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Automotive

WHAT CAN THE BUSINESS
JET WORLD LEARN ABOUT
SEAT TRENDS FROM THE
LATEST AUTONOMOUS
CAR CONCEPTS?

IDEAS

IFEC AND CMS

Experts predict the road ahead for virtual reality, flexible screens, inductive charging and more

PRAETOR 500 AND 600

Embraer reveals all about its two new models, as well as the Bossa Nova interior option

ACJ350 XWB

The three centers approved for completions on this type discuss the unique challenges involved

GAME changers

EXPERTS CUT THROUGH THE HYPE TO
DISCUSS THE REAL PROSPECTS OF
TECHNOLOGIES POSITED TO CHANGE
HOW PASSENGERS ARE ENTERTAINED
AND CONTROL THEIR ENVIRONMENT

Words by Tomás Romero. Illustration by Michal Bednarski

Although the actual date of the once far-off future that Marty McFly traveled to in the *Back to the Future* films came and went three years ago with nary a functional hoverboard in sight, Doc Brown's quote about the future being "what you make it" has never been truer. On the aviation front, a host of cutting-edge technologies are poised to take the commercial and private aviation market by storm.

While some of these technologies might not be ready to take flight just yet, Teague's creative director, Brian Conner, points out, "The reality of our world today is that, like it or not, every company is now a software company. Players in the aviation industry who embrace this will be making money and serving customers in new ways that aren't even envisioned yet today. Players who don't embrace this and try to hold on to traditional modes of operating do so at their peril."



Flexible displays

Although the concept of flexible displays dates back to Xerox's electric paper product Gyricon in the mid-1970s, flexible display technology has really hit its stride in the past five or six years, with flexible OLED displays being used in everything from mobile devices and TVs to Apple watches. With the next generation of OLED panels expected to be not only flexible but, in many cases, fully bendable, and Quantum Dot technology offering increasingly cheaper, thinner LED solutions, one has to wonder how such awesomeness could be applied to the business jet cabin as well.

"As flexible display technology develops, it presents a great opportunity for business jet interiors," says Tim O'Hara, director of design innovation at Gulfstream Aerospace. "Space and weight are factors we are always looking at in the aviation industry. Consider a 60in screen that right now would take up valuable storage, block windows and interfere with the living space. An ultra-thin, flexible screen would be able to roll up, retract and save weight."

Mike Sutton, senior project manager at Winch Designs, concurs: "One of our projects features a projector screen that can be pulled down onto the table. More advanced glass technology has enabled very thin

glass to be placed over the projector screen, creating a cinematic feel."

While Teague's Conner says he isn't convinced that the demand for flexible screen technology is there yet, the idea of using large-format formed displays in a dynamic way is appealing. "Imagine changing a business jet cabin to look like a small Italian bistro for dining, and then to a modern designer interior for working, or an outdoor scene for peaceful rest," he says. "But if we're looking to interact with flexible stuff, I see the interesting developments coming from another direction: taking materials that are already flexible, and making them smart. One of my favorite examples is Jacquard by Google, a fabric with sensors woven in to enable touch interactions. Having smart materials in a business jet cabin would lead to a new level of responsiveness for passengers. I imagine interactive surfaces woven into seat materials, or control surfaces seamlessly integrated into textile wall panels."



TOP: A BBJ INTERIOR CONCEPT INCORPORATING A FLEXIBLE DISPLAY, BY WINCH DESIGN

ABOVE: AN 'UNBREAKABLE' FLEXIBLE OLED PANEL CREATED BY SAMSUNG DISPLAY, WITH APPLICATIONS FROM SMARTPHONE SCREENS TO CAR DISPLAY CONSOLES

BELOW: DPI LABS RECENTLY UNVEILED OLED FLEXIBLE DISPLAYS FOR USE IN BUSINESS JETS, IN SIZES FROM 55-77IN. THEY ARE 4K AND HDR COMPATIBLE AND CERTIFIED UNDER A MULTIPLE STC





Inductive charging

Wireless charging pads are already commonplace in living rooms and coffee shops around the globe – Ikea even sells a five-piece round hole saw for US\$4.99 that enables users to insert the Rällen integrated wireless charger into almost any piece of furniture in its range. With many Android phones and the new iPhone Xs expected to support wireless charging at 10W and higher, and passengers using PEDs for entertainment more and more, why should this not be possible in luxury aircraft?

