Airline ENTERTAINMENT INTERNATIONAL

SHOWCASE2011

What's inside?

- Android IFE
- Digital wallets
- Content delivery

THE INTERNATIONAL REVIEW OF INFLIGHT ENTERTAINMENT & COMMUNICATIONS

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Printed by: William Gibbons & Sons Ltd.
P.O.Box 103, 26 Planetary Road
Willenhall, West Midlands, WV13 3XT
Cover image: Air New Zealand GUI

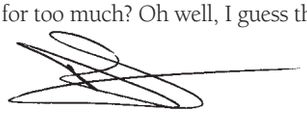
> "OF COURSE THE NEED FOR ONBOARD ENTERTAINMENT AND COMMUNICATION WILL REMAIN – IT'S MORE A CASE OF HOW IT WILL BE DELIVERED"

birthday**wishes**

It's hard to believe, but the IFE industry celebrates its 50th birthday this year – five decades have now passed since the first inflight movie (*By Love Possessed* starring Lana Turner) was shown on a TWA flight between Los Angeles and New York, back in July 1961. The world's a very different place now, of course – although we here in the UK still have the Royal Family. Newlyweds the Duke and Duchess of Cambridge (that's Wills and Kate) recently declined £200 each in duty free vouchers as compensation for the IFE failing to work on a first-class return flight with British Airways to London from Los Angeles earlier this summer.

Despite such failures, the IFE sector has come a long way in half a century. However, the industry is about to step out on a far longer journey in the years ahead – and one likely to be made at breakneck speed. Armed with mobile devices that provide permanent connectivity to a multimedia world, travellers today expect seamless design, interactive displays, a vast choice of content and multifunctionality. And they expect the same when they step on board an aircraft. In response, airlines, vendors and aircraft manufacturers continue to evolve and improve their products, services and technologies. From more effective operating systems that offer greater compatibility with software developments on the ground, to high-definition touchscreens and interactive menus and content, the IFE world is changing at a rapid pace.

We take a look at a number of key areas in this special supplement, brought to you by the team behind *Aircraft Interiors International* magazine. It's certainly a challenge trying to decipher this rather complex, technological world, but it seems clear that the industry is at a crossroads, with many asking whether it will even be around 50 years from now. Of course the need for onboard entertainment and communication will remain – it's more a case of how it will be delivered. My wish for the future is a simple one: make it easy, make it fun and make it cheap – for both the airline and the passenger. Is that really asking for too much? Oh well, I guess that's what birthday wishes are for….



Anthony James, editor

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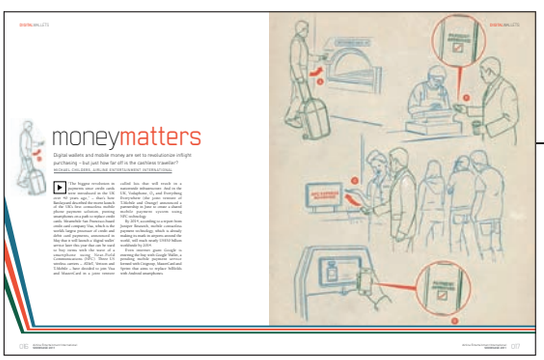

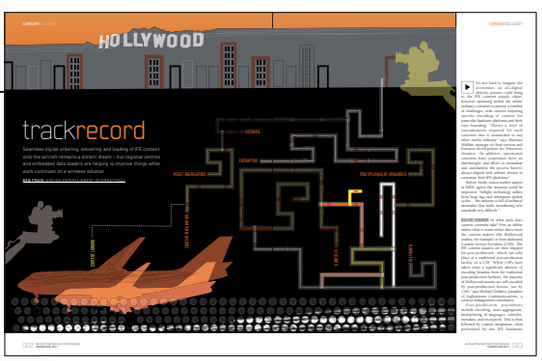

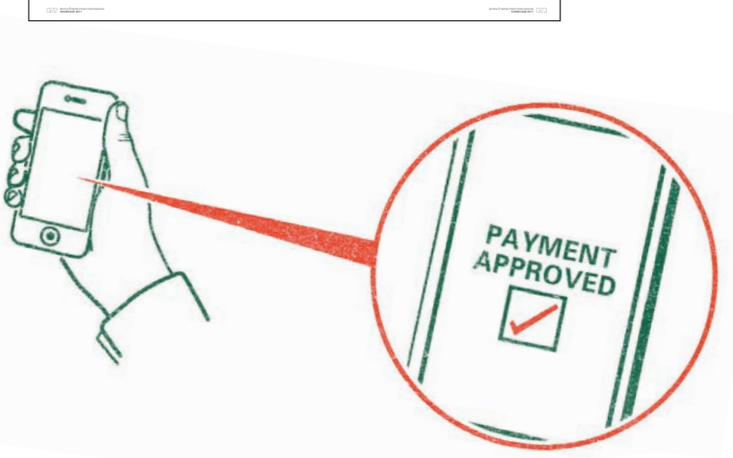

PATRICK BRANNELLY

Q&A

Patrick Brannelly, vice president of product, publishing, digital and events at Emirates, explains the trends influencing the airline's IFEC policy

HOW ARE PASSENGER EXPECTATIONS CHANGING?
Passengers today expect to be connected and to have an even wider choice of programming than ever before. Passengers on Emirates have been connected for over 15 years, since we installed phones on every seat way back in 1996, but today they can increasingly use their own mobile phone during the flight. Over 90 Emirates aircraft are currently installed with this system and more are being fitted every month. In addition we broadcast live news headlines to the aircraft so passengers know what's going on in the world below. A huge development has been the expectations around entertainment content – people now like to see entire series of their favourite TV shows, boxed sets, and will happily watch 10 episodes one after the other. Likewise with audio – every genre has to have strength in depth. Emirates is aware of its passengers' changing needs and expectations and has added programming to fit their needs.

WHAT ARE YOU DOING TO KEEP YOUR ICE IFE SYSTEM AHEAD OF THE GAME? We continue to invest in hardware and content. This year we finished an IFE hardware retrofit on our entire A330-200 and A340-300 fleets installing a new digital IFE system from Panasonic that brings ICE to every seat in our first and business class for the first time; a considerable investment in equipment at a time when many airlines are not investing capital in significant product improvements. The content selections on ICE also continue to grow, especially in non-English language product. We believe our commitment to IFE contributed to our customers voting us the 2011 Skytrax World Airline Awards' best airline for IFE.

HOW IMPORTANT IS IT TO TAILOR IFE TO INDIVIDUAL PASSENGERS? Potentially very important – personalisation is vital not just for IFE but I would say for the entire interaction between airline and passenger. In IFE terms, the ability to allow passengers their own preferences is going to grow from now on in every area – porting content playlists or favourites; choosing favoured GUI styles and languages; the ability to interact with the airline personally from the seatback for bookings, airline loyalty schemes and customer feedback; the system's ability to interact with personal devices, etc. Even if that technology is not available, personalisation can also mean offering content in someone's native language, there are many ways. Conversely an airline should always try to offer more and try to surprise the passenger by offering new activities or content.

HOW IS AEROMOBILE WORKING OUT FOR EMIRATES?
It's working out very well. Today, nearly seven million people have turned on a phone on an Emirates aircraft since we launched in March 2008. The equipment is on over 90 aircraft and the service is available on over 200 Emirates departures a day. Using a mobile phone is normal behaviour on Emirates and our passengers have come to expect it. I am also pleased to say we do not have a social problem with AeroMobile; we never expected this to be an issue based on our earlier experience with seatback telephones, and quite simply this issue never appeared as so many predicted. We ask passengers to turn their phone to vibrate and be mindful of others – and no more than that. There are a number of factors that help – an aircraft cabin has a high noise ambience to be begin with (making it hard to hear others chatting) and nearly everyone on Emirates is wearing headphones enjoying the IFE. Most people using their phones are sending SMS and really do tend to keep their voices down when making calls. I have sat next to plenty of people making calls on Emirates flights and it is not the intrusive nightmare that was imagined.

WHAT NEW TECHNOLOGIES WILL HAVE AN IMPACT ON IFE? Every single technology you can think of. Some that are pretty obvious like Android, HD or upcoming Ka band communications. But if someone is clever enough, and there are plenty of those in this industry, an application can be found for just about anything you can think of. The trouble is it takes a long time to update aircraft systems, and this at times restricts our responsiveness to new technologies more than we would wish. The big change that needs to happen is for airlines to have greater flexibility to adapt application software at the seatback – to more rapidly evolve the seatback experience. That would allow greater flexibility for airlines to take advantage of changing technologies, especially in software, to try to keep up with consumer demands. The leading hardware vendors and airlines are trending this way, and this will result in a greater fundamental shift in the overall experience.

WHAT ARE THE REAL UNEXPLORED OPPORTUNITIES FOR AIRLINE IFE? Watch this space – Emirates intends to keep investing in the required technologies as well as programming strategies to ensure we stay ahead. ■

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threethinking

Three leading IFEC experts share their three top trends and considerations for the coming year

ANTHONY JAMES, AIRLINE ENTERTAINMENT INTERNATIONAL

Robert Smith, senior market analyst, IMDC

Robert has five years' experience at IMDC, a research and consulting firm specialising in inflight technologies. He is the primary author of the IMDC Inflight Technologies Market Outlook Report for which he produces a five-year market forecast and conducts analysis of trends in IFE hardware, content and connectivity.

MORE THAN HARDWARE As an industry we should be rightly proud of advances in inflight technology. But is an integrated touchscreen, for example, going to impress a passenger who is already getting bored of their iPad? High-end technology in IFE is not in itself enough to create that 'wow factor' on board. Hardware capability is only part of the experience, to truly impress IFEC needs to interact with the passenger and deliver personalised functionality and content. If IFEC can achieve this 'mass customisation' and empower the individual travel experience by offering and continually improving inflight ordering, live travel information, tailored content selections and a connected experience, then there is a chance of passengers interacting with and approving of their chosen airline. The question for airlines over the coming year is: How to make an impact on and truly impress passengers?

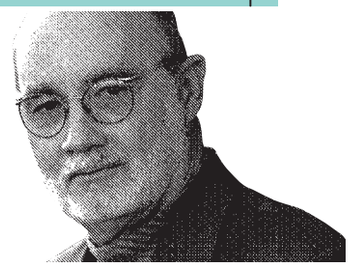
IMPORTANCE OF APPLICATIONS This year (2011) will be the year when US mobile phone users spend more time, on average, using mobile apps than they do surfing the web. While web use has increased, time spent using mobile apps has exploded, with the typical American spending an hour and 20 minutes every day using them. Almost half of time spent on apps is devoted to mobile games, and IFEC providers should take heart in the popularity of these relatively low-tech, near disposable lifespan titles, which would be well suited to the inflight environment. Connected apps are popular with both consumers and developers as they are a way of providing an improved experience, controlled by the developer, with lower data requirements than general web browsing. Integration with additional IFE services and functionality such as a movie selection that a passenger has 'liked' on Facebook, or travel loyalty scheme integration would have the dual benefit of delivering value to the passenger and relevant information to the airline.

GETTING CONNECTIVITY RIGHT Passengers clearly value a fully connected experience, and some are even prepared to pay for it, but delivering it is not simple, even across single aircraft-type fleets all operating domestically and over land. Airlines should perhaps be prepared to make a cash loss if they want to offer connectivity as part of a premium service. It is also too easy to worry that anything less than the highest possible bandwidth will not bring value to the passenger. If the bandwidth to an aircraft is not capable of delivering a full browsing experience then it is not wise to try and offer it and then charge for something not worthy. At the same time there must be an effort to make the most of what you have, an unusable browsing experience might not be worth paying for, but an application-powered 'live IFE' experience could well be. Such an experience can be both high-value and low-cost if airlines can be smart with partnerships.

> 66 THE QUESTION FOR AIRLINES OVER THE COMING YEAR IS: HOW TO MAKE AN IMPACT ON AND IMPRESS PASSENGERS? 99

Michael Childers, principal, Lightstream Communications Group

Michael has just accepted a new role as full-time advisor to The IMS Company, providing his expertise on strategic content and media development. He is also an independent IFEC consultant, a well-published IFEC journalist and a former managing editor of APEXnews, the fortnightly newsletter of the Airline Passenger Experience Association (APEX).



RELIABILITY THROUGH REDUNDANCY One of the key concepts of 'seat-centric' architecture in IFEC is that storing content at every seat – rather than relying on delivering it from the head-end to the seat when the passenger selects it – increases the reliability of the system. This isolates any failure to a single seat display unit (SDU), which can be switched out in less than a minute.

Now the concept of redundancy in content storage has become a key factor in Airbus' 4G IFE specification announced this year, replacing 'star architecture' with 'ring architecture' that – while still a centralised architecture – uses two backbones to form a loop for each seat column. Each seat group is served by two cables, one going from front to back, the other from back to front. In the event of a failure in one content delivery stream, the seat group can receive an identical stream from the cable running in the other direction. This reduces the impact of a systemic failure to a single seat group.

THE UBIQUITOUS SMARTPHONE, THE VIRTUAL AIRLINE The smartphone has emerged as the traveller's interface device of choice, with an increasing number of travel-based apps becoming essential to the passenger experience. Passengers can now use mobile boarding passes to check-in for flights, check baggage, gain access to premium lounges, go through security and gain entry to the aircraft via automated boarding.

