Aerospace Industries Association Policy Principles for Artificial Intelligence and Machine Learning Within Aviation

Artificial intelligence (AI) and machine learning (ML) have the potential to transform aviation– enhancing the safety, efficiency, and performance of both individual aircraft and the aviation system as a whole. U.S. aerospace companies are working to advance these technologies while maintaining aviation's exceptional safety record and earning the trust of regulators, stakeholders, and passengers. As global regulators consider how best to enable AI/ML in aviation, collaboration between industry and government will be critical. To support these efforts, the Aerospace Industries Association (AIA) has developed the following principles to help foster a proportionate, risk-based, and globally harmonized approach to AI/ML regulation that supports both safety and innovation.

Regulators should adopt a risk-based approach to AI/ML within aviation

Safety must remain the paramount consideration when evaluating AI/ML applications in aviation; however, these technologies should be assessed using the same risk-based principles that underpin existing aviation regulation.

- **The overall focus of AI/ML regulation should be on system-level safety.** The use of AI/ML should be evaluated based on its role within the overall system, rather than by regulating the model itself.
- **AI/ML should not be subject to higher safety requirements than conventional-based systems with the same risk profile.** AI/ML is one method of achieving certain capabilities such as automation or decision-support functions and may provide more practical or scalable implementation pathways. Systems performing equivalent functions should be subject to the same safety requirements, regardless of whether those functions are implemented using AI/ML or other technical approaches.
- **Regulations should remain focused on the safety of aviation.** Broader considerations, such as bias or discrimination, are important but fall outside the remit of aviation safety regulators.
- **New regulations and means of compliance should only be introduced only when necessary.** Regulators should build on existing certification and regulatory frameworks and should not create unnecessary burdens, only introducing new regulations to address safety considerations when genuine gaps are identified.

Regulation of AI/ML for aviation should be approached incrementally

AI and ML technologies continue to evolve, and regulatory frameworks should evolve with them. Regulators and industry will benefit from starting small and learning from real-world applications, enabling more complex use cases as experience grows.

- **Regulators should focus early efforts on enabling lower-risk applications.** Early experience with low-criticality or safety-enhancing systems should inform how

frameworks adapt to address higher-criticality use cases, ensuring regulators are able to adapt future rules based on evidence and their own experiences.

- **Different regulatory approaches will be needed for different types of AI**. A clear distinction should be maintained between learned AI (fixed, deterministic models after training) and learning AI (systems that adapt during operation). Current certifications will be largely suitable for learned AI, while incorporating learning AI in aviation will need more careful consideration and new regulatory approaches.
- **Regulators should leverage industry standards wherever possible.** Aviation and many other sectors are carrying out substantial work to address fundamental issues associated with the use of AI/ML. Making use of this work to take advantage of aviation industry standards where they exist – and only initiating new standards or rulemaking when they are truly needed – will help regulations keep pace with the pace of innovation.

Regional regulation must enable international harmonization

AIA recognizes that international regulators operate within different legal and policy frameworks that may require distinct approaches to AI/ML. Aviation is inherently international, and regulatory frameworks must be developed with global harmonization in mind.

- **Regulators should ensure the focus remains on end safety goals.** While different regulators may adopt varied approaches to AI/ML, all share the same objective: safety. Regulators should ensure a pathway for mutual recognition and validation of other regulators' safety findings, enabling manufacturers to design in one jurisdiction and deploy globally – relying on existing bilateral agreements wherever possible.
- **Regulators should not seek to move in isolation:** Regulators need to approach the issue of AI/ML collectively. Moving too quickly will increase the likelihood of a fragmented regulatory environment that cannot be harmonized. Individual regulators should engage in a collaborative dialogue with their counterparts, while ICAO should work to ensure global regulatory alignment.
- **Regional regulations should maintain a level playing field.** While some regions may differ in their risk-tolerance to new technologies, in a safety-critical industry like aviation it is imperative that a regulatory approach does not lead to a global race to the bottom as countries or regions seek to establish an advantage in AI/ML technologies.