



WORKING PAPER

ASSEMBLY — 41ST SESSION

EXECUTIVE COMMITTEE

Agenda Item 23: Innovation in Aviation

**OPTIMIZING DEVELOPMENT OF ICAO STANDARDS AND ASSOCIATED PROCEDURES
FOR EFFECTIVE IMPLEMENTATION**

(Presented by the United States and co-sponsored by Thailand)

EXECUTIVE SUMMARY

ICAO is empowered by Article 37 of the *Convention on International Civil Aviation* (Doc 7300) to adopt and amend Standards and Recommended Practices (SARPs) for the purpose of obtaining the highest practicable degree of uniformity in aviation worldwide. Development of new or amended ICAO Standards include a specified applicability date that, once published, requires an additional amendment to adjust should the date need modification. This approach, absent a comprehensive supporting framework in the development process, has led to the need to discuss and delay applicability dates, or to employ other ad-hoc approaches on a case-by-case basis. The increasing complexity and connectivity of aviation systems and procedures highlights a need to re-examine the current method of determining applicability date(s) and consider complementary improvements to other aspects of the Standards-development process. This paper offers points to consider in identifying the types of Standards most likely to be affected and ideas for solutions to optimize ICAO provisions for worldwide implementation.

Action: The Assembly is invited to:

- a) acknowledge the need to optimize the development process for certain ICAO Standards as described in this paper, with a focus on facilitating effective implementation; and
- b) adopt the proposed revision to Assembly Resolution A39-22, *Formulation and implementation of Standards and Recommended Practices (SARPs) and Procedures for Air Navigation Services (PANS) and notification of differences* directing the ICAO Council to inter alia:
 - 1) evaluate the root causes of global challenges in meeting specified applicability dates for certain Standards;
 - 2) identify and define the Standards likely to be affected by these challenges;
 - 3) identify and apply process improvements applicable to developing the impacted provisions; and
 - 4) assess the effectiveness of the procedural changes.

<i>Strategic Objectives:</i>	This working paper relates to the Safety Strategic Objective.
<i>Financial implications:</i>	This working paper contains no substantial financial implications.
<i>References:</i>	AN-WP/8848, <i>Impact Assessments</i> AN-Conf/13-WP/297, <i>Evolution of SARPs Drafting and Implementation</i> A39-WP/514, <i>Report of the Technical Commission on Agenda Item 35</i> A39-WP/205, <i>Assisting Implementation through the Application of Impact Assessments and Implementation Task Lists During the Standards-Making Process</i> A39-WP/86, <i>Enhancing the Implementation of International Aviation Provisions</i> A39-WP/37, <i>Implementation of ICAO SARPS</i> Doc 10150, <i>Assembly Resolutions in Force (as of 4 October 2019)</i> Doc 7300, <i>Convention on International Aviation</i>

1. INTRODUCTION

1.1 The flying public, industry, and government leaders expect ICAO to move quickly to address identified or potential aviation safety risks, and to accommodate new users, business models, and increasingly complex aviation-related technologies. However, the implementation of some new Standards developed to contend with these factors is equally complex, and ICAO, States, and stakeholders need to further evolve our interactions and processes to ensure both feasibility and accountability. Implementation timelines established when developing the Standards must be achievable, or risk undermining the value of the Standards.

1.2 Since the 39th Session of the Assembly in 2016, States, international organizations, and ICAO have recommended various approaches to enhancing the Standards and Recommended Practices (SARPs) and Procedures for Air Navigation Services (PANS) development and review processes. However, challenges to global implementation of an assortment of provisions becoming applicable during this period indicate there is a need to make additional adjustment focusing more specifically on a limited grouping of Standards and associated PANS, where relevant, and encompassing procedural elements beyond looking only at how the applicability dates may be determined.

2. DISCUSSION

2.1 SARPs are designed to improve global aviation safety and efficiency in a harmonized and standardized approach. In recent years, there have been instances where States and stakeholders have been hampered in their efforts to implement new and amended ICAO Standards by prescribed applicability dates that were not achievable from the outset, on a global scale. The COVID-19 pandemic introduced or magnified additional issues affecting production supply chains and delays in supporting systems development, which further highlight the complexity of creating realistic applicability dates for Standards and affiliated PANS.