In the next year, the number of smartphones equipped with the two-way Near Field Communications (NFC) technology will increase significantly as will the apps that it supports – including the digital wallet. The path to inflight purchasing without cash or credit cards will be paved. And when Apple releases a fully realised version of its 'super-app' – iTravel – the smartphone will be fully-enabled for everything from reservations and ticket purchases to inflight purchasing. As airlines increase the use of social media in customer service, smartphones will reduce face-to-face communications and the trend towards the 'virtual airline' will increase.

GOOGLE AND APPLE TO MAKE THEIR MARK Both Thales and Panasonic have adopted the open source Android operating system (OS) in their newest IFEC products. Now, American Airlines has announced its purchase of 6,000 Galaxy Tab tablet devices using Android OS. I believe that the choice of operating system is of greater significance than the specific tablet device itself.

The systems integrator behind American's new device will likely emerge during the forthcoming APEX Conference along with an Android OS-based product suite.

But the perceived intransigence of Apple – and the difficulty of adopting its Apple iOS into IFE – may send a false message about its attitude towards this space. In the next year it's likely that Apple will be more visible in IFEC – not directly – but via strategic partnering with service providers capable of protecting Apple's brand while utilising its capability in this space.

Such partnerships will be quite limited, but I believe that both Google and Apple will see their operating systems and apps used increasingly in IFEC.

> 66 BOTH GOOGLE AND APPLE WILL SEE THEIR OPERATING SYSTEMS AND APPS USED INCREASINGLY IN IFEC 99

Michael Planey, partner, HMPlaney Consultants

Michael Planey is an inflight technology specialist with HMPlaney Consultants, a consulting practice focused on the development of new products, processes and services to the global travel industry.

KILLER APPS The announcement by American Airlines that it intends to purchase 6,000 Samsung Galaxy Tablets solidifies the arrival of consumer mobile devices into the inflight market. Combined with other airlines' use of Apple iPads, these devices offer passengers access to the next big thing in inflight service: killer apps.

As a general rule, airlines have been dependent upon the IFEC vendors for operating system modifications and application development. Often, the only 'customisation' options available were colour, font and graphic changes. The emergence of both Android and iOS in the IFEC world means that there are now literally thousands of potential partners with the knowledge and experience to develop custom applications to satisfy the airlines' desires.

Given that the airlines (and hotels, tourism bureaus and ticket vendors) already have apps available, it won't take much effort to bring these apps into the cabin. With inflight connectivity rapidly expanding, these apps will give the airlines a chance to capture new revenues, expand relationships with marketing partners and deliver improved customer service.

AIRFRAMERS MAKE BIG CHOICES Once Boeing begins deliveries of the 787 and 747-8 into passenger service, it will be faced with making decisions on vendors and technology upgrades in the passenger cabins. First and foremost, those aircraft will require options for line-fit internet connectivity technology. After that decision is reached, the entertainment systems should be re-evaluated given that those systems were decided upon more than six years ago. Since then, the emergence of seat-centric IFEC architecture and innovative new vendors in the traditional in-seat model has changed the airlines' criteria for selecting their IFEC partners. Boeing needs to respond to its customers' new expectations for service, performance, functionality and weight savings.

As Airbus rounds the A350 into shape it too will need to evaluate the new trends in IFEC and perhaps expand its catalogue of line-fit passenger-facing technology. The list of approved Airbus Contracted Suppliers could expand based on the airlines' demand for weight savings and reduced costs.

Beyond these new twin-aisle aircraft, there is also opportunity for new IFEC services with Bombardier, COMAC, Embraer and Sukhoi. Announcements of passenger technology partnerships have been few and far between with these airframers, but that should change soon. As air travel continues to expand globally, passengers on these new single-aisle aircraft will come to expect many of the same services they enjoy on the larger birds and these companies will have to deliver.

CONSOLIDATION The proliferation of new ideas, new architecture and new vendors often creates opportunity for mergers, acquisitions and liquidations. The larger vendors have had plenty of time to look at the young companies offering inflight connectivity and seat-centric solutions. Perhaps 2012 will see some of these upstarts acquired by the established IFEC veterans. The economic downturn of the last few years and the lack of commercial lending have led corporate boards to hoard cash as a backstop to further liquidity problems. If the economy improves, those bank balances could be put to use by Panasonic, Rockwell Collins and Thales (and perhaps Apple, Google or Samsung) to acquire new technology and clients the old-fashioned way – buying them. ■

> 66 THE PROLIFERATION OF NEW IDEAS, NEW ARCHITECTURE AND NEW VENDORS OFTEN CREATES OPPORTUNITY FOR MERGERS AND ACQUISITIONS 99

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The Android operating system looks set to transform the inflight experience for passengers as major IFE vendors start to explore the new possibilities it offers

BERNARD FITZSIMONS, AIRLINE ENTERTAINMENT INTERNATIONAL

Before last year's WAEA (now APEX) show, Android was just a popular new operating system for mobile devices. But by the time the banners came down in Long Beach, Thales had scooped the Avion Best Achievement in Technology Award with its Android-based Touch PMU controller and Panasonic had revealed that its next generation eX3 platform would be based on the operating system.

So what's the big deal? The software gives access to nothing less than "a whole new world of possibilities", according to Thales' vice president of marketing, Stuart Dunleavy. The Touch PMU controller can host games and other applications and provides an ancillary display so that passengers can enjoy the same sort of multi-device environment they are used to at home. And the company is already pushing the Android operating software – and the Android marketplace and the software development kit (SDK) that it brings – throughout the new TopSeries Avant platform.

"We're leveraging the innovation and early market advantage that we had on the Touch PMU and essentially duplicating that across the entire system," Dunleavy says. "So as well as the Touch PMU, the new smart video display units (SVDUs) will also support the Android operating software. That means we can extend a similar range of application functionality onto the seatback screens themselves. The SVDU has more horsepower, more local memory, it's a beefed up version of the Touch PMU, but with the Touch PMU and the new screens in an aircraft you've got a fantastic multi-tasking, multi-media, dual media access capability."

01

One consequence of adopting Android, he says, is that Thales can leverage a much richer and more diverse range of user interface design, navigation and build methodology. "There are functions and features that we can enjoy through the Android operating framework that haven't been supported by historic technology before."

Another is the ability to bring in interesting applications from the Android marketplace, "either ones that already exist and we modify, or those which we commission and have built on our behalf with our airline customers".

So, far from being just a gimmick for the Touch PMU as a standalone device, Android is "definitely a fundamental tenet of our coding and our development strategy moving forward," says Dunleavy. "We're very excited about the opportunities it brings in terms of open source software and being able to leverage best-in-class consumer technology and consumer development."

> 66 YOU WOULD HAVE THE OPPORTUNITY TO SAVE A PLAYLIST OF THE CONTENT THAT YOU'VE PREVIOUSLY VIEWED 99

DIGITAL PERSONAS Android also promises to extend the reach of the IFE system beyond the cabin itself, he says, enabling both crew and passengers to "bring their travel tools and mobility applications into the aircraft environment and use the IFE and inflight technology platforms that we provide as a conduit between themselves and the cloud-based applications that many of us are now enjoying. The clearest example of this and what we've spent quite a bit of time working on from an R&D and prototype point of view already is the airline mobile applications that are being offered both through Android and through iTunes for download onto passenger devices."

The idea is to add a set of features to the airline mobility application that will be relevant in flight, Dunleavy says: "The goal is to enable the passenger to create a digital persona or a digital passport that they can carry from flight to flight, from system to system, and maintain a connection with their cloud-based applications but also maintain some consistency and some history between their inflight experiences."

He uses the example of a passenger transferring from a long-haul flight to a regional connection: "You would have the opportunity to save a playlist of the content that you've previously viewed or to remember the points at which you were in a movie or to have a pre-configured set of preferences that you can plug into the inflight technology system that will inform and influence your inflight experience."

01. Popular Android applications including the hit game Angry Birds are now available to airlines too
02. Artificial intelligence games from AI Factory
03. Thales' TopSeries Avant IFE system and Touch PMU controller

02

games galore

"Android is basically huge for us," says Jeff Rollason, CEO of London-based games developer AI Factory. AI, which specialises in artificial intelligence games such as chess and shogi, has supplied games to DTI for inflight use and is currently negotiating to supply them for the in-seat entertainment systems aboard new luxury coaches in Taiwan and elsewhere. By July it had five games in the top 15 of more than 18,000 in the free brain and puzzle category.

One of Android's attractions is its dominance: "We prefer monopolies in operating systems," Rollason says. "It's not a great help for us to have 20 different consoles out there. It's very hard to cover them and each becomes a subset of the market." And Android, he predicts, "is going to completely monopolise". Even Japanese companies, which tend to prefer in-house operating systems are "adopting Android big time", he says. "It genuinely has taken over the world."

Android is quite developer-friendly, he adds. An application programmer's interface (API), for example, makes it easy to accommodate multiple screens. "Rather than say 'render this particular menu at this particular location', you say, 'render it in the bottom left corner and scale it to whatever size the screen happens to be'."

Personalisation has been a buzzword in the industry for at least five years, Dunleavy says, but logistics and complexity have always got in the way: "With the advent of the Android application environment and the growth and development of airline mobility applications, we're confident that goal of personalising the inflight experience for the passenger is much more achievable."

STREAM LINES Thales is keeping a close watch on audio/video distribution capabilities to passenger devices, he adds. "We've already demonstrated some advanced concepts and technologies in this area and we will be showing a much more advanced version of this media streaming capability at the APEX show in September," he says.

Offering high-quality AVOD services to four or five hundred people on a long-range aircraft demands a wired network, he maintains. "However, we can support a smaller number of passengers using their own devices with streaming media and a wireless media type experience."

Thales sees integration of passenger devices with its system as a complementary rather than a replacement technology, but Dunleavy says the company expects to have a prototype product and a couple of airline trials announced in the fourth quarter of this year: "No guarantees at this point, but we're quite happy with the way the technology's moving and this is certainly an area that many of our existing customers have been very interested in."

STANDARD BENEFITS Steve Gladstone, Panasonic's director of applications and services, says Android is attractive first of all because it is a standard platform: "The fact that the technology utilises standard, open architecture makes it popular with developers," he says. Many developers will develop a deep and abiding sense of the platform and its details, he predicts, and many applications will be created by a developer community that numbers hundreds of thousands already and is still growing.

Once ported to Panasonic hardware, says Gladstone, the Android platform ensures de-coupling of hardware and software: "Historically, embedded development meant a tight coupling between hardware and software. The fact of this de-coupling ensures popular

03

04-05. Panasonic's eX3 IFE system is based on the Android operating system

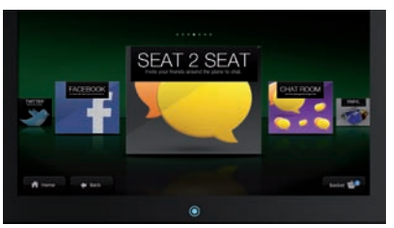
applications – like Angry Birds, which took approximately two hours to get running on Eco 9 – take less time to port to PAC hardware. This time and testing savings can be passed on to the airline customer."

Sandbox process isolation is another plus. Android uses process isolation to relegate each application to individual processes, each in its own sandbox. "If an application goes rogue or fails to function properly, Android can shut down the application without disturbing others," he explains. That means fewer seat re-boots for passengers, where older interactive systems required re-booting when a single application failed.

Android works with java security frameworks, which Panasonic can augment as it sees fit, Gladsone says, ensuring applications do not attempt operations they are not authorised to do. The company is building additional frameworks (PIF) that control application access to system data such as time, location, flight details and passenger personalisation details.

Android uses widgets, which are basically nuggets of pre-defined functionality. Developers can re-use useful widgets to achieve, for example, common navigation paradigms that users are familiar with, because they are used widely across many applications, so there is less need to reinvent the wheel. Widgets can also be made to be aware of one another and work together to create a very seamless experience for the passenger, says Gladstone: "Advertisements and other revenue-generating applications can be coded into widgets so that they become more a part of the application overall than an adjunct to it."

> 66 ADVERTISEMENTS CAN BE CODED INTO WIDGETS SO THEY BECOME MORE A PART OF THE APPLICATION OVERALL THAN AN ADJUNCT TO IT 99



04

RAPID DEPLOYMENT Gladstone also rates Android's deployment model as superior. "Android is built to leverage the cloud natively," he says, "not only for communication between applications and databases but also for application deployment. App stores are springing up everywhere, and applications housed in app stores, including the Panasonic App Store, will be effortless for airlines to download to their platforms." The standard nature of the platform means these apps should require little testing, making deployment rapid and robust.

All these features combine to produce "an incredible passenger experience," Gladstone says: "The net result is an easy-to-navigate, familiar graphical user interface for the passenger. Even if they are not familiar with the applications, the seamless nature of the interactive, through use of common widgets, enable passengers to get to apps or content they want to see. The widgets join them together, so that the passengers can explore the interactive. The widgets can be personalised to reflect themes and information that the passenger is interested in, and the advertising can be better targeted, even informative. All this while the interactive retrieves and digests remote 'cloud' data into its functions, with little programming effort." ■

05

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Digital wallets and mobile money are set to revolutionize inflight purchasing – but just how far off is the cashless traveller?

