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WORKING PAPER

ASSEMBLY — 39TH SESSION

TECHNICAL COMMISSION

Agenda Item 36: Aviation safety and air navigation implementation support

AVIATION SYSTEM BLOCK UPGRADE (ASBU) IMPLEMENTATION AND REPORTING

(Presented by Canada and the United States)

EXECUTIVE SUMMARY

The *Global Air Navigation Plan* (GANP; Doc 9750) provides a framework for coordinated planning and implementation of air navigation system improvements by States, Planning and Implementation Regional Groups (PIRG), Air Navigation Service Providers (ANSP), aircraft operators and avionics manufacturers. The Aviation System Block Upgrade (ASBU) framework supports coordinated and complementary efforts between industry, regulators and service providers

To better achieve interoperability and seamlessness in the planning and implementation of aviation system improvements, it is important for stakeholders to be aware of the status of planning and implementation in other States and ICAO Regions. This paper proposes a standardized methodology for assessing and reporting ASBU implementation to support timely identification of implementation challenges and provide more precise information concerning the capabilities being implemented by States and ICAO Regions.

Action: The Assembly is invited to:
a) endorse the proposed assessment and reporting methodology; and
b) recommend States and PIRGs use the methodology and related documents to report their ASBU implementation status.

Strategic Objectives:	This working paper relates to the Air Navigation Capacity and Efficiency Strategic Objective.
Financial implications:	None
References:	Doc 10022, *Assembly Resolutions in Force* (as of 4 October 2013) Doc 9854,*Global Air Traffic Management Operational Concept* Doc 9750, 2013-2028 *Global Air Navigation Plan* (Fourth edition) *Working Document for the Aviation System Block Upgrades* (Edition 28 March 2013) A39-WP/239 – Aviation System Block Upgrade (ASBU) Handbook

1. INTRODUCTION

1.1 The Aviation System Block Upgrade (ASBU) planning and implementation framework was endorsed by the 38th Assembly of the International Civil Aviation Organization (ICAO) which took place at ICAO Headquarters in Montréal, Canada, from 28 September to 4 October 2013. The ASBU framework and Modules are documented in the Fourth Edition of the *Global Air Navigation Plan* (GANP, Doc 9750).

1.2 The ASBU framework is meant to "provide clear guidance on the guiding operational targets and supporting technologies, avionics, procedures, standards and regulatory approvals needed to realize them" and to establish "a framework for incremental implementations based on the specific operational profiles and traffic densities of each State" (A38-WP/39 paragraph 2.1 refers). As elaborated in A39-WP/239 "Aviation System Block Upgrade (ASBU) Handbook", the ASBU Modules can be further refined into Elements, each of which represents a specific technological or procedural change that supports the capability improvement defined for the Module.

1.3 States and Regions are expected to assess the ASBU Modules for applicability and then plan for the implementation of those capabilities which are required; in practice, the assessment and implementation takes place at the Element level. Seamlessness and interoperability between States and between Regions is possible when planning and implementation is coordinated at the Element level. This requires visibility of other States' and Regions' detailed planning and implementation status and a common understanding of the reported status.

2. ASSESSMENT AND REPORTING OF ASBU IMPLEMENTATION STATUS

2.1 Canada and the United States have analysed the need for the Elements that comprise the ASBU Modules on an individual State basis and on a North American (NAM) regional basis. Canada and the United States, being the only States within the ICAO NAM Region, do not operate as a PIRG for regional planning purposes. Services in the ICAO NAM Region are provided by Canada and the United States and on the basis of bilateral agreements between them as required. This unique two-State composition provided the opportunity to develop a workflow which could be applied by a single State or region or groups of States or regions. The main benefit of using this workflow is that status can be reported at each milestone, thereby allowing direct comparisons between States or Regions in relation to each Element.

