

Aircraft

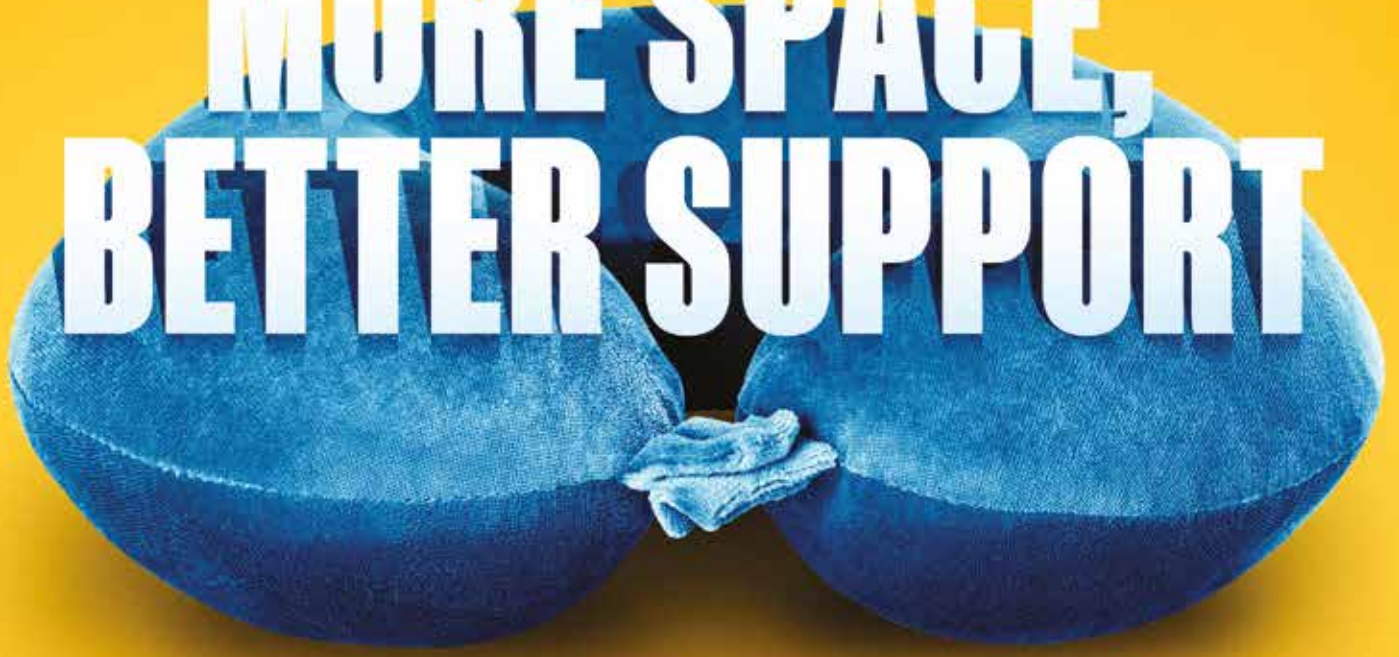
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VOLUME 15 • ISSUE 02 • APRIL/MAY 2026

CABIN

Perfecting the passenger experience

Management



**MORE SPACE,
BETTER SUPPORT**

**All rise for the user-centric
seating of the future**

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AIX PREVIEW

What to expect from this
year's extravaganza

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CATERING FOR ALL

The tech and logistics that
keep passengers fed

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LIGHTING THE WAY

Modern ways of keeping
the lights on in the cabin

P.64

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STRAITS TALKING

While everyone in our sector is busy packing their toiletries ahead of the AIX trade show, I must say I'm a little worried.

I'm streaming a news channel, and it is showing that portions of the world are on fire right now, both figuratively and literally.

The crisis in Iran and across the Gulf countries needs no introduction. Meanwhile Russian oil and gas terminals are ablaze (and its products are sanctioned anyway). Venezuela seems to be holding, but who knows how long that situation might last?

There's a report that the UK's emergency committee are drawing up plans in the event of a shortage of jet fuel. Undoubtedly other governments are doing the same.

Aside from possible fuel shortages, and the corresponding rise in price, research shows that the public are less likely to travel during a period of instability, even if they are not flying anywhere near an active war zone.

So what can airlines do to help mitigate this? I'd suggest that they need to double down on providing the best passenger experience in all cabins to ensure passengers who are comfortable to keep flying will want to come back time and again.

Elsewhere in this issue, you'll read an extract from Jennifer Coutts Clay's book where she



▲ This pinch-point could decide aviation's future

People are less likely to fly during a war, even if they are not near it

described how in the aftermath of 9/11, passengers were given downgraded meals, or no food at all on certain US airlines even after the catering supply chain was restored. It is perhaps no coincidence that we saw the rise of Asian and Gulf carriers at around this time.

If a positive can be taken from this, perhaps the development, production and uptake of SAF doesn't look so fanciful after all.

Greg Whitaker

Greg Whitaker

Editor

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Aircraft CABIN Management

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Let's talk rubbish; specifically, the best way to reduce it



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NEWS FROM ACROSS THE INDUSTRY



Interiors

EASYJET TO FIT MIRUS KESTREL IN 237 NEW AIRCRAFT

Low-cost carrier easyJet has announced that it will fit Mirus Kestrel seats on future A320neo and A321neo in a deal covering 237 upcoming aircraft.

The deal covers aircraft deliveries from 2028, and the British-made seats will result in a weight saving of up to 500kg per aircraft – estimated to deliver a combined annual fuel saving of over 12,936 tonnes, equivalent to over 40,513 tonnes of CO₂.

The Kestrel's 'pre-reclined' ergonomic design will also improve leg room and comfort, according to the airline. Its low part count and simplified design reduce maintenance requirements, while its robust structure ensures long-term durability in service.

The seats have been developed and tested at Mirus' UK-based MTEST

facility, one of the largest commercial testing centres of its kind, which reduces time, cost and carbon emissions by eliminating the need to transport seats for external certification.

David Morgan, chief operating officer at easyJet, said: "On top of the sustainability benefits, the additional legroom and enhanced comfort these seats will provide will also deliver an improved onboard experience for our customers which we know they'll love."

Ben McGuire, chief executive officer, Mirus added: "This landmark agreement is a defining moment for Mirus."

66
This landmark agreement is a defining moment for Mirus



Connectivity

British Airways installs Starlink on first 787-8

> British Airways' first aircraft equipped with Starlink Wi-Fi has entered service.

The 787-8 aircraft bound for Houston is the first in the airline's fleet to be connected, giving customers fast Wi-Fi. Within the next two years, the British Airways fleet will have this new technology available for all customers free of charge.

Describing the launch as "a landmark moment," Sean Doyle, British Airways' chairman and chief executive said: "We're excited to be the first UK airline to bring this level of connectivity to our customers."

"This milestone is part of a wider investment in elevating every aspect of our customer journey as we continue to modernise our airline."

He continued, "The same high-speed service will enable the airline's Cabin Crew and Flight Crew to communicate seamlessly in real time with colleagues on the ground."



Seating

EUROWINGS TO INSTALL 'PREMIUM BIZ' CLASS

➤ Low-cost airline Eurowings is to introduce a premium seating class on eight of its Airbus A320neo aircraft.

Instead of the traditional all-economy 2x3 layout, the airline will offer a roomier 2x2 seating configuration in the first two rows, creating eight "Premium BIZ" class seats.

The business class Geven "Comoda" seats come with several upgrades including adjustable footrests, USB charging ports, pillows, blankets, an

amenity kit and an enhanced inflight service featuring an aperitif, a hot meal on porcelain and an expanded drinks menu.

The airline frames the move as part of a broader strategy to differentiate itself through affordable comfort rather than maximising seat density. CEO Max Kownatzki said: "The success of our market tests made it clear that many passengers on longer flights want a bit more space and affordable comfort."

Business

WIZZ PREDICTS PROFITS DROP

➤ Wizz Air estimates that the current crisis in the Middle East will result in a negative impact to its FY26 net profits of around €50m.

The airline says that in terms of the expected impact, approximately one third is a result of cutting scheduled services to the Middle East, such as the Abu Dhabi base, with the remainder as a result of the Iran conflict.

The statement, issued on March 4th read: "Our assessment of the impact

of these macroeconomic factors is based on jet fuel and US\$/€ rates as of today, and assumes that these rates will remain at current levels for rest of Fiscal Year 2026.

As a result, Wizz Air expects that its reported net profits will fall below the guidance released on January 29, 2026, given at the time as 'Expected to be in the range of +€25m to -€25m.'

The airline will announce its F26 results on Thursday, June 11.



BRIEFS

- United Airlines has begun selling seats on its newly redesigned 787-9 Dreamliner featuring the United Elevated interior (pictured). The refit features plusher Polaris business class suites.

- Qantas has reached an agreement to settle the class action regarding flight credits during Covid that was brought against the airline in August 2023. The settlement is subject to approval by the Federal Court of Australia.

- Recaro Aircraft Seating APAC has picked up an award for its Corporate Social Responsibility (CSR) and sustainability efforts seen throughout the past year in the Asia Pacific region.

- Spirit Airlines has reached an agreement in principle with its backers on key terms for a restructuring agreement. This will help the embattled LCC exit Chapter 11.

- Salient Motion is to supply seat manufacturer Aviointeriors with actuators. The plan is to introduce a qualification-ready seat actuation alternative in roughly one year.

- IFE provider Anuvu has signed a distribution agreement with The Pokémon Company International.

[IN NUMBERS]

\$68BN

Bizjet sector projected to grow by a third by 2035, according to Fortune Business Insights data

30

Sessions relating to the cabin booked at the upcoming Passenger Experience Conference

25

The AIX exhibition has been held annually since 2000, missing only one edition due to the pandemic



Security

‘HALF A DOZEN’ DRONE INCURSIONS PER DAY AT STANSTED AIRPORT

Frequent civilian drone incursions are a major problem for UK airports, but fixing the issue is a problem that needs a plan consistent across the nation, according to the chief asset and development officer for Stansted Airport.

Speaking at the Commercial Aviation Summit held at the Royal Aeronautical Society, Mike Hardaker admitted that incursions were frequent and there were few ways in which an individual airport could retaliate.

“We get around half a dozen drone incursions per day,” Hardaker said.

“At the moment the response is that the police have to go out and physically find those responsible.”

Acknowledging the situation, Hardaker added: “There is technology

out there that can tackle this, and we share what we are doing with the other airports. However, this is one of those problems which the aviation community as a whole needs to tackle.

“It sounds flippant, but imagine an alarm on your car that goes off at 70mph. There will be people who very quickly find a way to turn it off, and upload that on the internet,” he explained.

London Stansted is owned by MAG Group, which also owns Manchester Airport and East Midlands Airport.

“At the moment, police have to physically find those responsible”



Connectivity

LOT begins fitting Viasat inflight Wi-Fi

➤ Flag-carrier LOT Polish Airlines has begun rolling out Internet access on its long-haul fleet. The service is currently available on the first Boeing 787 Dreamliner plane (SP-LSA). It will be offered on two more aircraft by the end of April. The system chosen is Viasat Amara.

Izabela Leszczyńska, director, product development and customer experience office, LOT Polish Airlines, said: “We wanted a solution that would ensure stability and high quality, which is why we chose a partner with well-established experience in aviation.”

Don Buchman, president, Viasat, added: “We are proud to bring Viasat Amara to LOT Polish Airlines as they take this important step in elevating the long-haul passenger experience.”

Complimentary internet access is available to LOT business class passengers and members of the Miles & More program from certain airlines, regardless of travel class.

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AIX HAMBURG PREVIEW

1

The perennial interiors expo returns for its 25th edition. Here's what to expect

There's one date in the calendar that every professional connected with the aircraft cabin will know about, and that is the Aircraft Interiors Exhibition better known as AIX.

This year, nearly 500 companies are set to exhibit – including 74 first-time exhibitors, 14 in the new BizJet Zone and 77 in the IFEC Zone.

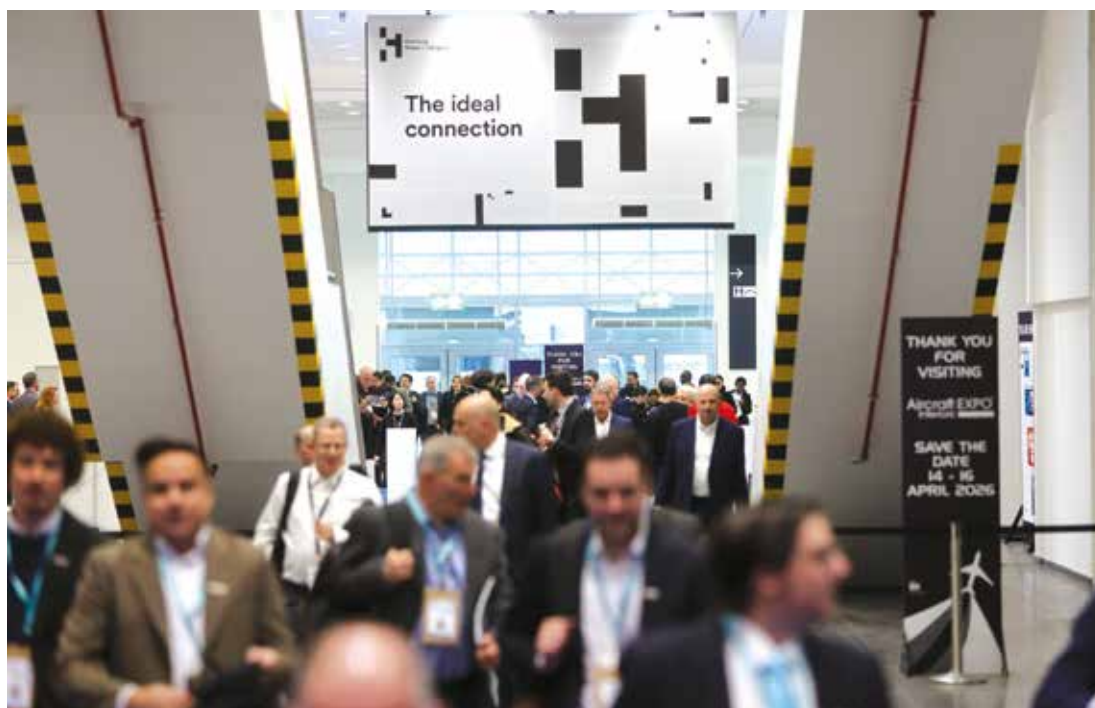
The 25th edition will also welcome show veterans. Twelve exhibitors have been attending for over 20 years, among them names such as B/E Aerospace, Belgraver BV, Botany Weaving Mill, and Lantal Textiles AG, joined by the likes of Percival Aviation Ltd, Rohi Stoffe GmbH, Tex Tech Industries, CELSO, Enflite, Panasonic, Schott and Isovolta.

Among the innovations on this year's show floor, Airchair will present its expanded wheelchair range, headlined by the Airchair II, following a global distribution deal with Satair, and WestJet's order of 22 units for its Boeing 737 fleet.

In connectivity, ThinKom will unveil a new small form factor antenna supporting ultra-fast GEO, MEO and LEO operation, engineered with reduced weight, lower cost and a smaller footprint. SES will be showcasing how it's aiming to make inflight connectivity easier by standardising how Android devices connect to inflight Wi-Fi through a new partnership with Google. Panasonic Avionics is set to demonstrate the progress being made across in-flight systems, connectivity, digital solutions and technical services.

Galley newcomers

On the galley equipment side, DKA Aerospace makes its debut with WasteLite, a lighter waste cart designed for easier handling, and ThermalCool, an insulated cart capable of keeping food below 7°C for 24 hours. A third product, addressing what the company describes as “an issue airlines have been asking to solve for years,” will be revealed exclusively at the show. Enflite will be showcasing its Modular Refrigerator. This advanced galley appliance separates the compressor-based cooling module, storage module and door panel, allowing each component to be routed to the appropriate teams for fit and finish. The result is improved material flow and a more streamlined aircraft completion process.



1. Around the stands at AIX
2. The entrance hall on opening day in 2025
3. Numerous panels and discussions are held during the event

2

“THERE’S ONE DATE IN THE CALENDAR THAT EVERY PROFESSIONAL CONNECTED WITH THE AIRCRAFT CABIN WILL KNOW ABOUT, AND THAT IS THE AIRCRAFT INTERIORS EXHIBITION BETTER KNOWN AS AIX”

In cabin lighting, Schott and F/LIST will introduce Opal Terra, a new reading light line incorporating natural materials such as wood and stone. Schott will also debut SeatSpot, a projector-based device integrated into business-class seat shells that shows seat numbers, logos or messages to streamline boarding and enhance the passenger experience.

Cabin equipment manufacturer Sogeclair will unveil three concepts using its ‘Vista’ cabin pod demonstrator. The first is an enhanced privacy door aiming to elevate personal space, acoustic comfort and cabin aesthetics. The second is a meal table including a single-piece business-class console table and a bi-fold side-ledge version enabling companion dining in front-row minisuites. And thirdly, a more open and flexible layout that maximises space and elevates the traditional front-row experience, with the Front Row Monument Minisuite.

On the sustainability front, Gen Phoenix has partnered with Boeing, Teague, Elevate Aircraft Seating,

Aerofoam and Müller Textil Group to launch the CircularAir Guide – a practical resource embedding circularity into seat design from the outset. The company will also unveil new premium leather finishes reflecting smarter material choices across the aircraft lifecycle.