“In my opinion, there are no major safety or regulatory barriers to implementing wireless charging pads in private aircraft,” says Jean-Pierre Alfano, managing and creative director at AirJet Designs. “The integration of such systems will necessitate proper equipment certification [such as ETSO/TSO], and the proper aircraft modification certification [STC], but this is something that is standard in the aviation industry, and for which

the nature of wireless pads should not pose a particular problem.”

Conner of Teague notes that inductive charging features are already offered as a retrofit option for the BBJ 777 and BBJ 787, and many airlines are keen to have them as a line-fit option as well.

“The biggest challenge with wireless charging is emissions mechanical interference,” says Gulfstream’s O’Hara. “We also need to determine how wireless chargers would interact with the design finishes in our aircraft without sacrificing the excellence Gulfstream is known for, with the high-build veneers on our cabinetry, for instance.”

Another interesting facet of inductive charging, says Conner, is that multiple players can integrate it. “Is it a feature of the IFE system, the seat, or a separate component altogether?” he asks. “We’ve found that successful integration happens when the seat environment and IFE system are conceived as one experience.”

ABOVE: ASTRONICS AES’S NEW WIRELESS CHARGING MODULE CAN BE EMBEDDED IN MONUMENTS AND SEATS – THE FIRST INTEGRATIONS ARE SCHEDULED TO ROLL OUT ON AIRCRAFT IN EARLY 2019

INSET: DPI LABS SAYS ITS WIRELESS CHARGING TECHNOLOGY – UNVEILED AT NBAA-BACE 2018 – IS PENDING PMA AND NOW READY FOR INSTALLATION IN AIRCRAFT

Virtual reality

The jury is still out on the widespread adoption of VR IFE due to issues like user isolation and motion sickness, as well as practicality concerns such as charging and storage during take-off and landing. However, VR headsets are certainly making headway on the commercial aviation front – adopted on carriers including Joon, Corsair and Alaska Airlines.

“Technically speaking, if it can be done for the commercial aircraft market, it can definitely also be done for the private aviation market,” says AirJet’s Alfano. “But I think, at the moment, VR entertainment brings more value to commercial flights, during which passengers are demanding new entertainment to make the flight seem shorter. In private aircraft, passengers are usually working or spending time with their friends and/or families. In that context, VR entertainment is more attractive for video games, rather than immersive entertainment.”

Mischa Loeffler, manager of product planning and strategy for Bombardier’s Challenger and

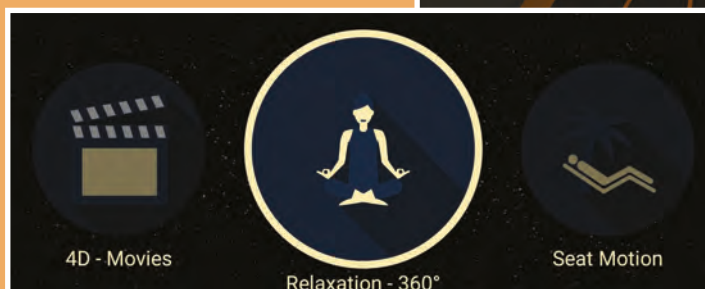
Learjet aircraft, seems to agree. “A private jet offers a different cabin experience to a commercial aircraft,” he comments. “Most flights have very few passengers and they tend to know each other. A business jet is meant to be more of a collaborative environment and passengers don’t have the same need to separate themselves from the flight experience.”

Another stumbling block, adds Conner from Teague, is the comfort factor, with many users complaining about eye strain and fatigue after wearing VR headsets for more than 15 minutes. “Will people be watching full-length immersive feature films in VR? I personally doubt it,” he says.

