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IFE Envelope Expands With Technological Advances

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Thales says its FlytEDGE system, shown here during an Aircraft Interiors Expo demonstration, is the only cloud-native inflight entertainment on the market.

Credit: Thales

As airlines increasingly compete on brand differentiation and customer experience, inflight entertainment systems have emerged as a major focal point.

Advances in technology and changing passenger preferences have been driving evolution in inflight entertainment (IFE) systems since the pre-COVID-19 era, according to Alan Lim, a director at the Alton Aviation Consultancy. Many of those advances are enabled by improved connectivity over the past few years, Lim explains, thanks to technologies such as low-Earth-orbit (LEO) satellite constellations and more permissive regulations such as the European Commission's decision to permit inflight 5G cellular services.

"With connectivity becoming faster, cheaper and more reliable, IFE has seen a step change from the passive systems of yesteryear," he says.

IN-SEAT RESURGENCE

Ben Asmar, vice president of products and strategy at Safran Passenger Innovations (SPI), says that as inflight connectivity started gaining traction, many airlines shifted toward wireless IFE paired with passenger devices. This was largely driven by cost-saving opportunities, he says.

“Connectivity paired with wireless IFE remains prevalent for short-to-mid-range missions—typically up to 5 hr.,” Asmar explains. “However, as narrowbody aircraft like the [Airbus] A321LR and A321XLR take on longer missions of 7-9 hr., the demand for seatback IFE systems rises significantly. We expect that trend to continue well into the next decade.”

Safran is developing the latest generation of its RAVE IFE system, with delivery to aircraft slated for 2028. Credit: Safran

To address this, SPI is developing the next generation of its RAVE (Reliable, Affordable and Very Easy) system, which will be its most advanced in-seat IFE to date, according to Asmar. The OEM expects to begin shipping parts in late 2027, with aircraft deliveries in 2028.

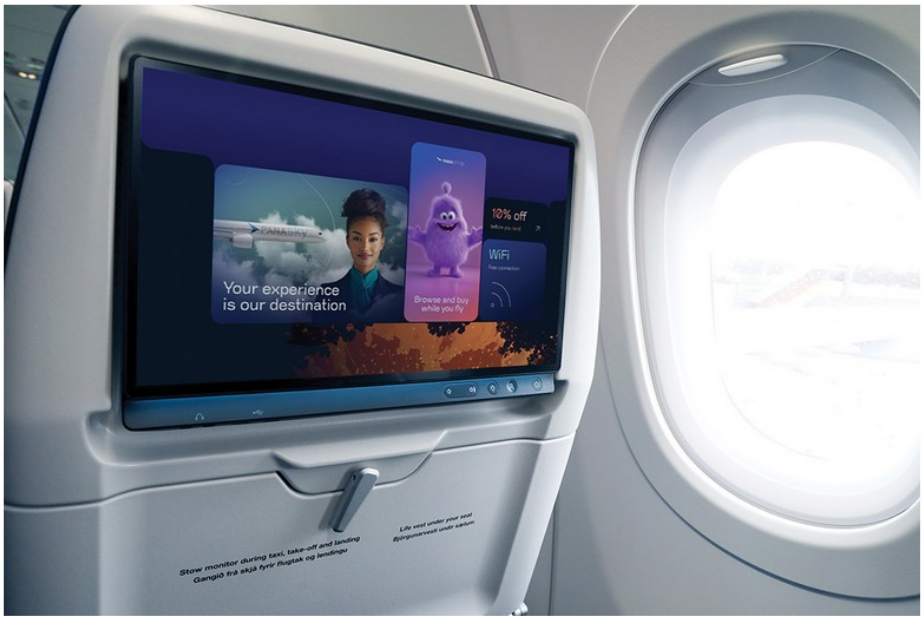
The coming generation of RAVE will feature 4K ultra-high-definition mini-LED display panels with full-array local dimming, up to 2,400 dimming zones and quantum dot technology. Available in a wide range of screen sizes, the product will bring 20% weight savings over the current RAVE system. “Its seat-centric architecture simplifies troubleshooting and minimizes single points of failure, which keeps maintenance events low and turnaround times fast,” Asmar says.

RAVE’s architecture, he adds, has been designed “to evolve over time through software” rather than constant hardware replacements. That reduces waste, avoids unnecessary retrofits and keeps the system running longer without sacrificing performance, Asmar says.

Panasonic's Astrova IFE system features modular architecture for easy hardware and software upgrades. Credit: Panasonic

Other in-seat developments include Panasonic Avionics' Astrova seatback IFE product, introduced in 2022 and now being delivered to launch customer Icelandair for installation on its Airbus A321neo fleet, explains Andrew Masson, senior vice president of product and strategy at the OEM.