Many more companies are expected to reveal brand new products and concepts exclusively at the show.

Insight and debate

The show isn’t all about the physical exhibits though. There are many panels and seminars to let you feel the pulse of the industry. CabinSpace Live, the show’s dedicated conference programme, free to attend for AIX visitors, will run over 15 sessions across three days. Expert panels, in-depth Q&As and practical case studies will shine a light on the trends and technologies. Sessions will feature speakers from APEX, Airbus, Vueling, Thales InFlyt Experience, and many more.

Fireside chats will return for 2026, offering lucid conversations led by senior

voices from airlines, manufacturers and industry associations. These sessions are designed to make complex topics accessible and engaging, while equipping airlines and industry professionals the insights they need to make informed decisions around passenger experience improvements, product development and service delivery.

The programme will open with a session on antennas and satellites and the next leap in in-flight coverage, before exploring how airlines can better link pre-flight, in-flight and post-flight touchpoints through smarter use of data and personalisation. Sessions will also examine how airlines can deliver diverse

3





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1. A Cabin Space Live sessions underway
2. The Airbus stand at last year's AIX

to connect, share experiences and gain practical insights from peers and industry leaders, alongside a complimentary buffet lunch.

Archana Dharni, event director, Aircraft Interiors Expo, says: "Twenty-five editions in, and innovation in the aviation interiors sector is accelerating at speed. What AIX uniquely delivers is the entire interiors ecosystem in one place, moving at the pace the industry now demands. This anniversary edition is both a moment to reflect on how far the sector has come since our very first edition, and a critical launchpad for the transformational technologies that will come next. It will be simply unmissable." ●

The 25th edition of Aircraft Interiors Expo (AIX) will take place at the Hamburg Messe in Hamburg, Germany, from 14-16 April 2026. The event will be co-located with the World Travel Catering & Onboard Services Expo (WTCE), following the Passenger Experience Conference (PEC) on Monday 13 April.

in-flight entertainment that meets evolving passenger tastes and regulatory compliance requirements while maximising monetisation opportunities.

Get comfortable

Further topics include improving cabin comfort through seating, materials, lighting and air quality; advancing inclusive design; and how evolving passenger expectations and sustainability goals will shape the cabin of 2030 and beyond. Commercial aviation will also be in focus, alongside a session offering practical insights for aviation start-ups. In addition, delegates can look forward to discussions on rethinking comfort on long-haul flights, the future of regional flying in North America, and the much-anticipated announcement of this year's Crystal Cabin Award winners.

Speakers in the programme will include Marc Landgraf, partner at Porsche Consulting GmbH; Paul Edwards, head of advanced design at Airbus; Nils Stoll, owner and CEO of Green Mobility Interior; Tammo Bahns, accessibility and inclusive design expert at Diehl Aviation; Steven Greenway, CEO of flyadeal; and Arendse Baggesen, founder and CEO of SMALLrevolution.

Details of additional talks taking place on Thursday 16 April will be announced soon on the AIX website.

Complementing the programme, Viasat's Women in Aviation Leaders lunch will take place on Wednesday 15 April, bringing together professionals from across the aviation interiors ecosystem for an inclusive and engaging networking opportunity. Open to all, the session will offer a relaxed setting

2

1

NEW IN 2026: THE BIZJET INTERIORS ZONE

AIX 2026 will launch the BizJet Interiors Zone, a brand new area spotlighting the technologies, materials and craftsmanship shaping VIP, business jet and eVTOL cabins. With business aviation activity 10% above pre-pandemic levels and driving rapid innovation in design and comfort, the new zone will bring together leading business jet innovators and suppliers, including Jet Aviation, Fokker Services B.V., Townsend Leather, High Tech Finishing and more.

PASSENGER EXPERIENCE CONFERENCE 2026

A record number of airlines are lining up to share insights in Hamburg

As in previous years, the Passenger Experience Conference (PEC) 2026 will be held on the day before AIX at the Hamburg Messe.

The organiser will bring speakers from a record 20+ airlines, including United Airlines, Virgin Atlantic, Saudi Airlines and Fiji Airways, alongside designers, technology providers, and industry innovators from Panasonic Avionics, Tangerine, Teague and Caynova AG.

“PEC 2026 is shaping up to be one of our most ambitious editions yet,” said Archana Dharni, event director of AIX. “We can’t wait to welcome delegates to PEC to share ideas, challenge assumptions and ignite the next wave of passenger experience innovation.”

Main stage highlights

The main stage will feature ‘The Great UXcape,’ a keynote panel with Akuila Batiweti, chief customer officer, Fiji Airways; Rossen Dimitrov, chief guest experience officer, Saudi Airlines; and Steven Greenway, chief executive officer, flyadeal. The session will discuss how airlines – from low-cost to long-haul full-service – are redesigning every passenger touchpoint, blending technology, personalisation and connectivity to make journeys smoother, more intuitive and memorable.

▼ Networking is a key part of the conference



▲ Panel discussions at PEC are always thought-provoking

“PEC 2026 IS SHAPING UP TO BE ONE OF OUR MOST AMBITIOUS EDITIONS YET”

In another highlight, Tero Taskila, chief executive officer and chairman, Beond, will present ‘Executive travel: Unrivalled luxury, Unmatched performance,’ showcasing the world’s first premium leisure airline. He will demonstrate how design, technology and craftsmanship combine to deliver an inflight experience that exceeds passenger expectations.

Sessions

Sessions in the Digital First; Personal, Intelligent & Intuitive stream will examine how technology is shaping smarter, more seamless journeys. Discussions will cover data-driven personalisation, next-generation IFEC, and how airlines can harness technology to create smoother, more intuitive passenger experiences.

Speakers confirmed include Dominic Green, director, inflight entertainment, United Airlines; Mohamed K AbdelRehim, CEO, SKYFive Arabia; and Jonas von Kruechten, founder and principal advisor, dgtlsky.

The Wellness, Comfort & Human-Centric Design stream will explore passenger wellbeing, accessibility and inclusivity. Sessions will highlight strategies to reduce fatigue and travel stress, design cabins and services that accommodate diverse needs and create truly human-centred experiences. Speakers include Clemens Strauss, vice president, customer experience, product and marketing, Eurowings; Blake Emery, board member, All Wheels Up; and Brent Jump, head of sales and marketing, Caynova AG.

The Sustainability & the Eco-Conscious Traveller stream focuses on practical strategies for greener air travel.

New sessions are being added to the programme regularly, with more to be announced ahead of the conference.

The day of insights will close with a networking reception, free for all PEC delegates, bringing together industry professionals for an informal evening of conversation and relationship-building over cocktails, global cuisine and live music. ●

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CRYSTAL CABIN AWARDS: FINALISTS ANNOUNCED

We look at the finalists for the most contested trophy in the Cabin

1

The Crystal Cabin Award 2026 highlights the aviation industry's latest advances in comfort, accessibility, sustainability and digitalisation. This year, 24 finalists across eight categories have been selected from 85 international submissions spanning airlines, OEMs, suppliers, design studios and start-ups. Winners will be announced on April 14, 2026, during Aircraft Interiors Expo (AIX) in Hamburg, Germany.

Accessibility

The Accessibility category centres on inclusive travel solutions that improve independence and comfort for all passengers.

Airbus, with Ipeco Holdings and AMF-Bruns, presents the Airspace U Suite, a universal cabin concept enabling wheelchair users to remain in their own chairs during flight. Flexible seating allows semi-private, face-to-face, and premium seating for mixed passenger groups.

Diehl Aviation's AURS – Adaptive User Routing System – enhances lavatory accessibility for blind and deaf

passengers through an adapted layout and digital guidance that includes tactile cues and visual safety announcements.

RAVE Aerospace introduces Live Transcription and Translations, which displays cabin announcements as real-time text – transcribed and translated into a user's preferred language – directly on the seatback IFE.

Cabin concepts

Finalists in Cabin Concepts rethink aircraft interiors with holistic, space-efficient and premium design approaches.

All Nippon Airways and Acumen Design Associates propose THE Room FX, a dual-seat module that saves space by keeping the backrest fixed while the leg rest forms the lie-flat surface.

Design Investment, with Air France and Stelia Aerospace, unveils the Air France First Class Suite, featuring separate seating and sleeping zones, dual 32-inch screens, a split mattress for adaptable rest positions and an integrated privacy “ribbon.” The layout supports a four-abreast configuration on the Boeing 777.

Thompson Aero Seating's VantageNOVA First transforms a single

premium seat into double or quad seating for social dining or meetings, creating a first-class-style experience without reducing business-class density.

Passenger comfort

This category focuses on ergonomic design, flexibility and new approaches to space usage.

Airbus's Airspace A350 First Class concept features a master suite with a double bed, a private lavatory and a bar area, along with virtual panoramic windows to expand the sense of space.

BMW Designworks introduces SPACEFRAME, an economy-class seat system using modular, lightweight materials with an ergonomic mesh

2



1. The Airbus U Suite offers flexible seating
2. ZIM Aircraft Seating's The Frame has modular, wooden components
3. smairGo, a digital repair and management tool
4. Guangdong University's AeroMorph seat
5. Diehl Aviation's AURS enhances lavatory accessibility for blind and deaf passengers



3

back and integrated power, lighting and wireless charging – fully recyclable at end-of-life.

Collins Aerospace presents SkyNook, a semi-private retreat in the aft cabin that uses previously unused space for families, passengers with special needs, travellers with pets, or those carrying bulky items.

Cabin technologies

Innovations in AI, sensors, automation and crew-centered design dominate this category.

AviusULD, with Eloc8, offers the SmartULD – Fire Tag, a tracking device that detects lithium-ion battery overheating up to two hours before ignition in both overhead bins and cargo containers.

Jamco & JAXA's Crew-Centered "C"-Galley redesigns galley workflows, separating work zones and reducing

cross-traffic while maintaining storage volume.

ZAL Center of Applied Aeronautical Research, with 3D.aero and Hamburg University of Technology, proposes Automated Quality Inspection, an AI-robotics system that detects cabin deviations and builds precise 3D models. A proof of concept identified all deviations within 30 minutes.

IFEC & digital services

Digital platforms and medical assistance tools lead this year's finalists.

Delta Air Lines' Connected Onboard Platform unifies operational and passenger data to enable consistent, personalised service across its fleet.

Veyond Metaverse offers FlyMD 5D XR, enabling remote physicians to participate in medical emergencies through real-time 3D cabin views and spatial guidance.

United Airlines, with Starlink, Axinom, and Spotify, presents an architecture delivering a unified, connected passenger experience through integrated streaming, device use and fleet-wide consistency.

Sustainable cabin

Three finalists focus on lighter, circular and bio-based materials.

Recaro Aircraft Seating's R Sphere seat reduces weight by 1.5 kg per passenger and saves around 55 tons of CO₂ per year per single-aisle aircraft.

Testori 1904 introduces a Plant-Based Fibre Textile System offering fire-safe, circular seat and cabin textiles.

ZIM Aircraft Seating's The Frame uses modular wooden components to reduce synthetics, weight and maintenance.



4

Breakthrough start-ups

This brand new category recognises disruptive concepts.

GMI advances cabin circularity with its aviation plastics Material Upcycling Hub and a zero-waste countertop for A320 galleys.

Quvia provides an AI-driven platform for real-time monitoring of digital cabin systems, reducing faults and improving reliability.

smair, with EK Engineering, presents smairGO, a digital repair and lifecycle management tool that standardises cosmetic cabin repairs.

University

Academic innovation showcases future-oriented concepts.

Georgia Tech, with Airbus and Delta, proposes a Closed-Loop Cabin Catering Data System to optimise food forecasting and reduce waste.

A second Georgia Tech project, SMARTrack, improves cabin-cleaning coordination to reduce delays and emissions.

Guangdong University of Technology's AeroMorph Seat uses pressure-responsive cushions that adapt automatically during flight without electronics. ●



5

WHAT, WHEN AND WHERE?

Crystal Cabin Awards
gala dinner
Doors open at 6:00 PM
Hamburg Chamber
of Commerce

IFPL
GROUP



COBALT
AEROSPACE

IFPL

AIX
Hamburg, Germany
Stand 4B20
14th - 16th Apr

ifplgroup.com

MRO Americas
Orlando, Florida
Stand 1752
21st - 23rd Apr

FUTURE-PROOFING POWER

Designing in-seat power systems to be durable takes time and effort
says **Mark Reed**, business development director, IFPL

A decade ago, an in-seat power socket was a nice to have. Today, it is closer to oxygen: invisible when it works, unforgettable when it doesn't.

Walk through any departure lounge and you will see the evidence. Passengers cluster around wall outlets, juggling cables, watching battery percentages like countdown clocks. By the time they board, phones, tablets, laptops, and handheld consoles are no longer accessories – they are how people work, relax, and parent at 35,000 feet. For airlines, that reality has quietly turned passenger power from a cabin feature into a core operational requirement.

The challenge is not simply supplying power. It's supplying the right kind of power, at the right scale, in an environment where demand is changing faster than aircraft interiors. The number, variety and power draw of onboard devices are all increasing, but cabin systems cannot expand endlessly in weight or electrical capacity. So, the question is: how can airlines ensure consistent, reliable in-seat power as devices and expectations evolve?

Understanding consumption requirements is a critical first step. Providing 5W to trickle-charge a smartphone is no longer sufficient; high-draw devices can now demand up to 60W. Multiply that across a cabin and the load becomes significant.



“The number, variety and power draw of onboard devices are all increasing but cabin systems cannot expand endlessly”



MARK REED

business development
director, IFPL

Architecture not wattage

Many operators ask a single question: how much power should we install? The better question is: how adaptable can the system be? USB Power Delivery (USB-PD) brings order through USB-C, letting devices negotiate voltage and current in real time, from 5V to 20V, delivering 15W to 60W and beyond. A laptop that prefers 45W can operate at 27W if necessary, charging more slowly but remaining usable. Interoperability is essential, but it's only half the solution.

The real differentiator lies behind the seat – in how power is generated, distributed, and managed across the cabin. Future-proofing is not about installing maximum



2

wattage everywhere; it's about scalable architectures providing a baseline level of power universally, then building capacity where it matters most.

Economy passengers typically need enough energy for phones and tablets, while premium cabins may justify guaranteed higher outputs for laptops. Modular design allows airlines to increase capability over time without full replacement.

Equally important is smart power management. Dynamic power-sharing systems monitor total demand and distribute capacity where it is actively used. This prevents system overload without excessive electrical overhead, reducing weight and installation costs.

Airlines must not treat in-seat power as one-size-fits-all.

As passenger behaviour evolves, capacity can be increased incrementally, not expensively ripped out and replaced.

In-seat power is no longer about meeting a moment – it's about planning for progression. Airlines that take a scalable, data-driven approach today will be best positioned to support the connected cabin of tomorrow. ●

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THE MRO SUPER-CYCLE

Deepak Sharma, CEO of Aircraft Finance Lease
explains how cost inflation is rewriting aviation finance

Airlines may generate \$41bn in net profit by 2026, but sub-4% margins leave little room for structural cost drift. The most consequential shift underway is not fuel or financing. It is lifecycle maintenance inflation, reshaping aircraft valuation logic.

Global MRO expenditure exceeded \$114bn in 2024 and is projected by Oliver Wyman to surpass \$150bn within a decade. That trajectory is not driven solely by demand; it reflects embedded cost escalation across labour, materials and engine durability.

For lessors, maintenance is no longer a technical forecasting input. It is a primary driver of asset risk.

Delivery delays at Airbus and Boeing have stretched production backlogs to around 17,000 aircraft. According to the IATA, the average fleet age has exceeded 15 years.

Operators are extending the life of mid-life assets because they must. The effect is mechanical: as aircraft move past year 12-15, maintenance visit intensity increases non-linearly. Structural checks deepen. LLP exposure compounds. Transition costs rise.

▼ Powerplant MRO now accounts for roughly half of total maintenance expenditure



“
**The repricing,
when it comes,
is unlikely to be
gradual**
”

DEEPAK SHARMA

CEO of Aircraft Finance Lease

Historically, these curves were stable enough to model over five- or seven-year lease horizons. That stability is weakening. Powerplant MRO now accounts for roughly half of total maintenance expenditure. Next-generation engines, despite efficiency gains, have shown durability constraints and premature removals. Shop visit timing is compressing, and turnaround times are lengthening.

Lease extensions

Consider a mid-life narrowbody approaching \$7-\$9m per engine event. If lease extensions are priced to capture current scarcity premiums while maintenance reserves are calibrated to legacy cost assumptions, reserve sufficiency erodes quickly. A single underfunded event can compress projected IRR by 150 basis points or more.

In securitised structures, extending duration without proportional technical provisioning alters portfolio risk

weighting. The cash yield may improve in the near term; asset volatility increases beneath it.

Ordinarily, escalating lifecycle costs would pressure residual values. Instead, constrained OEM output is supporting lease rates and extension activity. Market scarcity has delayed repricing.

That delay should not be mistaken for immunity. When supply normalises, the market will differentiate sharply between assets with well-funded maintenance positions and those carrying deferred exposure.

Aircraft that have been extended repeatedly through scarcity cycles may re-enter the market with significant LLP stacks and heavy check liabilities. The repricing, when it comes, is unlikely to be gradual.

