

**54th CONFERENCE OF
DIRECTORS GENERAL OF CIVIL AVIATION
ASIA AND PACIFIC REGIONS**

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AGENDA ITEM 1: THEME TOPIC

*“The Challenge of Managing Outcome Focused and Risk Based
Regulations for Asia Pacific States”*

**THE CHALLENGE OF DEVELOPING PERFORMANCE-BASED
REGULATIONS FOR ASIA/PACIFIC STATES**

(Presented by the International Civil Aviation Organization)

SUMMARY

The Global Aviation Safety Plan (GASP) objectives call for States to put in place robust and sustainable safety oversight systems and to progressively evolve them into more sophisticated means of managing safety. These objectives align with ICAO’s requirements for the implementation of State Safety Programme (SSP) by States and Safety Management Systems (SMS) by service providers.

Compliance with prescriptive regulations does not guarantee safety alone. Performance-based regulations offer improvements by focusing on the desired outcome rather than on the way something has to be done. However, it is important to note that the implementation of performance-based regulations requires more effort on the part of the industry to develop means to achieve the specified outcomes as well as more effort on the part of the regulator to evaluate each approach.

In choosing a regulatory instrument to address a particular problem, it will be useful to keep in mind that performance-based regulations may not be the best solution in all cases. In many cases prescriptive regulations are sufficient to achieve the desired safety outcomes. Several factors to consider would be: (1) the maturity of State’s safety oversight system; (2) effective implementation of SSP/SMS (3) determining what areas would benefit from performance-based regulations; and (4) the capacity of the industry to develop and the CAA to assess non-prescriptive means of achieving the desired outcomes, which typically require additional time and resources.

THE CHALLENGE OF DEVELOPING PERFORMANCE-BASED REGULATION FOR ASIA/PACIFIC STATES

1. INTRODUCTION

1.1 As a result of the Second High-level Safety Conference 2015 (HLSC 2015) held at ICAO Headquarters in Montréal from 2 to 5 February 2015, the Montréal Declaration on Planning for Aviation Safety Improvement called upon ICAO to continue assisting States in implementing safety-related Standards and Recommended Practices (SARPs) and an effective safety oversight system through additional guidance material, training and tools. Conclusion 2/1 a) related to *Strategies for managing aviation safety*, highlights that additional guidance is needed for States to develop performance-based regulations.

1.2 The 39th Session of the ICAO Assembly, held in Montreal from 27 September to 7 October 2016, endorsed the 2017-2019 Global Aviation Safety Plan (GASP), which maintains continuity with the version endorsed by the Assembly in 2013 while introducing a new global aviation safety roadmap. During the Assembly, the need for ICAO to assist States in the implementation of SSP was also expressed.

1.3 At the 53rd Conference of the Directors General of Civil Aviation of the Asia and Pacific Regions held in Colombo, Sri Lanka from 1 – 5 August 2016 the Civil Aviation Authority of Mongolia presented the Discussion Paper under the Theme of "*Challenging Performance Based Regulations (PBR) through Flexibility in the Asia Pacific Region*". After deliberation the Conference noted that the theme topic for the 54th DGCA Conference proposed by Mongolia was slightly complex and supported the proposal for Australia and New Zealand to work together with the ICAO Regional Office and come up with a simple theme topic. The revised theme topic agreed for the 54th DGCA Conference is "The Challenge of Managing Outcome Focused and Risk Based Regulations for Asia Pacific States".

2. DISCUSSION

ICAO Global Aviation Safety Plan 2017 - 2019

2.1 The GASP objectives call for States to put in place robust and sustainable safety oversight systems and to progressively evolve them into more sophisticated means of managing safety. These objectives align with ICAO's requirements for the implementation of SSP by States and Safety Management Systems (SMS) by service providers.

