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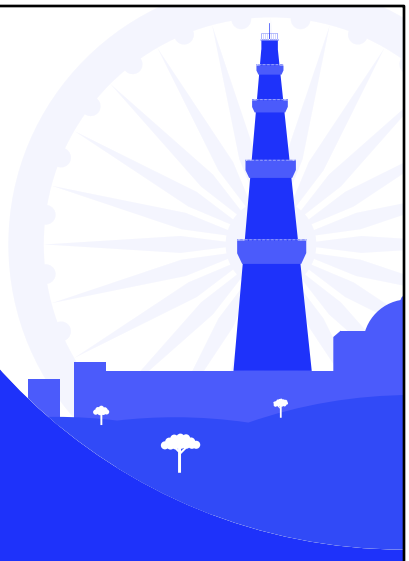

Media Briefing

Operations and Safety Update

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SVP Operations, Safety and Security

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100,000 Flights a Day – All Rely on Safe, Seamless Operations

In 2024, aviation carried over 5 billion passengers on around 40 million flights

The industry is growing—but so are operational pressures

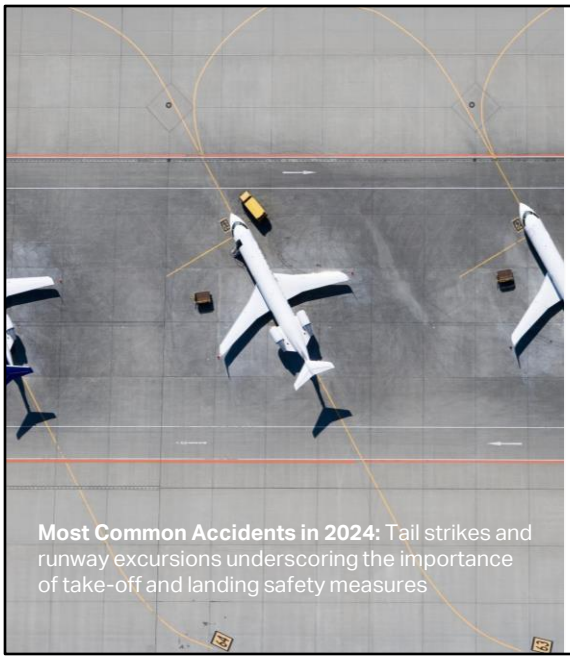
Safety remains strong, but the risk landscape is shifting

- In 2024, our industry safely carried more than **5 billion passengers** on around **40 million flights**. That's a powerful reminder of how central aviation is to global connectivity.

- But with that growth comes new challenges. We're not just flying more—we're operating in a **more complex environment**. We're seeing:

    - **Record levels of aircraft groundings** due to engine shortages and MRO capacity constraints.
    - **Tighter airspace** due to geopolitical conflicts and military activity.
    - Ongoing **staffing shortages**, particularly in technical and operational roles.
    - And mounting pressure to manage all of this while continuing to **reduce emissions and maintain profitability**.

- So while the **safety record remains strong**, the **risk landscape is evolving**—and our operations need to evolve with it.



Most Common Accidents in 2024: Tail strikes and runway excursions underscoring the importance of take-off and landing safety measures

2024 Safety: Another Strong Year for Aviation Safety

- **1.13 accidents per million flights** – safer than the 5-year average (1.25)
- **7 fatal accidents** out of **40.6 million flights**
- **244 on-board fatalities**, up from 72 in 2023
- **Fatality risk: 0.06, still below 5-year average (0.10)**
- Over 10 years the five-year average accident rate has improved from **1 per 456,000 flights to 1 per 810,000 flights**
- Airlines on **IOSA Register** had an accident rate of 0.92 per million flights**, significantly lower** than the 1.70 recorded by non-IOSA carriers

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Regional Safety Performance in 2024

Region	2024 Accidents	Accident Rate (per million flights)	Trend vs. 5 year average
North America	12	**1.20**	**Improved** (from 1.26)
Asia-Pacific	7	**1.04**	**Improved** (from 1.10)
Africa	10	**10.59**	**Deteriorated** (from 8.46)
Middle East & North Africa	2	**1.08**	**Improved** (from 1.09)
CIS (Commonwealth of Independent States)	0	**0.00**	**Improved** (from 2.49)
Europe	9	**1.02**	**Unchanged** (from 1.02)
North Asia	1	**0.13**	**Improved** (from 0.16)
Latin America & Caribbean	5	**1.77**	**Improved** (from 2.00)

- **North America**: The most common accident types in 2024 were tail strikes, followed by runway damage and runway excursions. While no accidents have been linked to debris from space operations, the increasing number of rocket launches presents challenges for air traffic management.