New forecast

The industry is moving towards scenario-based technical forecasting rather than deterministic cycle modelling. Fixed-rate MRO agreements and power-by-the-hour structures offer partial mitigation but transfer risk pricing to counterparties who are repricing aggressively.

If interest rates remain elevated while maintenance inflation persists, discount rates and technical cost curves will move in the same direction. That combination compresses equity returns on ageing assets.

The current environment favours disciplined portfolios with conservative provisioning and realistic exit assumptions. It penalises aggressive lease-extension strategies that rely on supply scarcity to mask lifecycle exposure.

The MRO super-cycle is not temporary volatility. It represents a structural repricing of aircraft risk. Technical miscalculation is no longer an operational inconvenience; it is a balance-sheet event. ●

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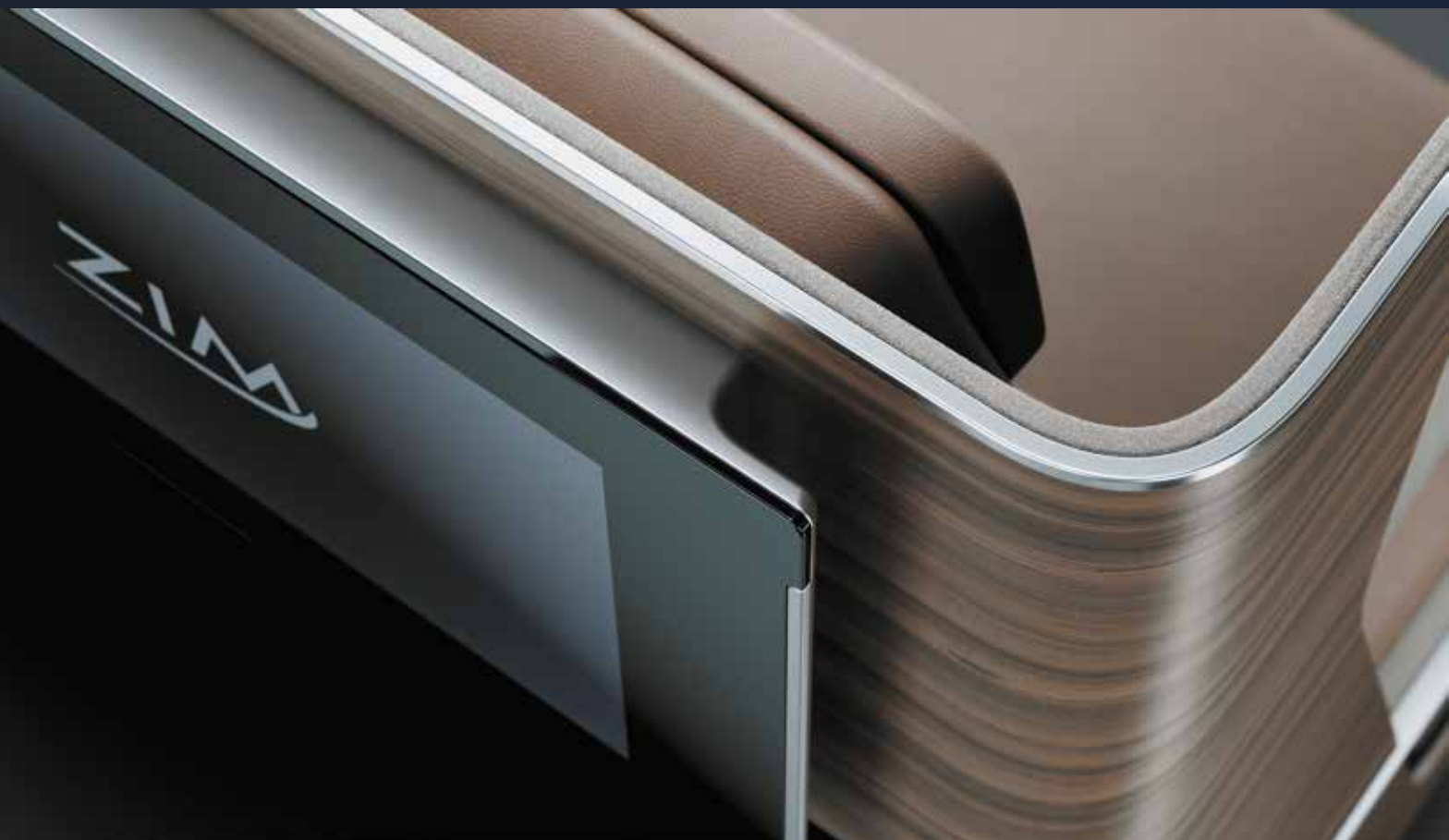
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REVOLUTION IN THE SKY

Eva Bisgaard, president, connectivity of Eutelsat explains how the expansion of LEO network is reshaping the passenger experience

Eva Bisgaard joined satellite operator Eutelsat from shipping line Maersk in January. She takes over at a time of transformational change in the industry. We put questions to her about her plans for the company, and the industry as a whole.

► **With procurement of 440 LEO satellites ensuring continuity and evolution of the OneWeb constellation, what new capabilities will this next-generation fleet unlock for airlines?**

With the procurement of 440 additional LEO satellites, Eutelsat will continue providing airlines with consistent, reliable connectivity while enhancing network performance. Our OneWeb Gen 1 constellation is fully operational today, providing global services. We are connecting flights across all continents and have over 600 antennas installed and 1500 tails committed – we are very excited about growth in both commercial and business aviation.



“
**Building and operating
a constellation requires
significant long-term
investment**
”

EVA BISGAARD

president, connectivity
Eutelsat

With our new 440 LEO satellites we will begin progressively replacing the earliest spacecraft that were launched in 2019. The benefit of this is to ensure service continuity, stability and improved efficiency of our network well into the 2030s. This approach allows us to maintain the high levels of reliability airlines depend on, while also introducing network improvements in capacity, resilience and overall customer experience.

At the same time, Eutelsat's long-term strategy is focused on the continued innovation of our LEO capabilities. Looking ahead, we are a leading partner in IRIS², the European Union's multi-orbit secure connectivity constellation which will introduce advanced technologies including optical inter-

satellite links, regenerative payloads and greater system flexibility, that represent the next major step in satellite network capabilities.

Together, these developments ensure airlines will benefit from a connectivity platform that is both reliable today and innovating for future demand.

► **How is Eutelsat adapting its commercial and operational strategy as LEO revenues now represent around 20% of overall business?**

We are seeing growing demand for LEO services, making it an important growth driver for Eutelsat. In fact, LEO revenues increased by around 60% in the first half of the year reflecting strong demand across multiple markets – including aero.

Passenger expectations are changing as travellers want to see the same seamless connectivity experience in the air as they enjoy on the ground. As a B2B company, we work through a strong ecosystem of partners – including Panasonic Avionics, Gogo, Hughes, SES and others – who integrate our capabilities into their service offerings.

This partnership model enables us to support both multi-orbit GEO & LEO and LEO-only solutions, positioning Eutelsat to capture growth as demand for high-performance connectivity continues to accelerate.

► **Eutelsat emphasises its “European anchored connectivity business.” What does this mean in practical terms for airline partners and passengers?**

For more than 40 years, Eutelsat has been delivering reliable satellite connectivity to customers around the world – becoming a trusted partner across markets.



“As the market evolves, our position as a European-anchored connectivity provider takes on added significance”

Today, as the market evolves, our position as a European-anchored connectivity provider takes on added significance. For airlines and partners it means access to a trusted, publicly listed operator that is European-owned and operated, bringing transparency, resilience and choice to a market where only two operational LEO constellations currently exist.

It also provides airline customers with flexibility and confidence in their connectivity strategy. Our model is built around working closely with partners to deliver tailored solutions for aircraft of all sizes and market segments, supported by an enterprise-grade network, purpose-built for mobility. This combination of experience, reliability and flexibility ensures airlines can deploy connectivity solutions that meet their operational needs today while remaining adaptable for the future.

Importantly, we are already delivering connectivity at scale in aviation today. We offer global coverage and connect flights of all sizes across all continents,

supporting leading airlines including Air Canada, American Airlines, Avianca and Royal Brunei, as well as business jets and government missions. Today, we have more than 600 aircraft installed and over 15 airlines committed to our services – demonstrating strong market adoption and the growing momentum of our aviation offering.

▶ **As cyber resilience becomes mission critical for airlines, how is Eutelsat addressing security within its connectivity offerings?**

Our network is enterprise-grade, meaning our network infrastructure, services and equipment are engineered and purpose-built for demanding professional environments requiring operational continuity.

Eutelsat operates in a complex regulatory and compliance environment and must comply with the relevant regulatory requirements. We are measured against such obligations by many national regulators. Our OneWeb LEO services are baselined against the

NIST 800 series of security compliance standards. Our systems are monitored and protected by state-of-the-art technology and industry-recognised organisations whose expertise is to provide threat intelligence. We conduct continuous adversary stimulation and security testing and continuously modify security protocols as risk profiles change. The speed of orbit and constant beam handovers also help protect against jamming and cyber attacks.

We also offer managed private network services to ensure mission-critical and operational data stays off the public internet. We encrypt and protect the data traffic on our global network.

▶ **How much of a threat to your business are new entrants to the market?**

Competition is healthy for any market, and we welcome new entrants. The reality is that the satellite connectivity market is large and growing rapidly. Today, we estimate the global B2B broadband connectivity market at around \$2 billion, with projections reaching approximately \$12 billion by 2033. As digitalisation accelerates for both passenger and operations in aviation,

1. Eutelsat Quantum Europe's reprogrammable satellite pillars
2. Turin ground station



▲ Eutelsat Connect VHTS

“LEO has transformed what’s possible in aviation connectivity in terms of latency and responsiveness”

we expect demand for capacity and performance to continue increasing as well.

It is also important to recognise that the barriers to entry in LEO are substantial. Building and operating a constellation requires significant long-term investment, access to spectrum, global ground infrastructure, and the ability to navigate complex regulatory and policy environments.

Today, there are only two operational LEO constellations delivering commercial services around the world, and being a first mover with early operational experience does matter. It is clear the market is large enough to support additional constellations over time, and we do expect more to come. For airlines, this will translate to massive improvements in passenger experience globally in a strong competitive environment. Even though with more providers the technology decisions become more complex, these advancements are already opening up new revenue streams for airlines.

► How does the recent €1.5bn capital raise affect LEO development?

In the past year we completed a €1.5bn capital raise supported by our key shareholders, a c. €1bn export credit

facility to fund the order of 440 new satellites with Airbus, and a further €1.5bn bond issuance in addition to refinancing existing debt.

The new funding supports both the deployment of new LEO satellites to maintain the performance and reliability of the OneWeb constellation into the 2030s, while also preparing for the next phase of capability development, including our role in the IRIS² programme later in the decade.

For the aviation market, this means our customers and the airlines and jets can have confidence in the continuity of our connectivity services, backed by a fully funded roadmap and a clear commitment to supporting airlines as demand for inflight connectivity continues to grow.

► Where do you see the biggest gaps or opportunities in aviation cabin connectivity today?

We see flexibility and customisation as key opportunities for aviation as technology advances and continues to be refined – the ability to offer solutions tailored to the unique needs of each airline or mission profile.

Options like multi-orbit solutions and premium network weighting will ensure a superior user experience. We see commitment to innovation and

€1.5

B I L L I O N

In the past year Eutelsat completed a €1.5bn capital raise fund the order of 440 new satellites with Airbus, and a further €1.5bn bond issuance in addition to refinancing existing debt

collaboration with industry leaders as key priorities for our growth in the sector.

LEO has transformed what’s possible in aviation connectivity in terms of latency and responsiveness, but the real gap today is how under-utilised connectivity still is, particularly for airline operations. In many cases, in-flight connectivity is still viewed primarily as a passenger amenity, when it can actually serve as a core operational and commercial asset.

A multi-orbit approach is especially powerful here. By combining LEO’s low latency with the coverage and capacity advantages of GEO, airlines can maintain reliable, always-on data flows across their entire network.

This makes it possible to support real-time aircraft health monitoring, predictive maintenance, crew tools, EFB synchronisation and continuous flight-to-ground data exchange throughout the flight – not just on the ground. As aircraft become increasingly data-rich, this level of connectivity directly improves situational awareness, decision-making, disruption management and overall operational resilience.

At the same time, connectivity performance has reached a point where access alone is no longer the value. The opportunity now is to move from treating IFC as a standalone passenger service to making it a core driver of airline efficiency, revenue and engagement. ●



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DINING Á LA JET SET

In this extract from her *Jetliner Cabins* ebook,
Jennifer Coutts Clay shares her analysis
of changes in catering onboard



“
**Major airlines
have developed
appealing health
food selections**
”

JENNIFER COUTTS CLAY

Airline industry consultant and
author of the *Jetliner Cabins* ebook

Since the early days of air travel, there have been significant changes in food and beverage provisioning and cabin standard services. Top international airlines must cater to the taste of passengers from all parts of the world who are accustomed to the finest restaurant and hotel dining services. Passengers in the premium cabins are accustomed to pre-ordering or requesting meal service at any time during the flight. Menu options range from celebrity chef-inspired gourmet banquets accompanied by fine wines and five-star trimmings to health-conscious salad platters, ethnic specialities, short-order deli-style dishes, trendy finger food, classic pub fare and Executive Express picnic campers.

To further offset their dollar outlay, some airlines run tie-in marketing campaigns with famous brand makers of, say, coffee and ice cream that are served onboard. Marketing messages can be incorporated into the dining experience on menu inserts, cocktail napkins and meal trays. Edward Gargiano, president and CEO of MHN North America, describes how airlines can capitalise on non-performing assets by making tray tables work for their living. He says using vinyl decals, revenue-producing advertising can be affixed to the inner side of the drop-down tray table. Based on actual headcounts of the captive audience, this

kind of programme can deliver a steady monthly income.

A welcome development has been the greater emphasis on lighter, more healthy dining with increased use of fresh in-season ingredients. The number and size of portions tend to be smaller and the food is more often presented in vertical arrangements or whereby the thrifty provisioning is disguised as part of an artistic display on smaller plates.

At Air Canada, there was a pioneering programme where menus had been verified and approved according to nutritional specifications. Nutri-Cuisine was designed to offer executive travellers more nutritionally balanced

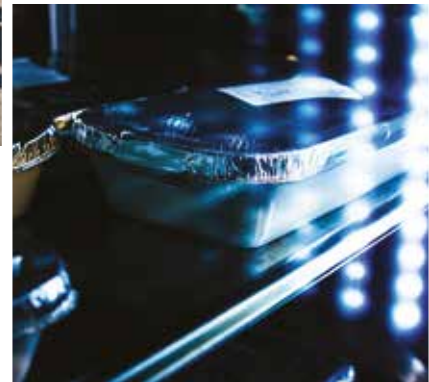


▲ Modern menus tend to be healthier



1

1. Food logistics in action 2. Trays must be stored in a temperature-controlled environment



2

QUALITY DECLINED AFTER 9/11

After the New York World Trade Centre terrorist attacks on September 11, 2001, the entire US commercial aviation fleet was grounded for reasons of security. Following these events, the US airlines urgently needed to achieve cost savings. Taking a draconian stance, they announced huge cuts in meal services on domestic flights effective November 1, 2001.

With the exception of Continental, the major carriers stopped serving meals in the first-class cabin on flights of under 3¼ hours. As the cost of the food and economy class at that time averaged \$4 per head, this resulted in immediate payoff for the airlines. From the customer's point of view, however, this was a miserable moment in the history of aviation. The scary stories of flying coast to coast via two or three hubs with only peanuts, pretzels and a beverage for sustenance used to be standard fare in the repertoire of stand-up comedians. After 2001, that nightmare became a reality.

Some passengers retaliated by bringing their own food on board. Tasteful cucumber sandwiches and fresh fruit delicacies might be

classified as acceptable solutions to the ongoing problems. But what about aromatic garlic sausages, over-ripe goat's cheese, and pickled onions? After an hour or so in cramped cabin surroundings, these foodstuffs can give off strong, unpleasant odours.

Since there are no disposal bins in the cabins, passengers tend to stuff leftover food and the wrapping materials in the seatback literature pockets, which can be the cause of hygiene problems and serious staining. Safety cards, magazines and, in some cases, parts of the seat covers had to be thrown away. The US airlines did not implement comparable food and beverage cuts on their international flights; however there were some reductions in overall service standards, for example in portion size, menu options and the number of go-arounds by flight attendants.

It is ironic that during this particular decade, some airlines developed and installed pull-out desk-sized tray tables that were about three times larger than the traditional drop-down predecessors, while at the same time transitioning to a dining service that was leaner and in many cases meaner than in the past.

dishes controlled in specific nutrients according to their lifestyle. Responding to passenger pressure, other major airlines have developed appealing health food selections.

For example, Delta's Business Elite Menu offered 'ideal performance' meals. A star by an entry on the menu indicated if passengers planned to work on board, the meals would keep them alert at the time and allow them to rest on landing.

To make a grand statement, airlines sometimes fly 'on-board chefs' or arrange for a chef from the kitchen to circulate in the premium cabins prior to take off or in the VIP airport when passengers are waiting to board the aircraft. The aim is to acquaint passengers with the menu of the day and to explain the range of wines on offer. The white chef's hat can have a miraculous effect on even the most dyspeptic traveller. And to add marketing distinction, airlines proudly display their relationships with celebrity restaurateurs. ●



For more, see the **Jetliner Cabins: Evolution & Innovation** ebook, available for iOS and Android

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THE VALUE OF UNDERSTANDING VALUES

Blake Emery, research and design consultant at D2Bridge and Board member of All Wheels Up advocates for improved accessibility for all

I found myself embarrassed. Only after joining the board of All Wheels Up, did I begin to learn of the difficulties a wheelchair user faces when attempting the monumental task of travelling by air.

