ASSEMBLY — 37TH SESSION

TECHNICAL COMMISSION

Agenda Item 36: NextGen and SESAR as part of the global ATM system

KEEPING STANDARDS RELEVANT

EXECUTIVE SUMMARY

An extensive analysis of the NextGen and SESAR programmes was conducted to determine their impact on ICAO Standards, manuals and circulars. Although both programmes are baselined on the *Global Air Navigation Plan* (GANP, Doc 9750), as proposed by Assembly Resolution 36-7, it was found that;

  (i) the programmes have significant differences; and
  (ii) the programmes will result in a significant number of changes to the Standards.

Early identification of the impact of NextGen and SESAR on the ICAO Standards, manuals and circulars will allow ICAO to subject these to international review through the ICAO consultation process; develop and amend the necessary Standards and other documents before the new techniques and technologies are implemented; and ensure harmony within the global air traffic management system.

Both programmes contain operational deliverables termed "operational improvements". These are supported by various "enablers". The "enablers" are technical, operational, procedural, policy or legal prerequisites. The "operational improvements" are defined at the same level of detail that Air Navigation Commission panels deal with. This greatly simplified the analysis task.

GANP would be more effective if it included a framework for the definition of other States' air navigation modernization plans. This framework would be structured with the Global Plan Initiatives at the top, supported by operational improvements and their enablers. Air navigation modernization plans defined this way could then be analyzed by ICAO and subjected to international consultation to ensure harmonization with the global air navigation system.

Action: The Assembly is invited to review the modifications proposed and adopt Appendix B, on the Global Air Navigation Plan, to the Resolution in the Appendix, to supersede Appendix B of Resolution A36-7.

Strategic Objectives:	This working paper relates to Strategic Objective D by proposing an improved planning method for other States' CNS/ATM modernization programmes.
Financial implications:	Resources for the activities referred to in this paper are included in the proposed budget for 2011 to 2013.
References:	Doc 9750, *Global Air Navigation Plan* Doc 9902, *Assembly Resolutions in Force* (as of 28 September 2007)

1.   **INTRODUCTION**

1.1   Following the Forum on Integration and Harmonization of NextGen and SESAR into the Global ATM Framework held in September 2008, an extensive analysis by ICAO on the NextGen and SESAR Programmes revealed that these programmes will generate over 300 changes to ICAO documentation.

1.2   This analysis was conducted with a view to ensuring:

a)   that NextGen and SESAR programmes are aligned with the *Global Air Navigation Plan* (GANP, Doc 9750) and that they will be compatible with each other and be adaptable to the global aviation community;

b)   that NextGen and SESAR developments are fed into the ICAO international consultation process in order to achieve global agreement and hence harmonization; and

c)   that the innovations of NextGen and SESAR are made available globally.

2.   **HOW WAS THE ANALYSIS DONE?**

2.1   The NextGen and SESAR programmes are baselined against the Global Plan Initiatives (GPIs) contained in GANP. Each programme contains deliverables termed "operational improvements". These are supported by various "enablers". The enablers are technical, operational, procedural or even policy or legal prerequisites, required to achieve the operational improvements.

2.2   The operational improvements are generally defined at the same level of technical detail that Air Navigation Commission panels deal with. This simplified the task of analysis as it was easier to identify the appropriate bodies to perform the analysis for each particular operational improvement.

2.3   Both operational improvements and enablers were evaluated to determine if additions to international Standards and Recommended Practices (SARPs), Procedures for Air Navigation Services (PANS) and other documentation were required.

3.   **RESULTS**

3.1   The work identified is divided into two categories:

a)   clearly defined document changes; and

b)   new concepts that require further development.

3.2   In total, over 300 changes to ICAO documentation were identified. Of these approximately 170 are in the first category, while over 130 are in the second category. The second category could be grouped into sixteen unique concept areas. Further work on these is needed in order to determine their impact on the standards development activities.

4.   **NEXT STEPS AND THE CHALLENGE AHEAD**

4.1   The operational improvements resulting in clearly defined changes have specific timelines, so ICAO can program this work with adequate lead time to ensure timely completion.

4.2   The concept development work is slightly more complicated. The dates that the described operational capabilities are needed are known; however, it will be necessary to determine a timeline for ICAO to produce the material. This task is complex as much of the work will also require SARPS development with validation by industry standards-making bodies.

4.3   For each category, ICAO has initiated the "standards roundtable" process in which ICAO will meet regularly with the management personnel of NextGen and SESAR and the various industry standards-making bodies. The intention is to make as much use as possible of the resources and products of the recognized external bodies as called for by Assembly Resolution A36-13.