- **Asia-Pacific**: There was no dominant classification for accidents in the region which included tail strikes, runway damage and turbulence, among others.

- **Africa**: The most common accident types in 2024 were runway excursions, followed by those related to landing gear. Forty percent of all accidents involving AFI-based operators, were on turboprop aircraft. Through the IATA Focus Africa initiative, the Collaborative Aviation Safety Improvement Program (CASIP) continues to mobilize resources to address key safety challenges.

- **Middle East and North Africa**: While no accidents were related to GNSS interference, it has emerged as a critical area of concern in the region.

- **Commonwealth of Independent States**: GNSS interference and security risks linked to regional conflicts remain key concerns for aviation safety in the area. Note that the December 2024 downing of an Azerbaijan Airlines aircraft in a conflict zone is excluded from accident classification in this safety report. It is also important to note that CIS has limited accident information available and may undergo larger revisions than normal once more data becomes available. This may affect accident rate as well as fatality risk calculation.

- **Europe**: The largest proportion of accidents were related to tail strikes followed by runway excursions.

- **North Asia**: There was only one accident involving North Asian-based operators and was related to a tail strike.

- **Latin America and the Caribbean**: The largest proportion of accidents was related to tail strikes.

Accident Reporting: Progress, But Still Gaps

There has been an improvement in the number of final accident reports published between 2018–2023.

But serious gaps remain:

- 107 investigations from that period are still incomplete.
- These accidents resulted in the loss of 234 lives.

Why it matters:

- Every accident holds lessons that can prevent future tragedies.
- Delays in reporting mean delays in safety improvements — and that is not acceptable.

- **Global guidelines call for an initial report in 30 days and a final one ideally within a year. Failing that, investigators should issue interim statements with latest developments on each anniversary.**

- **As of May 20th, 2025, there has been a slight improvement in the number of final accident reports published between 2018–2023. But Serious Gaps Remain:**
  - 107 investigations from that period are still incomplete.
  - These accidents resulted in the loss of 234 lives.

- **It is a dereliction of duty that 107 of accidents since 2018 lack a final published report**

- **Delayed or incomplete accident reports deny critical stakeholders—operators, manufacturers, regulators, and infrastructure providers—vital insights that could further improve aviation safety.**

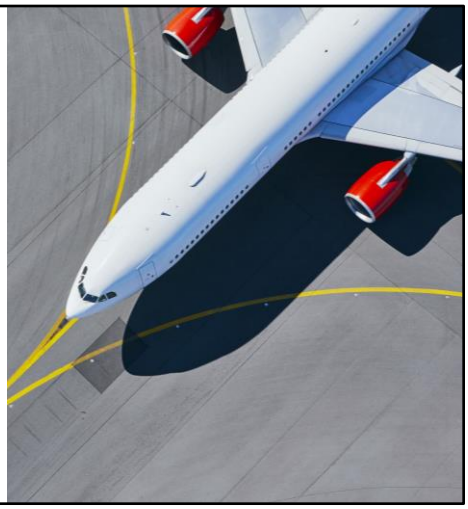
- **For example:**
  - The introduction, and evolution, of Crew Resource Management following a number of accidents such as Tenerife North and Cali.
  - The focus, and evolution, of Upset and Recovery Training following the loss of AF447 in 2009 to ensure aircrew are trained effectively in identifying and reacting

to unusual attitudes and pre-stall conditions.

- The "brace position" for emergency landings, for example, was refined over years thanks to such investigations. By pure chance, the least injured person in a fatal 1976 crash in New Jersey had his head between his knees due to air sickness.
- Technology to avoid collisions, the importance of not inflating life jackets inside planes and improved seat design are all lessons learned from past crashes.