Why was I so embarrassed?

Because after a long career at The Boeing Company, including almost two decades working to understand the passenger experience, I realised I had barely scratched the surface of accessibility challenges.

I was shocked to discover the number of wheelchairs that are lost or damaged during a commercial airplane flight, and the number of injuries sustained during the process of being transferred from an aisle chair to an airplane seat. Injuries to the passenger from getting dropped for example, or indeed injuries to the people doing the lifting.

This made me think: metrics alone don't capture the human values at stake. Dignity, independence and comfort are what truly matter. Since coming onto the board of All Wheels Up, I have

made wonderful new friends who use wheelchairs, and they have taught me a lot about their values. Not surprisingly, these values are not different from those of us who do not use wheelchairs.

Independence

I'll provide a few examples. Firstly there is the issue of independence. The sense of "I can do it myself" is something to think about in both cabin design and airline operations.

Secondly, there are seating needs to be considered. For some it is important to be able to remain upright in an aircraft seat. Because of reduced upper body strength, they need a window seat with the tray table down, otherwise their upper body falls into precarious positions during takeoff and landing.

Then there's foot and leg support. It is uncomfortable for any one of us to have our feet dangling for a long period. Being removed from a wheelchair with a footrest to an aircraft seat where feet dangle is uncomfortable and, for some, medically risky.

- ◀ Wheelchair users face a variety of accessibility challenges in air travel
- ▼ Transfers can be a source of injury for both passengers and staff members

Mobility during flight is important. Can a wheelchair user access the lavatory safely? Is there enough room to do so? For many, their wheelchair is prescribed, and it is a medical necessity to remain in it. Any time out of it comes at a risk of developing sores and losing skin integrity, which can lead to dangerous infection.

Design

Aircraft and cabin designers have an important opportunity to understand such values and design meeting those values into the cabin from the very beginning, rather than trying to squeeze it in after the fact. Accessibility is all about creating experiences that respect autonomy and comfort for every passenger, not just a tick box exercise.

Understanding values is the first step, but acting on them is what truly transforms the passenger experience. All Wheels Up advocates for wheelchair users, if they choose, to be in their own wheelchairs on commercial aircraft. And we support any progress along the way, for the entire journey – not only for wheelchair users but for all people who wish to fly, regardless of ability or disability. ●

This topic will be explored further in a session at the Passenger Experience Conference (PEC) at the Hamburg Messe on Monday April 13, 2026. PEC takes place ahead of Aircraft Interiors Expo (AIX) on April 14-16. For more information and tickets visit: www.passengerexperienceconference.com





ADVANCING ACCESSIBILITY

Passenger accessibility in all its forms has become a critical focus for airlines and OEMs.

Bernie Baldwin reports on how the industry is progressing

“Fairness or justice in the way people are treated.” This is the first definition of equity to be found in Merriam-Webster’s online dictionary. And though equity is sometimes used pejoratively in the term “diversity, equity & inclusion”, can there really be any doubt that everyone should be treated equitably?

In the airline industry, efforts to achieve that are currently focused on passenger accessibility, thus ensuring those with any disability – whether persons with reduced mobility (PRMs) or the neurodiverse – have equal and fair access to air travel. Airlines and manufacturers (OEMs) are under pressure to make it a reality.

Chris Wood, founder of Flying Disabled, acknowledges the major challenges for OEMs when trying to balance accessibility with weight, space and cost constraints. “This is the challenge for anything on aircraft, but it is even greater when you are trying to allow power wheelchair users to access the cabin.”

Wood is constantly pushing for solutions that will aid PRMs, be it access for a wheelchair, wider aisles or accessible toilets. “I don’t think we will ever see wider aisles. Accessible lavatories have

some legislative changes, but they are years away. Although I do think they are being considered by the OEMs when it comes to line fit,” he reports.

Beyond PRMs, the visually- or hearing-impaired and the neurodiverse also require solutions. “There are many apps from those communities with invisible disabilities coming through, largely from the community. I am working on one that has come from aviation,” Wood remarks.

Once solutions are developed, they must be certified, so governments and regulatory authorities have to buy into accessibility programmes. “There is lots of talk at the moment. We can only hope it develops into something more tangible. The US was leading this by way of regulation and legislation; however, that has all but diminished,” Wood opines.

Maria Paula Pineda is manager of customer accessibility at Abra Group, the parent company of Avianca Group, GOL Linhas Aéreas and Wamos Air. She identifies the major challenges when trying to bring accessibility to the airline subsidiaries.

Responsibility

“In implementing solutions to make air travel more accessible, we constantly navigate four competing pressures:

limited cabin space, aircraft weight, overall system complexity and cost,” Pineda begins. “Some accessibility features may require physical space. This often means sacrificing seats, galley space or storage, which has the potential to increase the unit cost of operations. But if the entire industry shares responsibility and embraces common standards, we can achieve low-cost, high-impact solutions that benefit the majority, instead of each airline solving these challenges alone.

“Accessibility also requires updates across systems: digital platforms, reservation logic, crew training, cabin hardware and ground handling equipment. And because regulations differ across regions, solutions must be adaptable and scalable. That is why we focus on progress over perfection –





implementing small changes with real impact, piloting larger innovations, and adjusting quickly based on evidence and user feedback,” she elaborates.

Industry bodies are keen to see progress in this area, notes Nobuyo Reinsch, senior vice-president, safety and regulatory affairs at the Regional Airline Association (RAA). Regional carriers performed around one third of scheduled passenger departures in the US in 2024, transporting 134 million passengers.

“Passengers with disabilities are one of the fastest-growing segments of travellers, and RAA member airlines are committed to improving accessibility and service wherever it can be done safely and effectively,” says Reinsch. “Regional airlines work closely with

their mainline partners and engage with the disability community to continually improve policies, training and customer experience. The goal is to transform air travel into an inclusive experience for all.

“One of the core challenges is the size of regional aircraft, designed to serve smaller communities and airports, often with limited infrastructure,” she continues. “As a result, cabin layouts, aisle widths and baggage compartments can constrain how mobility aids are stored and how PRMs are accommodated.”

Persistent factor

Collins Aerospace is one of the OEMs leading the charge to ensure passenger accessibility. For the company’s director of business development – cabin products, Shawn Raybell, the balance

between product design, development and integration – with size, weight and space constraints – on an aircraft is a persistent factor that aircraft cabin systems manufacturers have considered for decades.

“At Collins, we’re approaching accessibility design as we do anything else: thoughtfully, and with both the end user and customer in mind,” he states. “We realised several years ago that designing with accessibility in mind often leads to a more refined final product.”

Arthur Cuyugan is SVP technical services at Spafax, in particular at The Hub, the company’s key pillar of IFE services that plays a critical role in improving content management for airlines. “From Spafax’s perspective, accessibility challenges sit in the



▲ Collins' Prime concept has a monument which can be stowed to allow space for a wheelchair user

134

M I L L I O N

Regional carriers performed around one third of scheduled passenger departures in the US in 2024, transporting 134 million passengers

complexity of delivering accessible content at scale," he declares. "At The Hub, the main challenges are cost, asset availability and operational coordination. Closed captions and audio description tracks are not always supplied as standard by content owners, particularly smaller distributors. Audio description, in particular, requires specialist scripting, recording and quality control, making it more resource-intensive to produce.

"There's also the challenge of consistency. Airlines operate mixed fleets and multiple inflight entertainment platforms, so accessibility assets must be ingested, transcoded, validated and delivered in formats that perform reliably across varied systems. The balance in ensuring accessibility is

treated as a baseline expectation while working within commercial and technical realities," Cuyugan adds.

Accessibility maps

FlightPath3D president Duncan Jackson speaks with airlines all the time, introducing them to products such as the company's Accessibility Map, a simplified high-contrast display designed specifically for those with visual, motor or cognitive impairments. He has observed how important raising the bar on accessibility is for airlines.

"Many airlines are building accessibility into the inflight experience because customers are watching. With our Accessibility Map, we didn't just launch a feature, we set a new standard for the industry," Jackson claims. "We are confident that the accessibility layer is anything but a fad."

In regard to dealing with regulators and industry bodies, Jackson says the company is moving beyond the guidelines to provide for every flying passenger, regardless of age or ability. "Standards bodies deliver a strong framework, but we learned a hard lesson developing only to the specifications, as passengers need more than that," he explains. "By cooperating with airlines on the development, especially Delta's Advisory Group on Disability, we're moving beyond the standards to ensure true functionality for passengers.

"We're just getting started on the accessibility journey," Jackson continues. "Our product roadmap will see more features in the months ahead, because equal access shouldn't depend on where you sit or what device you use."

Passenger's wheelchairs

Returning to innovations that will aid PRMs, Abra's Pineda is optimistic. "One of the most promising developments is the effort across the industry to allow passengers to fly in their own wheelchairs. Although there are still some technical and regulatory challenges, the progress being made is remarkable, and it reflects how a mindset of cooperation rather than competition can accelerate innovation," she confirms.

"Also, technology is playing a central role in improving wheelchair handling. Digital tracking of mobility aids, real-time notifications, training linked to real devices and a personalised experience through apps that eliminate communication barriers or have all the information required for a specific frequent passenger, are already helping reduce damages and improve communication," Pineda adds.

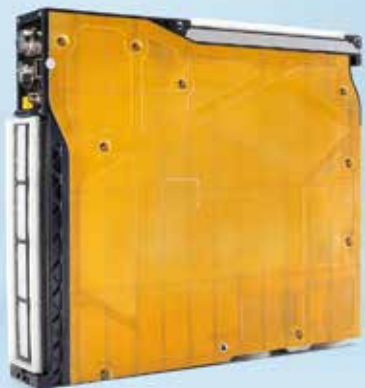
Such developments are backed by the RAA, but Reinsch adds a note of caution. "Regional airlines support the continued study, testing and development of safe, practical aircraft accessibility features that can meaningfully expand travel options for passengers with disabilities. Because aircraft design changes must meet rigorous safety and certification standards, progress tends to be incremental rather than immediate," she elaborates.

Key products for PRMs are in development at Collins, which has designed and demonstrated its Prime wheelchair seating solution at industry

"MANY AIRLINES ARE BUILDING ACCESSIBILITY INTO THE EXPERIENCE BECAUSE CUSTOMERS ARE WATCHING"

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► Collins' Prime concept



▲ Chris Wood, founder of Flying Disabled



events and in private conversations with airlines and airframers. “The Prime solution is based on a custom, adjustable monument located just inside door 1 of a narrowbody aircraft,” says Raybell. “The monument easily stows to reveal a tie down securement system recessed in the floor, allowing WC-19 power wheelchair users to remain comfortably and safely seated in their personal wheelchairs throughout flight. When not in use, the Prime monument flexes to provide crews additional service and stowage space.

“We have also been working on an accessible lavatory concept, exploring a design that allows two lavatories to transform into one to accommodate both a passenger with reduced mobility and a caregiver,” Raybell explains. “A central dividing wall between the two units can be slid to the side to create the space and then slid back in place for the two-lavatory configuration. The uniqueness of this concept is that it does not impact existing seating densities or infringe on current galley areas.”

RAA's Reinsch also notes that accessibility extends beyond mobility.

“Airlines increasingly consider the needs of passengers who are visually or hearing-impaired, neurodiverse or managing other invisible disabilities. Improvements in signage, communication practices, lighting and crew training can often deliver meaningful benefits even when physical modifications are limited by aircraft size,” she states.

This area of accessibility is where Spafax provides important assistance, according to Cuyugan. “From a technical standpoint, the most impactful accessibility tools remain closed captions and audio description, delivered reliably through the IFE system,” he notes. “Closed captions are designed for deaf and hard-of-hearing passengers and include dialogue alongside key non-dialogue audio cues. Audio description provides a separate narration track describing essential visual elements for blind or low-vision passengers.

“At The Hub, we are seeing a clear increase in demand for both. Major studios are increasingly providing audio description, while airlines are expanding caption availability across their onboard

libraries. When an accessibility asset is not supplied, Spafax can coordinate its creation, managing specifications, secure workflows, quality control and delivery so the content can be deployed across different IFE systems.”

Emma Gunn, VP – acquisitions & content partnerships at Spafax states that, from the content side, outlines another aspect of accessibility. “Our TV Acquisitions team actively sources film and television that authentically reflect disability and neurodiversity. We are seeing encouraging progress in unscripted, documentary and scripted content, particularly where disabled or neurodivergent talent is involved in the creative process. When this kind of programming is paired with accessible delivery tools, accessibility becomes both technical and cultural,” she stresses.

Abra's Pineda agrees that the cabin of the future will be increasingly sensor-driven and capable of delivering a more personalised experience for all passengers. She points to two examples of how hardware and technology can drive the change.

“First, IFE should include audio description, closed captioning in multiple languages and a simple menu for cognitive-diverse passengers. These features should be the default, not add-ons. Removing accessibility features should be the exception that requires price revision, not the other way around,” Pineda says. “Second, smart lightning is an emerging and highly effective tool

“LIGHTING CUES AND AUDIO DESCRIPTION ARE BECOMING MORE USEFUL THAN TRADITIONAL BRAILLE ALONE”



▲ Collins' ADAPT technology in use

to support low-vision passengers. As the industry acknowledges that not all visually impaired travellers are fully blind, lighting cues and audio description are becoming more useful than traditional braille alone."

Collins Aerospace is also active in this field of accessibility. "We've introduced technologies that could positively impact the air travel experience for people with other ability needs, including visual and hearing-impaired individuals, as well as those with neurodiverse sensitivities," Raybell reports, explaining the company's ADAPT technology.

"We've developed solutions for neurodiverse passengers to help mitigate environmental sensory inputs that can at times feel overwhelming. Adaptive lighting systems within the cabin can be seamlessly dimmed to reduce harsh transitions," he continues. "Noise management technology like our Q-Tech material can absorb sound effectively, and configured to reduce specific noise frequencies at a particular location – such as areas near the engine, galley workspaces or beside shutting lavatory doors. The material is thin and a direct replacement for honeycomb sandwich panels, enabling its integration into everything from sidewalls to seat monuments, headrests, and more."

Reinsch reports that the RAA is excited by some of the emerging accessibility technologies. "As these are evaluated to ensure safety and

feasibility on smaller aircraft, RAA member airlines continue to enhance accessibility-focused training for frontline employees so they can better support passengers," she comments.

This enthusiasm underlines RAA's commitment to accessibility programmes and aids, something the industry needs from all stakeholders. "Across government, regulators and industry, there is a clear and growing commitment to improving accessibility. This includes closer collaboration with disability advocates, updated guidance, and long-term investment aimed at raising standards across the global aviation system," Reinsch reinforces.

"In the US, airlines are required to ensure safe accommodations for travellers with disabilities. RAA member airlines meet or exceed the rules and work closely with regulators to implement the US Department of Transportation's Airline Passengers with Disabilities Bill of Rights," she continues. "RAA serves on the Air Carrier Access Act Advisory Committee, which advises



▲ Maria Paula Pineda, Abra Group

the US Department of Transportation on the air travel needs of passengers with disabilities. We help to identify barriers, evaluate existing programmes and recommend improvements that enhance the travel experience while maintaining the highest safety standards."

Spafax's Cuyugan says that from the company's position within the content supply chain, commitment from government and authorities is increasingly reflected in expectations rather than formal regulation. "Accessibility assets are increasingly requested as standard delivery components, and airlines are increasingly aligned on the importance of consistently offering these features," he states.

Abra's Pineda agrees that airline associations and global bodies such as IATA, ICAO and Airports Council International are increasingly aligned in their commitment to disability inclusion. "Making air travel more accessible and inclusive is complex, but it is unquestionably the right direction – and it requires shared responsibility across all industry stakeholders. Instead of investing in extremely expensive solutions that benefit very few, we're seeing a shift toward cost-efficient, scalable initiatives that meaningfully impact large groups of people," she reports.

In other words, increasingly equity for all. ●

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MORE SPACE, BETTER SUPPORT

It's an adage, but the most comfortable position is the next one. Designers and seating manufacturers continue in their pursuit to deliver comfort, space and privacy, whatever the position as a settled **Alex Preston** finds out

Most seating innovation has leaned towards premium cabins. But airlines are beginning to reverse their strategy of cabin densification in favour of a more enhanced passenger experience, all without sacrificing efficiency or revenue generation, and so the spotlight has shifted to passenger empathy within economy – an oft overlooked area.

“In economy class seating, to be honest, not much innovation has happened for the past two decades,” says Nathan Portlock, Associate Director at BMW Designworks. “A big update was fitting 10-abreast in the 777 by reducing seat width, and now we’re seeing that trend extend to the narrower A350. Considering the largest cabin affects the most passengers and potentially has the greatest potential to make gains

in sustainability, we’re looking forward to rethinking economy and premium economy class seating.”

Such a reconsideration is being pushed as airlines expand their networks with longer routes served by ultra-long-range aircraft. Now the focus is not just on aesthetics but health and enduring comfort.