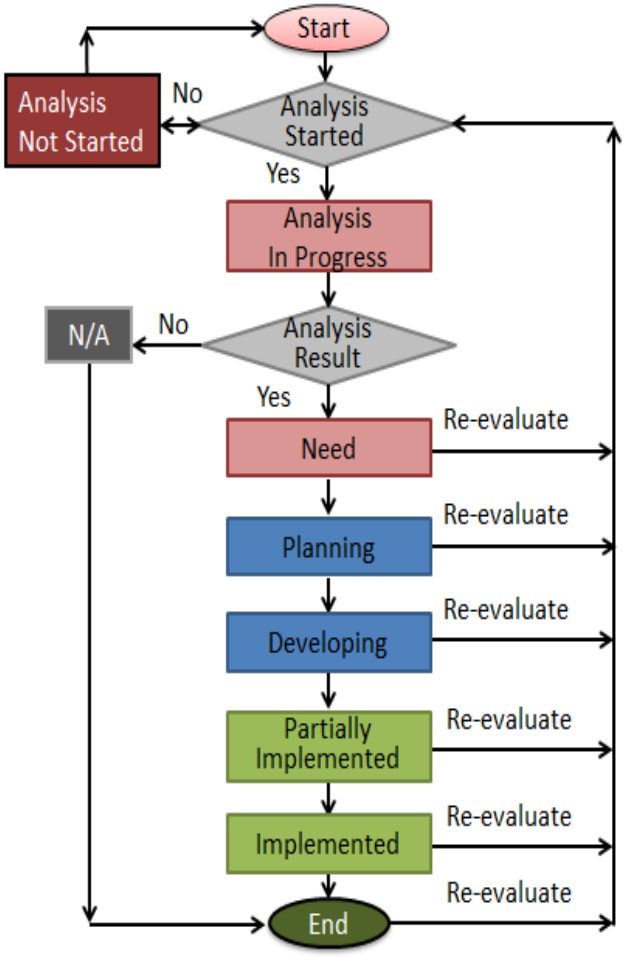
2.2 The proposed milestones represent important and definable stages in the planning and implementation process. Reporting against common milestones provides a basis for a more precise understanding of how ASBU implementation is proceeding and could highlight where challenges are being encountered. For example, if States had not yet performed a Need Analysis, and this status remained the same over time, this could indicate where support or guidance was required at the earliest stage of implementation planning. A State or a group of States is possibly being "left behind" if they are not able to assess whether ASBU Module Elements would address their State (or regional) ANS improvement requirements.

2.3 Comparing implementation status between States and between Regions could reveal trends, such as numerous States or Regions determining that certain Elements weren't required or that implementation of certain Elements was not progressing beyond the Planning or Developing phase. Such

information could be valuable for determining planning and assistance priorities and further development of certain ASBU Modules and/or Elements.

2.4 It should be highlighted that the workflow explicitly emphasizes that ASBU Elements should be regularly re-evaluated by the State or Region for applicability in addressing air navigation system improvement requirements. This is necessary to ensure that previous decisions not to implement specific technological or procedural changes will be reviewed, and possibly revised, as circumstances change and air navigation system requirements evolve.

2.5 The proposed workflow is pictured below. Each milestone is represented by a rectangle, and defined as follows:



Analysis Not Started: The requirement to implement this Element has not yet been assessed
Analysis In Progress: A Need Analysis as to whether or not this Element is required is in progress

N/A: The Need Analysis concluded that it was not required to implement this Element

Need: The Need Analysis concluded that implementation of the Element is required, but no planning or other implementation activities have yet begun

Planning: The resources to implement the Element have been identified, arrangements are being made to ensure those resources will be available when and where needed to support the implementation and implementation activities have been scheduled

Developing: Pre-implementation activities, such as construction of equipment, development of procedures, etc. have been initiated

Partially Implemented: The Element is partially operational, or, is operational at only some of the sites where it is required

Implemented: The Element is fully operational at all of the sites where it is required

2.6 This approach tracks implementation progress of ASBU Elements to address to State, multi-state or regional air navigation requirements. This aligns to the performance-based planning approach detailed in the *Global Air Traffic Management Operational Concept* (Doc 9854), whereby the requirements for system performance are identified (preferably collaboratively with the involvement of all stakeholders) and possible solutions are assessed for applicability.

2.7 Appendix A provides an example reporting form for a single State and an example reporting form for an imaginary group of 5 States. These examples illustrate how the proposed workflow and milestones support direct comparisons between States, Regions or groups of States or Regions. Also provided is an example of the type of graph which could be constructed from such reports, again supporting straight forward comparisons between States, Regions or groups of States or Regions.

2.8 This approach would also allow other stakeholders, such as avionics manufacturers, regulatory authorities, aircraft operators, etc., to indicate their implementation status. As regards ASBU Block 1 and later Modules and Elements, it would be beneficial for the aviation community as a whole to know how and whether ASBU preparatory and planning activities were proceeding. Such knowledge would support the ASBU planning concept that technology, regulations, certifications, etc. will be ready at the specified Block timeframes.

3. CONCLUSION AND RECOMMENDATIONS

3.1 The ASBU framework supports interoperable and complementary enhancement of the air navigation system across State and Regional boundaries. Because specific implementations are planned and take place at the Element level, it would be beneficial if there were a pragmatic and straight forward method to track and report implementation planning and progress at this level.

3.2 Interoperability can more easily be achieved if adjacent States and Regions are able to compare implementation decisions at the Element level. Complementary planning and focussed assistance can be more easily achieved if all aviation stakeholders are able to directly compare their ASBU planning and implementation status.

3.3 The Assembly is therefore invited to consider recommending that States and Regions use the workflow described in paragraph 2.5 above as the basis for reporting ASBU planning and implementation status.

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