Conflict Zones

- Two aircraft were downed in conflict zones (Kazakhstan with 38 fatalities and Sudan with five fatalities)
- A significant number of long-haul routes worldwide are impacted by airspace restrictions.
- Multiple FIRs restricted or closed due to geopolitical conflicts
- Airlines forced into costlier, longer routes—impacting fuel, emissions, and passengers



- **Airspace should remain neutral and accessible wherever it is safe to do so.**
- **Aviation connects people, economies, and cultures — and that connectivity should not be compromised by geopolitical disputes. This does not mean ignoring national security or international law.**
- **Too often, we see airspace access used in retaliatory ways — a tit-for-tat approach that fragments global connectivity, disrupts operations, and hurts passengers and economies.**
- **We are calling for airspace decisions to be made based on safety, technical criteria, and ICAO principles — not politics. Rebuilding trust and restoring airspace access, even incrementally, is essential to a more resilient and connected global air transport system.**

- Rising Conflict Zone Risks:

  - **Widespread Impact**: In 2024, geopolitical conflicts led to significant airspace restrictions, affecting a substantial portion of long-haul routes. Notably, the Russia-Ukraine conflict resulted in the rerouting of approximately 1,100 flights daily, leading to longer flight times and increased operational challenges.
  - **Two aircraft downed** in conflict zones in 2024 (Kazakhstan with 38 fatalities and Sudan with five fatalities)
  - **Fuel & Emissions Surge**: Detours around conflict zones can lead to an average fuel consumption increase of 13% on affected routes. Flights between Europe and Asia experienced even higher increases, with fuel consumption rising by up to 14.8%
  - **Airspace Closures**: Multiple Flight Information Regions (FIRs) were restricted or closed due to geopolitical tensions. For instance, in October 2024, Iran launched missiles at Israel, prompting widespread airspace avoidance in the region.
  - **Operational Challenges**: Airlines faced increased costs and logistical complexities. British Airways, for example, suspended flights to Beijing due to the need to avoid Russian airspace, which extended flight times by nearly 3 hours and increased fuel costs by 20%.
  - **Safety Concerns**: The presence of missiles in active flight corridors raised serious safety issues. In October 2024, multiple flights encountered Iranian missiles aimed at Israel, leading to diversions and emergency maneuvers

- No civil aircraft should ever be a target—deliberate or accidental—of military operations.

- Governments must step up, enhance intelligence-sharing, and establish clearer global protocols to prevent such tragedies and safeguard civilian aviation.

Ukraine/Russia Impact on Civil Air Traffic in/to/from the EUROCONTROL Network

- Airspace closures (e.g. Ukraine) and sanctions (e.g. Russia) continue to disrupt flight operations.
- Average Summer High-Traffic Day (~35,000 Flights)
  - Predicted Cancellations: Up to 2,000 flights/day (6% of total traffic) on routes to/from Ukraine, and restricted Russia-bound services
  - Predicted Reroutings: Up to 1,500 flights/day (4.3% of total traffic) – flights adjusted to avoid restricted airspace
- These are the highest disruption levels seen in over 14 years of European air traffic operations.

**the numbers reflect the situation last year and this is summer expected to be similar.*

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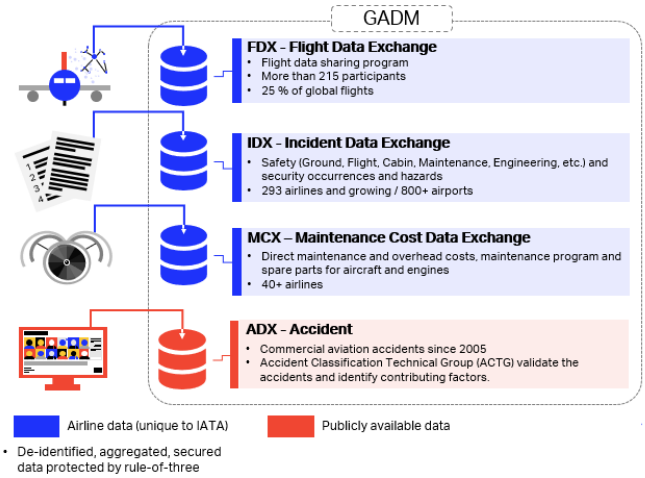
- The **Ukraine/Russia conflict** is the main driver of flight **cancellations and reroutings** in the EUROCONTROL network today.
- On an **average summer day** with around **35,000 flights**, up to **2,000 flights** are **cancelled due to:**
  - Closed Ukrainian airspace (unavailable for civil traffic)
  - Sanctions preventing flights between Russia and parts of Europe
  - These figures reflect a **sharp rise** compared to pre-conflict levels.
- **This equates to approximately 6% of total daily network traffic being cancelled due to the conflict (rounded up from 5.8%).**
- **Additionally, up to 1,500 flights per day must be rerouted to avoid restricted airspace, representing around 4.5% of daily traffic (rounded up from 4.3%).**
- **These percentages are exceptional and directly linked to the ongoing conflict.**
- **In over 14 years of managing European air traffic flow, such high levels of disruption have not been seen before.**

