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EFFORTS OF AIRCRAFT MANUFACTURERS ON MAKING AIR TRAVEL ACCESSIBLE TO PERSONS WITH DISABILITIES

(Presented by the International Coordinating Council of Aerospace Industries Associations (ICCAIA))

EXECUTIVE SUMMARY

Aircraft manufacturers are taking deliberate steps to support the global aviation sector's goal of inclusive, barrier-free travel. These efforts are motivated by the growing number of travellers with disabilities, rising expectations from regulatory bodies, and advocacy organizations. By centering human variability in the design process and viewing accessibility as a system-wide imperative, manufacturers are addressing longstanding challenges across the air travel journey. This paper outlines how aircraft manufacturers are applying integrated engineering principles, collaborating with advocacy groups, and prototyping scalable innovations that enhance safety, dignity, and usability for all travellers.

This information paper highlights the coordinated efforts of aircraft manufacturers to:

- reduce physical, sensory, and cognitive barriers within the aircraft;
- support consistent global design standards for accessible travel;
- partner with stakeholders across the travel ecosystem to ensure solutions reflect real-world use; and
- enable sustainable, certifiable, and economically viable accessibility improvements that scale globally.

Strategic Goals:	This information paper relates to Strategic Goal *Aviation Delivers Seamless, Accessible and Reliable Mobility for All.*
Financial implications:	None.
References:	Doc 9984, *Manual on Access to Air Transport by Persons with Disabilities* Assembly Resolution A41-15, *Accessibility in International Civil Aviation*

1. INTRODUCTION

1.1 Global demographic shifts, especially aging populations, and rising travel demand among people with disabilities have created new urgency for aviation systems to adapt. Accessibility is not limited to visible disabilities; it includes a wide range of physical, sensory, cognitive, and neurological conditions, which may be permanent, temporary, or situational. The industry recognizes that the most sustainable and consistent solutions are those embedded early in the aircraft development process and informed by direct user experience.

1.2 Definition of accessibility: Accessibility ensures that individuals with disabilities can access services, environments, and information, without systemic or design-based barriers. To address accessibility holistically, manufacturers consider the needs of diverse user groups. These include:

- individuals who use wheelchairs or mobility devices
- deaf and hard-of-hearing travellers
- blind or low-vision passengers
- neurodivergent individuals
- travelers with reduced mobility due to injury, fatigue, or age

1.3 The industry is responding by conducting research and development efforts. Investment to understand lived experiences, identify barriers, define design principles and criteria, and iterate on concepts is leading to innovations that close the gaps passengers with disabilities face with air travel. Some key areas of focus are:

- inconsistencies among regions in law and policy
- loss of independence and dignity; lack of autonomous navigation
- disparity in engaging in communication and receiving information and services
- damage to assistive devices during transport

2. DIFFERENT APPROACHES TO ACCESSIBILITY

2.1 Historical context: historically, accessibility was addressed as a compliance requirement, often resulting in minimal and fragmented adaptations. This approach limited meaningful integration and often failed to align with passenger dignity, operational realities, or long-term maintainability. Today, the shift should be towards embedding accessibility as a fundamental design consideration across all aircraft systems.

2.2 Two differing approaches to designing for accessibility are the social model and the medical model. These models view persons with disabilities and how they interact with their environments very differently. The medical model focuses on addressing the impairment itself, often resulting in solutions developed without full inclusion of the person affected. People with disabilities have little say in what

solutions are offered and generally result in point-based design solutions. In contrast, the social model views the system as the barrier to fix, includes people with disabilities throughout the design process and views the system as an opportunity for innovation.

2.3 The social model uses a systems thinking approach to consider the role of all stakeholders and their connectivity across the end-to-end travel journey. The goal is to design solutions that are accessible, efficient and adaptable. Borrowing from the disability community adage of "nothing about us without us", central to the approach is inclusion of passengers with lived experiences throughout the design process, from use-case definition to concept iteration and finally solution verification. Embedding lived experience into every phase of design—from defining use cases to verifying solutions—ensures the system accounts for human complexity and minimizes design bias.

2.4 In solving for those with disabilities, solutions often have material benefit to other users extending the value and elevating the experience for all, in a convention known as the "curb cut effect". So named for the benefit of small ramps in sidewalks, curb cuts originally designed for wheelchair access of veterans returning to the U.S. from WWII, the design exhibits benefit to people pushing strollers, pulling luggage and riding bikes – unintended value enjoyed by many. The social model is foundational in designing integrated systems solutions for barrier-free air travel.

3. INNOVATION IN ACCESSIBILITY

3.1 The history of innovation in accessible air travel is closely tied to the evolution of regulations as the acknowledgment of a public need. While the Air Carrier Access Act (ACAA) set a precedent in the United States, similar efforts have been made globally, including the European Union's Regulation EC 1107/2006, Brazil's Resolution N.280/2013, Canada's ATPDR, and Australia's Disability Standards for Public Transport. The key features were largely procedural with airlines having responsibility to assist with boarding, deplaning, staff training, and prohibited any limits on passengers with disability from flying.

3.2 In the 1990's the Americans with Disabilities Act (ADA) revolutionized access for many aspects of public life including design parameters for the built environment but did not apply it to air travel. At the same time, the US DOT did enact regulation (14 CFR Part 382) to require expanded access for aircraft including accessible lavatories and on-board wheelchairs for twin-aisle aircraft plus stowage standards for personal wheelchairs.

3.3 More recently, the US DOT is enacting regulation requiring accessible lavatories on single aisle aircraft with emphasis on damage-free wheelchair transport and better enforcement mechanisms. OEMs are developing novel solutions to address the design criteria set forth in regulation while meeting the configuration needs of airlines to maximize the revenue potential of the cabin layout.

3.4 Further, as identified by the Committee for a Study on the Feasibility of Wheelchair Restraint Systems in Passenger Aircraft, a Technical Review Board convened on the matter of wheelchair securement. They concluded that there are no insurmountable technical challenges to reducing barriers to personal wheelchair access confirming opportunity for the industry to act in advance of regulation.

3.5 With respect to improved communication, the FAA Reauthorization Act (2024) included provisions to assess and make recommendations for improving air travel accessibility for deaf/hard of hearing and blind/low-vision passengers. Innovations include real-time speech-to-text captioning, tactile

interfaces such as braille overlays, and closed captioning synchronized with in-flight entertainment. These systems are increasingly designed to interface with passengers' personal assistive technologies.

3.6 While regulatory action has historically catalysed change, recent OEM-led efforts demonstrate a shift toward proactive accessibility innovation—driven by direct engagement with disability advocates, increased research and development investment, and the emergence of inclusive engineering methodologies. Cross-sector collaboration with organizations such as All Wheels Up, Open Doors Organization, Flying Disabled and ICAO's Working Group on Accessibility in Aviation inform early-stage technical requirements. These partnerships ensure lived experience translates directly to testable, certifiable and operationally viable specifications.

4. CONCLUSION

4.1 By embedding inclusive systems engineering principles throughout product development and working with passengers, regulators and operators, aircraft manufacturers are building the foundation for barrier free air travel. The development, certification and implementation of accessibility solutions requires a balance of what's desirable to the end user, what's technically feasible from a design, build, certification perspective, and what's commercially viable from an operator perspective. Interdisciplinary cross industry collaboration is key to understanding connections, agreeing to design standards and fostering meaningful progress.

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