"Its 4K [organic light-emitting diode] HDR10+ display offers exceptional picture quality, contrast and color accuracy, creating a cinema-grade viewing experience," says Masson. "This, combined with high-fidelity audio options via wired or Bluetooth connections, makes IFE more engaging and enjoyable. At the same time, these key features allow airlines to introduce new features across their Astrova-enabled fleet."



The Astrova IFE system is being delivered to Icelandair for installation on its Airbus A321 fleet. Credit: Panasonic

Masson says the product takes a modular approach to processors and architecture, with features such as a removable peripheral bar. “Airlines can easily upgrade hardware and software, enabling airlines to progressively incorporate or upgrade features to meet the evolving demands of the market and evolution of consumer electronics,” he explains.

Masson notes that the connected seatback will unlock a new channel for airlines, which are increasingly focused on digital engagement.

“As an example, passengers may use the web for 10 min. to book a flight,” he says. “The day before the flight, they use the airline app for an average of 3 min. to check in and select a seat. Upon boarding, the passenger sits behind a seatback screen for 90-600 min., depending on the length of their flight. This length of time represents 10 times the digital passenger engagement opportunity, and why so many airlines are investing in fleetwide IFEC [(inflight entertainment and connectivity)] solutions.”

IFE INNOVATIONS

Last year, Thales launched FlytEDGE, the only cloud-native IFE on the market, according to InFlyt Experience Chief Technology Officer Tudy Bedou. Bedou describes the product as an open software platform that enables new capabilities such as access to streaming platforms, live personalization, gaming and “much more.” The system is powered by Thales’s Onboard Data Center, which he calls the only flying data center designed with six patented technologies and a self-healing blade architecture.

Delta Air Lines and Qatar Airways are the system’s first announced commercial customers. FlytEDGE has been flying with a wireless IFE configuration for more than 18 months.

Bedou says that FlytEDGE is positioned to drive deeper passenger connections and completely remote operations. “Fully flexible and scalable to meet today’s and future needs, FlytEDGE runs any consumer web-app and is ready to support next-generation apps,” he says. “Passengers can either access titles loaded onboard the aircraft or instantly stream their favorite entertainment using their personal video subscriptions and continue watching their favorite shows from the ground to the air and across flights.”

Bedou points out that the technology also can help airlines increase their ancillary revenue through real-time advertising, loyalty and recommendation engines as well as other direct-to-consumer business models.

“FlytEDGE enables completely remote airline operations, with virtual testing and immediate over-the-air updates for software and content, user interface and new services akin to updating an app on a smartphone,” he says. “That is a paradigm shift in terms of how IFE is done.”

Asmar points out that SPI is designing cloud services to take advantage of increased bandwidth when it arrives. This includes the ability to synchronize both content and software across multiple connectivity pathways.

“IFEC is a likely candidate to be one of those pathways, but it’s not just a matter of plugging in a high-capacity satellite service and calling it done,” says Asmar. “To really take advantage of this shift, we need a fundamental change in the content supply chain.”

He notes that current systems and processes are not built for continuous content delivery. “Instead of pushing multi-terabyte packages once a month, we need to move toward pushing smaller amounts of content constantly,” he says. “It’s a transition that will happen over the next several years as connectivity capacity improves and our systems evolve to make the most of it. By building a platform designed for distributed content management and real-time updates, we’re setting the stage to

seamlessly integrate new IFEC capabilities as they come online, ensuring airlines are ready for the connected cabin of the future."

Masson points to Panasonic Avionics' Converix, introduced at this year's Aircraft Interiors Expo, as an open and neutral application-hosting platform providing a complete aircraftwide solution for non-safety-critical services. He says Converix's capabilities include a broad range of services such as dynamic content delivery, over-the-top streaming and live TV and personalization. It also includes IFEC apps, gaming, connectivity integration through the seatback and an artificial intelligence virtual attendant.

Qatar Airways and Saudia are the two publicly announced Converix customers so far. Masson reports that deliveries will commence in 2028.

LEO CONNECTIVITY

Industry experts see LEO satellite constellations as the coming game changer for IFE. Gilat Stellar Blu is one vendor offering antenna technology to exploit the high-speed, low-latency advantages that LEO promises to deliver. Its current product is the Sidewinder, with 180 flying today, according to President Tracy Trent.

Sidewinder is the only multi-orbit, single-array antenna without a radome requirement, Trent says, and the only electronically steered antenna designed to meet airframe OEM installation requirements. Additionally, the product is network-agnostic and not locked into any internet service provider (ISP).

"The terminal was designed to meet the latest airframe OEM strategy of flexibility and reusability," Trent explains. "In the cabin, the aircraft controller unit at Sidewinder's core is software-defined and capable of integrating with any Ku-band modem. The adaptor plate and fairing—outside aircraft equipment—were designed for modularity, providing OEMs and airlines ISP flexibility and optional future antenna enhancements with limited airframe modification."

He adds that Gilat Stellar Blu software supports bespoke customer configurations, including network selection, multiple modems and dynamic switching based on region, performance or bandwidth cost.

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