Data as a Force Multiplier for Safety and Operations

- Data is powering improvements in flight planning, predictive maintenance, and safety risk management
- IATA is leveraging operational data to enable smarter decisions
- Real-time insights are transforming how airlines respond to turbulence, technical events, and disruptions
- The future of safety isn't reactive—it's predictive

GADM – Where Aviation Data Comes Together

- GADM integrates safety and operational data from across the industry
- Includes Flight Data (FDX), Incident Data (IDX), Maintenance Costs (MCX), and Accident Records (ADX)
- Covers over **298 airlines**, **800+ airports**
  - FDX: 220
    IDX: 304 including GHSPs
    MCX: 44



- **IATA is the leading source of aviation safety and operational data**
- **The Global Aviation Data Management (GADM) program is a data management platform which integrates all sources of operational data received from various channels. These include IATA-unique programs, which all feed into a common, interlinked database structure.**
- **Three main pillars:**
  - FDX – Flight Data Exchange
  - IDX – Incident Data Exchange
  - MCX – Maintenance Cost Data Exchange
  - ADX – Accident data
- IATA's Flight Data eXchange (FDX) program comprises data from 30 million flights performed by 9,000 aircraft. - 8 million flights in 2024
- The FDX data captured from each flight monitors hundreds of parameters per second, thus making GADM the most authoritative and comprehensive collection of global aviation operational data in the world.

- IDX Incident Data eXchange (IDX) using AI to solve data quality and enhancing the data for greater safety insights. This innovation earned the DataIQ Grand Prix award, showcasing IATA's commitment to leveraging new technologies.

Mitigating Turbulence

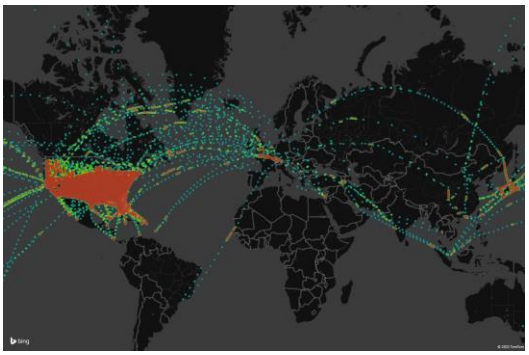
- 54% of travelers say they are more concerned about turbulence
- Real-time turbulence data allows pilots to make better in-flight decisions—more accurate than traditional long-range forecasts

10

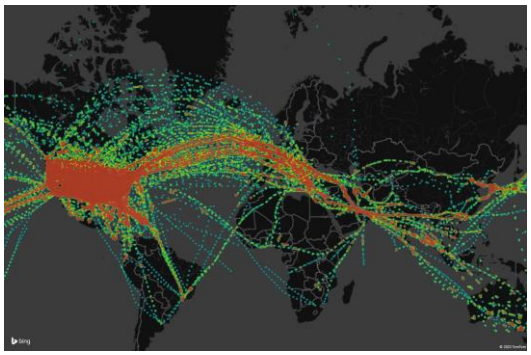
- One example when data is being used to improve safety is turbulence
- Turbulence can be an uncomfortable and unpleasant experience – IATA Passenger Survey revealed that 54% of travelers are more concerned about turbulence.
- Severe turbulence is rare however according to the FAA it is the leading cause of injuries to cabin crew and passengers in non-fatal accidents.
- Pilots use weather forecasts to anticipate and avoid turbulence when needed. However, these can be inaccurate, as weather radars cannot detect clear air turbulence.