Defeating space invaders

Indeed, operators and their seating partners are looking at all components of comfort, including geometry. For example, ANA’s new 787-9 aircraft, scheduled for delivery in August later this year, will arrive with updated cabins. This includes new economy class seats from Recaro, which have been collaboratively designed to “redefine passenger comfort, especially on long-haul flights.” Those at the back of the aircraft will enjoy a seat pitch of 33-34 inches (84-86cm), whilst the space



◀ Pearson Lloyd's Eco Seat concept is a reimagining of how to maximise passenger space, increase comfort and challenge build principles in economy

Pearson Lloyd
2

around the knees has been redesigned to provide an additional 1 inch (2.5cm) of space, asserted to be the largest standard in economy class. Additionally, the seat recline has been increased by 2 inches (5cm) – 1.5 times the previous seat's space for improved comfort and one of the world's highest pitch and amount of recline for an economy class seat.

The German seat manufacturer is also helping Southwest with its fleet modernisation plan as the airline introduces an updated cabin look with new Recaro R2 seats. The cabin features Extra Legroom (ELR) sections that provide passengers "a roomier experience" with more room to stretch out at the front of the cabin and near the Exit rows with up to five additional inches of extra legroom compared to Standard and Preferred seats. Seat pitch will vary by aircraft type.

Elsewhere, Emirates is hoping to upend economy class seating design. Whilst it is introducing new, lighter-weight versions of Safran's Z400 seat as part of an expanded retrofit programme, putting 219 aircraft through a full cabin refresh as it faces ongoing delays in new aircraft deliveries, there have been widespread reports that the airline is working on a new economy class seat that eschews enhancements to seat width or pitch for ergonomics via a focus on vertical space.

Looking up

According to multiple sources, the airline is exploring increasing seat height, which it believes will better support posture, body contour and leg comfort. However, it faces the hurdle of regulatory certification, particularly over the issue of line of sight.

The concept is reminiscent of elements of Pearson Lloyd's PL Eco Seat, which the studio developed as part of the studio's ongoing research into long-haul economy seating.

The key design innovation of the seat is in the introduction of a vertical structural 'spine' that

delivers a variety of benefits to the user. As the studio notes, by allowing the seatback and headrest to be separated from the primary structure, the top section of the assembly becomes significantly narrower and so maximises passenger space and the overall sense of space in the cabin. The 'spine' houses the seat's functional parts – its tablet, storage and monitor – visually demarcating them from the upholstered front section and facilitating easy egress into the aisle.

According to the design studio, the seat geometry provides a greater recline when in the upright position, allowing passengers to recline further, without impeding their sense of space around the knee area. The seatback's slim form also allows passengers' knees to sit on either side of their spine, following the natural curve of their back.

Innovation is also occurring in the field of passenger kinematics with attention on the humble headrest.

ZIM Aircraft Seating is proposing to improve multidirectional adaptability and intuitive ergonomics through the 'Swing', a finalist in this year's Crystal Cabin Awards (CCA). According to the seat manufacturer, the flexible headrest automatically conforms to each individual's posture and movement, reducing pressure points and supporting the head and neck in any position. Its horizontal and vertical adjustment range ensures personalised comfort, privacy, and relaxation – even on the longest journeys.

Emirates' new economy class seating on its A350 fleet will feature Safran's U-Dream headrest, which allows passengers the option of sleep with full neck support. The 6-way adjustable headrest aims to replace travel pillows.

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▲ The majority of Emirates' passenger load comes from its economy class

“THE REAL WINNER IN THIS INDUSTRY WILL INNOVATE A PREMIUM ECONOMY SEAT THAT PROMOTES REST LIKE BUSINESS CLASS WITHOUT REQUIRING MUCH MORE FLOOR SPACE THAN ECONOMY”

U-Dream is part of Modulair, a modular solution, designed in cooperation with ENSCI (L'École Nationale Supérieure de Création Industrielle), a French-based design school, that targets privacy, rest, space, cleanliness and entertainment.

BMW Designworks is also looking to reimagine the economy-class seat experience as a cohesive system with its Spaceframe concept.

“Our concept, a finalist for the Crystal Cabin Award, seeks to put passenger comfort first,” says Portlock. “A fixed exoskeleton enables space-neutral recline, ensuring passengers have control over their spatial envelope. Increased storage, larger tray tables, wireless charging, water bottle holders and improved egress clearance improve the passenger experience, while lightweight and modular architecture deliver economic advantages to airlines.”

As these solutions show, the least-evolved cabin of commercial air travel has become an opportunity for meaningful innovation. Of course, innovation also continues in premium cabins.

Premium ideas

“When EVA and Virgin Atlantic introduced Premium economy in the early 1990s, it was a bridge between previous generation business class recliners and traditional economy. A few decades later, airlines have narrowed in on where the supply and demand curves meet, though feature set and price point still fluctuate widely across the industry. The real winner in this industry will innovate a premium economy seat that promotes rest like business class without requiring much more floor space than economy, and key for airlines, promotes upsells from economy rather than cannibalises business class sales,” notes Portlock.

Continuing, Portlock adds that that, in contrast, business class cabins have seen incredible innovation since British Airways Club World introduced the lie flat in 1999. “The focus recently has been functionality: life flats, direct aisle access, doors, large IFE. There has been a commoditisation of the ubiquitous reverse herring bone at 43-44” pitch - dense, reliable, convenient.”

One example is VantageNOVA First from Thompson Aircraft Seating which seeks to deliver a business-class experience with first-class appeal with no loss of density. It already has an as yet unnamed launch customer.

Incorporated into the front row of the VantageNOVA platform, VantageNOVA First has the flexibility to be transformed from a single passenger retreat to a dual or quad dining and socialising experience, thanks to a reverse herringbone central column that creates a Star Configuration, which see the seats oriented towards the centre of the aircraft.

In Bed Mode, the privacy divider can be raised, and the secondary dual purpose seating areas provide an

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1. The Swing from ZIM Aircraft Seating is designed to improve the sense of well-being, restfulness and spatial comfort that redefines the passenger experience **2.** Air France's "La Première" suite's 30-inch wide bed has a split mattress design allowing passengers to transition between positions whilst remaining in place

extended sleep surface for passengers to rest. Optional features include 'zero G' seat mechanism, seat heating and cooling.

"For our clients, Designworks differentiates on experience, emotion, and meaningful customisation. Comfort sometimes gets overlooked – so innovations to improve sleep quality and how passengers feel after the flight are topics we're actively researching. We can't wait for our active projects to start flying soon," Portlock adds.

First class is another open topic. Portlock says that legacy European carriers like British Airways, Lufthansa and Air France, whose "La Première" suite replaces the traditional convertible seat-bed with separate dedicated spaces for sitting and sleeping within a full-height private suite, are investing heavily in brand-plays on the 777 and A350, while Asian and Gulf carriers are forced to consider what the top cabin could offer after the era of the A380. Complete end-to-end user experiences are curated with highly customised soft product and next-tier experiences on the ground, further supported with new single aisle lie flat products on connecting narrow body aircraft.

Innovation to move you

According to Salient Motion, as airlines invest in premium cabin upgrades and expanded lie-flat seating offerings, the seat actuation system market is experiencing sustained growth.

However, the company believes the supply base remains highly concentrated, with a limited number

of legacy suppliers relying on bespoke designs, long development cycles and high non-recurring costs. These constraints have made it increasingly difficult for seat manufacturers, airlines and airframers to introduce new seating solutions on realistic timelines, they say.

To address this, Salient Motion has recently entered into a partnership with Italian aircraft cabin interiors firm Aviointeriors to provide seat actuation control systems for the Allegra and Allegra HD business class seating programmes.

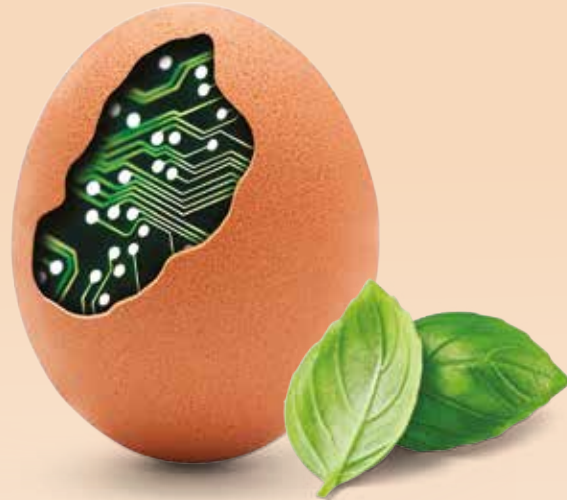
The partnership will expand the Allegra seating family's reach by introducing a qualification-ready seat actuation alternative in roughly one year.

According to Vishaal Mali, CEO of Salient Motion, the company "saw a structural issue emerging in the aircraft interiors market – one where innovation was being slowed by long certification timelines and limited supplier choice. That was the signal for us to put our engineers to work. In under a year, we took a seat actuation concept from a napkin sketch to a qualification-ready system. This partnership with Aviointeriors demonstrates what's possible when modular design and software-driven development are applied to one of the most constrained categories in aerospace. And this is just the beginning of what we believe the industry will ultimately demand from its suppliers."

Christian Battisti, sales & marketing director at Aviointeriors added, "From a seat supplier's perspective, having access to a modular, software-driven actuation platform represents a meaningful step forward. It enables greater flexibility in seat design, simplifies integration across different programmes, and supports faster time-to-market while maintaining the highest standards of safety and reliability."

Innovation isn't just about comfort – it allows for easier updates and maintenance, ensuring consistent reliability and a premium flight experience. ●

“HAVING ACCESS TO A MODULAR, SOFTWARE-DRIVEN ACTUATION PLATFORM REPRESENTS A MEANINGFUL STEP FORWARD”



MODERNISING YOUR MEAL TRAY

Cabin management systems are catering for the future. **Gerrard Cowan** reports

Aircraft catering demands a significant logistics operation to meet the daily demands of airlines around the world.

Recent years have seen significant technological advances in data analysis, automation and beyond, improving the speed, accuracy and resilience of supply chains, according to leading providers in the area.

LSG Sky Chefs is a provider of in-flight catering programmes and bespoke airline meal solutions for a wide range of airlines. Ric Melvin, the company's director of supply chain management, tells *Aircraft Cabin Management* that there have been significant technological changes in the area in recent years, notably the development of "real-time digital visibility across production, inventory and logistics, [which] really laid the groundwork for bringing innovation into airline kitchens".

The sector is highly regulated, Melvin notes, particularly when it comes to food safety. Technological advances in the supply chain offer tools that can help airlines to meet these demands.

"Temperature-controlled transport ensures that meals remain within safe ranges, while real-time temperature and location monitoring reduce spoilage risk," he explains.

In addition, he points to "more precise loading and staging workflows, ensuring timely, safe movement from kitchen to aircraft. As a result, our airline clients see higher levels of food safety, greater freshness of the products they serve their passengers, and fewer last-minute catering issues".

Integrated workflows

Tuomas Pirskanen is product manager at Flightscape, a data-driven platform from CAE that aims to optimise operations

across a range of airline services, including catering. Supply chain management is an end-to-end process, he explains, with technology laying the groundwork for an increasingly integrated and smoother approach.

"Airlines and catering businesses are moving away from manual processes with fragmented systems to integrated workflows, where systems support the full supply chain process from sourcing and planning to operations and financial controls."



1



2

Pirskanen says the Flightscape platform has been designed to support this end-to-end process, notably through its In-Flight services management tool, a system for services planning, meal ordering and other aspects of catering.

The aim is to “accurately plan and provision the correct number of meals, rotatable and non-rotatable goods for all of an airline’s flights, handling real-time operational data such as passenger counts, special meals and preorders as well as managing inventory and invoices”, says Pirskanen, adding that it provides accurate catering provisioning, service reliability, lower material waste and improved cost efficiency.

Pirskanen notes that the nature of aviation means the aircraft supply chain must be able to respond to operational changes. This is a focus for Flightscape

through integrations to and from reservation systems for passenger information and counts. It can also offer information on operational changes to flights by sourcing data from airline scheduling and operations systems, so that changes to catering services can be made as required.

“Flight disruptions and schedule changes can be managed and reacted to accurately and passengers still receive all the services that they pay for. On-time performance (OTP) is improved and airlines can maintain a level of service.”

Information about galley loading is particularly important for the crew to perform onboard services efficiently, adds Pirskanen, noting that Flightscape In-Flight provides accurate galley loading diagrams and load quantities for flights, including optimisation of



3

1 & 2. LSG Sky Chefs provides in-flight catering programmes and bespoke airline meal solutions for a range of airlines
3. Customers using the cloud-based Flightscape solution

available space. “This lowers service errors and improves efficiencies.”

Data element

Data is a vital element of aviation logistics today, including catering. Pirskanen says accurate data regarding flights is imperative for the cold chain, including when the flight is leaving, what equipment is onboard and which catering services should be provided.

He says Flightscape delivers operational data for airlines and responds to flight schedule changes in order to support catering operations and the cold chain. This could include operational alerts, “so flights are not catered too early or too late”.

Accurate forecasting is mandatory for optimal catering, Pirskanen adds, reducing the amount of manual work that operations must conduct to maintain catering quantities for flights. “Similarly for inventory, accurate planning of services for flights is needed as a basis for forecasting material purchases and inventory movements across an airline’s network.”

To support this, he says the In-Flight tool is designed to use airline planning data as well as historical data to accurately forecast passenger and

“AIRLINES ARE MOVING AWAY FROM MANUAL PROCESSES WITH FRAGMENTED SYSTEMS TO INTEGRATED WORKFLOWS”



2

“REAL-TIME DATA ALLOWS US TO BE PROACTIVE IN IDENTIFYING ANY ISSUES”

meal counts by route, aircraft and the services needed on all flights. It also supports analysis of catering operations, he continues: for example, highlighting areas of improvement for services.

Melvin says LSG Sky Chefs utilises predictive analytics to forecast passenger meal choices by route, cabin and season. “Having real-time data allows us to be proactive in identifying any issues, thereby reducing out-of-service incidents.”

Analytics also helps to improve purchasing, inventory rotation and waste reduction, he continues. “As a result, our airline clients see fewer substitutions, improved menu accuracy, reduced waste and better cost control.”



1

Automation and AI

Aircraft catering faces tight turnaround times of aircraft and other operational challenges where accurate information and automation are imperative, according to Pirskanen. He says the In-Flight tool is designed to provide accurate forecasting of passenger counts and inventory to optimally support catering requirements by flight.

“This includes operational changes with reprovisioning of catering requirements and effective communication of such changes between the airline and caterers,” he notes, adding that Flightscape can integrate with catering and airline systems to convey and enhance the information used to enable catering process automation.

Automation is being increasingly used across the industry, says Melvin, providing consistent meal assembly. AI-driven forecasting and planning help to optimise volumes and reduce waste, he explains, as well as providing stronger transportation and cold-chain controls to ensure product integrity: for example, using AI-driven platforms to better ensure that trucks leave the kitchen to meet flights on time and in the right order.

“With the introduction of integrated supply chain systems, we’re able to connect kitchens, warehouses and flight

1. The Flightscape system covers services planning, meal ordering and other aspects of catering
2. LSG Sky Chefs offers bespoke airline meal solutions for a wide range of airlines



schedules. Together, these technologies support a faster, more predictable catering process,” notes Melvin.

The industry is in the early stages of robotic automation and AI deployment in the catering industry, but the results seen so far in terms of delivering reliability and consistency have been encouraging, says Melvin.

“AI models and robotics have helped our employees work in a more ergonomic environment, as robotics take care of repetitive tasks, such as portioning, mixing, packaging and tray handling, as well as taking on extraneous activities such as heavy lifts.”

Future innovation

Automated catering facilities streamline meal assembly and reduce manual error, Melvin adds. “Along with AI-based planning that optimises staffing, production timing and inventory levels, our airline clients see shorter turnaround times, fewer errors, more reliable meal service and higher consistency across flights and stations.”

LSG Sky Chefs believes that autonomous ground support and vehicle integration for faster aircraft loading “is in the not-too-distant future”, Melvin concludes. More advanced AI could allow for real-time decision-making and disruption recovery, while digital twins and simulation tools could optimise catering options from end to end.

“With smarter sustainability technologies, including automated waste reduction systems and improved packaging science, we’d be able to offer a highly connected, low-waste, automated catering ecosystem that provides airlines with greater reliability, improved sustainability and deeper customisation capability.” ●

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GALLEY MAKEOVERS

A new wave of galleys is streamlining operations and providing a more enjoyable travel experience for passengers. **Alex Preston** reports

Given the attention airlines pay to enhancing the passenger experience, it's easy to overlook the fact that the cabin is also a workplace for the crew. Nowhere is this truer than in the galley.

Galleys are extremely hard-working, space constrained environments. The focus of OEMs and suppliers has therefore been on maximising space efficiency while maintaining full functionality.

Ray Hough, director of business development at Collins Aerospace observes that galleys are some of the more complex items within a cabin with structural, electrical, water, waste and many other integration responsibilities. "The complexity deepens when designing solutions that act as system integrators, seamlessly coalescing areas such as seats, furniture and other structures into a comprehensive cabin system," he says. "While the end benefits to operators, crews and passengers are

outsized, the design work is meticulous and exacting, requiring deep cabin integration expertise to fully optimise cabin spaces holistically."

