International Civil Aviation Organization

A38-WP/79
TE/14
30/7/13

WORKING PAPER

ASSEMBLY — 38TH SESSION

TECHNICAL COMMISSION

Agenda Item 32: Air Navigation — Policy

WORK PROGRAMME PRIORITIES

(Presented by Lithuania on behalf of the European Union and its Member States[1] and the other Member States of the European Civil Aviation Conference[2], and by EUROCONTROL)

EXECUTIVE SUMMARY

The recommendations of the AN-Conf/12 Conference have resulted in a long list of tasks for ICAO, which have since been prioritized by the Secretariat and the ANC to establish the proposed triennial work programme. This paper highlights the criticality of a consistent approach and optimized process to address standardization needs, work programme and priorities, in order to ensure that all of the important provisions needed to support key elements of ATM development are delivered, at the times they will be required to support the implementation steps described in the Global Air Navigation Plan (GANP). The paper also presents key issues that need be addressed with priority in this context.

Action: The Assembly is invited to request ICAO to:

a) take, in establishing its work programme for the next triennium, the necessary steps in order to:

1) give suitable priority to the actions that are on the critical path for the timely production of provisions supporting the implementation of the GANP;
2) better exploit the opportunities in Resolution A37-15 for sharing work with other organisations;
3) take into account the intended regional implementation of Aviation System Block Upgrades (ASBUs) and the resources able to be mobilised at the regional level; and

b) optimize the working arrangements to take the above into account.

Strategic Objectives:	This working paper relates to all Strategic Objectives.
Financial implications:	None directly. Discussion of the best use of available budget and resources.
References:	Doc 9750, *Global Air Navigation Plan for CNS/ATM Systems*, 2013 Edition proposed to the Assembly Doc 10007, *Twelfth Air Navigation Conference*

[1] Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden and United Kingdom.

[2] Albania, Armenia, Azerbaijan, Bosnia and Herzegovina, Georgia, Iceland, Republic of Moldova, Monaco, Montenegro, Norway, San Marino, Serbia, Switzerland, The former Yugoslav Republic of Macedonia, Turkey and Ukraine.

1. INTRODUCTION

1.1 The recommendations of the Twelfth Air Navigation Conference (AN-Conf/12) have resulted in a long list of tasks for ICAO, which have since been prioritized by the Secretariat and the Air Navigation Commission within a proposed triennial work programme, due to be addressed at the Assembly in the context of ICAO's budget and resources.

1.2 This paper highlights the criticality of a consistent approach and optimized process to address standardisation needs, work programme and priorities. This is to ensure that all of the important provisions needed to support key elements of ATM development are delivered and available, at the times they will be required, including in those areas which will be the first to implement such provisions, to support the implementation steps described in the Global Air Navigation Plan (GANP). The paper also presents key issues that need be addressed with priority in this context.

2. DISCUSSION

2.1 The GANP defines what needs to be done to deliver a level of ATM performance which will meet the needs of States and the aviation community. The plan provides for a sequence of changes which are dependent upon having first developed and validated the necessary standards, recommended practices and other guidance material (These changes will also of course then be dependent upon the subsequent industrialisation and deployment steps having been taken). This puts an emphasis on the timely delivery and availability of all the enabling products – and in the first place and most essentially – on the production of the necessary standards and other provisions. The products for standardization relate to ICAO's Standards and Recommended Practices, but go beyond amendments to the Annexes to the ICAO Convention and may include the PANS and other supporting guidance material, as well as industrial standards necessary to aviation equipment.

2.2 The volume of work for ICAO will be influenced by the way in these standards and other provisions are developed. Resolution A37-15 set a clear framework for standardization by stating, inter alia, that:

> *3. SARPs and PANS shall be drafted in clear, simple and concise language. SARPs shall consist of broad, mature and stable provisions specifying functional and performance requirements that provide for the requisite levels of safety, efficiency and interoperability. Supporting technical specifications, when developed by ICAO, shall be placed in separate documents to the extent possible;*
>
> *4. in the development of SARPs, procedures and guidance material, ICAO should utilize, to the maximum extent appropriate and subject to the adequacy of a verification and validation process, the work of other recognized standards making organizations. Material developed by these other standards-making organizations may be deemed appropriate by the Council as meeting ICAO requirements; in this case such material should be referenced in ICAO documentation;*

2.3 The Resolution clearly indicates that not all provisions have to be developed by ICAO itself, and anticipates a distinction between SARPs at functional level and other material, either developed or referred to by ICAO. This provides a means of addressing the challenge posed by the need to address the many recommendations made by AN-Conf/12, and deriving from other ICAO tasks, at a time when the ICAO budget and resources are under severe pressure. Instead of simply delaying work, it is proposed that other ways of delivering the required products are considered, avoiding duplication and making use of material developed by others.