2.2 The near-term objectives, to be achieved by 2017, take into account the current level of safety oversight systems implementation at the regional and national levels. The near-term objectives are as follows:

- a) States lacking fundamental safety oversight capabilities are to achieve an Effective Implementation (EI) of at least 60 per cent overall of the eight CEs of a State safety oversight system.
- b) States which have an EI of 60 per cent or greater should implement SSP, which will facilitate addressing risks specific to their aviation systems; and
- c) all States and stakeholders are encouraged to put in place mechanisms for the sharing of safety information through their Regional Aviation Safety Groups (RASGs) and other regional or sub-regional fora.

2.3 The mid-term objective calls for all States to achieve SSP implementation by 2022. Additionally, RASGs should continue to advance the maturity of regional safety monitoring and safety management programmes. As the time and effort required for SSP implementation will vary among States, the near- and mid-term objectives should be coordinated at the regional level through the RASGs.

Annex 19 - Safety Management and supporting guidance and tools

2.4 The SARPs in Annex 19 - *Safety Management* and the guidance provided in the ICAO *Safety Management Manual* (SMM) (Doc 9859) are intended to support States in fulfilling their obligations regarding the Convention through the management of aviation safety risks. Annex 19 and ICAO SMM support the continued evolution of a proactive strategy to improve safety performance. The foundation of this proactive safety strategy is based on the implementation of SSP, which includes ensuring service providers implement SMS, to systematically address risks to safety.

2.5 The first amendment to Annex 19 — *Safety Management* was adopted by the ICAO Council on 2 March 2016 and became effective on 11 July 2016 with an applicability date of 7 November 2019. The fourth edition of the SMM is expected to be published at the end of September 2017 and will be complemented by a Safety Management Implementation website. The website will contain expanded tools and examples to further support the effective implementation of SSP and SMS and will serve as a means for sharing best practices across the aviation community.

2.6 The ICAO SSP Gap Analysis tool on iSTARS (<https://portal.icao.int/space/Pages/SSP-Gap-Analysis.aspx>) was developed to assist States in developing an SSP implementation plan and will also be updated by the end of September 2017 to reflect Amendment 1 to Annex 19 and the fourth edition of the SMM. The data already entered into the ICAO SSP Gap Analysis tool will be mapped to the updated tool and incorporate Universal Safety Oversight Audit Programme (USOAP) Protocol Question (PQ) data to highlight the need to address prerequisites which have been identified as for a sustainable SSP implementation.

EI in USOAP CMA and progress in SMS/SSP Implementation

2.7 The Asia Pacific region is geographically vast, culturally diverse and heterogeneous in the maturity of its safety oversight systems and in the implementation of SSP and SMS. As per USOAP CMA, the average EI for States in the Asia/Pacific Region is 59.33%. 18 States in the region have EI lower than the 60% (the GASP target for 2022 in all States). It indicates that most States in the Region are still struggling to implement an effective safety oversight system.

2.8 By the end of December 2017, amended SSP-related PQs are expected to be published by ICAO to reflect Amendment 1 to Annex 19, the fourth edition of the SMM and lessons learned to date. Selected States will be approached by ICAO with a view to performing audits including the amended SSP-related PQs in 2018 and 2019 on a voluntary, but non-confidential basis. As of 2020, ICAO will perform audits using the amended SSP-related PQs on States meeting criteria to be established by ICAO, in line with the 2020-2022 edition of the Global Aviation Safety Plan.

2.9 In preparation for these USOAP activities, States are expected to conduct self-assessments using the SSP-related PQs and complete the Annex 19 — *Safety Management* compliance checklists.

Prescriptive vs Performance-based regulations

2.10 As part of its SSP, State are expected to collect and analyse safety data to identify and measure the effectiveness of the safety risk controls in place to manage safety risks. The regulations are one of the most important tools at the disposal of a regulator.

2.11 Prescriptive regulations are based on a desired level of safety and identify what the industry is expected to do to achieve it. This approach has proved to work since the early years of aviation and has helped to achieve the current safety levels. However, the amount of complexity, innovation, evolving technologies and disruptive business models in the aviation industry is increasing at a rate that makes it difficult to develop prescriptive regulations that can address all the safety issues in a timely manner.