MICHAEL CHILDERS, AIRLINE ENTERTAINMENT INTERNATIONAL

"The biggest revolution in payments since credit cards were introduced in the UK over 40 years ago," – that's how Barclaycard described the recent launch of the UK's first contactless mobile phone payment solution, putting smartphones on a path to replace credit cards. Meanwhile San Francisco-based credit card company Visa, which is the world's largest processor of credit and debit card payments, announced in May that it will launch a 'digital wallet' service later this year that can be used to buy items with the wave of a smartphone using Near-Field Communications (NFC). Three US wireless carriers – AT&T, Verizon and T-Mobile – have decided to join Visa and MasterCard in a joint venture called Isis that will result in a nationwide infrastructure. And in the UK, Vodaphone, O_2 and Everything Everywhere (the joint venture of T-Mobile and Orange) announced a partnership in June to create a shared mobile payment system using NFC technology.

By 2014, according to a report from Juniper Research, mobile contactless payment technology, which is already making its mark in airports around the world, will reach nearly US$50 billion worldwide by 2014.

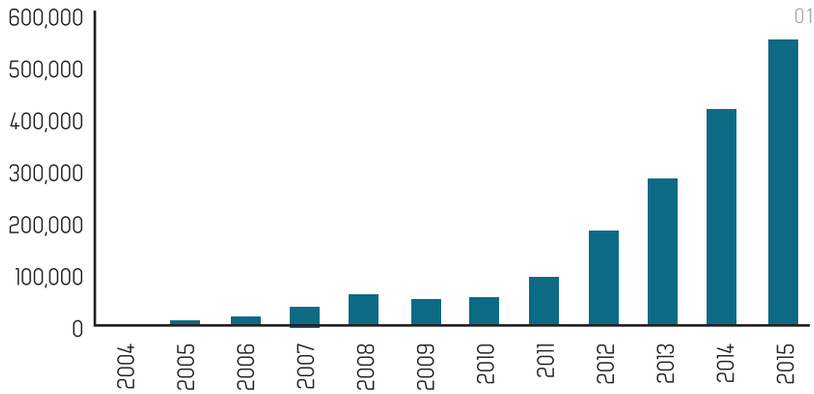
Even internet giant Google is entering the fray with Google Wallet, a pending mobile payment service formed with Citigroup, MasterCard and Sprint that aims to replace billfolds with Android smartphones.

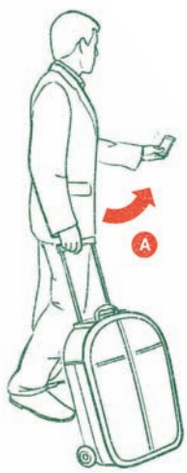

NFC EXPRESS CHECK - IN
A
PAYMENT APPROVED
B
C
NFC EXPRESS BOARDING
PAYMENT APPROVED
D

CASHLESS CABIN "The cashless cabin has long been a goal of the airlines," says Michael Planey, a travel technology specialist with HMPlaney Consultants. "It has largely been realised via 'store and forward' devices handled by the flight attendants, but there are improvements to the business model that a smart wallet offers with its instant debiting function. If the chip is built into the in-seat monitor, transaction time and flight attendant workloads will be reduced. Also, the airline can choose to offer a wider variety of products with higher price points due to the mitigated risk of fraudulent cards," he continues. "I know of at least one IFE vendor who was engaged in serious talks with MasterCard about its 'PayPass' technology at least three years ago. That system didn't make it into production, but it won't be long before one of the major vendors incorporates this into a next-generation device."

Planey estimates that it could happen within two years as the desire of the airlines matches up with the deeper pockets of the mobile payment industry. Airline passengers themselves are ready now – as early adopters of smartphones (75% of frequent travellers use them), airline passengers are also more likely to use mobile apps in travel than for other situations. Hence Apple is working on a single mobile app that can be used for making airline reservations, checking in, passing through security, lounge access, boarding – and onboard purchasing via a NFC-enabled digital wallet.

01. Worldwide forecast of cell phones with integrated NFC capability (thousands of units) – source: IHS iSuppli May 2011

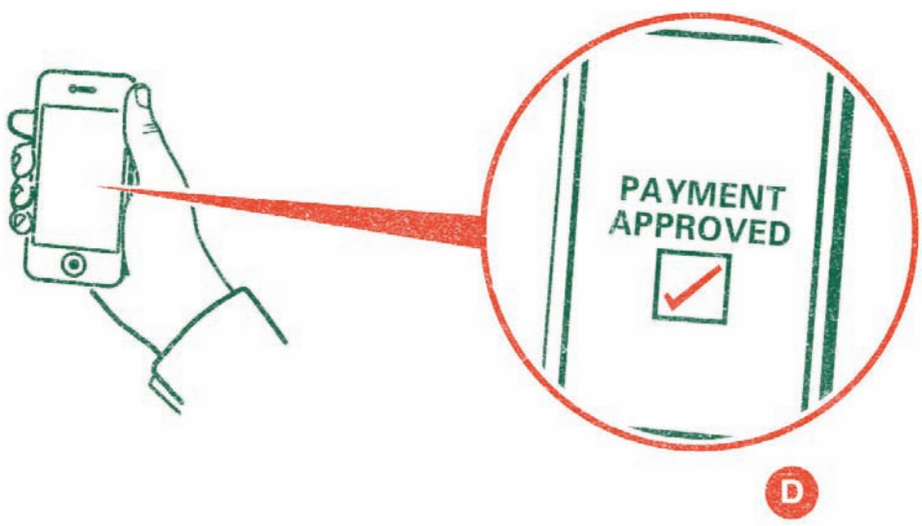




Airlines are already moving to embrace NFC technology in other areas in the near term. Scandinavian Airlines (SAS) will roll out the SAS Smart Pass in September. It uses NFC as a wireless transmitter across the airport at self-service kiosks, security, fast track, lounges, and by the gate. "We can see that your mobile and NFC is the future," says Lena Rökaas, SAS' vice president, product and customer service.

Kristine Mayer, strategic project manager for SAS Smart Pass, told *Airline Entertainment International*: "For the moment we will use the NFC technology to identify the passenger at all touchpoints in the airport. In the future, I also see a great use of the technology as a mobile wallet. For now the availability of mobile phones equipped with integrated NFC is low in Scandinavia. Therefore, we are offering our most frequent travellers SAS Smart Pass, an NFC-sticker with the same functionality that the customer can attach on their existing mobile phone. When the NFC mobile market is ready, it is a natural step that SAS Smart Pass is integrated in the mobile."

Japan's All Nippon Airways (ANA) and Japan Airlines (JAL) already allow passengers to proceed to the boarding gate by simply waving their wallet phones at the entrance to the jetway, if tickets have been reserved and paid for in advance by using their wallet phone. Japanese mobile network operator KDDI includes airline ticketing in the range of smart wallet purchases to be enabled by NFC.



ONBOARD SALES The venerable SkyMall, which launched in 1990 with a business model that consisted of an onboard catalogue, Airfone access to a call centre, and warehouses near the airport, has always been quick to embrace technology. Launching a mobile commerce strategy in 2007, SkyMall released its entire catalogue on a dynamic iPhone app, and in 2010 launched a BlackBerry app.

However, in the early 1990s, the maintenance of warehouses of merchandise close to the airport nearly bankrupted the company, which switched from hand delivery of products at the airport to UPS delivery to the home. SkyMall has since teamed with Aircell to provide WiFi shopping on AirTran Airways, and partnered with Row44 to manage the retail partners to its inflight walled garden SkyTown Center.

Casey Christ, vice president of airline marketing at SkyMall, says his company is open to the return of the sale of onboard products, which are then handed to the customer on the

NFC explained

NFC – a technology which shares many similarities with RFID but provides two-way versus one-way communications at a distance of about 4cm – is based on inductive coupling and offers a digital replacement for the cowhide wallet jammed full of plastic cards by embedding all of the data on those cards onto your smartphone.

These NFC-enabled smartphones are about to lead the changes in the way mobile commerce is conducted, as NFC chips are – or are widely expected to be – embedded in the next generation of smartphones, including Apple's iPhone 5, Google's Nexus S and Research in Motion's next offering. In June, a Bloomberg report said that Hewlett-Packard is developing mobile devices including phones and tablets that use NFC for contactless payments that may be available by year-end.

ILLUSTRATION BY TOBY LEIGH

> "WE HAVE ACTUALLY DONE LIVE FLIGHT TESTING OF THE SALE AND DELIVERY OF GOODS IN FLIGHT WITH TWO US AIRLINES RECENTLY"

aircraft. "We have actually done live flight testing of the sale and delivery of goods in flight with two US airlines recently. There could also be opportunities relative to NFC and the catalogue," says Christ. "There is no reason that the same technology could not be used to allow customers to purchase on board and have the product delivered to them," he continues. "We support a variety of technologies that allow customers to transact with us when and where they want and we see the digital wallet as a great new opportunity."

But when it comes to exactly when, Christ, like many others, is hesitant: "It is hard to say how the digital wallet will impact sales as it is a nascent technology."

WAITING GAME Many ecosystem components must converge before the digital wallet can be widely deployed by airlines. To begin with, as Kristine Mayer of SAS has already noted, the number of mobile phones equipped with integrated NFC is low – not just in Scandinavia, but everywhere. That is likely to change very soon, and if the iPhone 5 is released in 2012 or sooner with integrated NFC, critical mass will quickly be realised.

Then, of course, there is the question of who the service providers will be. Both credit card companies and mobile phone providers are potentially at the heart of the ecosystem. But do we need both? Mobile giant Samsung and credit card company Visa have announced a joint effort to offer a mobile handset equipped with NFC and a Visa-enabled SIM card just ahead of the London 2012 Olympics. And Google's partnership with Citigroup and MasterCard will see NFC trials this summer in New York and San Francisco. But Google's digital wallet won't work at the Olympics, and the Samsung solution won't work in New York and San Francisco. As with all new technology, interoperability is essential to an ecosystem.

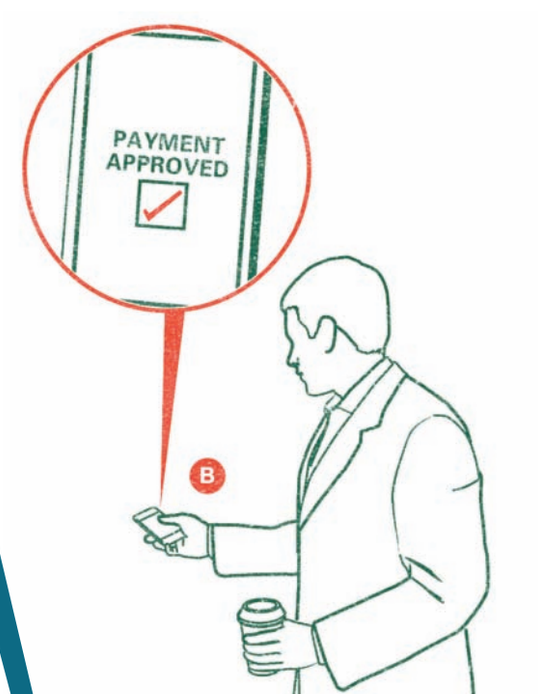
In the digital wallet ecosystem, two components are a given: the smartphone; and NFC. Everything else is up for grabs. Yes, universally recognised credit cards like Visa, MasterCard and American Express have brand value, but in theory they could be replaced by smart SIM cards that bill purchases directly to the mobile bill.

A recent study from Retrovo discovered that iPhone owners would be more comfortable using a mobile wallet from Apple (61%) than Android owners (46%) would be to using a Google wallet, and also suggested that smartphone owners were more

payment plan

Dave Samson, CEO of Mezzo Movies, and a former head of strategy at Tesco.com, questions whether we will see NFC any time soon on board an aircraft: "Near Field Communication (NFC) adoption in aviation will follow local terrestrial adoption by local banks and only when it has reached a level to make it commercially viable to do so," he says. "My guess is that in the UK we might see some London airports deploy it in the next 12 to 18 months, but I wouldn't expect it to arrive on board airlines for years, except for the odd trial here and there unless a company funds it as a strategic demonstration – but let's face it – there are far bigger retailers for them to try it out with than airlines."

For Samson, a key stumbling block is cost: "Adoption is about the number of terminals that retailers have available, not the number of handsets, and you have to ask who will pay for the rollout of all the terminals?" he asks. "We have had RFID payment in London for some time on the Underground transport system and more recently Barclays Bank introduced it last year, but it's still got a long way for either to be mass market outside of London," he continues. "As far as aviation is concerned I would say right now NFC is irrelevant, but I think it has some exciting potential for onboard sales in the future. My estimate is it will be five to ten years before we see real mass market adoption achieved by western countries and maybe half as long again before it is commonly available on multiple airlines."



> "IN EMERGING MARKETS SUCH AS AFRICA AND INDIA... MOBILE WALLETS COMPETE WITH CASH RATHER THAN CREDIT CARDS"

comfortable making mobile payments through Apple and Microsoft than via credit card companies like MasterCard and Visa, or mobile providers like AT&T and Verizon.