Elizabeth Payne, chief technology officer at AVIC Cabin Systems (ACS UK) agrees, stating that the integration of multiple systems of chilling, heating, electrics, waste and potable water within a confined space to stringent requirements requires detailed planning and engineering development. "Because these are equipment-dense, high-use areas, weight is critical," she says, a driver behind the company's use of lightweight yet durable and corrosion-free materials. "A high focus on durability of integrated designs is required to avoid in-service issues," she adds. Payne says

ACS UK also prioritises ergonomics and the safety of crew members and passengers, while ensuring designs are easy to clean and maintain.

Hough believes that Collins has demonstrated these capabilities over the years, most recently with its Aurora premium cabin system. "On the surface, Aurora appears only to be a lie-flat suite for long-haul narrowbodies. However, a closer inspection reveals a comprehensive cabin system distinctly positioned to accommodate the unique geometries of narrowbody aircraft. This deliberate design detail enables front and aft row furniture integration, significantly expanding galley capacity over similar solutions, providing the trolley cart and crew work area





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“THE DESIGN WORK IS METICULOUS AND EXACTING, REQUIRING DEEP CABIN EXPERTISE TO OPTIMISE SPACES HOLISTICALLY”

1 & 2. Modern galleys need to address the challenges crew members, passengers and ground teams face with onboard service and maintenance scheduling. Credit – Collins
3. The “C”-Galley is a crew-centred galley concept designed to streamline workflow. Credit – JAMCO/JAXA

THE NEW ERA OF GALLEY INNOVATION

Airlines are rethinking the galley with the aim of creating a smarter, lighter and more connected workspace. Here are some of the leading trends that are driving the next wave of cabin service transformation:

Weight reduction as a priority

Composite materials and redesigned structures cut kilograms without sacrificing durability – directly improving fuel burn and operating costs.

Connected, “smart” galley equipment

Ovens, chillers and beverage makers equipped with digital sensors offer predictive maintenance, real-time health monitoring and automatic reporting.

Modular and reconfigurable layouts

Galley monuments designed with interchangeable inserts let airlines adjust catering capacity, service models and crew workflows without major cabin rework.

Energy-efficient appliances

New-generation ovens and chillers use less power while improving cycle times and temperature consistency, supporting more sustainable operations.

Crew-centric ergonomic design

Improved lighting, better door and drawer mechanisms and human-factors-driven workflows reduce crew fatigue and speed up service.

Space optimisation innovations

Slimline trolleys, vertical storage solutions and integrated waste systems increase capacity without expanding the galley footprint.

Digital inventory management

RFID tagging and smart racks help crews track meal loads, reduce waste and support more accurate provisioning.

necessary to accommodate the catering volume necessary for premium long-haul service,” he says.

First-rate service

According to Hough, the industry trend towards more premium is replicated throughout the inflight experience, not just in individual seats and cabins.

“Space optimisation and catering must complement this shift,” he argues, “with passengers expecting food, beverage and service reflective of a more premium onboard product. This demand naturally leads to increased galley utilisation, which has direct implications to the size, weight and power usage of systems. Simultaneously, airlines are focused on minimising operational costs and simplifying maintenance, creating an ideal inflection point for innovation.”

Innovation is driven by a combination of factors. ACS UK works closely with airlines to understand and meet their specific requirements, while also responding to evolving passenger expectations and regulatory requirements.

“Alongside these, sustainability is an increasingly important driver, and we must champion circular design principles that consider material choice, weight reduction, durability and lifecycle performance. Our aim is to balance airline priorities, passenger experience, compliance and long-term environmental responsibility,” Payne says.

The conversations Collins has with OEMs and airlines about galleys usually begin with space optimisation, efficiency and modularity. “With every square inch of cabin real estate proving more valuable than ever, it’s essential that galley areas not only provide basic functionality, but are also optimised to improve passenger service, crew ergonomics and cabin layouts,” Hough says.

A change of thinking

A major driver of galley optimisation is the industry shift toward more premium layouts, particularly as airlines deploy extra-long range narrowbody fleets across the globe. These trends have required a reimagining of galley integration.



“It’s no longer feasible for galley systems to be designed in a vacuum, independent of the neighbouring spaces they abut,” states Hough. “Galley systems must be intelligently incorporated into a broader cabin ecosystem and seamlessly integrated into cabin monuments, seating solutions and lavatory complexes to fully maximise available space, storage and usage. In short, galley design must be holistic and complementary in order to meet the evolving needs of operators, crews and passengers,” he says.

One such example is Bionic Galley from Airbus and its wholly owned subsidiary APWorks. Nominated for a Crystal Cabin Award (CCA), the partners claim the concept will significantly reduce aircraft galley structural weight through topology load optimisation and functional integration and establish a scalable, modular product line that slashes cost, certification time and design variants to define the new standard for future galleys. The Bionic Galley is designed for

“GALLEY SYSTEMS MUST BE INTELLIGENTLY INCORPORATED INTO A BROADER CABIN ECOSYSTEM”

“WE MUST CHAMPION CIRCULAR DESIGN PRINCIPLES”

seamless integration into existing aircraft architectures across various monument topologies, including lateral galleys.

The developers explain how a robust invariant modular standard housing (milled aluminum) forms the load-bearing core and integrates essential elements. Scalable compartment walls, utilising standardised joints and beams from aluminium, provide layout flexibility.

Leveraging a product line approach with invariant and scalable modules, the Bionic Galley is intended to enable a catalogue-based approach for both standardised and customised galleys, potentially lowering design variants, testing and certification costs. The two companies assert that the design principles for the compartments introduce new features such as in-service

reconfiguration and multiple splitlines, surpassing current galley designs and leading into demand-based galley for the customer and a potential improvement of the monument in the final assembly line with easier and faster installation.

Preliminary cost analysis indicates potential cost savings compared to traditional honeycomb structures. APWorks and Airbus contend that the Bionic Galley serves as an enabler for future innovations by incremental integrating systems.

Another CCA shortlisted galley solution is the “C”-Galley, jointly developed by JAMCO and JAXA and built on extensive interviews with active crew. The concept introduces a new layout that separates work zones for meal preparation, drink preparation and in-flight sales tasks, reducing crew overlapping traffic to improve operational efficiency.

◀ AES’ GPM turns the galley into an intelligently managed subsystem.

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► ACS UK has a deep understanding of how to make complex, space-constrained environments work harder for airlines. Credit – ACS
▼ The Bionic Galley seeks to define the new standard for future galleys. Credit – Airbus/APWorks

A wide-open countertop serves as a stable workspace, and the cart storage beneath, accessible from both sides, enhances a streamlined service process. In addition, the counter transforms into a passenger-accessible snack bar during lights-off periods, all the while maintaining the same footprint and storage capacity as conventional galleys, ensuring airline profitability remains unaffected.

Connected galley

Not dissimilar to many other aircraft systems, there's a growing emphasis on connectivity, data collection and maintenance in the galley area. Airlines are increasingly interested in solutions that can provide insights to improve service, crew communication and system performance across both galley structures and inserts.

"Effectively connecting the galley and embedded inserts begins with a shift in design, from standalone equipment to a managed system integrated into the aircraft's digital ecosystem. At Collins, we've recently introduced an AI-based system called galley.ai that essentially acts as a personal assistant to cabin crew by helping streamline tasks, while also improving provisioning and predictive maintenance. The intelligent system is trained on a predetermined set of



“MANY CURRENT SYSTEMS ARE HEAVY AND RESTRICTIVE”

crew tasks, inventory items and system componentry. Data is visually displayed on an embedded control panel, providing crews with real-time information that makes pre-flight inventory checks quicker, in-flight inventory tracking more efficient and even alerts crews to spills, mishaps or damaged equipment,” says Hough.

“We’ve also developed an industry-first, IoT-enabled connectivity solution embedded into our oven, chiller and coffee maker insert equipment, transforming passive appliances into intelligent, self-reporting assets that actively contribute to operational efficiency, cost reduction and passenger satisfaction. Things like fault reporting, power consumption and usage trends are automatically collected, providing actionable insights so airlines can move from reactive fixes to planned maintenance.”

The depth and quality of information is amplified dramatically when installed across entire fleets, accumulating mountains of data that help establish component health trends weeks prior to failure. This allows airlines to better provision, prepare and troubleshoot during planned maintenance visits which

ultimately can help reduce unexpected catering disruptions or aircraft on ground scenarios.

ACS is focusing on the development of next-generation chilling systems, designed with more efficient airflows and advanced materials that reduce thermal losses. These innovations improve energy efficiency while freeing up valuable space within the galley.

To improve energy efficiency, AES has developed the Galley Power Manager (GPM), a retrofittable system for managing electrical galley loads in commercial aircraft. Summing up, Payne says that ACS believes there is a huge opportunity for a step change in galley systems. “Many current systems are heavy and restrictive and, as aircraft operate increasingly long-haul routes, galleys need to support multiple service cycles while ensuring crew safety and wellbeing. We are collaborating with catering companies, OEMs, airlines and cart and trolley manufacturers to rethink how galleys function. We see clear opportunities to improve preparation spaces and introduce more efficient, slimline chilling solutions that free-up valuable space and enable more flexible, efficient operations.” ●

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DIGITAL CABIN IS A REVENUE CORNERSTONE

1

Fernando Guinea explains how digitalisation is changing payments for good

Over the past decade, airlines have transformed how they use data on the ground. Distribution, revenue management and loyalty programmes are now driven by analytics and predictive models. Yet inside the cabin, teams still rely largely on intuition and delayed information. What passengers watch, browse and buy often remains unclear until after the aircraft has landed.

This gap limits how quickly airlines can respond to demand and affects how they provision flights, manage weight and waste, grow revenue and support their crews. That lack of visibility becomes an operational choke point.

But that reality is changing. Lower-cost, low-latency low earth orbit (LEO) satellite connectivity now allows airlines to collect and transmit data at 30,000 feet without the capital expenditure of traditional connectivity. When paired with unified onboard platforms that link key digital services and operational workflows, the impact becomes tangible. A unified onboard ecosystem consolidates retail and payment activity, passenger engagement data and operational information into a single system that works consistently across fleets. Crew can act on information during the flight, while planning and provisioning teams on the ground use the same data to refine decisions around catering, retail assortments and in-flight entertainment.

In this scenario, the cabin becomes the cornerstone of an airline's digital strategy rather than an afterthought.

Live transactions

Airlines increasingly rely on ancillary revenue to drive growth. The cabin is where much of that activity takes place. In this context, the connected cabin is vital. With connectivity and digital retail, transactions can be authorised, recorded and analysed in flight rather than reconciled hours after landing, significantly reducing exposure to declined cards and fraud.

Immediacy offers additional advantages, particularly for the passenger experience. Loyalty customers, for example, can redeem points in real

time, whether for onboard purchases or destination services, making benefits more flexible and meaningful.

Payments are only one part of the retail equation, however. In a connected, digital retail environment, pre-orders and early purchases provide a sharper picture of demand than historical averages, allowing airlines to refine what they load on a route-by-route basis.

The result is fewer missed sales, less overstocking and reduced food and product waste.

Digital retail also removes the physical limits of trolley-based sales. Airlines can present broader catalogues, promote services fulfilled before or after the flight, and adjust assortments seasonally to increase the likelihood that what is carried will sell. Just as importantly, they offer a retail experience that more closely resembles what passengers are accustomed to on the ground.

Retail insights

The same data that strengthens onboard retail reshapes how the cabin operates.

When the cabin crew closes the service cart, the work is not always over. Inventory checks, payment reconciliation and sales reports often begin after passengers disembark, eating into

already tight turnaround windows on short-haul routes.

Digital cabins reduce that burden by recording orders, payments and inventory as they occur. Instead of reconstructing transactions on the ground, crew and operations teams have a clear, live record to work from. Less time is spent on reconciliation and paperwork, and more on delivering consistent service.

In an industry operating under staffing pressure and faster aircraft turnaround, this combination strengthens resilience and helps service stay consistent.

At Immfly, we see this most clearly in narrowbody fleets that were previously priced out of connectivity. Linking passenger engagement data to operational forecasting enables airlines to make better decisions while the aircraft is still in flight.

As connectivity and onboard systems mature, the cabin will increasingly influence how airlines manage revenue, service delivery and operational performance.

The carriers that integrate it into their digital strategy will be better positioned to run leaner, more responsive, more sustainable and ultimately more profitable fleets. ●



▲ **Fernando Guinea**
president of Immfly

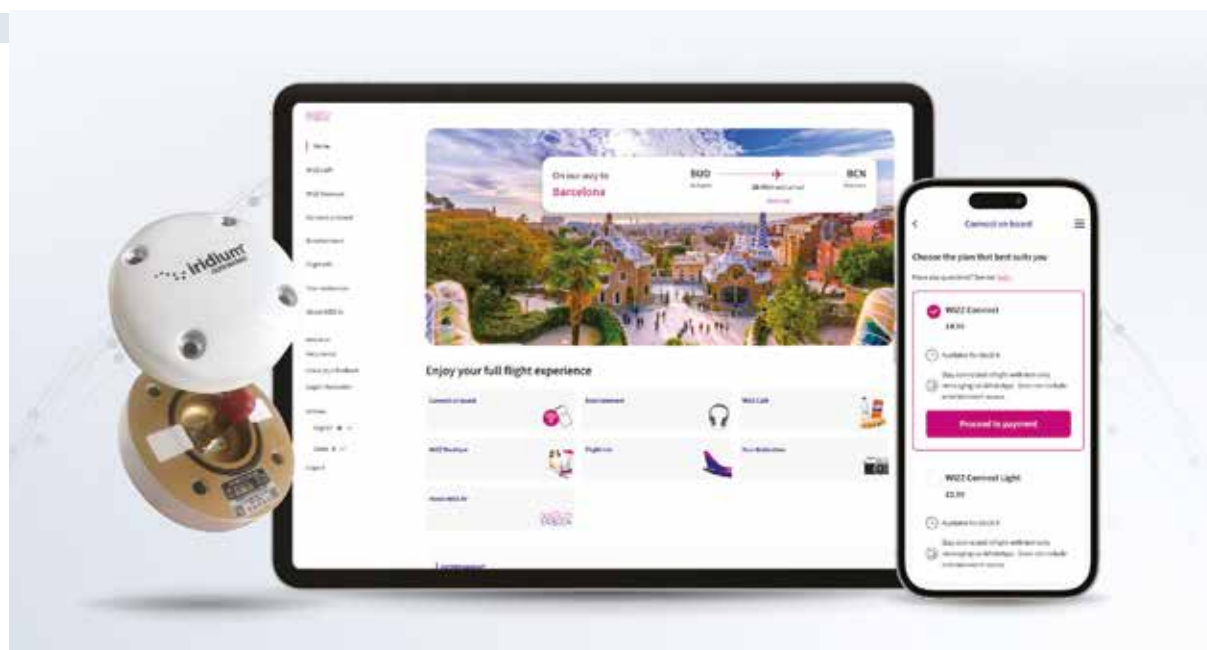
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2





PRIVATE AVIATION IN TIMES OF CRISIS

Kevin Singh, pilot and CEO of Icarus Jet discusses access, responsibility and the limits of the market

When parts of the aviation system slow down, it is assumed that the rest of the industry will slow down with it. However, the opposite is true. Instead of slowing down, the industry gets fragmented. This is what the current situation in the Middle East has led to.

The airspace restrictions, changes to routing corridors, and the current situation at the airport level have not brought the industry to a complete halt. Instead, some parts of the system continue to function while others do not.

Commercial aviation is designed to struggle in a situation like this. This is because it depends on a certain level of continuity. However, the moment the industry's continuity changes, it becomes difficult to manage.

Private Aviation does not have the same problem. It operates in a more flexible, but also more exposed way. And that is where its role becomes more visible.

The meaning of access

There has been a noticeable increase in demand for private flights out of the region. That is not surprising. When commercial options disappear or become

unreliable, people look for alternatives. But it is worth being clear about what that demand represents.

In many cases, these are not discretionary trips. They are driven by timing. Companies relocating teams. Families trying to leave uncertain situations. Medical movements that cannot wait for scheduled capacity to return.

From the outside, it can look like private aviation is simply filling a gap. From the inside, it feels more like working in a constantly shifting system, where decisions have to be made with incomplete information.

“THE QUESTION FOR OPERATORS IS NO LONGER JUST HOW MUCH FUEL IS AVAILABLE, BUT WHETHER THAT FUEL WILL BE AVAILABLE WHEN IT IS NEEDED”

Aircraft availability is only one part of the equation. The larger question is whether a flight can actually be executed safely and predictably.

In practical terms, this has forced operators into specific routing patterns, often starting in Oman, routing through Cairo and then Athens as an entry point into European airspace.

Fuel, airports and decision-making

Fuel is just one example of how these factors are being felt, but in a different way. The cost of fuel has risen in this region and, while this is undoubtedly a factor, it is not as significant as the question of access to that fuel.

The question for operators is no longer just how much fuel is available, but whether that fuel will be available when it is needed. This brings into play another level of planning, in which the fuel stop is no longer just a logistical consideration but a strategic one. The decision



1. Private jets can be utilised when commercial aviation is disrupted
2. The flexibility of private aviation can bring peace of mind to customers
3. Parking, handling and permits all contribute to the complex nature of the business

regarding fuel stops becomes part of the overall risk assessment for flights.

Another level of complexity has been added by airport-related factors, in which parking, handling and permits all play a part in ensuring that, even if an aircraft is available, executing this flight is not always as simple as it might be.