2.4 Two main approaches are suggested: making better use of the ICAO working arrangements and the resources available (Secretariat and other); and delegation of work to other entities.

2.5 The detailed optimization of the working arrangements is a matter for the ICAO Secretariat. Nevertheless, general orientations are found in Recommendation 6/13 of the AN-Conf/12, bearing in particular on an increased project and delivery orientation in the work of panels, streamlined work programmes, additional coordination among groups, and the avoidance of duplication of work with other bodies. An opportunity is also identified for panels to focus on the performance requirements for GANP/ASBU, leaving the subsequent technical specifications to other bodies that can support ICAO. It was also recommended that account be taken of regional structures.

2.6 An important issue highlighted at AN-Conf/12 was the need to strike a proper balance between being able to progress the work quickly, and the need to ensure an appropriate geographical representation amongst those involved, and the exposure of new material, in order in each case to facilitate its eventual adoption. A well-judged selection by ICAO of experts from States and regions, notably of those with experience in new ATM programmes developments with an urgent need for implementation, could very much facilitate the future updating of the GANP and ASBUs. Equally important will be the formal ICAO "endorsement" of non-ICAO provisions, as a legal basis for their implementation. Many organisations outside ICAO already have a validation process in place, and this might be made an ICAO requirement for the use of material developed by others. Resolution A37-15 provides general guidance in this respect, and this could be further detailed in working arrangements.

2.7 It is therefore proposed that ICAO fully exploit Resolution A37-15 and in particular considers the following in the course of revisiting the work programme of the groups and panels:

a) while the ASBUs are most definitely about global interoperability, not all the modules or enabling technologies imply a tight synchronisation of the underlying features all around the world. This was highlighted at AN-Conf/12 (see Recommendation 6/12). In practice, this allows progress to be made on some topics without immediately impacting all States, while nonetheless preserving interoperability conditions.

b) on the basis of the intended deployment of the ASBU modules in the regions, the opportunity offered by the differences in implementation dates should be taken to focus on the contributions of the potential initial users of the new provisions. Typically, material developed first at a regional level could be proposed for upgrading into a global provision at a later stage. This would require ICAO to keep an open record of on-going work in order to prevent duplication, and ensure visibility of the overall picture. Where needed, a group could be formed (see also paragraph 2.6 above) with participation from regions that have developed new programmes for new technologies and concepts. This too is in the spirit of Recommended Practices, and could lessen the burden on panels and study groups, leaving them more time to address issues still to be developed.

c) where appropriate, ICAO could therefore, put a greater focus on formulating high level standards and work on inventories (as part of the standardisation road map), focussing on real needs in a multidisciplinary approach, rather than itself seeking to elaborate the technical specifications needed to support such standards. This would also recognise that States often have difficulty in providing panels with the expertise needed for such elaboration. ICAO could instead work in close coordination with relevant standard-making organizations, to organize the sharing of work (and alignment of plans), and to arrange for the recognition of their inputs as references made in ICAO documentation. This could take the form of a kind of standing standardization forum. As these bodies often have already a validation process in place, such cooperation would also ease the validation requirements for ICAO; and

d) not all of the ATM features are so sensitive to full interoperability as to need to be developed, in all their aspects, on a global basis. This is an additional argument for a

more distributed way of working. The need for global work is nevertheless probably the case in relation to the information of system-wide information management (SWIM), flight and flow – information for a collaborative environment (FF-ICE) and performance-based navigation (PBN) issues, lying as they do at the very heart of interoperability and involving a transition from legacy systems.

2.8 Finally, it is important to ensure that work on the different blocks is scheduled and prioritized with regard to the date at which the standards in question need to be in place, and the time needed to develop them, and not simply to assume that development of the modules of Blocks 2 and 3 is automatically a lesser priority. A standardization roadmap, maintained as a living document, will greatly assist in this, making clear which steps are needed in the development of new ICAO provisions, and clearly identifying the different components of new concepts and different phases as enablers for future steps.

2.9 Regarding the prioritization of the work and its content, it is considered that there should be a priority given to those standardization needs identified in the GANP to support the ASBUs and its modules, as well as the enabling technology roadmaps. These needs can also be associated with the timescales of the major ATM modernization programmes that will use them.

2.10 In this respect, the standardization needs listed in the table in the Appendix, together with the date at which it is estimated that the new provisions as needing to be available, are considered as critical for the European developments and should be addressed with high priority by ICAO.

2.11 At AN-Conf/12 suggestions were made for more provisions about training. There is a need to develop suitable provisions (guidance principles, guidance material and other provisions, including SARPs as necessary) to harmonize ATM personnel training and licensing and the use of synthetic training devices.