According to a report issued by travel-tech giant Amadeus this June, the transformation of the mobile phone into a mobile wallet is progressing at a rapid pace, with agreements between telecommunication companies, banks and credit card companies already in place: "In emerging markets such as Africa and India where mobile penetration is growing rapidly and leapfrogging landline technology, mobile wallets compete with cash rather than credit cards," says the report. "As a result mobile wallets have become commonplace: "This is the case with a major African airline where mobile is the primary form of payment for electronic transactions," it continues. "For mobile payments to become a reality overall security issues such as PCI-DSS compliance will have to be resolved."

ANNUAL REPORT So will 2011 be the year that NFC gets traction? Several things must happen to bring this about. First, there must be a critical mass of NFC-equipped client devices. Then, the standards for secure mobile payments will have to be agreed by entities like the EPC. And then the roles of the various providers in the supply chain need to be clearly defined by entities such as GlobalPlatform, a not-for-profit association that develops and publishes standards for interoperable, secure chip technology in a Trusted Execution Environment (TEE).

The number of mobile phones equipped with NFC will increase significantly in 2011, but it is unlikely that the number of NFC-equipped deployed devices will reach a sufficient critical mass in 2011 to fully jump start the business. When it does – which may well occur in 2012 – transportation ticketing will be a primary use.

California-based research firm HIS forecasts that nearly 550 million NFC-equipped mobile handsets will ship by 2015, with 93.2 million of them shipping in 2011.

According to Juniper Research, the transition to open contactless payment systems using NFC will grow significantly on metro transportation systems by 2013. Juniper believes that Western Europe, the Far East and China will be the leading transport mobile ticketing regions by 2015. But much of the timing seems to be at the discretion of Apple, its NFC-equipped iPhone 5, and its secret super app that will give it primacy in the travel space. ■

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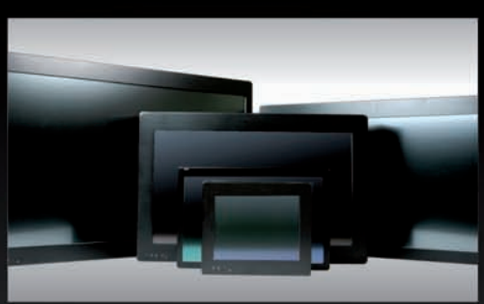

trackrecord

Seamless digital ordering, delivering and loading of IFE content onto the aircraft remains a distant dream – but regional centres and embedded data loaders are helping to improve things while work continues on a wireless solution

BEN FRAIN, AIRLINE ENTERTAINMENT INTERNATIONAL

It's not hard to imagine the economies an all-digital delivery process could bring to the IFE content supply chain, however operating within the airline industry continues to present a number of challenges, with carriers requiring specific encoding of content for particular hardware platforms and their own branding. "There's a level of customisation required for each customer that is unmatched in any other media industry," says Matthias Walther, manager of client services and business development for Panasonic Avionics. "In addition, operational concerns have sometimes been an afterthought, and efforts to streamline and standardise the process haven't always aligned with airlines' desires to customise their IFE platforms."

Robert Smith, senior market analyst at IMDC agrees the situation could be improved: "Inflight technology suffers from huge lags and infrequent update cycles… the industry is full of technical anomalies that make introducing new standards very difficult."

ROUTE FINDER So what path does content currently take? First an airline orders what it wants either direct from the content makers (the Hollywood studios, for example) or from dedicated Content Service Providers (CSPs). The IFE content masters are then shipped for post-production, which can take place at a traditional post-production facility or a CSP. "While CSPs have taken away a significant amount of encoding business from the traditional post-production facilities, the majority of Hollywood movies are still encoded by post-production houses, not by CSPs," says Michael Childers, president of Lightstream Communications, a content management consultancy.

Post-production procedures include encoding, asset aggregation, multiplexing of languages, subtitles, metadata, and encryption. This is then followed by content integration, often performed by the IFE hardware

HOLLYWOOD

> LUMEXIS IMPLEMENTS CONTENT INTEGRATION OF THE AIRLINE'S MONTHLY CONTENT ONTO A LOAD DISK CARTRIDGE THAT IS SENT TO THE AIRLINE

providers: "This consists of building individual content files into content sets by exhibition period and loadsets by platform," continues Childers.

The penultimate stage sees content loading, which involves either the delivery of physical media (discs, drives, SD cards, etc) or portable data loaders to the aircraft where the media might be inserted into the server or offloaded from the portable data loader. This 'last mile' from the gate to the aircraft is still the potentially weakest link, the last to be networked due to bandwidth constraints, and a path often serviced by 'SneakerNet' – a euphemism for a technician hand-carrying physical delivery media on board the aircraft.

The content is then stored on the aircraft's file-server on a hard drive or a solid-state Secure Digital (SD) device. Or in some cases, an SD device can be inserted into the file-server and the content read from it. From here the content travels to each individual passenger screen. This final part of the journey has seen the most activity in recent years, with vendors applying various solutions: "Ultimately, in terms of the onboard systems, there is a choice of architecture, which can be seat or server centric; network, which can be wired or wireless (each with different technologies); and the display and interface, which can include passenger's own devices," explains Smith.

01-02. IMS' Terminal Data Loader can receive multiple forms of physical delivery media

Lufthansa Systems' BoardConnect system utilises a single server within the aircraft cabin and up to five access points (each access point typically supports up to 100 devices). In comparison with a traditional copper wire network, it's significantly lighter (nearly half a ton less for a Boeing 767-300), which leads to welcome fuel savings. "The system is much easier to install because there is no wiring required," says Dr Jörg Liebe, CIO of Lufthansa Systems. "It can be integrated during a regular maintenance check, so there's no need for extra downtime." BoardConnect will enter service with Condor on board two Boeing 767s this October.

Meanwhile Lumexis' 'Fibre To The Screen' (FTTS) IFE system offers a fibre-optic network as an alternative to traditional copper wires, ensuring faster and smoother delivery of content, as well as substantial weight savings.

However, both of these systems still rely on content being delivered by hand to the actual aircraft in the first place: "Lumexis implements content integration of the airline's monthly content onto a load disk cartridge that is sent to the airline," confirms Rich Salter, Lumexis' chief technical officer. "This cartridge is duplicated and installed into our content loader unit that is fixed-mounted on each aircraft… so, there is not much difference to the traditional SneakerNet in this process."

GOING THE DISTANCE "The last-mile conundrum is not the data loading solution but the underlying network

breaking the code

Before digital media is consumed, it has to be condensed, with data encoded to suit particular formats. For example, to fit a feature film on DVD, content is compressed enormously (into MPEG-2 data) compared with the originating source, while for a Blu-ray disc, content requires encoding into MPEG-4 AVC or VC-1 format. Inflight content is encoded further still to ensure it can play on a specific airline's hardware. "IFE systems are not high-end, powerful laptop devices that have enough processing power to play many different, high-quality formats so that all systems can share a single video encode," explains Adam Williams, digEcor's marketing director. "Because of this, almost every platform has a different encoding specification which creates the need for unique encoded files."

However, Michael Childers of LightStream Communications argues that such unique encoding will eventually be displaced by 'transcoding': "Transcoding is the process of producing multiple encodes from a single 'mezzanine' master," he says. "In simplistic terms, a 'mezzanine' is a version of the source content in a high enough quality format that it can service the transcoding of multiple versions from it."

If transcoding were to become commonplace, the cost of producing specific encodes could be negated, hopefully bringing further economies to the content loading and delivery process. "This technology has established itself outside of aviation and is suited to the multiple requirements of airline IFE," says Childers.

Will transcoding spell the end for Content Service Providers (CSPs)? Perhaps not, according to Thales' vice president of marketing & customer proposition, Stuart Dunleavy: "It isn't just about encoding," he says. "Where content service providers (CSPs) add enormous value is when a big airline has a wide demographic – packaging content, languages, and menus together to service all those needs is an incredibly specific skill."

ILLUSTRATION BY ANNA DAVIE

that bridges, or does not bridge, that last mile," says Childers. Lumexis' Rich Salter doesn't see a near-term solution to the last-mile or gate-to-plane problem: "The bandwidth requirements of the pipe to the aircraft are just too great to be accommodated any time soon – at least until we get Fibre To The Plane (FTTP)!"

Thales, in partnership with CSC and Proximetry, believes it has a wireless answer to the problem in the form of its 'GateSync' solution. Using CSC's existing ground-based global private network, secure IFE content is made available worldwide. Thales' avionic components are then able to deliver the data wirelessly from the airport gate to the aircraft. Key to the systems ability to do this efficiently is the Proximetry wireless management software called 'AirSync'. This adds a hitherto unavailable level of network intelligence that places a resource where and when it's needed. "The plane becomes a node on the airline's IT infrastructure, taking advantage of multiple and different networks," explains Stuart Dunleavy, Thales' vice president of marketing & customer proposition.

Unlike traditional WiFi networks, GateSync fuses a collection of network technologies (GSM, WiMAX and WiFi) and determines which one is best for each individual circumstance. It also features a novel concept, in aviation at least, of meshing resources autonomously. For example, two aircraft belonging to the same airline could cross-load content while parked at the gate. The aircraft with the more up-to-date content would serve as a virtual hub for the other in the absence of a better connection elsewhere to the GateSync hub. The system has been field tested at a number of major airports (including Warsaw and San Diego), but is not yet commercially available. "The long pole in the tent isn't the technology, it's breaking down the procurement barriers and establishing a relationship with the airline's IT department," says Dunleavy. "Once that is accomplished, the connected aircraft is useful to many airline departments, not just the department buying the equipment."

03

03. IMS' Terminal Data Loader installed on board an American Airlines aircraft

> "THE DELIVERY TO THE AIRCRAFT IS LESS A TECHNICAL BUT MORE A COMMERCIAL AND INFRASTRUCTURE ISSUE"

A further demonstration of GateSync is scheduled for this September's Aircraft Interiors Expo and APEX events in Seattle, where attendees can judge the system's technical merits for themselves.

Panasonic is equally keen to solve the last mile conundrum, but highlights the same stumbling blocks: "The delivery to the aircraft is less a technical but more a commercial and infrastructure issue," argues Walther. "We can support gate link or satellite delivery solutions today – it would just extend our infrastructure to an airport level. The question however is the financial viability of such a solution."

Meanwhile carriers keen to update content more efficiently continue to seek interim solutions. American Airlines, British Airways and Virgin America use another alternative to SneakerNet in the form of an embedded dataloader. Supplied by the IMS Company and EMS Aviation, the Terminal Data Loader (TDL) is a multiple-ingest platform permanently installed on the aircraft that receives most forms of physical delivery media (AIT tapes, DVD/CD-RW, etc) – and uses all forms of network delivery (WiFi, CDMA, GSM/GPRS). The TDL detects and automatically connects to wireless networks at the gate for down-loading of content. Once received by the TDL, content is background-loaded to the onboard server whenever power is on, such as during flight.

REGIONAL APPROACH While continuing to work on GateSync, Thales currently offers faster content refreshes through the use of regional content integration centres. The first is in Seoul, Korea, with others planned at strategic positions globally, including the UK, China and Middle East. They will enable faster builds of content and allow advertisers to change their content far quicker: "Usage statistics for both the airline and their advertisers can be offloaded as often as the aircraft is touched," adds Dunleavy.

Panasonic also advocates regional delivery, supporting seven media centres sharing content through an internal network. "The main benefits for airlines are process transparency and control by having access to it in their 'neighbourhood'," explains Matthias. "Whenever it makes sense for a specific customer, we can move the operation or even just the output of an integration process to a specific region."

Although not entirely seamless, regional centres at least provide an alternative to 'monthly only' content refresh cycles. As for the future, completely seamless delivery remains a distant goal, while onboard technology continues to change at a rapid pace: "There are many theoretical possibilities for inflight content based on the capabilities of new technology but the complexity and nuances of the sector will no doubt surprise anyone making bold predictions based on technology alone," concludes IMDC's Smith. ■

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Today's connected travellers expect feature-rich content, touchscreen control and seamless connectivity – how are airlines developing GUIs to keep apace?

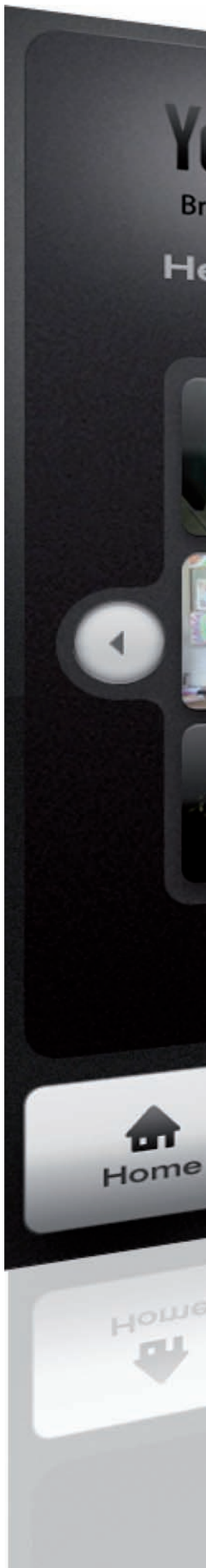
BEN FRAIN, AIRLINE ENTERTAINMENT INTERNATIONAL

The quantity and variety of IFE content is expanding at hitherto unseen rates – airlines need the latest GUIs to handle it in a sensible, manageable and affordable way. Meanwhile more and more passengers are using smart phones and tablets, creating a customer-based expectation for a similar user experience on IFE devices. Together, these factors are effectively generating the need for a seat-centric 'hub' for content and connectivity: "We now must support personal electronic devices carried by our passengers, whilst delivering a much improved user experience that will replicate that delivered by the latest tablets, but also stand up to the long-life requirements of the embedded entertainment systems," explains Catherine Stewart, onboard media development manager at Virgin Atlantic Airways.

