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WORKING PAPER

ASSEMBLY — 36TH SESSION

TECHNICAL COMMISSION

Agenda Item 31: Continued evolution of a performance-based global air traffic management (ATM) system

TRANSFORMING TODAY'S AIR TRANSPORTATION SYSTEM TO MEET TOMORROW'S CHALLENGES

(Presented by the United States of America)

EXECUTIVE SUMMARY

This working paper provides an overview of the U.S. Next Generation Air Transportation System (NextGen) and its impact on the global aviation system. The goal of NextGen is to significantly increase safety, security, capacity, efficiency, and environmental compatibility of future air traffic operations. These benefits can be achieved through a combination of new procedures and advances in technology deployed to manage passenger, air cargo and air traffic operations. International harmonization is a key principle of NextGen, and the United States is working with other States to ensure interoperability with their modernization programs. We recommend that ICAO assess NextGen and other future systems to advance harmonization efforts and to recognize the potential need for technical standards development work that may be derived from these programs.

Action: The Assembly is invited to:

a) *provide* information on NextGen to all States interesting in learning how they can adapt this initiative in the development of their own future air transportation systems.

b) *direct* the ICAO Council to identify the appropriate ICAO mechanism to monitor NextGen, SESAR, and other future planning initiatives to ensure global collaboration in the development and acceleration of standards for required future systems.

Strategic Objectives:	This working paper relates to Strategic Objectives A, B, C, D and E.
Financial implications:	No additional resources required.
References:	

1. INTRODUCTION

1.1 Today's U.S. air transportation system[1] is under stress. The demands on air transportation are outpacing our ability to increase system capacity. Operating and maintenance costs of the air traffic system are outpacing revenues and the air carrier industry is going through a period of dramatic change. The security requirements established in the wake of the September 11 attacks have had a significant impact on costs and the ability to efficiently move people and cargo. In addition, growth in air transportation is provoking community concerns over aircraft noise, pollution, and congestion. Adapting our current air transportation paradigm will not be sufficient to meet these challenges. Instead, transformation of today's system is required to ensure a healthy, environmentally friendly, globally interoperable air transportation system for 2025.

1.2 In 2002, the U.S. Congress established the Joint Planning and Development Office (JPDO) to define a national strategy for developing NextGen. The JPDO is a public-private partnership directed by the U.S. Congress to transform the U.S. national air transportation system to meet our projected needs for the year 2025 while simultaneously providing near-term benefits. The NextGen vision for 2025 enables the safe, efficient and reliable movement of large numbers of people and goods throughout the air transportation system in a way that is consistent with national security objectives. The NextGen vision is founded upon an underlying set of principles and enabled by a series of key capabilities that will free the United States of many current system constraints, support a wider range of operations, and deliver an overall system capacity up to three (3) times the current operating levels.

1.3 The United States is not the only State undertaking this type of long-term planning initiative. The European Union and its members are working on the concept and implementation of the Single European Sky (SES), with one technical component being that of the SES Air Traffic Management Research (SESAR) program. Other States have modernization programs in progress to define and implement their own future air navigation systems.

2. BACKGROUND

2.1 For users of the aviation system, their flying experience starts well before they get on a plane. Therefore, NextGen is all encompassing in scope, covering all elements of aviation, not just air traffic management. NextGen will be developed with enough flexibility to accommodate a wide range of users – including very light jets and commercial aircraft, manned and unmanned aircraft, as well as military and general aviation operators. Safety in NextGen is approached in a prognostic fashion, establishing a new safety culture that assesses risk in a predictive environment, instead of the existing reactive context. The system will enable integrated management of environmental performance to foster continued growth of aircraft operations in a future where increased scrutiny of the environmental impacts of aviation is expected.

2.2 Many NextGen air traffic management concepts were based on ICAO's Global ATM Operational Concept, which represents a globally harmonized set of concepts and international requirements for the future. It is our goal to implement systems and technologies for NextGen that are aligned with international standards. This is a mutual goal that we share with other States involved in NextGen cooperation.

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[1] The current air transportation system is a complex array of systems and services used by an ever broadening collection of stakeholders. The term "the air transportation system" means all activities and components related to the safe passage of people and goods by air. This includes related federal lines of business, as well as private industry, state, and local activities.