But no matter what the future holds for VR IFE, O’Hara believes the virtual world is still no match for the real one. “VR in flight still has a long way to go to match the quality standards Gulfstream sets for its customers,” he says. “The virtual environment is still clearly artificial. Would you rather see a majestic view from one of our signature oval windows, or a simulated view you know isn’t quite real?”



SKYLIGHTS’ ALLOSKY VR HEADSET AND INSEAT SOLUTIONS’ INTERACTIVE MESSAGE SYSTEM CAN BE INTEGRATED WITH STELIA AEROSPACE’S OPAL BUSINESS SEAT TO TRANSPORT PASSENGERS TO A VIRTUAL PRIVATE JET, BEACH OR YACHT, WHERE THEY CAN RECLINE THE SEAT AND HAVE A MASSAGE



Wellness

Health-focused options have taken off on long- and short-haul commercial carriers the world over of late, with everything from IFE yoga programs and guided meditation series, to essential oil and rejuvenating face mist-laden amenity kits. Panasonic recently announced plans to take inflight well-being and mindfulness to the next level with Wellness, the latest solution for its Next platform. Wellness adds headphone-free active noise canceling technology, tailored seat lighting and nano air-cleansing technology. Is this a trend that will also play out in the private aviation market?

"Health and wellness is a critical concern for us," says Loeffler from Bombardier. "It factors into every facet of the Global 7500 business jet."

Citing the crucial role that lighting plays in reducing the effects of jet lag, Loeffler says Global 7500 passengers can use the CMS to set lighting schemes that correspond to their circadian rhythm and destination.

"We have everything from daylight simulation to enhance wakefulness, to warm evening lighting to promote relaxation," explains Loeffler. "In addition, the Global 7500 has an advanced air-management system that delivers both 100% fresh air, as well as a turbo heat and turbo cool feature to rapidly raise or lower cabin temperature."

"This is one area where the hotel and hospitality environments are ahead in terms of wellness and experience," adds Christopher Pirie, senior director of business development for Teague. "Wellness will continue to be sought after as a differentiating element in an OEM's business jet offering. Factors like humidity, fresh customizable fragrances and ionized air systems will be highly desirable. Cabin noise reduction technologies will also continue to be developed, as they are critical for a calm and stress-free air travel experience."



ABOVE: COULD GUIDED MEDITATION AND YOGA PROGRAMS BECOME A COMMON IFE FEATURE?

LEFT: GLOBAL 7500 PASSENGERS CAN SET CABIN LIGHTING SCHEMES TO SUIT THEIR CIRCADIAN RHYTHM

Smart screen/emotion AI

Although skeptics initially scoffed at the concept of emotion-aware smart screen apps and digital experiences, affective computing pioneers including Affectiva and Crowd Emotion have been applying emotion AI technology in everything from gaming to healthcare, retail, education, advertising, and to keep drivers awake.

Applying such facial recognition technology in flight could bring huge personalization possibilities for IFE. In addition, Sutton from Winch Designs is intrigued by the idea of using such smart screen technology to help calm anxious flyers or to change the cabin environment during the flight.

"All technology should be aware of the user's condition," adds O'Hara from Gulfstream. "Beyond individual smart devices, the next generation is the smart environment, one in which all devices work together as a symphony and support each other."

Describing a future cabin environment where smart screen technology could sense a passenger's mood and adjust the intensity and hue of the cabin lighting accordingly, O'Hara

says the future for such technology is wide open. Teague's Conner is a little less sure:

"As a passenger, do I want the IFE screen to react to every facial gesture I make while I'm watching a movie? Probably not. I see more use for a technology like this in the outlier use cases – being able to monitor a passenger with known health issues or to orchestrate the cabin environment to ensure optimal sleep.

"It goes back to understanding how commercial airlines and private carriers want to design the experience, especially from a service perspective. In premium cabins, the interactions with the real people serving you are what make the experience exclusive and elevated. Extending this into business aviation, principals often have personal relationships with their pilots and flight attendants. In short, nothing will replace human interactions." ❖

BELOW: RECOGNIZING PASSENGERS' EMOTIONS COULD LEAD TO GREATER PERSONALIZATION OF THE CABIN ENVIRONMENT AND IFE