Hardware constraints make the task particularly difficult: "Some airlines have a lot of limitations such as memory, user input and system speed," says Dave Twiss, an application developer for Airborne Interactive, which has produced GUIs for KLM, Singapore Airlines, Lufthansa, Delta, Aer Lingus and others. "We have to be careful when making GUI designs as some older monitors can only deal with the 256K palette."

Beyond these restrictions, airlines and their partners also have to conform to their IFE supplier's internal certification process – Panasonic's Acceptance Test Procedure (ATP), for example – adding significant cost and delay to even minor GUI updates: "Having to demonstrate that a change in the wording of a crew text message or that changing a question in a game necessitates a full ATP and release process costing thousands of dollars and taking many months is failing all concerned," says Greg Mashlan, IFEC manager at Emirates.

NO NEWS IS GOOD NEWS Of course most passengers are blissfully unaware of such hardware limitations or certification requirements – they just want something easy to use. "Passengers rarely comment on the detail of the design or implementation of a GUI, they are more likely to comment on the overall user experience," observes Dee Brady, an independent IFE consultant and former



01. The Air New Zealand GUI provides slices of popular content available on consumer devices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GUI design rules

Dave Twiss, design lead and application developer at Airborne Interactive, shares his top 10 tips for successful GUI design:

- Make sure the GUI is designed to be user friendly for both touch and handset navigation – as this can vary;
- Design must be able to support multiple screen resolutions (1024 x 600, 1280 x 768, 1280 x 800, for example);
- Ensure all corporate branding is consistent throughout interactive;
- Never make design 'too techy' as interactive should be designed for all ages in mind (children to senior citizens);
- Clarify which items are monthly updateable (movies/TV/games/music – genre, titles, posters and synopsis);
- Determine if there are any differences between seat classes and/or flight routes (first, business, premium economy/economy; international or domestic) – as content and options may vary);
- If using photos in GUI designs, ensure photos have been licensed (royalty free or rights managed);
- If any special fonts are being used, ensure all fonts are licensed before finalising GUI designs;
- Allow room for translations which may be longer than English and pay particular attention to back, home, play and purchase buttons – for example German translations can be particularly longer compared to English;
- Always test the colours of GUI designs on monitor to ensure there's no glare or colour clashes when using older monitor types.

IFE, publishing & media manager at British Airways. "The more intuitive and effective the interface, the less people comment – they simply work well – as they ought to."

In terms of on-screen visuals, the hall-marks of good design prevail: clearly understandable icons (to negate language issues); simple menu hierarchy; consistency of design; support for language orientation (right to left as well as left to right); traceable path ('breadcrumbs') throughout; and an ever present link to the home page with clear feedback to any user interaction. "It must be simple, accessible to people of all ages, all technical abilities and be easy to pick up and use straight away," explains Virgin Atlantic's Stewart.

It's also essential that where an abundance of choice is available, menu structures don't become a problem: "The days of a hierarchical branch and root menu structure are long gone," notes Emirates' Mashlan.

Then there are airline specific design challenges, as Raymond Girard, president of Spafax Interactive describes: "The major difference between IFE GUIs and those found on consumer devices is that they have to be on brand with the airlines own set of attributes," he says. "Corporate colours, uniform colours – even how the screen complements the colour of the upholstery it's embedded into!"

In addition, there are considerations applicable to the fixed nature of the screen: "You also have to consider lighting levels or rather, your inability to control them," continues Girard. "The screens are fixed in place with limited mobility so can't necessarily be moved around to avoid reflections. Conversely, contrast can really be bothersome in dim lighting conditions. The ideal GUI would have different settings for night and day."

02

REFRESH RATES Handling GUI content updates remains case specific, depending on the IFE platform in use: "The newer systems support a content management system that allows the airline to input their own details such as categories, titles, posters, synopses, etc," says Airborne Interactive's Twiss. "But only a few airlines update the monthly content themselves."

The latest IFE systems use a metadata management application (MMA) – a web-based tool that creates an XML file of metadata – for monthly refreshes. However, airlines are frustrated with the rate of change: "We have heard for far too long how IFE would be configurable using HTML interfaces, which would be able to be managed like a website – but so far this has not been delivered upon," says Mashlan, who argues the entire software/ATP release process needs to change.

"IFE vendors, aircraft OEMs and regulators need to change the way of certifying and releasing software and limit their scope to core operating systems," he continues. "This would leave airlines and their developers to create and deploy applications and configurable databases without requirement of an IFE vendor lead software certification procedure."

Updating content once a month typically requires little involvement from IFE vendors, however, changing GUI

03

02. GUI screen grabs from Air New Zealand's 'Kids' zone feature Jack, Abi and Squib – Jet Cadet characters that help drive junior brand loyalty

03. Philippine Airlines (PAL) GUI screen grabs, designed to run on Panasonic's eX2 IFE hardware

04

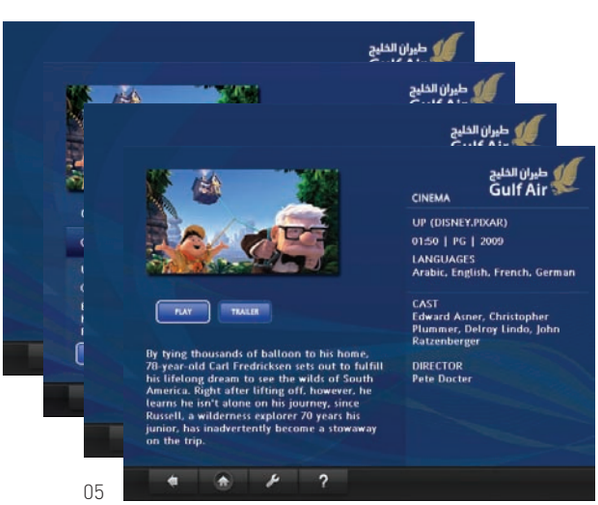
graphics, embedded in the code, requires certification. Airlines therefore bundle as many changes as possible to absorb the inherent cost of certification.

More recent GUIs have been designed to be more dynamic, as Patrick Joly, an independent IFE consultant explains: "The latest designs are database driven," he says. "For example, if there are no games in the database, the games icon won't display front end. Setting things up this way stops the continual cost of re-certification. Effectively only the database has changed, not the core program."

So many hurdles ensure IFE systems typically take two years from project start to flying software: "Think about that for a second," asks Emirates' Mashlan. "Just two years ago there were no iPads, iPhone 4s or Android devices. Because of the nature of the regulatory requirements, we are always behind the curve."

> 66 IF THERE ARE NO GAMES IN THE DATABASE, THE GAMES ICON WON'T DISPLAY – SETTING THINGS UP THIS WAY STOPS THE CONTINUAL COST OF RECERTIFICATION 99

04. Air New Zealand's latest 777-300 fleet GUI on Panasonic eX2 hardware
05. Gulf Air GUI screen grabs



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TOUCH SENSITIVE Those same devices have heralded an era of touch-sensitive and controllable interfaces, which airlines are now looking to replicate: "Touchscreen gestures on consumer devices are quickly becoming conventions but it's a challenge keeping pace with these in the slower moving IFE world," says Matthew Wood, IFE manager for Air New Zealand.

"Passengers expect high tech IFE in a high tech plane, but the reality often looks different," says Adam Randall of Neutral, which designed Lufthansa's GUI for the IFE system on its A380 fleet. "While touchscreen is commonplace, gestures are still to be deployed. IFE systems will strive to accomplish similar functions to gadgets on the ground, but there will be a considerable difference for some time to come."

Although pinch, swipe and scroll gestures are familiar to most passengers, implementing them retrospectively on legacy systems isn't easy: "Some of the older systems are very limited in this type of functionality," says Twiss. "However we have mimicked this for browser projects at Lufthansa, Singapore and Air France. We are looking into improving these types of functionality for future projects."

With new GUI builds on more recent hardware, it's less of a problem, particularly on the new Android-compatible platforms, where touch gesture functionality is built in to the core operating system. However, that's not to say Android isn't without its own set of challenges: "There are issues with Android in the IFE world, namely the speed with which Android in evolving – there are six versions out already," explains Emirates' Mashlan.

With growing emphasis on touch gestures, how will hardware stay hygienic? "Sanitation is largely addressed through regular cleaning of the devices," says digEcor's Adam Williams. "Some airlines provide approved wipes or spray/cloth to clean players while in flight. Though all devices are cleaned by the provisions, who are often the caterers. As far as hardware is concerned, we try to reduce the number of cracks and crevices where germs and fluids can reside."

Whilst the look and feel of each airline GUI will always vary, the elements of a strong visual design remain a quantifiable constant. However, the way that passengers physically interact with the next wave of GUIs is rapidly changing. ■

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personal**fortune**

Passengers want a more personalised IFE experience, according to Rockwell Collins' Innovation Lab

Step aboard any airline today and you'll witness a swarm of personal devices ranging from seemingly microscopic music players to robust laptop computers that passengers refuse to leave home without. Whether it is reading a book or magazine electronically, watching a movie, or playing a video game, today's personal consumer technology is very much a part of the airline industry. Understanding that, Rockwell Collins sees an opportunity to enhance the personal inflight experience.

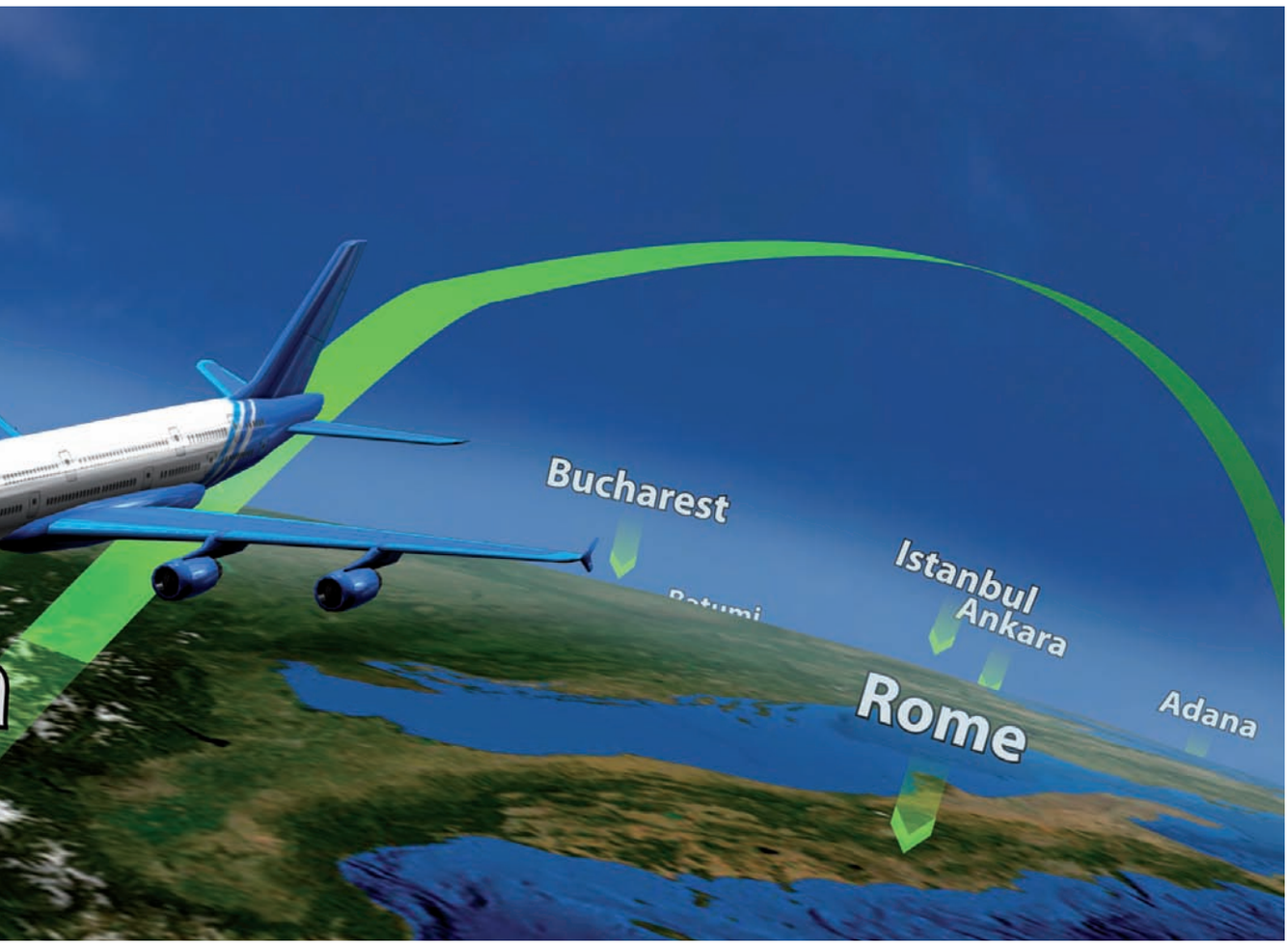
"Everyone has different tastes in terms of how they want to spend their time while on a flight, whether it is a short hop or a long overseas trip," says Dave Austin, vice president and general manager, cabin systems, at Rockwell Collins. "As highly advanced as overhead and in-seat systems are today on board airliners, we see a rapidly growing trend of passengers wanting to utilise their own devices when it comes to entertainment and productivity."