2.12 Performance-based regulations focus on desired, measurable outcomes and provide flexibility to the industry in the implementation rather than just trying to develop prescriptive rules for every eventuality. The advantages and disadvantages of performance-based regulations are:

Advantages

- Focus on achieving the desired performance;
- Results in more robust regulations; and
- Provides industry with flexibility.

Disadvantages

- Lack of experience in how to write these types of regulations;
- Difficult to agree on how to state the desired performance;
- Developing individual ways of meeting the regulations may require more time and resources on the part of the industry; and
- Evaluation of the means of compliance will require more experience and judgement on the part of the CAA inspectors.

2.13 Both types of regulations are valid and need to be used in a complementary way to achieve the best outcome with the available resources and required effort.

Challenges for Asia/Pacific States

2.14 The challenges for the Asia/Pacific States in developing and implementing performance-based regulations are:

Maturity of Safety Oversight Organization of States

2.15 In order to develop and implement performance-based regulations, two additional functions are required from a CAA:

- Internal safety management by the State through the implementation of SSP; and
- Assessment and monitoring of the implementation of SMS by service providers

2.16 All safety data related activities will need to be performed by the CAA to support the above-mentioned functions.

Human and financial resources

2.17 If the transformation from an exclusively compliance-based approach to a combined compliance/performance-based approach is to be successful, CAA must develop data collection, analysis and exchange capabilities that are largely absent at the present time. This requires a revision of existing structures and capabilities within a typical CAA.

2.18 The successful development and implementation of performance-based regulations will depend on the human and technical capital of the CAA. However there is a risk that some CAAs may move too fast towards performance-based approach when their environment is not prepared enough or when emphasis on compliance-based approach is still needed. Insufficient resources and competence would negatively impact the oversight activities and potentially the safety performance.

2.19 Consideration of the additional functions to be performed by a CAA under a combined compliance/performance oversight environment is essential to orient the definition of roles and competencies required by human resources within a CAA, which will likely need to be developed.

2.20 Human and financial resources will have to be invested to get the necessary competence, training and understanding to establish the new processes. Associated costs to this paradigm shift are expected, in particular at the beginning of its implementation.

Training and qualification of Inspectors

2.21 The introduction of performance based regulations adds a complexity for both the service providers and the regulator. For instance, CAA inspectors are **not yet trained** to evaluate/assess service provider's proposed "program/processes/procedures" in order to determine if it actually meets the required "Performance". Assessing compliance with performance-based regulations requires some supplementary competence in addition to the required domain-specific technical expertise.

3. CONCLUSION

3.1 In order for States to introduce performance-based regulations, the maturity of their safety oversight system and the level of effective implementation of SSP and SMS should be considered.

3.2 Performance-based regulations may not be the most practical for all areas aviation. Careful study is needed to define where and in what area performance-based regulations are most beneficial as more resources will be required on the part of the industry as well as the State. Human and financial resources will have to be invested to develop the necessary competence, training and understanding to ensure that performance-based regulations are implemented effectively to achieve the desired outcomes.

3.3 Several factors to consider before introducing performance-based regulations include: (1) the maturity of State's safety oversight system; (2) effective implementation of SSP/SMS (3) determining what areas would benefit from performance-based regulations; and (4) the capacity of the industry to develop and the CAA to assess non-prescriptive means of achieving the desired outcomes, which typically require additional time and resources.

4. ACTION BY THE CONFERENCE

4.1 The Conference is invited to note the content of this paper and:

- a) urge States to put more resources and efforts to achieve the objectives outlined in the GASP;
- b) urge States to emphasize on effective implementation of SSP and SMS; and
- c) urge States to consider the appropriate use of performance-based regulations to further enhance safety based on the factors identified in this paper.

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