IATA's Turbulence Aware is Scaling Fast

2019: 24 hours, 65k observations

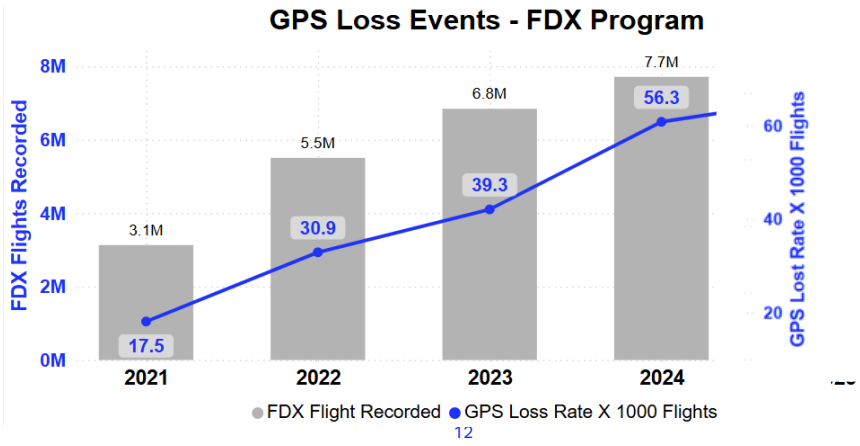


2025: 24 hours, 159k observations



- In 2018, IATA launched Turbulence Aware to give airlines real-time, data-driven insight into turbulence—helping pilots make safer, smoother decisions in flight.
- Data from **IATA's Turbulence Aware provides a real-time view of turbulence**, so flight crew can mitigate the impact
- With more airlines joining, the clearer the picture of turbulence: In 2024, the airlines involved in Turbulence Aware generated a total of 51.8 million turbulence reports, a significant 35% increase over 2023
- **Three additional airlines**—including **Air Premia, Air France and Etihad**—have signed up since the start of 2025
- Total of 28 airlines across 2,700 aircraft contributing data

GPS Jamming & Spoofing: GPS Signal Loss Events Evolution



- **GPS loss events evolution**
  - This chart shows the trend in GPS signal loss events reported under the FDX program over the last four years.
  - The **blue line** represents the **GPS Loss Rate**, measured as the number of GPS loss events per 1,000 flights.
  - The **grey bars** show the total number of flights recorded each year, in millions.

- **Key takeaways:**
  - In **2021**, the GPS loss rate was **28.1**, based on a relatively low number of recorded flights.
  - In **2022** and **2023**, the number of recorded flights increased significantly. The loss rate rose slightly to **30.5** and **30.8** respectively — showing a steady trend despite higher traffic volumes.
  - However, in **2024** the **GPS loss rate jumped sharply to 56.3**

- **Implications:**
  - This spike in 2024 is notable and concerning — it suggests that GPS interference or jamming is becoming more frequent, not merely a function of flight volume.

GNSS Priorities

- **OEM Support**
  Aircraft manufactures must continue to support aircraft operators by providing appropriate guidance.

- **Infrastructure Planning**
  Regional infrastructure rationalization plans must consider the optimal Minimum Operational Network (MON) of conventional navigation.

- **Global Coordination through ICAO on:**
  - Advancing future-proof navigation technologies to resist interference
  - Develop standardized protocols for States to notify flight crews of interference events

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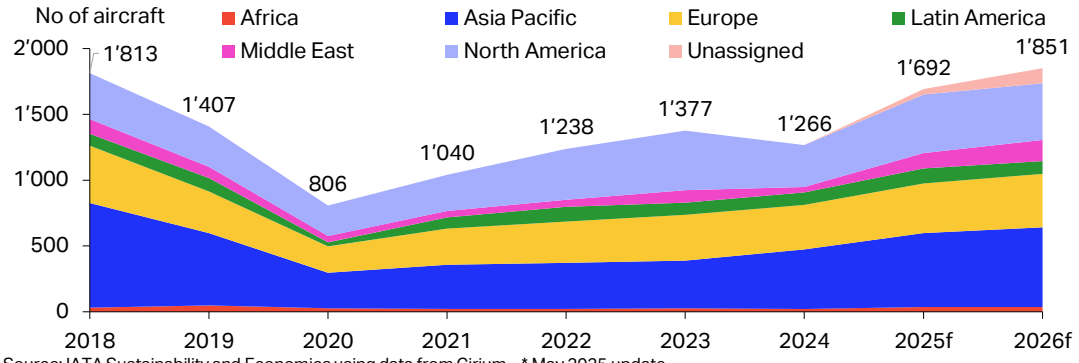
Aircraft Capacity Constraints Will Persist in 2025 and Beyond...