2.3 Another profound distinction in the development of NextGen is the inclusion of both public and private sector stakeholders in the development and implementation of NextGen. The level of industry (both domestic and international) involvement in NextGen is unprecedented. Currently, over 200 representatives from over 100 companies and non-governmental organizations participate on 9 JPDO working groups established to assess existing programs and develop future solutions in the areas of aircraft design, airports infrastructure, air navigation services, environment, global harmonization, net-centric information, safety, security and weather.

2.4 The JPDO is currently preparing detailed plans for transforming the current system into the NextGen 2025 system. These plans are in development with government and industry stakeholders. The NextGen Concept of Operations (CONOPS) is a document that provides a basic operational description of how NextGen will function. Version 2.0 of the CONOPS was released on 13 June 2007.

2.5 The NextGen CONOPS is being developed concurrently with the NextGen Enterprise Architecture (EA). The NextGen EA represents the plan for how NextGen will be developed, much like a set of blueprints, including the systems that will be needed, the timing for their development, and how they will work together. The NextGen EA is a recognized tool for re-engineering business practices and the underlying technology that supports them. Version 2.0 of the EA was published on 22 June 2007.

2.6 The NextGen Integrated Work Plan (IWP) is a document that shows how current and near-term transformational activities such as Automatic Dependent Surveillance-Broadcast (ADS-B), cooperative surveillance and satellite navigation will be aligned with the planned future system. The NextGen IWP is divided into distinct but interrelated operational improvements, and breaks down the evolution path of NextGen. The NextGen IWP was published on 31 July 2007.

3. DISCUSSION

3.1 *Global harmonization and coordination with other States*

3.1.1 Since 1990, international air travel to and from the United States to points all over the world has grown dramatically. International harmonization of equipment and procedures accommodates both the demands of U.S. users to operate globally without unnecessary constraint, and similarly, to embrace the needs of non-U.S. users to operate in the United States. Users have much to gain when harmonization processes are engaged and manufacturers also benefit from the development of open standards. These efforts contribute to the modernization of systems and help our economies grow. Accordingly, international outreach is a critical component of the NextGen plan.

3.1.2 We know that successful implementation of NextGen will require significant coordination with the international aviation community. To date, we have established partnerships with States that border our flight information regions or are destinations for our major traffic flows so that their input can be included from the earliest stages of NextGen's development.

3.1.3 In 2006, the FAA and the European Commission signed a Memorandum of Understanding (MOU) that establishes a framework for cooperation between NextGen and SESAR. This MOU sets the stage for exploring opportunities to implement compatible technologies in our respective ground and air systems and for the development of common synchronized timelines for the

implementation of new technologies. Our goal is to focus on the early foundational products of both programs and identify interoperability concerns sooner than later.

3.1.4 We have also formalized our cooperation on the development of future air transportation systems with China, Japan, and under the auspices of the North American Aviation Trilateral with Canada and Mexico. These collaborations were developed to align the strategic planning of our respective aviation systems and to identify opportunities to advance seamless operations. We hope to expand our cooperation with other States interested in transforming their own air transportation systems and in learning more about NextGen.

3.2 *Coordination with ICAO*

3.2.1 The United States, along with other States, looks to the ICAO Global ATM Operational Concept with its Global Initiatives, and the ICAO regional implementation plans for guidance and international integration. Because ICAO has established the broad international requirements for a future ATM system, it would be appropriate for ICAO to monitor the development of systems concepts as defined in the plans for NextGen, SESAR and other future planning initiatives, and to identify opportunities for further harmonization and standardization of these plans.

3.2.2 States may also benefit from ICAO's involvement in the development and implementation of these future air transportation initiatives. ICAO should identify an appropriate mechanism to raise greater awareness of these initiatives and to ensure that all States have an opportunity to participate in a global dialogue on the integration of these initiatives.

4. CONCLUSIONS

4.1 Despite the size or scope of a State's air transportation system, each State must recognize its own relevance in the larger global aviation system and take the appropriate actions to ensure the continued viability of our shared system.

4.2 NextGen is a transformation of our current national air transportation system to ensure a healthy, environmentally friendly, globally interoperable air transportation system for 2025. System changes are being implemented now in order to meet our goals for the future.

4.3 International harmonization is a key principle of NextGen. We are fully aware that we cannot build a harmonized system without partnerships with our domestic stakeholders and international counterparts. ICAO should participate in the integration and harmonization of programs such as NextGen and SESAR.

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