SYNC AND SWIM

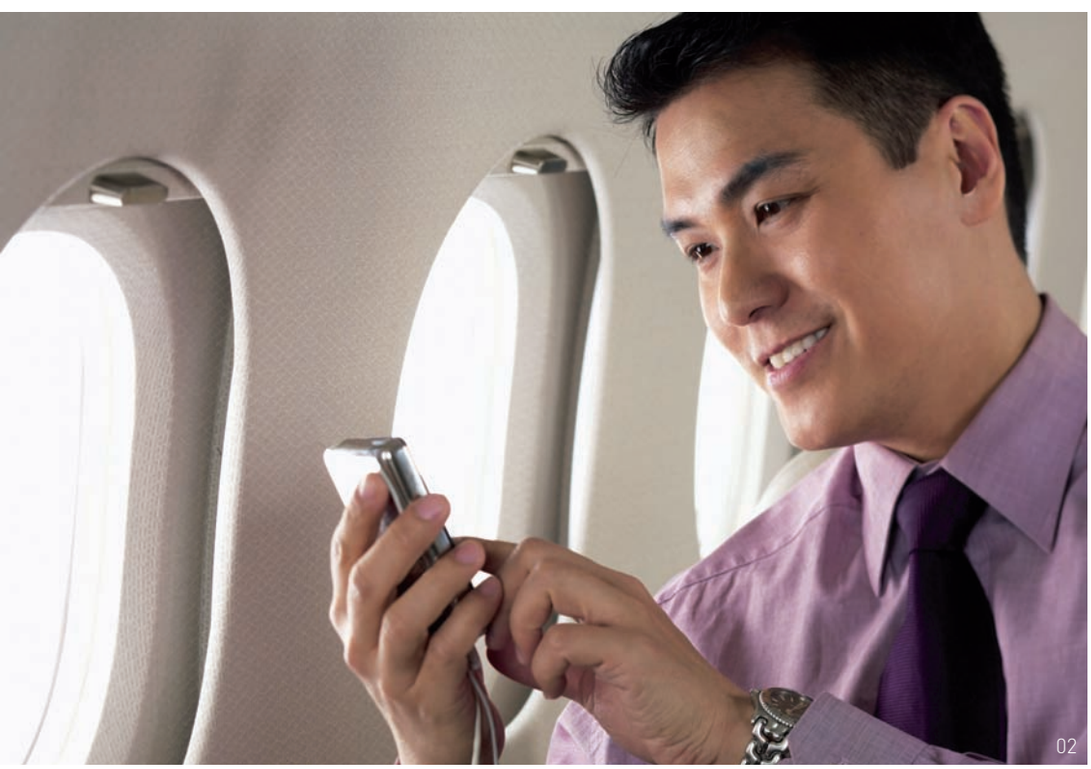
Rockwell Collins' research shows that the majority of passengers also favour using their personal devices to augment their experience, and welcome the ability to sync that with an in-seat entertainment system.

"Why not create an environment where passengers can reliably sync their own device to their own personalised in-seat display?" asks Austin. "Going a step further, what if passengers had a highly secure, in-seat entertainment system where someone could shop right at their seat, play games and chat with passengers in other seats?"

These are the type of ideas Rockwell Collins considers part of its product

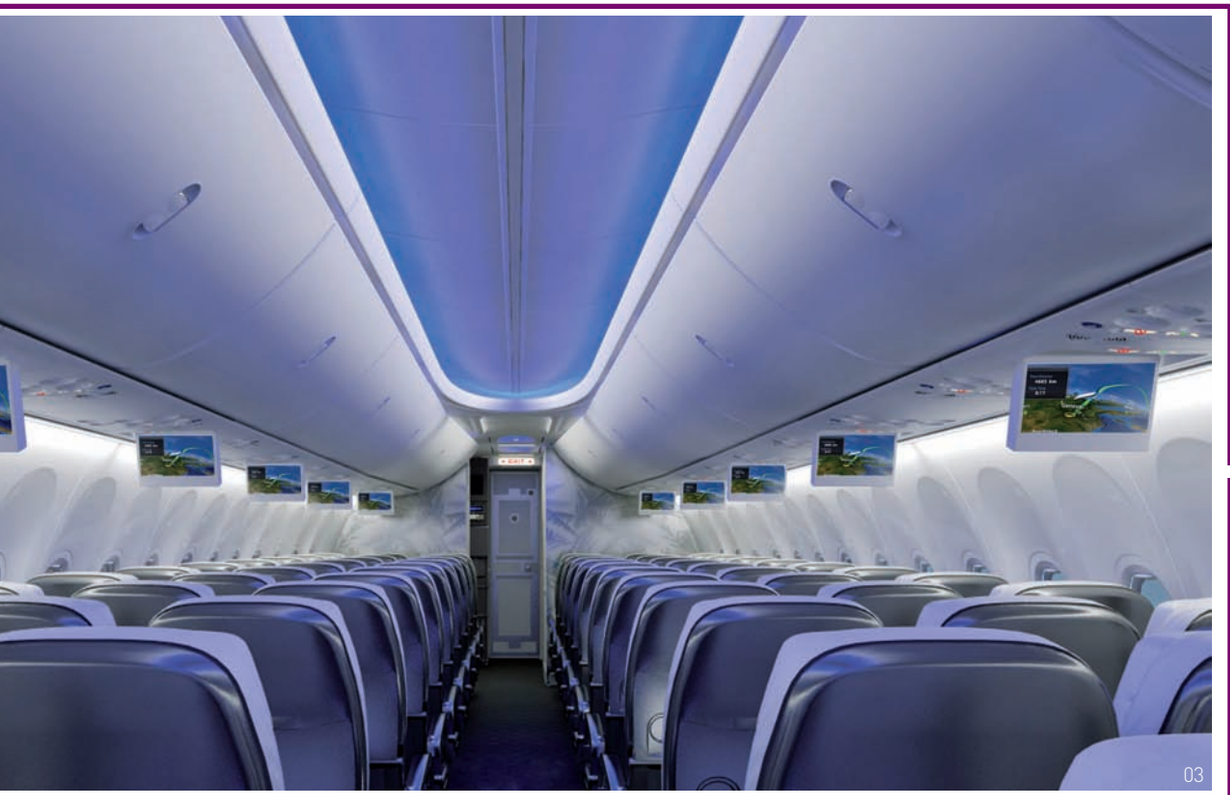


01. Recent updates to Airshow, Rockwell Collins' moving map, include real-time flight information
02. The company has an entire team keeping track of consumer technology



development. In its Tustin, California-based Innovation Lab for cabin systems, a team of designers and dreamers assess the latest consumer technologies for suitability in the cabin. With this technology evolving daily, the team is vital to the company's cabin business. "There is a real sense of urgency within our Innovation Lab to stay abreast of the latest IFEC-applicable technology," says Austin. "Passengers expect airlines to keep up with the technologies of their personal devices and we are structured to do just that."

The company is not only focused on passenger desires, but also what is best for its direct customers – the airlines. Its ongoing aim is to design smaller, lighter and easy-to-maintain systems that reduce flight crew workload. "Airlines are seeking ways to become more efficient and to reduce their carbon footprint, including finding IFEC



03

03. The second-generation dPAVES system
04. Blue Marble data on Airshow

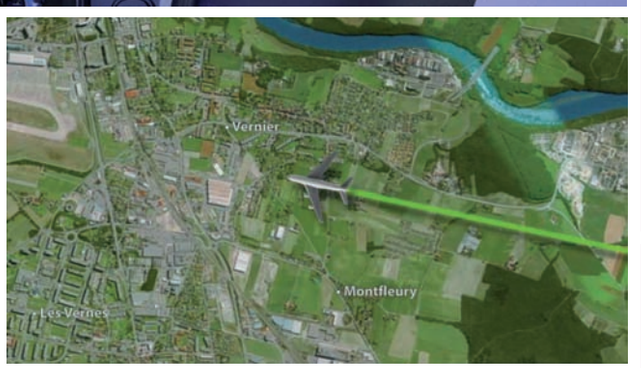
solutions that trim payload without sacrificing quality," comments Austin. "With current technology, IFEC systems could easily be at least 50% lighter than they are now."

TRADE SECRETS

Asked if Rockwell Collins has plans to make any of these capabilities and hardware improvements available to the market, Austin says the company will provide its response to the market's needs at this year's APEX expo, which is co-locating with Aircraft Interiors Expo Americas in Seattle, Washington, USA, on 12-14 September 2011.

"Technology is moving fast, and so are we," says Austin. "We have products in the works that will greatly benefit airlines and their passengers. I don't want to ruin the surprise, but we are a little more excited than normal for this year's APEX."

No longer a surprise are the products and enhancements Rockwell Collins has unveiled in recent months, including a new version of its Airshow moving map, which offers dramatic new views of real-time flight information. The map is now embedded within the company's dPAVES second-generation IFE system, which will have optional surround sound for the audio distribution system later this year. In addition, the company refreshed its moving map to include NASA's Blue Marble map data, which is based on actual satellite imagery and enhances the system's 3D realism.



04

Also available with Airshow is a head-up display (HUD), which gives passengers a pilot's eye view of the flight and provides the same navigational guidance reference information used in the cockpit. "We are a leader in HUD technology so it only made sense to incorporate this into our Airshow product. It was one of those 'oh yeah' ideas that moved through development quickly," says Austin. "Leveraging technologies like that across our business units not only provides unique products for our customers, but it gets them to the market faster." ▣

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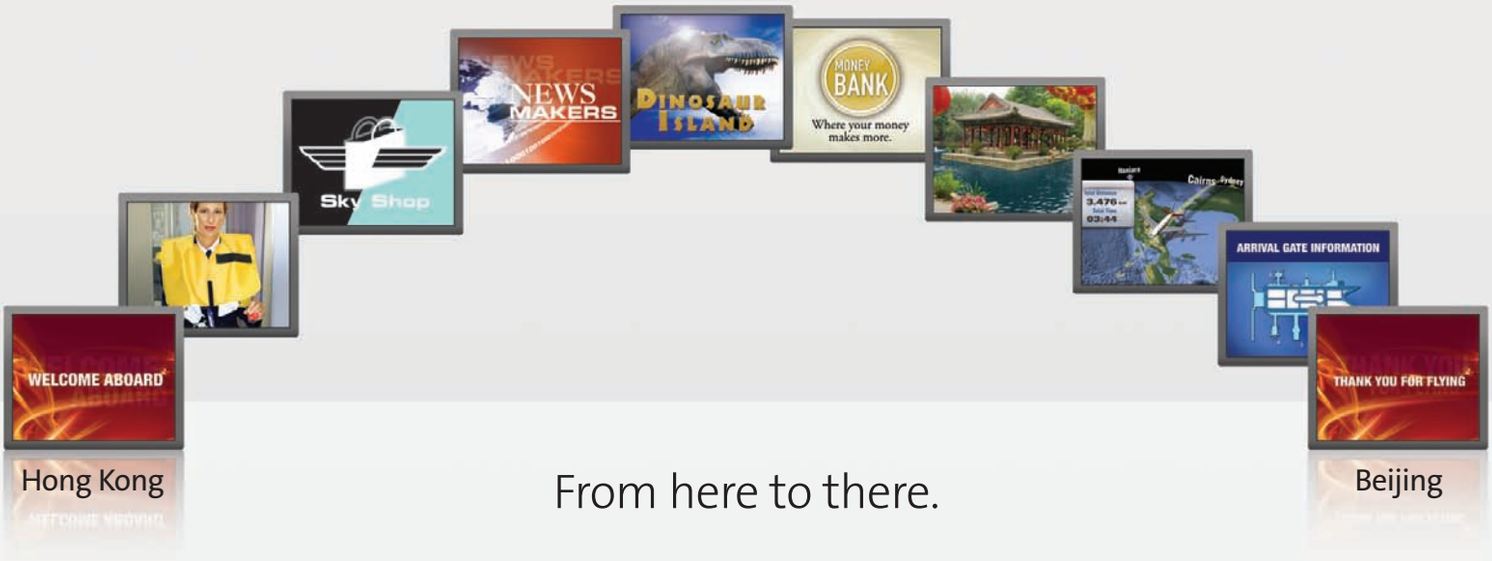
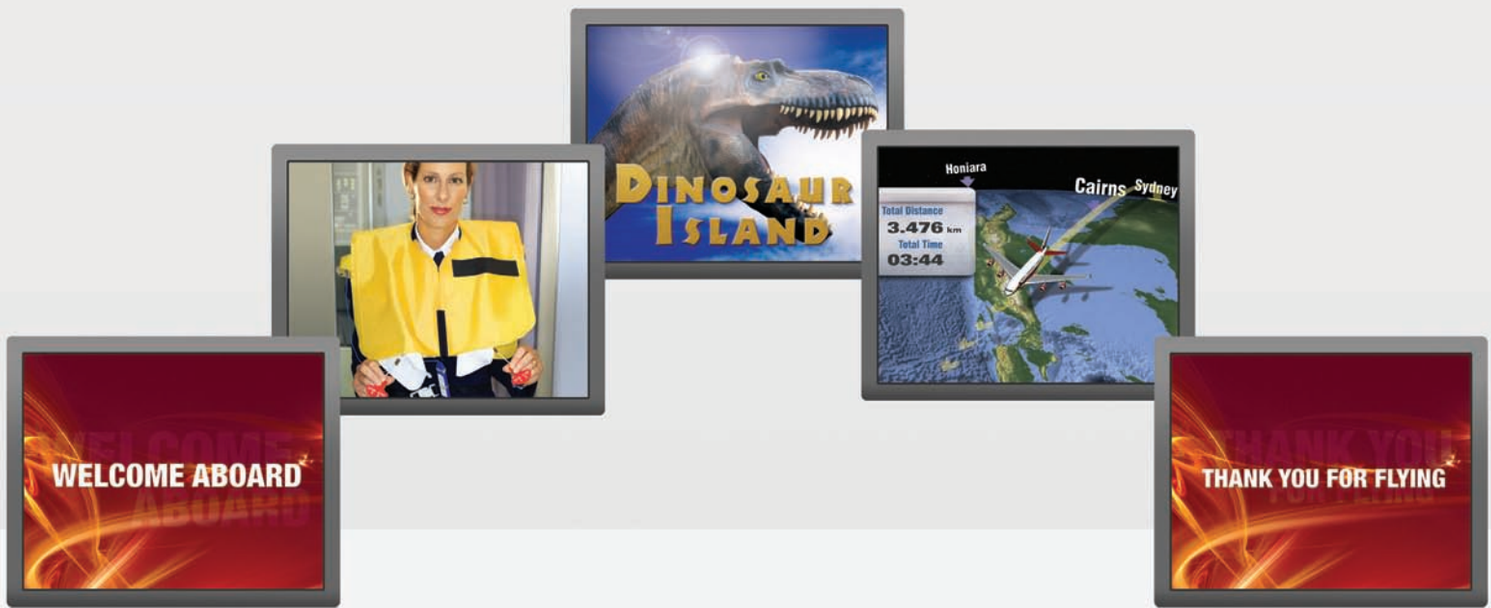