2.2 Some pertinent examples are the ongoing experiences with implementation of the Global Aeronautical Distress and Safety System autonomous distress tracking (ADT); 25-hour cockpit voice recording provisions; electronic personnel licensing; and performance-based communication and surveillance. In these and other similar scenarios, there is a need to account for development of manufacturing solutions (i.e., new, modified, retrofit equipage); promulgation of requirements and guidance by regulators and development of an enforcement framework; creation of infrastructure that supports the new mandates; and implementation of new procedures by the responsible service providers. The dependencies among the steps needed to implement these types of solutions fully, and on the scale envisioned, add complexity.

2.3 In order to design a standards development process to anticipate and mitigate these types of challenges against the backdrop of an increasingly intricate, globalized, and interdependent aviation system, it is necessary to:

2.3.1 *Evaluate root cause(s) for the recent challenges in meeting prescribed applicability dates, such as by conducting one or more case studies.* A detailed analysis is beyond the reach of this paper, but the following considerations may be relevant:

2.4 Successful implementation of new ICAO Standards by Member States and stakeholders is dependent on balancing scope, timelines, and resources. ICAO, committees, and expert groups, under the oversight of the Air Navigation Commission and Council may identify the appropriate minimum thresholds

for proposed new Standards and their intended outcomes, but one reason for the implementation difficulties may lie with an inaccurate assessment of their impact and implementation complexity on the State, industry, and other stakeholders. Without this vital information, ICAO may be proposing provisions that are not readily implementable in the designated timeframes. This is particularly evident with ICAO Standards related to equipage mandates to meet operational requirements.

2.4.1 Applicability dates may be driven by the perceived level of risk to the safety and/or efficiency of the aviation system. Applicability dates ensure that there is accountability by the aviation community to address identified issues and reflect a level of urgency to resolve them; however, the timelines must be realistic and achievable in order to be answerable.

2.4.2 All of the actors in the implementation of ICAO provisions, to include ICAO, Member States, and industry, are constrained by finite resources the application of which must be prioritized. The profile of resource impacts associated with adopting new Standards and the resource efficiencies gained through harmonized international approaches are not the same for all Member States or their regulated entities. Understanding the economic impact of new Standards is crucial to their successful development and implementation.

2.5 *Identify and define impacted provisions.* It will be beneficial to pinpoint the common elements to support identifying early in the development process those Standards that may prove especially complicated to implement. These could include, for example, Standards:

- a) crossing multiple Annexes/Panels or expert groups in the development of the provisions and guidance material, such as provisions in one Annex that require consequential amendments to other Annexes and or modifications to PANS (and thus, frequently the Regional Supplementary Procedures, as well);
- b) requiring a change in equipage or NEW equipage (i.e., must be designed to purpose) to implement;
- c) needing completely new enabling solutions to implement the concept – i.e., capability or tool must be created to support global implementation (e.g., the Location of an Aircraft in Distress Repository);
- d) necessitating the participation of non-traditional stakeholders to implement the concept as envisioned, which may not be subject to regulation by the aviation authorities; and
- e) whose economic impact is estimated to meet or exceed a specified threshold (which would need to be established).

2.6 *Identify and apply process improvements applicable to developing the impacted provisions.* There are many possible solutions that ICAO could further study and incorporate into the standards development process. Among them are the following:

2.6.1 Enhance the impact assessment by establishing a standard framework for identifying and mapping implementation dependencies with solicited input from States and stakeholders. Effectively mapping dependencies can identify implementation risks while also providing technical solutions well in advance of the applicability date. ICAO State letters promulgating proposed amendments for consultation could be a vehicle to conduct structured solicitation.

2.6.2 ICAO could consider an iterative approach by promulgating initial solutions through the use of Recommended Practices (RPs) in cases where proposed new or updated standards development require more time and study. These RPs could then be modified prior to becoming Standards. Additionally, utilizing multiple limited-scoped Standards with staggered applicability dates, in lieu of a single broader-scoped Standard, may help focus on the priority elements necessary to progress towards the intended outcome.

2.6.3 Improve implementation guidance by replacing the standardized checklist distributed with State Letters notifying the adoption of amendments with more detailed lists specific to the new provisions describing the actions stakeholders will need to take. This would ensure that implementation support documentation (e.g., manuals) is available at the time of adoption.

2.7 The above concepts could be integrated into the work of the Panels, committees, and expert groups developing new SARPs, PANS, and guidance, leveraging those bodies and the ICAO Secretariat in their supporting role in the SARP development process.

2.8 Lastly, it is important to assess the effectiveness of the procedural changes to determine whether they are producing the desired results, and make adjustments if they are not.