Aircraft deliveries by region

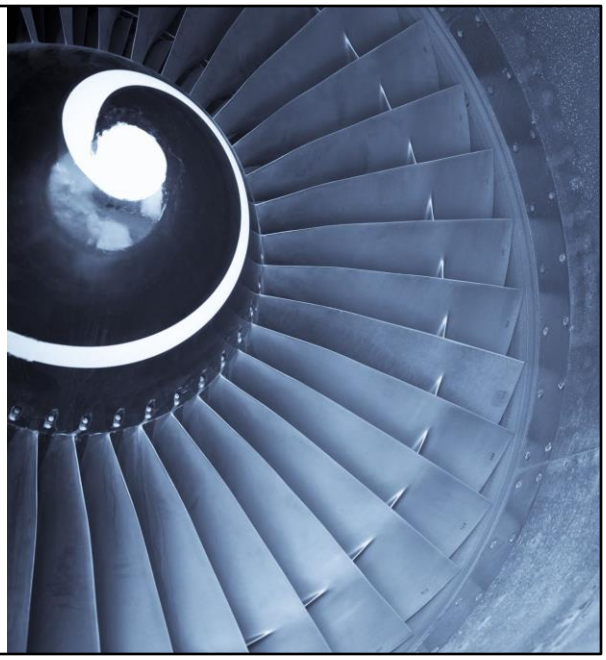


Source: IATA Sustainability and Economics using data from Cirium * May 2025 update

- We expect aircraft delivery issues will persist in 2025.
- Although the number of aircraft delivered is expected to rise, perhaps substantially vs 2024, we should not exceed the 2018 record-high by 2025.
- We also believe there is still a risk of downgrade of the 2025 forecast, same as it happened in 2024. In 2024 the final number of delivered aircraft was 500 lower than original estimates from Cirium.
- We observe an uptick in deliveries in the first quarter. However, we would need to see higher growth rates in deliveries in coming quarters, as the 10% seen in 1Q 25 would not be enough, to reach more than 1,600 aircraft deliveries in 2025.

Grounded Aircraft, Missing Engines

- About 15% of the global fleet is in storage — above long-term average of 12%.
- Of these ~1,100 aircraft are younger than 10 years, and most of these jets are parked due to engine issues.
- 69% of young fleet in storage linked to PW1000G engine problems.
- **Utilization is near 2019 peaks**—airlines are flying everything that can fly
- The demand is ready, the passengers are ready — but the aircraft and engines are still catching up.



- Compounding this is the issue of ground aircraft due to missing engines.
- Over 1,100 aircraft under 10 years old are in storage—3.8% of the global fleet, compared to just 1.3% pre-2019
- Global storage is 15%, just above average—but nearly all grounded young planes are parked due to engine issues
- Of these, 69% are grounded due to PW1000G engine issues
- Utilization is near 2019 peaks—airlines are flying everything that can fly
- The aircraft are ready, the passengers are ready, the engines and aircraft are not

Supply Chain Pressures on Maintenance

- Airlines are grappling with a **perfect storm of supply chain bottlenecks**
- **What's driving the problem:**
  - Skilled labor shortage
  - Parts delays and raw material constraints
  - Clogged MRO shops and poor forecasting
  - Spike in maintenance demand post-COVID recovery

- **The result?**
  - Rising costs
  - Lower technical reliability
  - Delays in network recovery and growth

- **Airlines also face severe shortages in spare parts and overhauled units**

- **Maintenance is also a challenge in a complex supply chain affected by:**
  - Skilled labor shortages in both the manufacturing and MRO sectors.
  - Technical Inefficiencies: generational overlap, standardization, interoperability, lack of digitalization, regulatory acceptance
  - Poor Forecasting: Poor part data, complex MRO supply chain
  - MRO Demand Spike: Aging fleets due to delivery challenges, parts makers being pulled in two directions: Do they supply a part to an aircraft manufacturer to build a new aircraft or provide it to an airline that needs a replacement part? Engine teething issues
  - Raw Material Availability: Geopolitical issues, rerouting supply chains
  - Clogged MRO Shops: Lack of hanger slot capacity, lack of engine overhaul slots, waiting for parts, logistics issues
  - Strong Parts Demand: Low inventory levels, everyone restocking
  - Lack of Alternatives: Few aircraft retirements, few suppliers approved to repair equipment

- **This has led to:**
  - Airlines unable to scale network as planned

- Having issues with technical Reliability
- Raising industry costs

Teardowns: A Valuable Source of Parts

- Aircraft teardowns have become an important source of aircraft and engine parts
- Helps alleviate bottlenecks in new aircraft and engine deliveries
- Commercial aircraft disassembly, dismantling and recycling market size is projected to grow from $8.07 billion in 2023 to $14.72 billion in 2033
- IATA MRO SmartHub has hosted more than 270 teardown projects, offering up more than 250,000 spare parts through MRO SmartHub