2.12 The implementation of the recommendations of AN-Conf/12 and the 6th Air Transport Conference (ATC/6) with regard to the financial aspects of service provision, in relation to incentives and BEBS, should receive adequate priority of ICAO, for the development of provisions for service priority policy in support of ATM system modernisation.

3. CONCLUSION

3.1 The Assembly is invited to request ICAO to:

a) take, in establishing its work programme for the next triennium, the necessary steps in order to:

1) give suitable priority to the actions for the timely production of provisions supporting the implementation of the GANP;

2) better exploit the opportunities in Resolution A37-15 for sharing work with other organizations;

3) take into account the intended regional implementation of ASBUs and the resources able to be mobilized at the regional level; and

b) optimize the working arrangements to take the above into account.

— — — — — — — —

APPENDIX

HIGH PRIORITY STANDARDIZATION NEEDS IN SUPPORT OF THE GANP – EUROPEAN VIEW

Based on but not limited to the Standardization Roadmap of the European ATM Master Plan, the following activities are seen as needed by ICAO:

Activities	**Block and module**	**Estimated date for implementation**
Moving from Airspace to 4 D Trajectory management		
Check Annex 10 for the possible impact of ASAS Spacing applications as described in latest EUROCAE/RTCA standards.	B1-ASEP	2015
FF-ICE, Step 1 (FF-ICE/1) for the pre-departure phase using new XML data exchange standard model, FIXM.	B1-FICE, B2-FICE	2015
4D Trajectory	B1-FICE, B2-FICE, B1-TBO, B1-SWIM, B1-DATM	2015 (for Block 1 use)
Update of PANS-ATM to include optimised CPDLC message set including oceanic and new continental needs. For the uplink of clearances or instructions from ATC to the aircraft.	B0-TBO, B1-TBO, B0-OPFL	2019-2020
Update of the PBN Manual to include Enhanced controlled time of arrival (CTA) for applying multiple time constraint management.	B1-TBO	2019-2020
Network collaborative Management		
SBAS L1/L5 Signal specification	NAV Roadmap for B1-APTA and modules enabled by PBN	2014
Expanding of ICAO Circular 330 to cover full civil-military coordination and FUA processes	B1-NOPS, B1-FRTO	2014
Reflect GPS L5 Specifications in Annex 10 in support of multi-constellation GNSS using the existing EUROCAE/RTCA standards.	NAV Roadmap for B1-APTA, & possible impact on surveillance related modules and modules enabled by PBN	2015
RPAS Integration into non-segregated airspace, addressing regulatory and R&D aspects impacting all Annexes	RPAS roadmap and general issue and in Blocks 1-3	2016 (for Block 1 use)
ICAO Provisions (update of existing docs) to specify Service priority principles	Development of provisions for service priority policy in support of ATM system modernisation. Ref. BEBS incentivization	2014
Airport Integration and throughput		
Initial provisions for GBAS Cat II&III precision approaches based on GPS L1	B1-APTA	2014
Ground based Doppler (X-Band and Lidar)	B1-WAKE, B2-WAKE	2014
A-SMGCS Levels 3&4	B2-SURF	2016
Update of PANS-ATM for curved approach and automatic RNP transition to XLS/LPV, single time constraint management (CTA) and enhanced A-RNP as well as LPV approach based on SBAS.	NAV Roadmap for B1-APTA, B1-CDO	2019-2020
Airborne wake vortex prediction and information exchange	B1-WAKE, B2-WAKE	2020
Full provisions for GBAS Cat II&III precision approaches based on multi constellation and multi frequency	B1-APTA	2020

SWIM		
Harmonise in Annex 15 the Aeronautical Information Services and Quality of Services taking into consideration the AIXM Structures.	B0-DATM	2015
Annex 3 needs to include how to exchange METAR, SPECI, TAF and SIGMET using the new XML data exchange standard model WXXM.	B1-DATM	2015
Inclusion in Annex 15 and Annex 14 of information, as provided by EUROCAE standards ED-99C and ED-119B on aerodrome mapping database.	B0-DATM, B1-DATM	2016
SWIM based services, including technical and operational requirements for the service (see the relation with regulatory activities in Europe about SWIM Governance)	B1-SWIM	2019
Standards to cover Information security	General issue and in particular for B1-SWIM & B2-SWIM	TBD
Conflict management and Automation		
DOC 9925 needs to include Swift Broad Band Inmarsat service.	COM Roadmap to support modules using ADS and ADS-B services	2015
Terrestrial L-Band Technology (LDACS 1or2)	COM Roadmap for B3-TBO and other B3 modules	2019
ATN over mobile IP	COM Roadmap for supporting B2/B3 modules	2022
Human performance		
Develop suitable provisions (guidance principles, guidance material and other provisions, including SARPs as necessary) to harmonize ATM personnel training and licensing and the use of synthetic training devices	B1	2017

— END —