3. CONCLUSION

3.1 The United States recognizes the success of the global aviation community in working through ICAO to enhance global aviation safety and efficiency; however the processes we collectively employ need to reflect the realities of a complex and changing aviation ecosystem, present and future. There is opportunity to optimize ICAO's standards-development process to meet the realities of today and our expectations for the future. This work is important to the continued effectiveness of ICAO as the forum for obtaining the highest practicable degree of uniformity and interoperability in civil aviation worldwide, and particularly with regard to those Standards calling upon all sectors to converge in meeting a new operational condition.

APPENDIX

A41-xx: Formulation and implementation of Standards and Recommended Practices (SARPs) and Procedures for Air Navigation Services (PANS) and notification of differences

Whereas Article 37 of the Convention on International Civil Aviation requires each Member State to collaborate in securing the highest practicable degree of uniformity in regulations and practices in all matters in which such uniformity will facilitate and improve air navigation;

Whereas Article 37 of the Convention requires the Organization to adopt and amend international Standards and Recommended Practices and procedures and states the purpose of and the matters to be dealt with in that action, and Articles 38, 54, 57 and 90 contain additional relevant provisions;

Whereas in accordance with Article 38 of the Convention any Member State which finds it impractical to comply in all respects with any international standard or procedure or deems it necessary to adopt regulations or practices differing therefrom is obliged to give immediate notification to ICAO;

Whereas the Assembly deems it advisable to establish certain policies to be followed in complying with these provisions of the Convention;

Recognizing the effective implementation of SARPs and PANS promotes safe, secure and sustainable development of international civil aviation;

Recognizing that making differences information easily available to all stakeholders in a timely manner is important to promote safety, regularity and efficiency in international civil aviation;

Noting that many Member States experience difficulty in fulfilling their obligations under Articles 37 and 38 of the Convention and keeping pace with frequent amendments to Annexes;

Recognizing that up-to-date ICAO technical guidance material provides valuable assistance to Member States in the effective implementation of SARPs, PANS and Regional Plans;

Recognizing that substantial resources are required to develop and maintain all ICAO technical guidance material for SARPs and PANS;

Noting the increase of the number of notified differences to ICAO;

Recognizing that there is a strong need for all available means to be sought and employed in encouraging and assisting Member States in overcoming their difficulties in implementation of SARPs and PANS; ~~and~~

Recognizing that implementation of a Standard is increased globally through a development process that encourages inclusion of perspectives among all States and relevant industry stakeholders; ~~and~~

Recognizing that certain Standards, including but not limited to specifying new operational conditions to be supported by new or modified equipage, require comprehensive, integrated assessment and implementation planning during their development to achieve worldwide execution;

The Assembly:

1. *Calls on* Member States to reaffirm their commitment to abide by the obligations under Articles 37 and 38 of the Convention;
2. *Resolves* that SARPs and PANS shall be amended as necessary to reflect changing requirements and techniques and thus, inter alia, to provide a sound basis for global and regional planning and implementation;
3. *Agrees* that subject to the foregoing clause, a high degree of stability in SARPs shall be maintained to enable the Member States to maintain stability in their national regulations. To this end amendments shall be limited to those significant to safety, regularity and efficiency and editorial amendments shall be made only if essential;
4. *Reiterates* that 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, regularity and efficiency. Supporting technical specifications, when developed by ICAO, should be translated in all working languages of ICAO in a timely manner and shall be placed in separate documents to the extent possible;
5. *Instructs* the Council to 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 in the development of SARPs, PANS and ICAO technical guidance material. 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;
6. *Resolves* that to the extent consistent with the requirements of safety, regularity and efficiency, SARPs specifying the provision of facilities and services shall reflect a proper balance between the operational requirements for such facilities and services and the economic implications of providing them;
7. *Instructs* the Council to consult Member States on proposals for the amendment of SARPs and PANS before the Council acts on them, except when the Council may deem urgent action to be necessary. Furthermore, subject to the adequacy of the verification and validation process, technical specifications may be acted upon by the Council without consultation with Member States. Such material shall however be made available to Member States upon request;
8. *Resolves* that the applicability dates of amendments to SARPs and PANS shall be so established as to allow Member States sufficient time for their implementation;
9. *Agrees* that no Annex or PANS document shall be amended more frequently than once per calendar year;
10. *Reminds* Member States of the requirement in Annex 15 to publish any significant differences in their Aeronautical Information Publication (AIP) and to include English text for those parts expressed in plain language;
11. *Encourages* Member States to use the Electronic Filing of Differences (EFOD) System when notifying their differences to ICAO;
12. *Instructs* the Secretary General to continue improving the EFOD system and assist Member States in transitioning from the paper-based processes to the use of the EFOD system;

