



WORKING PAPER

**SEVENTH WORLDWIDE AIR TRANSPORT CONFERENCE
(ATCONF/7)**

Montréal, HQ, 16 to 20 November 2026

Agenda Item 3: Strengthening regulatory and institutional frameworks

3.3: Strengthening emergency planning mechanism and consumer protection for a resilient aviation system

**ECONOMIC RESILIENCE AND CONTINUITY OF SERVICE WHEN
CRITICAL FUNCTIONS IN INTERNATIONAL AIR TRANSPORT
DEPEND ON PROVIDERS OUTSIDE THE AVIATION SECTOR**

(Presented by the United Arab Emirates)

EXECUTIVE SUMMARY

Some functions on which international air services depend are now delivered by cloud, software and data-service providers that are not, in that capacity, licensed, certified or supervised by aviation authorities. When one fails, the initial cost falls on air operators, with consequences for passengers and connectivity. Using the operators' and authorities' own figures, this paper documents that cost, shows that the International Civil Aviation Organization (ICAO)'s economic-regulatory texts do not expressly address who bears it, notes that other sectors have applied a legal test to identify critical external providers and, complementing ATConf/7-WP/6, invites the Conference to recommend that the Council examine the question.

Action: The action by the conference is detailed in paragraph 5.1.

*Strategic
Goals:*

This working paper relates to Strategic Goals: *The Economic Development of Air Transport Assures the Delivery of Economic Prosperity and Societal Well-Being for All; and Aviation Delivers Seamless, Accessible, and Reliable Mobility for All.*

*Financial
implications:*

No additional resources are required; any follow-up work would be undertaken within existing budgetary resources.

References:

Assembly Resolutions A42-25 and A42-26; ATConf/7-WP/2, WP/6 and WP/8 Doc 9587, *Policy and Guidance Material on the Economic Regulation of International Air Transport*
Doc 9161, *Manual on Air Navigation Services*
Doc 9980, *Manual on Privatization in the Provision of Airports and Air Navigation Services*
ICAO Core Principles on Consumer Protection (2015)
ICAO Survey on Assistance to Passengers
DGCA/60 Discussion Paper 60-DP-06-03 (2025)
Regulation (EU) 2022/2554; The Critical Third Parties (Designation) Regulations 2026 (United Kingdom)

1. INTRODUCTION

1.1 Under Agenda Item 3.3, ATConf/7-WP/6 proposes a framework for consumer protection and emergency planning, including clearer responsibilities among airlines, intermediaries and other service providers and the maintenance of critical functions during system-wide disruptions. This paper complements that framework with a question it does not reach: who bears the cost, and which authority can act, when a disruption originates with a provider that is not, in that capacity, licensed, certified or supervised by aviation authorities.

1.2 The question is one of economic regulation. The paper does not address safety, security or technical performance, and it proposes no regulation of any provider and no new standard, framework or body. Aviation entities remain responsible under the applicable safety, security and operational frameworks for the risks that arise from their suppliers; the question here is whether the economic regulatory framework addresses the resulting distribution of disruption costs — the question ATConf/7-WP/2 invites the Conference to consider: whether existing policy frameworks remain fit for purpose.

2. DOCUMENTED DISRUPTIONS AND THEIR COSTS

2.1 On 19 July 2024 a defective content update issued by a provider of endpoint-security software for Windows-based systems caused the systems on which it was installed to fail in many States and across many operators at once. It was not a cyber-attack. According to Microsoft, the update affected some 8.5 million Windows devices, fewer than one per cent of all Windows machines. Neither the provider, as a cross-sector technology supplier, nor its update process is directly overseen by an aviation authority.

2.2 Delta Air Lines reported in its securities filings (Forms 8-K and 10-K) some 7,000 cancellations over five days affecting 1.4 million customers, an estimated direct revenue impact of USD 380 million in the third quarter of 2024, primarily refunds and customer compensation, and some USD 170 million of additional operating expense. Proceedings between the operator and the provider over that cost remain pending.

2.3 The failure of the flight-plan processing system of the United Kingdom's en-route air navigation service provider on 28 August 2023 shows the same pattern within aviation. The independent review commissioned by the United Kingdom Civil Aviation Authority recorded an estimated 700,000 or more passengers affected, estimated the airlines' costs at about GBP 65 million and the total cost at GBP 75–100 million, found the provider's financial exposure under its performance regime limited by comparison, and recommended that the Authority be given consumer-enforcement and information powers comparable to those of other regulators.

2.4 In both cases the operator bore the initial cost of a failure that began outside its direct control, while remaining responsible for its own resilience and mitigation. Whether any part of that cost returns to the entity in which the failure began depends, in the first case, on a private contract, on terms no aviation authority sees; in the second, the provider's exposure was limited to its performance regime.