Hong Kong

From here to there.

Beijing



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Please visit us at APEX, Exhibit 1001.

Rockwell Collins

Building trust every day

the**tipping**point

David Bruner, VP of global communications services at Panasonic, provides his view on the future of inflight communications

A colleague said to me the other day, "We've reached the tipping point". The point he was referring to was the moment when every airline realises that they need to have a true inflight broadband communication service.

At the beginning of 2011, it became obvious that most airlines had made a decision to move forward with enhanced communications. Some airlines made their decisions based on the world as it is now. Others made their choice based upon what the world will be like in a few years. Nevertheless, virtually every carrier we come across now is expressing their desire to proceed with enhanced passenger communications on their aircraft.

Looking at the state of inflight connectivity in the USA, we see Aircell enjoying rapid expansion with over 2,000 aircraft under agreement and 1,100 installed. Aircell is joined by Row44 with its huge contract from Southwest Airlines. Recently, LiveTV joined the fray with agreements with JetBlue and Continental Airlines. Rumour has it the only uncommitted aircraft in the USA will likely be committed very soon, and airlines are now turning to their international fleets.

Overseas, the major international commitments over the last two years started when Lufthansa, Turkish Airlines, Gulf Air, SAS, Cathay Pacific and Dragonair selected Panasonic's Global Communications Suite (GCS). Row44 added Norwegian Air Service to its growing portfolio. Those in the know are aware that there are also several other unannounced commitments by airlines trying to keep their selections quiet from their competitors as long as they can.

With just a few exceptions, every airline in the world is going to be adding GSM capability to their aircraft. Some of the exceptions include the US carriers impacted by the current FCC ban on inflight mobile phone use, which will take a couple of years to reach resolution. However, Panasonic's belief is that these airlines will eventually adopt GSM technology.

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The hard decision will be internet access. At this time, 75% of the world's airlines have decided that they need to have internet access on board. Of that 75%, 60% or more are saying that they need to have a true broadband solution, which to us means multiple per-second bandwidth capability, easily accommodated with Row44, Panasonic or ViaSat technology.

A major driver for inflight broadband is that passengers expect to be constantly connected to friends, family, co-workers and even world events, regardless of where they are – including when they're at 30,000ft. Social networking, global live television and business connectivity services are the main concerns for people who are on the move. In addition, passenger use of high-bandwidth applications such as YouTube is common. There is much debate about whether service providers should manage or even block these services, but the fact that passengers want access dictates that an aircraft have the bandwidth to support it. With high-bandwidth solutions available from select service providers, airlines can have a network capable of meeting these types of demands and expectations.

KA OR KU

Which leads us to the next major question – should I wait for Ka band or should I use Ku? Whenever there is an opportunity to increase capacity and efficiency, companies will invest in those technologies. Panasonic, for example, is investing in a Ka-band antenna because of its ability to deliver both. In fact, our modems already support Ka-band.

Still, there are several questions that remain about this service. Today, Ka-band has a well-defined niche in terms of where it provides services effectively, and there are still some hurdles to overcome to get Ka-band on aircraft. One principle concern is the type of satellite in operation. There is a huge difference between a ViaSat-1 and an Inmarsat Global Xpress satellite, including completely different capacity and performance. One is great because of its global footprint, and the other offers high-powered spot beams. Both, however, come with problems that need to be addressed. For example, atmospheric challenges such as rain fade are quite extreme, and there are several potential problems associated with providing highly reliable Ka-band service on aircraft or any type of vessel.

Meanwhile, a robust, global broadband Ku satellite network is available today and dramatic improvements are continually being made. Modulation improvements as well as the launch of new, higher powered satellites throughout the world, allow service providers to use fewer beams and become more efficient on a gradual basis. In addition, the leading Ku service providers have begun formulating strategies to upgrade their customers to Ka-band, when and if the service becomes viable at the right price points, with little or no impact on airlines' capital investment.

In the short term, airlines should consult service providers to learn the improvements in Ku compared to Ka to determine if there is a tipping point that best meets their unique needs. They should also consider passenger demand to be perpetually connected and decide if it makes sense within their business model to wait several years to connect their aircraft with broadband Ka-band service.

For airlines there is no resisting the bold improvements in communication nor evading ever-changing consumer demand. There are over 1,500 aircraft 'in play' today, both wide- and narrow-body, operated by airlines located in nearly every region around the world. What caused this rash of investment by airlines? They realised their passengers strongly desire communications for business and personal use.

Many airlines have embraced the Panasonic Connected Aircraft initiative which is about so much more than WiFi – it is about every system being capable of communicating to the cloud. With native broadband connectivity, IFEC applications can be designed from the ground up with a true broadband network in mind. The key to this amazing revolution is an IP network that is global, that is always on and most importantly, is low cost. ■

02

01-02. Panasonic's GCS offers broadband, mobile phone and live TV services

01

swapshop

Goodrich can help airlines that need to replace the obsolete parts of early IFE systems

The operational life of IFE systems that rely on traditional Hi-8mm tape will soon come to an end, according to Goodrich, forcing many airlines to either replace or retrofit early IFE systems in a wide variety of commercial passenger aircraft.

At the 2011 Airline Passenger Experience Association (APEX) meeting, the group notified members that supplies of the Hi-8mm tape stock are expected to begin drying up in early 2012. Market forces had already prompted several major manufacturers of the tape stock to halt production, and the recent Japanese earthquake and tsunami further disrupted supplies. In addition, manufacturers of mechanical tape transports and playback heads have left the market, making replacement parts harder to find.

Goodrich believes these factors are a signal to airlines that it is time to shift to digital IFE systems. "The good news is that airlines have a number of options available to bring digital video to passengers," says Dan Vargas, IFE business development manager for Goodrich. "Some airlines opt to offer only WiFi in narrow-body equipment, while others consider replacing the total IFE system. Complete replacement may give an airline an edge in passenger experience, but it comes at a significant cost for equipment, downtime and training. However, since the only obsolete part of most IFE systems is the video reproducer unit (VRU), an efficient solution is to simply replace it with a digital VRU."

GOING DIGITAL

A typical IFE system retrofit involves removing the existing Hi-8mm tape unit and installing a digital file server that plays movies and other content. By replacing a single line replaceable unit (LRU), the bulk of the infrastructure remains in place, the aim being to reduce the cost of both the installation and the aircraft recertification.

"While the replacement digital file server provides the same type of service as a Hi-8mm tape system, it solves the obsolescence issue and provides a much higher quality video signal," says Vargas. "A retrofit can be a long-term solution that is much less expensive than

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02

03

01. A complete IFE system from Goodrich
02. The VE-801 HDD high-density drive digital video reproducer
03. The VE-801 HDi hard drive interactive digital video reproducer

a total system replacement. It requires less installation time and employee training, yet still provides passengers with a digital experience."

EARLY-WINDOW CONTENT

However, Vargas gives a caveat to this retrofit solution – advising that it is important to consider a VRU from a supplier that offers encrypted video capability. This permits the system to play Hollywood movies that are not yet modified for commercial DVD and cable distribution – early-window content. "Playing early-window versions of movies enhances the passenger experience and allows airlines the widest choice in content," says Vargas.

There are several digital file server suppliers available today, but not all VRUs are able to provide early-window content. Goodrich's encryption process is accepted by major Hollywood studios and content providers and provides early-window content. "In addition, airlines should choose a supplier with a lot of experience in manufacturing IFE systems and one that has a proven track record of supporting them around the globe," says Vargas. "Companies with complementary products such as avionics and aircraft interiors also bring added depth and breadth to solving problems."

Retrofit VRUs from Goodrich are available in three configurations, and selecting one over the other depends on the aircraft's existing IFE infrastructure, the desired playback duration, and the feature set of the unit (from simple playback to fully scripted playlist playback).

Goodrich's first retrofit VRU – the VE-801SS solid state digital video reproducer – is based on DVD and solid-state memory, and offers up to four hours' dual-language output of composite video in MPEG2 format.

The second – the VE-801 HDD high-density drive digital video reproducer – provides dual-language playback of up to 40 hours for encrypted or unencrypted MPEG1, MPEG2 or MPEG4 video.

The third – the VE-801 HDi hard drive interactive digital video reproducer – offers dual-language output and supports unencrypted and encrypted content MPEG1 or MPEG2 playback that can be downloaded from a removable hard disk drive or compact flash memory. The unit also boasts a built-in colour LCD preview monitor and allows background content loading.

The company manufactures a variety of audio and video components for IFE systems. Goodrich combines TEAC's 20 years of IFE experience with its portfolio of interior products, including lighting, seats and electronic flight deck systems. Its IFE systems fly on major airlines in the USA, South America and Europe.

PLUG AND PLAY

"The impending elimination of Hi-8mm tape stock and near-obsolescence of videotape technology in general creates an opportunity for airlines to upgrade their IFE systems, but it doesn't have to mean a complete system change," says Vargas. "There are virtually plug-and-play VRU retrofit solutions with a variety of capabilities and formats to fit most IFE infrastructures in existing commercial aircraft. Retrofitting tape-based systems with a digital VRU can help minimise downtime and costs, while adding to the passenger experience and to the life of existing IFE systems." ■

01

screenstars

New contracts and STCs are on the cards for retrofit monitor specialist Imagik

With over 15 years of experience, Imagik is one of the world's leading suppliers of flat-panel IFE monitors. Its products are flying with many prestigious airlines – including Aero Mexico, Air Ethiopia, Air New Zealand, Avianca, British Airways, El Al, Finnair, Hawaiian Airlines, Monarch Airlines, Neos Airlines, TAM Linhas Aereas, US Airways and Vision Airlines.

"Our technologically advanced monitors, proven track record and our ability to work with our customers have allowed the company to win a number of big orders for retrofit or replacement monitors," says Claudio Ovide, general manager at Imagik. "We have an enviable reputation for producing the best monitors at reasonable prices with no compromise in quality and reliability. All our monitors have passed the FAA D0160 approval requirements and all monitors are either installed with STCs and/or have PMA status."

Imagik is also a Section 145 FAA and EASA approved repair station. The design of its electronic components (hardware, software and firmware) as well as the external hardware and shroud design, are done in-house, to make the most efficient product in terms of power usage and weight.

Various Imagik monitors have been installed on Boeing 767s, including a 17in version for both PSU and bulkhead mount, and 32in and 37in replacements for projectors on monuments. On the Boeing 757, aisle monitor replacement has proven popular – and the company says it is a simple and economical approach. "An additional benefit is the elimination of the retractable unit by two bulkhead units, increasing viewing angles for first row passengers while eliminating the weight and height issues, not to mention the crew's pinched fingers," says Ovide.

Currently the company is pursuing an STC to enable the installation of 32in monitors on all monuments on the Boeing 747, adding to its extensive list of ready-to-install monitors, brackets and shrouds.