13. *Directs* the Council to monitor and analyse the differences between the regulations and the practices of Member States and the SARPs and PANS with the aim of encouraging the elimination of those differences that are important for the safety, regularity and efficiency of international air navigation and taking appropriate actions;
14. *Instructs* the Council to explore possibilities to make differences information more easily available to all interested stakeholders and assess appropriate mechanism and form in which this information is made available;
15. *Resolves* that Member States shall be encouraged and assisted in the implementation of SARPs and PANS by all available means and provided as soon as possible with more guidance in respect of the notification and publication of differences;
16. *Calls on* all Member States able to do so to provide requesting States with technical cooperation in the form of financial and technical resources to enable those States to carry out their obligations under Articles 37 and 38 of the Convention;
17. *Instructs* ICAO to establish priorities for the continuing updating of the contents of present ICAO technical guidance material and the development of additional guidance material thus ensuring optimum value for Member States in their planning and implementation of SARPs and PANS;
18. *Resolves* that the associated practices in this Resolution constitute guidance intended to facilitate and ensure implementation of this Resolution;
19. *Urges* Member States to review their procedures related to the development of SARPs with a view to enhance the involvement of a broader set of aviation stakeholders;
20. *Instructs* the ICAO Council to optimize the SARPs development process by evaluating the root causes of global challenges in meeting specified applicability dates for certain Standards; identifying and defining the Standards likely to be affected by these challenges; identifying and applying process improvements applicable to developing the impacted provisions; and assessing the effectiveness of the procedural changes;
21. *Requests* ICAO to consider development of a transition and communication strategy throughout planning and implementation phases for Member States, who in turn should facilitate outreach to stakeholders;
22. *Directs* ICAO to enhance the role of its Regional Offices in facilitating and monitoring the SARP amendment review process;
23. *Calls upon* Member States to respond to ICAO State letters regarding proposed Annex and PANS amendments; and
24. *Declares* that this resolution supersedes Resolution ~~A38-11~~ A39-22.

Associated practices

1. The Council should ensure that provisions of SARPs and PANS are completely consistent with each other. Furthermore, the Council should endeavour to improve the processing, presentation and usefulness of ICAO documents containing SARPs, PANS and other related provisions, especially for complex systems and their associated applications. To that end the Council should promote the development and upkeep of broad system-level, functional and performance requirements. The Council should continue

seeking the most appropriate means of development, translation, processing and dissemination of technical specifications.

2. Member States should comment fully and in detail on the proposals for amendment of SARPs and PANS or at least should express their agreement or disagreement on their substance. They should be allowed at least three months for this purpose. Furthermore, Member States should receive at least 30 days of notification of the intended approval or adoption of detailed material on which they are not consulted.

3. Member States should be allowed a full three months for notifying disapproval of adopted SARPs amendments; in establishing a date for notifying disapproval the Council should take into account the time needed for transmission of the adopted amendments and for receipt of notifications from States.

4. The Council should ensure that, whenever practicable, the interval between successive common applicability dates of amendments to Annexes and PANS is at least six months.

5. The Council, prior to the adoption and approval of amendments to SARPs and PANS, should take into account feasibility of the implementation of SARPs and PANS by the intended applicability dates. This includes the use of standardized approaches to identifying impacts and risks to implementation throughout the SARPs and PANS development process.

6. The Council, taking into account the definitions of terms “Standard” and “Recommended Practice”, should ensure that new Annex provisions, uniform application of which is recognized as necessary, are adopted as Standards, and that those new provisions, uniform application of which is recognized as desirable, are adopted as Recommended Practices.

7. The Council should urge Member States to notify the Organization of any differences that exist between their national regulations and practices and the provisions of SARPs as well as the date or dates by which they will comply with the SARPs. If a Member State finds itself unable to comply with any SARPs, it should inform ICAO of the reason for non-implementation, including any applicable national regulations and practices which are different in character or in principle.

8. Differences from SARPs received should be promptly made available to Member States.

9. In encouraging and assisting Member States in the implementation of SARPs and PANS, the Council should make use of all existing means of ICAO and strengthen partnerships with entities which provide resources and assistance towards development of international civil aviation.

10. Member States should establish internal processes and procedures by which they give effect to the implementation of provisions of SARPs and PANS.

11. ICAO should update and develop guidance material in accordance with the established priorities to adequately cover all technical fields.