3. THE GAP IS STRUCTURAL, NOT TECHNOLOGICAL

3.1 When the failure begins inside an operator, the framework works. In December 2022 an operational breakdown at a major United States carrier, whose crew-network processes and tools were overwhelmed after a winter storm, led to 16,900 cancellations and left more than two million passengers stranded; on 18 December 2023 the Department of Transportation announced a civil penalty of USD 140 million for the carrier's failures towards its passengers. Because the carrier was the regulated entity responsible for those obligations, the authority could investigate and enforce them, whatever the technical origin of the disruption.

3.2 When the failure begins with a provider outside the sector, the aviation authority's reach stops at the operator. ICAO's air transport economic guidance has settled the analogous question for functions delegated within the sector: a State that assigns an airport or an air navigation service to an autonomous, commercialized or private entity remains ultimately responsible for safety, security and economic oversight (*Manual on Privatization in the Provision of Airports and Air Navigation Services* (Doc 9980), 1.2; *Manual on Air Navigation Services* (Doc 9161), 2.38; A42-26, Appendix C). Doc 9161 already recognizes that outsourcing air navigation services to third-party operators raises continuity questions and answers with a service-level- agreement template (paragraphs 2.37–2.40, Appendix 1) — a contract, with no counterpart for air operators.

3.3 ICAO's consumer-protection texts contemplate massive disruptions, but not this one. Resolution A42-26 urges States to apply the Core Principles on Consumer Protection “including in case of massive disruptions impacting aviation”; the Core Principles *Policy and Guidance Material on the Economic Regulation of International Air Transport* (Doc 9587), Part 5, Principles 1.2 and 3.3) describe such disruptions as circumstances outside the operator's control and name airlines, airports and governments as the planners. Neither text addresses whether any part of the cost can return to the entity in which the failure began. An ICAO survey after the 40th Session of the Assembly found that 19 of 82 responding States defined massive disruption in their national regulation, and a 2025 discussion paper to the Asia and Pacific Directors General observed that “there is not a clear or agreed definition of extraordinary circumstances”.

3.4 None of the disruptions cited involved artificial intelligence: they arose from a software update, a flight-plan processing system and an airline's crew-network processes. As artificial intelligence, including generative systems, spreads through aviation functions, and as each new generation of technology arrives faster than the last, dependence on providers outside the sector will deepen and the gap described here will widen unless it is examined now.

4. OTHER SECTORS, AND THE ROLE OF THE COUNCIL

4.1 In the European Union, Regulation (EU) 2022/2554 on digital operational resilience for the financial sector (applicable since 17 January 2025) provides in Article 31 for designating information and communication technology third-party providers as critical on criteria of systemic impact, reliance for critical functions and substitutability; the first 19 designations, on 18 November 2025, include European entities of the three largest cloud-infrastructure groups, overseen by a Lead Overseer with penalty powers. The United Kingdom's Financial Services and Markets Act 2023 provides a comparable designation power; the first four designations, in force since 13 July 2026, cover European entities of four cloud and technology providers, including those three groups, now overseen, for the services they provide to the financial sector, by the Bank of England, the Prudential Regulation Authority and the Financial Conduct Authority.

4.2 These regimes show that systemic dependence on external providers can be identified by objective criteria and brought under coordinated attention. They neither displace the regulated entity's responsibility for its own third-party risks nor transfer disruption costs to the provider; they are cited as evidence that the question is answerable, not as models. ATConf/7-WP/8 recommends coordination between aviation authorities and the regulators for digital technologies and finance — the regulators that built the regimes described above.

4.3 The question concerns the allocation of the cost of disruption, consumer protection and the continuity of connectivity: economic regulation, within the scope of Doc 9587 and of Resolution A42-26, which requests the Council to keep ICAO's air transport policies current. The review of the Core Principles referred to in ATConf/7-WP/6 offers an immediate vehicle for the examination proposed below, which would prejudge no outcome, require no additional resources and propose no framework: it asks only for the timely, technology-agnostic analysis of need that Resolution A42-25 calls for.

5. ACTION BY THE CONFERENCE

5.1 The Conference is invited to:

- a) note the economic consequences for continuity of service, consumers and connectivity when critical functions in international air transport depend on providers not directly overseen by aviation authorities, as illustrated by the documented events described in this paper;
- b) note that ICAO's economic-regulatory texts, including the Core Principles on Consumer Protection, do not expressly address the allocation of the cost of disruption where a disruption originates with such a provider, and that an ICAO survey of States and a discussion paper presented to an ICAO regional conference have recorded the absence of an agreed definition of massive disruption or extraordinary circumstances; and
- c) recommend that the Council examine, in the follow-up to ATConf/7-WP/6 and in the review of the ICAO Core Principles on Consumer Protection, whether existing economic-regulatory arrangements adequately address continuity of service and the allocation of the cost of disruption between operators and such providers, taking into account relevant work in other sectors.

— END —