SUMMARY
The United States supports the concept of an overarching safety management framework and consideration of a new Annex to address State Safety Management requirements. Currently, most ICAO requirements are contained in separate Annexes, which address individual functions or types of aviation services. This allows for the Annexes to address the unique needs of each target audience but does not address the integrated nature of the modern air transportation system. The increasing complexity and tighter coupling among the numerous safety critical elements of the system call for an approach that provides for a higher degree of integration of safety management functions. Moreover, this approach should be based upon a comprehensive analysis of the air transportation system that reflects the full life cycle, functions, and interactions among the elements of the system. This paper will provide a discussion and preliminary recommendations for a new Annex that will provide for an overarching safety management framework that also provides for integration of functions among the individual specific Annexes.

Action: The Conference is invited to endorse the conclusions below in future ICAO Standards.

1. INTRODUCTION

1.1 The modern air transportation system is a complex, dynamic system that is characterized by tightly coupled, diverse networks of highly interactive components. The interactions between components of the system are often critical in terms of information flow, lines of authority and decision making, and interdependencies of processes.

1.2 In order to manage the aspects of aviation operations in which safety risk originates, technical, managerial, and safety processes must function as an integrated system. Safety management cannot be viewed as a set of processes or activities that are separate from the productive aspects of business processes.
1.3 The United States Federal Aviation Administration (FAA) published, in 2008, FAA Order 8000.369, *Safety Management System Guidance*. This document established an internal safety management standard for the FAA, recognizing that safety management activities must be accomplished through an integrated system across all elements of the air transportation system. It also established a high-level framework for safety management requirements for service providers.

1.4 Currently, most ICAO requirements are contained in separate Annexes, which address individual functions or types of aviation services. This allows for the Annexes to address the unique needs of each target audience but does not address the integrated nature of the modern air transportation system.

1.5 ICAO has recently issued requirements for States to develop and implement a State Safety Programme (SSP) as a means of managing safety within the State. Requirements for the SSP include a State’s responsibility to promulgate requirements for Safety Management Systems (SMS) on the part of aviation service providers. The currently recommended SSP framework (see ICAO Doc 9859, Chapter 11) contains the four components of SMS (as defined in ICAO Doc 9859) including State safety policy and objectives; State safety risk management; State safety assurance; and State safety promotion. Additional detail needs to be developed to fully outline the State’s requirements with respect to safety management and oversight.

1.6 An ICAO working group of the Air Navigation Commission in 2008 also determined that no single ICAO document clearly defines the responsibilities and processes for safety management and oversight in the State Safety Program (SSP). Moreover, no single document exists to define the structure of the SSP or its major functions and relationships to service providers’ safety management systems.

1.7 Safety management functions and processes should, therefore, take an integrated systems view in order to account for the highly integrated nature of the air transportation system. A determination must be made of how best to document requirements and standards for a comprehensive, integrated SSP within each State. These requirements must provide for standardization of SSP functions and processes while at the same time, allow the flexibility for each State to develop an SSP that is relevant to their operational environment.

2. **DISCUSSION**

2.1 Future management of safety should take a systems perspective and should move the practice of safety management and oversight toward a process approach. Future oversight systems must view the air transportation system as an integrated system rather than a set of independent components that can be treated in isolation. ICAO Doc 9734, *Safety Oversight Manual* (para. 2.4.7 (b)) includes, “…a systematic approach to auditing to ensure that whole systems are considered where appropriate, not just isolated elements, activities or disciplines.”

2.2 It will be essential to ensure that safety management requirements be consistent across all Annexes to avoid duplicate or conflicting requirements from being imposed on service providers or regulator’s sub-organizations. Thus, maintaining internal consistency must be a major consideration of the construct of a separate safety management Annex and revisions to individual Annexes.

2.3 A separate Annex devoted to safety management should be used to define high-level principles and standards for the SSP and a high-level framework for safety management systems for aviation industry service providers. This Annex would treat, at a high level, consideration of the air transportation system as an integrated entity, with coverage that transcends the boundaries of the individual components.
2.4 Safety management requirements specific to individual Annexes should remain in the separate Annexes. This will allow them to address the unique needs of individual service providers’ organizations and to assure that safety management is incorporated into their management strategies. A high-level framework for SMS in the safety management Annex could be adapted to fit the nuances of the various types of service providers.

3. CONCLUSION

3.1 The future set of international safety requirements should recognize the high complexity, diversity, tight coupling, and the dynamic operating environment that characterize the modern air transportation system and provide for a more integrated, systematic, data-driven approach to safety management and oversight. The air transportation system must be thought of as an integrated whole, rather than a collection of individual components.

3.2 Oversight systems of the future should also be based on a careful understanding of the aviation system and must focus on control of the effects of hazards in that system. This will require regulators to develop and implement new systems of data collection, sharing, and analysis and to adopt a more systemic orientation toward safety decision making. Standards for oversight and safety performance must, therefore, reflect this needed structure.

3.3 The development of a separate Annex for safety management, as a means of delivering high-level safety concepts, doctrine and requirements and as a means of integrating the content of the other Annexes will facilitate the above objectives. Roles, responsibilities, and relationships of and between regulators and service providers and the general framework and expectations for service providers’ SMSs should be considered in the development of the new Annex. More specific SMS requirements would be left to the individual Annexes.

3.4 The new Annex would be the mechanism for delivering requirements for the State Safety Program, with emphasis on safety management and safety oversight at the State level.

3.5 SMS requirements specific to particular Annexes should be retained in individual Annexes to stress the fact that safety management must be integral to technical program management and safety performance. Maintaining specific SMS requirements in the individual Annexes will foster the concept that safety should be managed as an integral part of operational management rather than as a separate endeavor.

3.6 The development of the SSP and the Annex which embodies its requirements must be based upon comprehensive analysis and discussions among relevant stakeholders to assure standardization, harmonization, and relevance to each State’s situation as well as to the nuances of each type of aviation service provider’s operations.

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