4.4   In the standards roundtable process, work schedules will be driven by implementation dates. Standards development will be treated like a project. The relationship between the high-level international SARPS and the detailed industry standards will be clear. The work of ICAO and the standards-making bodies will be tightly coupled to save on resources. ICAO will adopt a multi-disciplinary approach to SARPS development.

4.5   All of the SARPS work required by NextGen and SESAR has been identified and will be subject to full consultation with the States and international organizations. This will allow all States to participate in the work.

4.6   Failure to engage the NextGen and SESAR programmes early carries the risk that new techniques and technology could be implemented by some States before the necessary SARPS are developed and subjected to the international consultation process by ICAO.

5.   **BEYOND NEXTGEN AND SESAR**

5.1   Many other States have developed next generation plans for CNS/ATM modernization. As the number of modernization plans increases, so too does the challenge of ensuring harmonization. ICAO is about to begin the task of ensuring harmonization between NextGen and SESAR and sees benefit in extending this to all new air navigation modernization plans.

5.2   The benefits of this approach include:

        a)   the availability of best practices to all; and

        b)   a reduction in transition problems.

5.3   All major air navigation modernization initiatives that have any impact on the global air navigation system should be subject to analysis and assessment for global compatibility as early as possible.

5.4   ICAO should amend the GANP to include a framework for the definition of other States'
air navigation modernization plans requiring them to do the following:

> a)   define the objectives of each air navigation modernization programme in terms of
>   desired operational improvements; and
>
> b)   define the necessary enablers to support these improvements.

5.5   States should then submit this information to ICAO for review so that the impact on
ICAO's work programme and standards development activities can be determined.

5.6   ICAO would then forward this information to the air navigation service providers
concerned with appropriate recommendations which may be as follows:

> a)   for clearly defined needs, engagement in appropriate standards development work;
>   and, if necessary; and
>
> b)   a standards roundtable process like that applied to NextGen and SESAR.

6.   **CONCLUSION**

6.1   ICAO has taken action to ensure that the NextGen and SESAR programmes are
integrated and harmonized into the global air navigation system. Early engagement is essential to allow
the necessary standards to be subject to international consultation and development while still meeting the
programme schedules. Depending on the programme needs, this work may require simple involvement in
Air Navigation Commission panel activities or a coordinated activity like the standards roundtable
process described in this paper.

6.2   There is a need for ICAO to amend GANP to include a framework which will allow
ICAO to easily analyze the impact of other States' air navigation modernization plans on the global ATM
system and then take appropriate action needed to ensure global harmonization.

6.3   The Assembly of ICAO is invited to approve the resolution given in the Appendix which,
calls on ICAO to amend the GANP as discussed in this paper and to take the necessary actions to ensure
harmonization in the global air navigation system.

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APPENDIX

DRAFT RESOLUTION FOR ADOPTION BY THE
37TH SESSION OF THE ASSEMBLY

Resolution 36/2: ICAO global planning for safety and sustainability

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Appendix B

Global Air Navigation Plan

Whereas the enhancement of the efficiency of aviation operations is a key element of the ICAO Strategic Objectives;

Having adopted Resolution A35-15, a consolidated statement of continuing ICAO policies and practices related to a global air traffic management (ATM) system and communications, navigation and surveillance/air traffic management (CNS/ATM) systems; and

Noting the acceptance on 30 November 2006 by the Council of the new version of the Global Air Navigation Plan (GANP); and

Recognizing that many States are developing new generation plans for their own air navigation modernization.

The Assembly:

1.   *Instructs* the Council to amend the GANP to include a framework that will allow ICAO to easily analyze the impact of States' air navigation modernization plans on the global system and then take appropriate action as needed to ensure global harmonization.

~~1~~2.   *Calls* upon States, ~~P~~planning and ~~I~~implementation ~~R~~regional ~~G~~groups (PIRGs) and the aviation industry to utilize the guidance provided in the GANP for planning and implementation activities~~;~~.

~~2~~3.   *Urges* Contracting States, industry and financing institutions to provide the necessary support for coordinated implementation of the GANP, avoiding duplication of effort~~;~~.

4.   *Urges* States that are developing new generation plans for their own air navigation modernization to share their plans in a timely manner with ICAO for review and assessment to ensure global compatibility and harmonization; and

~~3~~5.   *Instructs* the Council to ensure that the GANP is continuously maintained up to date in light of further operational and technical developments, in close collaboration with States and other stakeholders~~;~~.
~~and~~.

~~4.   *Urges* the Council to facilitate the development and monitor the implementation of regional, subregional and national plans on the basis of the GANP.~~

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