Flexibility and demand

Private aviation is often characterised as flexible and, in this sense, the term applies to it to some extent. The fact that aircraft can be moved, routes changed and flights operated outside normal commercial schedules means there is greater adaptability in this form of aviation than in commercial aviation.

However, this does not alter the fact that, in this environment, every decision involves a trade-off and must be carefully assessed. This, of course, is where the value of private aviation lies.

It's not about eliminating complexity; it's about having the ability to work through it. That distinction becomes more apparent when the environment grows more challenging.

Of course, when the supply-and-demand environment becomes more challenging, pricing becomes a sensitive



WHY PRIVATE AVIATION KEEPS MOVING WHEN THE SYSTEM BREAKS

Designed for adaptability

Aircraft can reposition, schedules can shift, and routing can be redrawn with fewer structural constraints.

Decentralised ecosystem

Operators, brokers and service providers make independent decisions, allowing pockets of activity to continue even when parts of the system shut down.

Able to operate under different constraints

Private flights can depart at short notice, use alternative airports, and adjust routes rapidly in response to geopolitical or operational changes.

Private aviation becomes a parallel mobility system.

When commercial aviation slows or fragments, the private sector provides continuity – moving people, teams and aircraft even as the broader aviation network struggles.

issue. In the last few weeks, there have been cases where the cost of repatriation flights has been quoted at levels that are difficult to justify based on the operational costs involved.

In terms of the market, the answer is obvious. There's a lack of supply and high demand, so costs have had to be adjusted. It's a simple answer, but it's the way most of the markets work, and aviation is no different.

Yet the world of private aviation operates in a broader environment, where perception of the industry is as relevant as its economics. It's an industry already under the spotlight, particularly regarding the environment and its role in the world of mobility.

Beyond the current moment

There's a difference between the cost of doing business based on the economics of the situation, as opposed to the cost of doing business based on the level of urgency, even if the two are somewhat close. That distinction isn't necessarily well defined, but it becomes more relevant when the environment is more challenging, as the client has fewer options.

The justification for short-term decisions can be based on immediate circumstances, while the perception of how decisions were made can extend beyond those conditions. The client



1. Ease of access can make private aviation particularly appealing for customers
2. When commercial aviation slows, the private sector provides continuity

will remember how they were treated in such a situation. One of the defining factors in private aviation is that it is not a highly centralised system. There are independent operators, brokers and service providers, each with different decision-making processes and constraints.

This creates fragmentation in the private aviation industry, which can be both a strength and a weakness. A strength is that it allows for flexibility and can adapt quickly to changing circumstances. The weakness here is that it can be difficult to achieve consistency across the private aviation industry, as there is no single standard to measure against for treating clients in this type of crisis.

Resilience and visibility

There has been a tendency to describe private aviation as resilient in this type of environment, and that is broadly accurate. However, resilience should not be interpreted as operating without pressure or without constraint, because that is not the reality on the ground.



“IT’S MOMENTS OF DISRUPTION , NOT PERIODS OF STABILITY, WHICH HELP TO DEFINE INDUSTRIES AS A WHOLE”

Fuel costs are higher, insurance costs are more complex, routing is less efficient and execution risk is higher at multiple stages of the process. It's not as if private aviation is immune from these factors; it's simply a part of the process, a part of the environment and a part of the system.

What private aviation does provide, however, is a sense of continuity amid a fractured system. It allows aircraft movement when the system as a whole has slowed, and it provides access when other forms of transportation are limited or unavailable.

Every disruption of the aviation ecosystem seems to bring the same basic question to the surface: access is not equal across the system. It's simply a fact of life, and when the commercial network of aviation is moving at full speed, it's simply not as relevant or as noticeable. When those networks are disrupted, the

difference becomes much more apparent. Private aviation sits in that gap, not as a replacement for commercial aviation, but as a parallel system that can operate under different constraints.

It's moments like these, moments of disruption, which help to define industries as a whole, as opposed to moments of stability, which simply don't have the same degree of relevance.

In the case of private aviation, the relevant factors are the system's flexibility, speed, access and judgment. In the current environment, that last element is becoming just as important as the others, particularly in how decisions are made and perceived. ●



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THROWING

THE RIGHT

SHADES

Aircraft cabin lighting has evolved from a purely functional element into a critical component of passenger comfort, airline identity and operational efficiency, as **Bernie Baldwin** reports

Cabin lighting, just like temperature, is one of the hygiene factors which help a passenger to define how enjoyable a flight has been. Too bright, too dim, too colourful, not colourful enough, and all the possible options in between – there is always a likelihood that for someone, things just won't be quite right.

Nadia Chaouki-Griffiths, head of sales for STG Aerospace, posits that lighting might be the most underappreciated

system in aviation. "It literally sets the tone for every flight, yet it's often treated as an afterthought," she explains. "With the best airlines, lighting isn't just bright or dim, it's tuned, it shifts colour temperature to match time zones and body rhythms, fades smoothly between scenes, as well as enhancing materials and finishes in the same way high-end residential systems do. When it's done right, passengers don't even notice it – they just feel better."

Chaouki-Griffiths notes how airlines have benefited from technological advances such as the move from fluorescent to LED and dynamic RGB systems. "Fluorescent systems tend to make a cabin feel dated. Their light output is typically a very warm, yellow tone, which can make a cabin look tired. They are additionally prone to flicker and colour degradation as they age," she observes. "Switching to an LED system gives a far more modern feel as well as providing 16.7 million colour variations.



1

“Airlines also expect to experience weight savings, reductions in power consumption and reduced maintenance. For example, our liTeMood cabin lighting system installation in Airbus twin-aisle platforms typically results in up to 45 kg of weight savings, 55% power consumption reduction, and an MTBF (mean time between failure) in excess of 1.5 million hours. LEDs are not only an aesthetic improvement, they provide real benefits all round,” Chaouki-Griffiths adds.

LED upgrade

“Upgrading to LED lighting is a very simple and low risk option to enhance not only the cabin interior, but the overall passenger experience. liTeMood

is plug and play, meaning it uses the same mounting points and connectors as the original OEM incumbent; installation on an Airbus single-aisle aircraft can be accomplished in as little as six hours, minimising aircraft down time,” she continues. “An additional benefit is that liTeMood interfaces with the aircraft’s existing flight attendant controls, so there is no substantial learning curve for the cabin crew.”

John Alotta, associate director of business development, lighting systems at Collins Aerospace, also highlights how the move from fluorescent to LED lights brought change. “It provided benefits in power efficiency, performance consistency, compact sizing and extended product lifecycles,” he

recalls. “We’re approaching nearly two decades since LEDs started consistently appearing in commercial aircraft cabins. Over that time the underlying technology has steadily improved over earlier generations, elevating the passenger experience, reducing airline maintenance, requiring fewer spare parts and reducing aircraft power and fuel consumption.

“Dynamic RGB systems provide much more flexibility in lighting design than a static white LED. These systems are becoming increasingly advanced, with the ability to be programmed to illuminate dynamic scenes or automatically adjust to external factors such as time zone, aircraft positioning and flight duration to optimise the

3



2

1. Diehl Aviation's Light Verification Centre in Nuremberg
2. A Finnair cabin featuring Cobalt lighting
3. Diehl Aviation's Future Cabin concept

“FULL-SERVICE CARRIERS PREFER MORE SUBTLE EFFECTS TO MOVE PASSENGERS COMFORTABLY BETWEEN RELAXATION TO MEALTIMES”



▲ A mood-enhancing IFPL Electra refit

resting and wake cycles of passengers,” Alotta remarks.

“Integration of these systems into cabin management platforms provides heightened control, allowing cabin crews to adjust the light more seamlessly for the entire cabin or in a select area of their choosing. Crews can gradually transition lighting scenes and scenarios; anyone who has ever been startled awake by an abrupt flood of light during an evening leg will appreciate how beneficial that is for the inflight experience,” he quips.

Jonas Balzar, business development manager, Diehl Aviation, notes how his company, together with aircraft manufacturers and the retrofit market, helped to facilitate the change from tube technology to LEDs. “The latter technology offers significant operational benefits, including lower weight and power consumption, high brightness and cabin lifetime reliability,” he comments. “A state-of-the-art full-colour cabin lighting system further improves upon this by enabling airlines to enhance the passenger experience with their branding colours or dynamic effects, such as a sunrise, to make the flight more comfortable.”

IFPL Group commercial director Claire Sixsmith views the transition from fluorescent to LED lighting as a move from purely functional to a product that can deliver operational, aesthetic and practical benefits. “Full integration with the Flight Attendant Panel (FAP) allows control over both lighting colour and intensity, enabling crew to adapt the cabin environment in real time for different flight phases, service moments, or passenger needs. Wireless control updates simplify installation and allow lighting concepts to evolve across an aircraft’s lifecycle,” she explains.

“The most significant passenger benefit of modern lighting is its ability to improve circadian rhythm alignment on long-haul flights. Programmed scenes can adjust colour temperature and intensity to create natural day/night cycles, helping passengers stay alert when needed and rest more effectively during sleep periods,” Sixsmith elaborates. “Simulating sunrise and sunset reduces jet lag and eases time-zone transitions, supporting wellbeing throughout the journey. Mood enhancement is another key advantage. Warm, calm lighting during boarding and rest phases lowers stress, while

cooler, brighter tones help maintain alertness during meal services or movement around the cabin.

“Lighting can also differentiate cabin class. Premium cabins use nuanced, layered scenes to convey calm and exclusivity, while economy cabins benefit from balanced illumination that enhances comfort and space perception.

“Good lighting also plays a crucial role in how food is perceived on board, influencing not just appearance but appetite and overall passenger satisfaction,” Sixsmith states. “The right lighting enhances natural colours, textures and freshness, making meals appear more vibrant and appealing, which is important as at altitude taste and smell are already dulled. Warm, well balanced cabin lighting can make food appear richer and more inviting, helping meals look closer to how they were intended by the caterer, while harsh or poorly tuned lighting can wash out colours and make meals look unappetising.”

Colour profiles

According to Chaouki-Griffiths, STG Aerospace’s liTeMood enables the design of a range of colour profiles to support passenger wellbeing and circadian rhythm alignment, plus brand-specific options for the various stages of flight. “For example, for Azores Airlines we created custom, dynamic ‘rainforest and ocean’ inspired scenes, accompanied by the sounds of nature, thereby creating a holistic sense of the Azores islands before passengers arrive,” she reports.

“JET LAG IS ONE OF THE MOST FRUSTRATING ASPECTS OF AIR TRAVEL. HOWEVER, WITH THE INTRODUCTION OF SMART LED SYSTEMS, IT MAY SOON BECOME A THING OF THE PAST”



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1. Lighting colour can be changed according to mood
2. Diehl Aviation unveiled its eDecor technology for the first time at AIX 2025



1



2

“Jet lag is one of the most frustrating aspects of air travel. However, with the introduction of smart LED systems, jet lag may soon become a thing of the past. By mimicking the natural progression of daylight and gradually adjusting the lighting to align with the destination’s time zone, this technology helps passengers arrive feeling refreshed, alert and ready to take on their next adventure,” says Chaouki-Griffiths.

Collins’ Alotta believes cabin lighting systems are capable of “incredible things”, including helping to reduce jetlag and improve relaxation during flight. “Our Hypergamut lighting system achieves this by adding additional LEDs into the system, expanding the colour range and quality far beyond traditional RGB systems. The extra Hypergamut LEDs also tap into additional wavelengths and a specific spectral range that functions as a primary trigger of human biological clocks,” he explains.

Brand differentiation

“Airlines are increasingly using premium cabins to further differentiate their brands and add curated experiences to high-end and frequent flyers. The addition of bespoke lighting elements

elevates the premium experience and is becoming more frequently incorporated in premium cabins. Airlines are doing everything, from providing individual passenger control of their lighting environment to incorporating subtle accent lighting around seats, furniture and architectural features to create a more high-end environment,” Alotta stresses.

Diehl’s Balzar advises that studies on the effects of circadian rhythms and mood on passenger well-being already exist and are used to design lighting that matches flight phases. “For example, calming scenarios are used before sleeping and energising scenarios are used before disembarking. Some of our customers take advantage of these possibilities.”

Balzar sees lighting options being used throughout the cabin to further enhance the carriers’ branding capabilities. “This can be achieved through tailored main cabin illumination scenarios. However, many carriers use flexible lighting solutions integrated into monuments, feature panels or suites to extend this effect closer to passengers,” he reports.

“Diehl Aviation is working on innovations

like the Dynamic Color Display, Cabin Projection System or eDecor to further enhance a carrier’s branding capabilities and bring new unique ways to further enhance branding in the cabin. Light is a very strong branding tool. Carriers can change the appearance, the mood of the cabin simply by a button push,” Balzar emphasises.

STG’s Chaouki-Griffiths picks out the way different types of airlines use lighting options as a branding tool. “In general, low-cost carriers prefer punchy colours with high visual impact. They want to differentiate themselves from their competitors and make sure that passengers have a ‘wow factor’ experience. Boarding is a great time to get passengers excited; popular options include brand colour displays or pulling in representative colours from destinations, such as with our Azores Airlines example,” she comments.

Cue the lights

“On the other hand, full-service carriers prefer more subtle effects to move passengers comfortably between relaxation to mealtimes or landing. Crew

“AIRLINES ARE INCREASINGLY USING PREMIUM CABINS TO FURTHER DIFFERENTIATE THEIR BRANDS AND ADD CURATED EXPERIENCES TO HIGH-END AND FREQUENT FLYERS”

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the airline beyond what they merely see," she remarks.

Mention has already been made of what the latest lighting systems offer in terms of energy savings, reduced maintenance and overall lifecycle benefits. The IFPL executive says that modern lighting systems deliver measurable operational advantages. "LEDs are lighter in weight and energy-efficient, reducing power consumption and overall aircraft weight significantly contributing to substantially lower fuel burn over an aircraft's life," she confirms.

When assessing how the latest lighting systems offer energy savings, reduced maintenance and other benefits, Marc Renz, senior business & sales excellence manager at Diehl Aviation, believes comparisons are always difficult. "The question is, to what? Some of our light units are structural parts of the cabin with built-in lighting functions. But one thing is certain," he stresses. "Compared with old tube illumination, power consumption and weight have been significantly reduced. We have cut it in half, at least!

"Significant savings can be seen in lifetime costs. An LED system virtually never breaks. Of course, every electronic part has an MTBF, but for LED light units, those values are on a scale of a cabin's lifetime. This means that LED lights usually last the lifetime of an aircraft," Renz adds.

"There is still a spare parts business, of course, but it is nothing compared to the 'old' fluorescent tube days, where the tubes had lifespans of just a few weeks or months. We all remember flights where one or two light units just had to be switched off because they had reached the end of their lifespan. Since the majority of new aircraft have LED lighting systems now, passengers don't experience those sorts of outages anymore," Renz states.

Airlines, passengers and even the environment each benefit in different ways from the latest in lighting technology. Moreover, the various manufacturers are providing such a breadth of options to users, that there appears to be no downside to investing in new lighting developments. ●

▲ Colours are carefully calibrated for airlines

feedback suggests they like to use the lights to cue passengers to begin to get ready, to tidy up their belongings and change their seat positions – before meal service, for example. By conducting a bespoke colour workshop, we work closely with the airline to take any of our standard scenes and tailor them to incorporate airline brand colour tones," Chaouki-Griffiths continues. "One example could be dimming down into a deep blue or including red or pink within the transition to match their CMF (Colour Material Finish) palette. It's this attention to detail that flag carriers expect from a premium offering."

Collins' Alotta agrees with the notion that lighting has become an increasing aspect of an airline's visual identity. "Carriers have long had signature colour palettes boldly represented on liveries, digital properties and lounges, and are now replicating that signature style to cabin interiors via modern lighting systems," he acknowledges.

IFPL's Sixsmith concurs about lighting now being a deliberate and immersive branding tool. "Bespoke scenes can reflect an airline's colour palette, design philosophy or cultural influences, creating a consistent visual identity from boarding to arrival. Subtle branded hues reinforce recognition at a subconscious level, shaping how passengers feel about

**"COMPARED WITH OLD
TUBE ILLUMINATION,
POWER CONSUMPTION
AND WEIGHT HAVE BEEN
SIGNIFICANTLY REDUCED"**



WHAT EXACTLY IS AN LED?

A light emitting diode (LED) is a semiconductor device that produces light when an electric current passes through it. Unlike traditional incandescent bulbs – where a filament is heated to produce light – LEDs generate illumination through an efficient electronic process called electroluminescence.

For aircraft cabins, this matters for three key reasons:

- Longevity: with lifespans measured in tens of thousands of hours, LEDs dramatically cut maintenance cycles – a significant advantage for airlines operating tight turnarounds.

- Efficiency: LEDs convert far more electrical energy into light rather than heat, reducing overall power draw and easing demands on the aircraft's electrical and cooling systems.
- Versatility: LEDs can be tuned to produce virtually any colour or intensity, enabling sophisticated cabin lighting scenarios that support circadian-friendly illumination, branding and passenger ambience.

In short, the LED is the small but powerful building block behind today's dynamic, reliable and energy-efficient aircraft lighting systems.

WISE SKIES

Airspace reform is an effective way to lower emissions, reports
Greg Whitaker from the Sustainable Skies World Summit

If sustainable aviation fuels (SAF) and next-generation aircraft are the headline-grabbers in the race to net zero, airspace modernisation is the quiet workhorse. It delivers carbon savings today, requires no new engines or airframes and, according to Ian Jopson, sustainability director at NATS (National Air Traffic Services in the UK), is essential for the future of UK aviation.

