draw ATM researchers, academia, industry players, and other stakeholders of the global aviation community to collaborate and participate in a wide range of ATM research and development activities. This work will be supported by a network of research and development institutes which will leverage on Singapore's pool of multi-disciplinary research talents and world-class research infrastructure to undertake cutting-edge research in ATM solutioning and to nurture a continuous pipeline of high calibre ATM human capital that will support ATM research and development efforts and the growth of the ATM industry in the region. Amassing ATM talents and research and development activities in this manner will allow the development of an ecosystem of ATM research, industry, intellectual clusters, and international aviation organizations to grow and take root in the region.

3.2 This convergence of key stakeholders and industry players from across the aviation community is a holistic approach to enable the cross-pollination of ideas and knowledge to achieve an eclectic fusion of best practices, concepts and solutions to generate innovations and technologies that the region needs for ATM upgrades. The Asia/Pacific Region is expected to experience one of the highest air traffic growth rates globally. With its germinating ATM modernization efforts, the region provides fertile ground for the integration of the best ideas and concepts from the major ATM transformation programmes in the world, and the test-bedding and validation of these concepts.

3.3 The key to the success of this endeavour is collaboration. Even as ICAO promotes coordination and cooperation among stakeholders in the implementation of the block upgrades, Singapore as a Centre of Excellence for ATM will actively foster cross-boundary and cross-sectoral collaboration for ATM modernization and harmonization. By providing a platform for consultation and collaboration, this initiative will enable the ATM industry to engage users and stakeholders to tailor ATM solutions to fit the local and regional operational needs. Crucially, such solutions will be founded on the ASBU framework.

3.4 In line with the ICAO “One Sky” vision, Singapore plans to share the resultant ATM solutions and uniquely adapted technologies with our regional partners so that the region can collectively move up the ATM value chain, and further the harmonized implementation of ATM upgrades.

3.5 CAAS is already engaging like-minded global partners such as Airbus ProSky, NATS (Services) Ltd and Single European Skies ATM Research Joint Undertaking (SESAR JU) in ATM collaboration that will not only lead to cooperation in advancing ATM modernization, but also bring about greater interregional harmonization to ensure interoperability.

4. CONCLUSION

4.1 Singapore’s Centre of Excellence for ATM will house an ecosystem of research, industry and intellectual clusters, and international aviation organizations to collaborate and delve into ATM research and development for new concepts and solutions to fulfil the region’s unique requirements. A collaborative approach is required for this effort to not just bring about new technologies, but also to harmonise the development efforts to ensure interoperability. The Conference is thus invited to agree to the following recommendation:

Recommendation 1/x – Collaboration as the way forward in the development of new solutions and technologies to fulfil States and air navigation service providers’ needs in air traffic management upgrading

That the Conference:

- a) acknowledge the challenge that each State/air navigation service provider and region will have its own unique requirements and targets for the respective air traffic management modernization programme;
- b) agree that further research and development will be required to realize the new concepts and capabilities as outlined in the aviation system block upgrade including adaptation to local and regional peculiarities; and
- c) endorse the cooperative approach, as adopted by Singapore in its efforts to build a centre of excellence for air traffic management (ATM), as one of the ways in developing and delivering future ATM solutions, and advancing harmonized ATM modernization.

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