Turning Metal into Money: Korean Air's Teardown Win

IATA supported Korean Air with a teardown of a Boeing 777-200

- Connected the airline to **45 potential buyers** and sourced **1,969 bids** across **586 parts**
- All 586 parts received bids—from **APUs and landing gear** to **cabin interiors and aircraft skin for upcycling**
- Revenue from the auction **exceeded teardown costs**, proving value in sustainable asset recovery
- One retired aircraft, hundreds of parts, as profitable second life

IATA MRO SmartHub

18 4 June 2025

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Lithium Batteries

- Recent incidents of lithium battery fires underscores the importance of managing these risks properly.
- Battery operated devises, power banks and spare batteries can be carried safely in aircraft cabins.
- Knee-jerk changes to regulation should be avoided — global consistency keeps aviation safe

- **Battery operated devises, power banks and spare batteries can be carried safely in aircraft cabins**
  - Battery operated devices, power banks and spare batteries are subject to strict global guidelines under the IATA Dangerous Goods Regulations.
  - Airlines are trained and equipped to manage risks, and passengers play a vital role by taking care of their devices and following packing instructions carefully.
  - The system works—when everyone follows the same rules.

- **Knee-jerk changes to regulation should be avoided — global consistency keeps aviation safe**
  - Knee-jerk reactions often miss the real risks and create new safety and operational problems.
  - Fragmented rules undermine safety. When countries take different approaches, passengers face confusion and may unknowingly violate safety rules—for example, packing power banks in checked luggage, where fire risks are harder to manage.
  - Any changes to regulation must be evidence-based and coordinated through ICAO.
  - A harmonized approach protects passengers, supports airline operations, and ensures clear guidance across borders.

- **Passengers play a vital role by taking care of their devices and following packing**

instructions carefully.

Travel Smart with Lithium Batteries

- **Pack light:** Only bring the devices and batteries you really need.
- **Stay alert:** If a device is hot, smoking, or damaged, tell the crew immediately.
- **Keep devices with you:** Always carry phones, laptops, cameras, and other battery-powered items in your hand baggage—not in checked baggage.
- **Protect loose batteries:** Keep spare batteries and power banks in their original packaging, or cover the battery terminals with tape to prevent short-circuits.
- **Gate check reminder:** If your hand baggage is taken at the gate to go in the hold, remove all lithium batteries and battery-powered devices first.
- **Check battery size:** If you're carrying a larger battery (more than 100 watt-hours or Wh)—like for some cameras, drones, or power tools—you may need airline approval. Check before you fly.

Priorities for a Safer, Smarter, More Resilient Industry

1. Governments must keep airspace neutral and accessible.

Civil aviation must be protected from conflict, interference, and fragmentation.

2. Governments must mandate timely and transparent accident reporting.

Delayed or incomplete reports deny operators, manufacturers, and regulators the insights needed to prevent future accidents

3. OEMs must step up.

Collaborate with airlines, resolve supply chain bottlenecks, and deliver on commitments to get fuel-efficient aircraft into service.

4. The industry must unlock the value of data.

Timely, consistent data sharing is essential to strengthening global aviation safety and efficiency.

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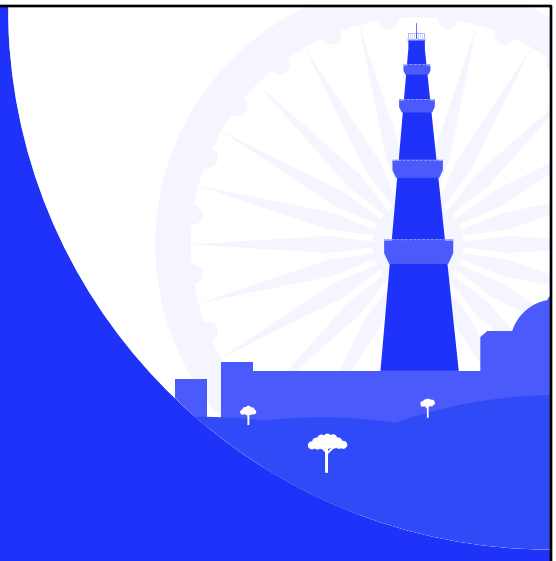

Questions

Thank you

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