“Fuel propels the aircraft, but airspace shapes the journey,” Jopson told delegates at the Sustainable Skies World Summit held at Farnborough in March. Every minute of holding eliminated and every smoother climb or descent converts directly into emissions avoided.

Those avoided emissions are already substantial. Jopson told the conference that since 2007, NATS’ airspace enhancements have enabled annual savings of 1.8 million tonnes of CO₂ in UK airspace. To put that in perspective, he likens it to an aircraft flying 100 million miles a year, the equivalent of 5,000 trips around the Earth, without burning a drop of fuel, all achieved through smarter use of the skies.

Various carbon monitoring bodies have recognised the savings. CDP (formerly the Carbon Disclosure Project) has

awarded NATS an ‘A’ rating for the third year running, placing it in the top 4% of more than 22,100 companies worldwide assessed for climate transparency and performance. Meanwhile, the Science Based Targets initiative (SBTi) awarded NATS with ‘Business Ambition’ status, the highest achievement possible.

Wise pairing

In his keynote, Jopson mentioned a system called ‘Pairwise’ being implemented at Heathrow. This was deployed in late 2024 at the Swanwick air traffic control centre.

Pairwise introduces a new method for calculating the minimum separation between arriving aircraft pairs. Traditionally, separation is based on six categories that consider an aircraft’s weight and the wake it creates as it flies. Pairwise separation is calculated based on the specific characteristics of each aircraft type.

Calculating the separation in this more granular way means air traffic controllers can safely reduce the gap between some pairs of aircraft and increase the overall flow of traffic, allowing for an additional two arrivals per hour at Heathrow and a 3.2% increase in the average landing rate during peak morning hours.

1. Ian Jopson, sustainability director at NATS

2. Air traffic controllers can safely reduce the gap between some pairs of aircraft

3. NATS may be able to reduce 1 million tonnes of CO₂ per year by 2050



2

Less time on hold

A higher landing rate means aircraft spend less time circling in airborne holds – one of the most fuel-intensive phases of flight.

Through this new system and other initiatives, Jopson told the conference that he believes NATS can reduce another 1 million tonnes of CO₂ per year by 2050.

“Modernising airspace is the fastest and most cost-efficient way to deliver near-term emission savings,” he said, adding that while doing so is government policy, it needs support to make it a reality.

“What we need for it to be fully delivered is continued support from policymakers, but also support from airlines and the airports and all other airspace users to deliver these near-term benefits.”

“MODERNISING AIRSPACE IS THE FASTEST AND MOST COST-EFFICIENT WAY TO DELIVER EMISSION SAVINGS”



1



“FUEL PROPELS THE AIRCRAFT, BUT AIRSPACE SHAPES THE JOURNEY”

methodologies for assessing the effects of non-CO₂ emissions”, said Jopson.

In short, the industry is ready to move beyond laboratory models and into operational testing – and NATS sees itself as a central player in that journey.

Expanded demand

Demand for air travel is set to increase. By 2030, the UK’s skies are expected to host around three million flights annually. Without redesigned airspace, Jopson warns, the system simply won’t cope.

Good airspace, Jopson concludes, is the backbone of a predictable, resilient aviation ecosystem. It keeps aircraft moving efficiently, reduces pressure on airports and cuts the environmental impact of every journey. ●

Non-CO₂

Jopson also addressed the growing focus on aviation’s non-CO₂ impacts. Sustainable Aviation’s newly published position paper acknowledges that non-CO₂ effects, such as contrail formation, represent a significant share of the industry’s climate impact.

These include maximising co-benefits through SAF and advanced engine

technologies that reduce both CO₂ and non-CO₂ emissions; testing mitigation strategies at scale, including operational trials that evaluate real-world climate impact; and working with academia and climate experts to build robust methodologies for assessing the effects of non-CO₂ emissions.

“These are to work with academia and climate experts to build robust

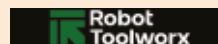


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2026 Testimonials



"I spent the last two days in Dublin representing Aegean Airlines at the PAM Europe 2025 conference. It was inspiring to hear operators share insights from their predictive maintenance journeys - some well underway, others just beginning. One thing is clear: predictive maintenance will soon be an industry standard."

Emmanouil Nanos, Reliability and Maintenance Programme Engineer, Aegean Airlines



"Thank you to the PAM Europe team for fostering a collaborative environment and insightful exchanges on the digital transformation of our sector. These discussions and case studies highlight just how crucial innovation and teamwork are to advancing predictive technologies in aviation."

Mike Roemer, Director, Digital Fleet Management, United Airlines



"This year's discussions offered a sharp, practical look at the real predictive maintenance journey - not from theory, but directly from the experiences of operators like Ryanair, easyJet, Delta Air Lines, United Airlines, Vueling Airlines, Aer Lingus, British Airways and Condor Flugdienst GmbH."

Amanjot Singh Bhambra, Aircraft Systems Specialist, Wizzair UK

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ABNCAST

Uncorking the innovation bottleneck

Why Air France-KLM decided now is the right time to undergo “open heart surgery” on its core retail and distribution technology

Making the leap to move ahead with fundamental transformation of core technology in any business is fraught with risk, no more so than in the airline industry.

However, this is what Air France-KLM is doing as it looks to move on from legacy retail and distribution systems that have served the carrier for decades.

Speaking on a special ABNcast – part of a series with technology partner Amadeus – Iris Taguet, programme director for modern airline retailing, likened the change to “open heart surgery”.

“We’re changing the heart of our commercial machine, without reducing any of our operation. It is complex, it is critical, you need to make sure it is worth it, and it’s the right time,” she said.

Air France-KLM announced the shift to Amadeus’ Nevio platform, as part of its wider MOON programme, in February last year at the technology developer’s Altitude 2025 conference.

But Taguet said the decision was the culmination of a process that began many years earlier in 2021 as Air France-KLM began to prepare for a future One Order world.

“Although this [One Order] concept from IATA dates back to 2015, there were just small proofs of concept by some airlines, but nothing real, nothing tangible.”

One Order

“We started with a low key, small study to ask whether it made sense, was there something we couldn’t do that would be solved by One Order,” said Taguet. “The thing with technology is there’s nothing you cannot do, it’s all a question of time and a question of money.”



“We’re changing the heart of our commercial machine, without reducing any of our operation”

“Is it worse to invest additional money to build workaround solutions? You can bypass all sorts of limitations with workarounds.

“It’s an opportunity to get rid of a lot of legacy and complexity in terms of business process and technology that we inherited from more than 60 years ago when the concepts were invented.

“Those concepts were created when people bought an airline fare that included everything. Now you buy an airline fare and next to that you buy everything else you need.”

Workarounds

Ghaleb Rostom, head of portfolio product management at Amadeus, said the time for workarounds has gone and it’s

time for the industry to modernise the customer experience.

“Airlines are only getting to this now because they actually were one of the first industries to use technology to take bookings worldwide from anywhere.

“And because they started very early, these technologies have become a bit of a bottleneck for innovation and user experience.

“After trying several workarounds, the conclusion is workarounds are not enough now and we really need to start afresh.

“We are taking this opportunity to modernise everything, to make sure we have something that’s modern and will support airlines, and so we are relevant for airlines for many years to come.” ●



ABNcast episodes are released weekly on the Aviation Business News YouTube channel. To make sure you don’t miss the latest editions subscribe: [youtube.com/@aviationbusinessnews](https://youtube.com/aviationbusinessnews)





JUST LANDED

A few of the items set to launch at AIX this year

“THIS FRIDGE SEPARATES THE COOLING MODULE, STORAGE MODULE AND DOOR PANEL”



Who: SES

What: Standardised Platform

Web: ses.com

Connectivity provider SES will be demonstrating how it is aiming to make inflight connectivity easier by standardising how Android devices connect to inflight Wi-Fi through a new partnership with Google. Ahead of the show, the company announced it will deploy meoSphere, a next-generation medium Earth orbit (MEO) satellite network targeted for operation by 2030 and designed to significantly boost the company's MEO network capacity.



Who: Enflite

What: Modular fridge

Web: enflite.com

Bizjet cabin supplier Enflite will be showcasing its Modular Refrigerator at AIX. This advanced galley appliance separates the compressor-based cooling module, storage module and door panel. The result is improved material flow and a more streamlined aircraft completion process.



Who: ThinKom

What: Antenna

Web: thinkom.com

Avionics firm ThinKom is expected to launch a new small form factor antenna supporting ultra-fast GEO, MEO and LEO operation, engineered with reduced weight, lower cost and a smaller footprint. The firm has made news in recent months having secured numerous satcomms contracts from the US government.



Who: DKA Aerospace

What: Galley equipment

Web: diethelmkelleraviation.com

At AIX 2026, DKA Aerospace is set to announce three new products, although it is remaining tight-lipped on what these are likely to be. The company is best known for its range of meal carts and galley stowage, and has won multiple plaudits for its lightweight XT2.5+ product.



Who: Airchair

What: Airchair II

Web: airchair.global

Mobility equipment manufacturer Airchair will be demonstrating the second generation of its signature product at AIX. The Airchair II has been specifically developed to comply with the latest US Department of Transportation (DOT) regulations (US DoT Regulation 14 CFR Part 382.65) regarding accessibility.



Who: Starling Aerospace

What: New seats

Web: starling.aero

UK-based seat manufacturer Starling Aerospace will display two new ranges of aircraft seats at the show. SA4000 is an economy class seat, which Starling says has been designed with a focus on weight efficiency and simplified maintenance. Meanwhile, the SA5000 is a dual 'club style' platform. In addition to these models, the company is developing a seat for private jet operators to be known as SA6000.





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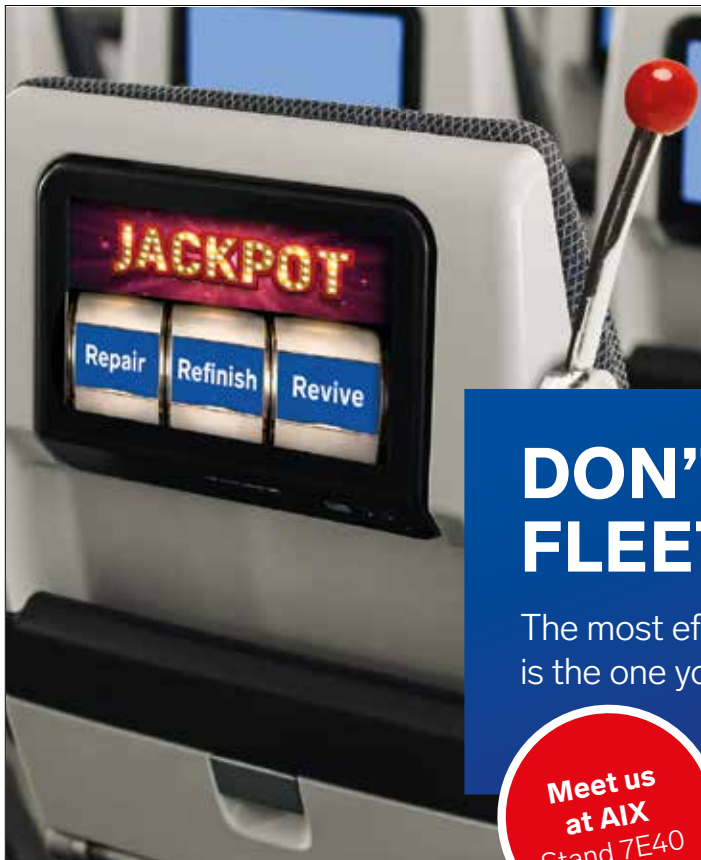
Novem, a name synonymous with craftsmanship and innovation in the automotive realm, is now setting its sights on the skies. For over 75 years, Novem has been quietly perfecting the art of

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REGISTER OF INTEREST

David Colindres, president of the San Marino Aircraft Registry explains why aircraft registries must be built on relationships, not just regulations



▲ David Colindres says aircraft registries must change in line with shifts in aviation

For decades, aircraft registries have been viewed primarily as technical authorities. Their role was clear: issue certificates, maintain records and enforce compliance. That foundation still matters. But it is no longer enough.

Modern aviation is shaped by cross-border ownership structures, layered regulatory frameworks, and operators managing increasingly complex fleets and missions. In this environment, the most effective registries are not simply administrators. They are relationship-driven partners that operate at the intersection of compliance, operational reality and trust.

This is not a branding exercise. It is a structural shift driven by how aviation works today.

The reality behind aircraft registration

From the outside, registration appears transactional. Documents are submitted. Certificates are issued. Records are updated. In practice, it rarely unfolds quite as cleanly.

Owners are often navigating financing arrangements, lease transitions and asset restructuring. Operators are balancing maintenance schedules, crew currency, audit cycles and operational commitments. Legal teams, lessors, CAMOs and insurers are frequently involved at the same time.

Each decision has operational and commercial consequences. Timing matters. Clarity matters. Context matters.

When registry teams understand

“FROM THE OUTSIDE, REGISTRATION APPEARS TRANSACTIONAL... IN PRACTICE IT RARELY UNFOLDS QUITE AS CLEANLY”

these realities, interactions become more productive. Guidance becomes more relevant. Decision-making becomes more efficient. Over time, these repeated interactions build professional relationships that go far beyond administrative processing.

Trust is built through consistency

Trust in aviation is not created through messaging. At the San Marino Aircraft Registry, we believe it's built through behaviour.

Operators remember which authorities respond when questions arise under operational pressure. Owners remember who communicates clearly during ownership changes or compliance transitions. Maintenance organisations remember which registries provide predictable interpretation instead of shifting requirements.

Consistency creates reliability. Reliability reduces operational uncertainty. And reducing uncertainty is one of the most valuable contributions a registry can make.

This does not mean relaxing standards. It means applying them

with clarity, fairness and continuity. When expectations are stable and communication is transparent, compliance becomes collaborative rather than adversarial.

A relationship-driven future

As aviation becomes more global and interconnected, complexity will increase. Ownership structures will diversify. Operational models will continue to evolve.

In this environment, registries must position themselves as trusted partners rather than distant authorities.

That trust is built daily. Through communication. Through consistency. Through professionalism. Through reliability.

Aircraft registration will always involve regulation and compliance. But its future will be shaped by relationships.

Because aviation, at its core, remains a people-driven industry. ●



For more information on the San Marino Aircraft Registry, visit: smar.aero

Reduce cabin waste to make passengers feel better

Paul Mills, director at International Flight Services Association
says sustainability initiatives must be tangible for travellers

For many years, sustainability and passenger experience were treated as separate conversations in aviation. One focused on reducing emissions and improving operational efficiency, while the other centred on comfort, service and brand differentiation. Today, those conversations are rapidly converging.

Passengers are increasingly aware of the environmental impact of flying, and many now expect airlines to demonstrate meaningful progress toward sustainable operations. Importantly, this expectation is no longer confined to a small group of environmentally conscious travellers. It is becoming a mainstream consideration in how people evaluate airlines and their travel choices.

For airlines, this creates both a challenge and an opportunity. Sustainability can no longer sit solely in corporate reports or engineering discussions about fuel burn. Increasingly, it must become visible and tangible within the passenger experience itself.

Lightweight

One of the most immediate areas where this is happening is with onboard products. Airlines are introducing lighter materials, reusable service items and more sustainable catering solutions that reduce waste while maintaining quality. Increasingly, airlines are also prioritising ethical sourcing, ensuring suppliers operate responsibly and positively impact people, communities, animals and the environment. For passengers, these choices matter as much as carbon reduction itself.

“FOR DECADES CABINS WERE SOMETHING OF A ‘BLACK BOX’ ONCE THE AIRCRAFT DOORS CLOSED. THESE AIRLINES KNEW WHAT WAS LOADED BUT HAD LIMITED VISIBILITY OF WHAT WAS ACTUALLY USED”



◀ Reducing waste through technology will have an environmental benefit and be noticed by passengers

A particularly exciting development is the use of data to understand onboard consumption for full-service airlines. For decades, cabins were something of a ‘black box’ once the aircraft doors closed. These airlines knew what was loaded but had limited visibility of what was actually used. That is beginning to change.

Consumption

Airlines and suppliers are developing technologies that track inflight consumption more accurately, allowing catering teams to forecast demand with far greater precision. Some carriers are already experimenting with systems that record what items are distributed during service, while others are developing tools that analyse what remains on returned trays. The goal is simple but powerful: understand passenger behaviour so that the right amount of food and beverage is loaded in the first place.

Aircraft manufacturers are also exploring solutions. Airbus’ AI-enabled Smart Catering technology captures data on what is served and what is left uneaten, helping airlines optimise catering loads, reduce unnecessary aircraft weight and streamline onboard service for crew and passengers alike.

Taken together, these changes point to a broader shift in how airlines approach sustainability. It is no longer only about reducing emissions behind the scenes. Sustainability is becoming embedded in the journey, from what is served, to how it is sourced and consumed.

In the process, sustainability moves from an abstract concept to something passengers can see and feel throughout their journey. ●



This topic will be explored further in a panel session at the Passenger Experience Conference (PEC), taking place at the Hamburg Messe on Monday 13th April 2026. PEC takes place ahead of Aircraft Interiors Expo (AIX) on 14-16th April. For more information and tickets visit: passengerexperienceconference.com

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