Imagik has also received PMA approval for its 15in LED in-arm monitor on Boeing 747 and

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02

Boeing 777 aircraft. This 'high feature set' monitor includes touchscreen, USB charging port, picture-in-picture for moving map, ambient light sensor and external AV input from personal video players. It is envisaged as a differentiated offering for premium classes. This unit has been purchased by both British Airways and TAM, and the company says it will soon be certified on an A330.

"We are very pleased with the monitor supplied by Imagik," said Ben Clarke of British Airways. "Initial passenger feedback has shown a significant point gain in IFE customer satisfaction as a result of this new high feature set monitor."

Meanwhile, the company reports ongoing interest in its projector and CRT replacement products, as well as its new range of LED backlight monitors (designed to be 30% lighter than the legacy monitors they replace). "In addition to the valuable weight savings (tonnes when taken across a large fleet) they also support USB charging, picture-in-picture and remote video input," says Ovide.

Imagik was recently awarded a contract from BA for its short-haul Boeing 767s, and is also working on numerous, currently confidential, projects for the Boeing 767 and 777.

FUTURE FACING

So what does the future hold? "In the last two years we have been changing our product line to all-LED monitors," says Ovide. "We are now completing our new full line of LED large monitors, ranging from 32-55in. These will be state-of-the-art products and will bring into the IFE business the most advanced technology available today. Further lowering weight, power consumption and slightly over 1in in thickness, these monitors will bring the latest available viewing experience into the aircraft."

Imagik's reach has also been expanded by the signing of commercial and strategic agreements with other top suppliers. It will show its full product line at APEX 2011 (to be held in Seattle, USA, on 12-15 September 2011) and at Aircraft Interiors Expo 2012 (to be held in Hamburg, Germany, on 27-29 March 2012). ■

01-02. Various monitors from Imagik

fastforward

01. The Aura seatback IFE system

Is there a future for embedded IFE systems?

There are some within the industry who believe the death of embedded IFE is nigh. "Their prediction rests on two premises; one is assuredly true, the other highly debatable," comments Martin Cunnison, managing director of IFE provider Intelligent Avionics. "What is true is that legacy systems from entrenched producers are no longer sustainable."

The first of Cunnison's reasons is weight. "With oil at US$100 a barrel, some legacy systems are far too heavy," he says. "Airlines are unwilling to carry dead weight; they want either to save the fuel (not to mention preventing tonnes of CO_2) or to transfer weight savings to useful payload."

Cunnison says legacy systems have reliability issues, "because they have several points of failure, not just the server". He also believes they are expensive to buy and run and that most fail to meet passenger needs: "Upgrades are slow and expensive, screens aren't bright, sound isn't impressive, features are limited – and don't keep pace with advances in consumer electronics."

The second argument of those who predict the end of embedded IFE is the prospect of wireless content streamed to passengers' devices. "Promising as this sounds, big challenges must be overcome to deliver the quality and reliability passengers expect," says Cunnison. "Streaming an HD movie to a 10in (25.4cm) tablet is still far from ubiquitous on the ground. That said, we know these problems will be solved."

Intelligent Avionics envisages a future where airlines continue to choose its embedded Aura IFE, even though many passengers will own a smartphone or tablet.

The company's first reason for predicting this is its belief that battery technology will be unable to keep pace with the power-hungry demands of ever-more sophisticated apps. "So to maintain consistent bring-your-own IFE, airlines still have to invest in power to every seat," says Cunnison.

Its second argument revolves around space. "Economy-class seat pitch, though it will be a bit more generous because seats will be thinner, will still be so compact that there will be nowhere to put your tablet," argues Cunnison. "So airlines will have to modify seats, either to accommodate Aura, or to make room for passengers' devices."

Finally, because not all tablets are equally capable, Cunnison believes airlines will struggle to achieve the brand and onboard service consistency they expect with wireless-to-PED technology. "They can instead opt for simplicity with Aura's capacity to keep pace with consumer technology, to deliver new features – and revenue streams that could offset the cost of the system," he says.

The Aura system, launched in 2011, boasts a 'clean sheet' design. "The fact is, not all embedded systems are obsolete before they are installed," says Cunnison. "Aura's hot-swappable screen units can be refreshed and upgraded in just minutes – software and hardware. And the behind-the-scenes components were chosen to last a lifetime, sourced from the industry's most trusted suppliers. We think that Aura will be a new era for IFE." ■

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Reader Enquiry No. 505

Why do planes have anchors?

www.aurainflight.com

They do. Every aircraft with a legacy IFE system carries 300 to 2,200 pounds of anchor, in a failure-prone server, systems, and seat hardware. Dead weight, gobbling fuel.

AURA has no server. Intelligence and storage reside in every seat unit. It's far lighter and much more reliable. Less expensive (you're not chained to expensive service contracts) and more flexible. AURA won't hold you back.

AURA from Intelligent Avionics. Weigh the anchor.

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NCH headphone Patent Number
China: 2004200828790
UK: GB2417385

LPE-P3NC

LPE-P3NC
P3NC Noise Cancellation Headset

LPE-P1NC

LPE-P1NC
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LPE-880NC

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S-07NC
S-07NC Noise Cancellation Headset

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W-01

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01

01. The LPE-P3NC headphones

soundchoice

New headphones offering active noise reduction, comfort and efficient customisation

Designed to combine comfort, quality and style, Long Prosper Enterprise's latest product, the LPE-P3NC, is a fully equipped active noise cancellation headphone model for first- and business-class cabins. It boasts customised around-ear earpads to enhance passenger comfort, as well as high-fidelity sound quality to suit the premium cabin.

The active noise cancellation yields a 20dB reduction in noise, which Long Prosper Enterprise says blocks out more than 85% of engine noise. The full coverage of the earcups also contributes to noise reduction. The company says other benefits include a battery life of more than 40 hours, and high durability – both crucial for the long-haul market.

The headphones can be customised to reflect the image of each airline, by redesigning the earcups. The company believes its approach – modifying just the earcups, and not the other components – minimises lead times and eliminates additional tooling and design costs.

Everything about the product is designed with the industry's specific requirements in mind. For example, its metallic finishing is achieved using a special painting technique that Long Prosper Enterprise says is environmentally friendly. Meanwhile, in terms of availability, LPE-P3NC is a fully certified CE and FCC consumer-grade product and can be shipped within three weeks.

With over 30 years of experience as a major supplier of headphones to airlines, Long Prosper Enterprise is familiar with IFE systems and has expertise in manufacturing headphones to be compatible with them.

The company also plays close attention to the fast-moving consumer electronic industry. By working closely with several famous chip manufacturers, Long Prosper Enterprise aims to optimise its noise cancellation technology without compromising sound quality. The company is also working with Austriamicro System on its next-generation noise cancellation headphone model. By combining feedback and feedforward noise cancellation technology, it hopes that the forthcoming model will create another trend in the airline industry.

The company also offers a comprehensive range of services for its airline clients – including warehouse logistics, managing inventory levels based on customers' needs, and the refurbishment of headphones. ■

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01

01. The ASL 175 AeroScreen
02. The AeroStream XP1 unit

expensespared

New options for cost-minimising plug-and-play retrofit IFE

With over 25 years of experience in servicing aircraft interiors, UK-based Airline Services Limited (ASL) recently expanded into the IFE world, with a range of products aimed at the cost-conscious retrofit market.

The latest of these is the AeroStream XP1, a solid-state digital plug-and-play device to replace legacy tape and DVD players. The product was developed with space, weight, cost and energy savings in mind. It is designed to offer the speed, clarity and flexibility of a digital delivery system with improved reliability and support at a highly competitive price – all while delivering a superior performance.

The AeroStream XP1 system boasts 80GB of memory, and plays in MPEG 1 to 4 format. The product converts digital data into a composite signal for older-generation IFE monitors. It has the capability to serve as either a standalone unit or slave unit for multichannel systems, while being small enough to fit into an overhead bin. ASL says it has managed to achieve all this while weighing in at less than 3kg.

02

ASL's in-house engineering team is also responsible for the ASL 175 AeroScreen – a 17.5in (44.5cm) HD-ready monitor. The AeroScreen is fully interchangeable between its bulkhead mounting and centre-aisle retraction mechanism. ASL says benefits include improved reliability, reduced weight and lower energy consumption, as well as excellent clarity and brightness.

"Over recent years we have developed new products tailored to the demands of modern airlines and passengers," says Dan Hepworth, sales and marketing director at ASL. "Our specialist engineering team has taken the latest developments from the world of consumer electronics and adapted them to incorporate the specialist requirements of our industry, enabling us to offer simple, cost-effective solutions for IFE."

ASL performs engineering, design and workshop activities at its Manchester facilities. It holds EASA Part 145 approval for the repair and overhaul of seats, galley and IFE equipment, along with EASA Part 21 J and G (design and manufacture) approvals. "The experience we have built up by servicing existing IFE systems has been a valuable tool in building robustness, reliability and performance into our own," says Simon Sixsmith, ASL's director of engineering. ▣

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The Aerostream XP1

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Airline Services

01

moneyspinners

Harnessing the power of inflight technology to realise ancillary revenue

Brett Proud, executive vice president of global sales and client support at GuestLogix, believes the airline industry is a prime example of under-realised ancillary revenues – and that it doesn't have to be this way. The company is a leading provider of onboard store technology.

"Although many carriers are catching up, there is plenty of unexplored potential," he says. "Some airlines are creating onboard revenue opportunities by offering destination-based products and services, innovative IFE options, and convenient and secure payment options and solutions – all powered by leading-edge technology."

Onboard technology now enables carriers to monetise the connectivity of their passengers. "85% of Americans over the age of 18 now own mobile phones, and the average American spends nearly three hours a day on their mobile device," says Proud. "A 'walled garden' approach in the cabin enables passengers to increase the quality of their experience by interacting directly through their own devices. Considering the great number of connectivity models on board, connectivity provides multiple opportunities for increased sales opportunities and increased revenues."

Meanwhile, new technologies are enabling seamless transactions between airlines and consumers and bringing new functionalities to IFE, without the need to retrofit. "Transforming the experience of viewing media on board, while also creating significant revenues in the process, new IFE technologies offer passengers the chance to interact in real time with any object that captures their interest while watching IFE, such as a TV show, movie, sports programme or music video, that is directly linked to a point of sale," says Proud. "Allowing travellers to literally touch and interact with their entertainment, and choose objects of interest to browse for further information or make a purchase, all from the comfort of their seats, creates the opportunity for airlines to monetise any IFE content through a virtual shopping mall in the sky."

Proud believes payment solutions are becoming more intuitive and secure. "These back-end technologies are taking pre-flight, in-cabin, and online sales to the next level, and transforming airlines into retailers in the sky," he says.

For example, platforms that enable airlines to create logical product categories and relevant service offerings through an online sales portal are also enabling those airlines to leverage inflight internet access to their advantage. "This allows airlines to provide free WiFi access to passengers without

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sacrificing the incremental revenue that could be earned by selling simply access," says Proud. "Unharnessed, WiFi reduces itself to an instant commodity and leaves significant money on the table, whereas airlines that utilise back-end onboard retail technology don't have to charge their passengers to enter their online retail spaces. Instead, they harness their WiFi asset and turn it from a product with finite revenue to a revenue enabler of significant proportion."

With what is still for many a volatile marketplace, sustainable ancillary revenue streams can be vital. "For most airlines, creating a sustainable ancillary revenue strategy means embracing both a robust booking path and an advanced onboard retail space," says Proud. "To achieve the latter, airlines must rethink what their entire cabin space means to them and their passengers."

Following this theme, in October 2011, airlines will have the opportunity to learn about new technology that aims to keep passengers connected while also driving ancillary revenues. The 2011 GuestLogix User Group Conference agenda has been designed to engage participants in discussions about the present and future of onboard retail technology. It will feature prominent speakers from 25 of the world's largest airlines and travel operators; breakout and panel presentations to examine the potential of an integrated retail strategy in helping to monetise onboard sales; and networking opportunities. To be held in Toronto, Canada, on 3-5 October 2011, GuestLogix will introduce new products, technologies and strategies that it believes will help take onboard retailing to the next level. ▣

02

01. GuestLogix facilitates onboard retail through IFE and POS equipment
02. GuestLogix believes every stage of the customer's journey presents a revenue opportunity

01

gamechangers?

How tablets and connectivity are affecting the IFEC market

The explosion of portable personal entertainment devices and easy, free internet access in consumer markets is blurring the boundaries in many markets and IFE is no exception.

With tablets from multiple consumer manufacturers gaining ground, some are even questioning the need to make customised IFE at all. The topic is perhaps of most pertinence to portable IFE providers such as digEcor, which offers competitive products to the iDevices.

"IFE providers find themselves continually having the iPad conversation even a year after the off-the-shelf product began blasting its way through the consumer market," comments Adam Williams, marketing director at digEcor.

Williams believes handheld tablets have three direct impacts on portable IFE. "First, they are setting a standard and passengers' expectations," he says. "Second, IFE providers have to consider the popularity and developer support communities that exist around consumer operating systems and applications. And third, tablets are replacing portable IFE in some situations (for example, American Airlines)."

Despite the buzz around tablets, Williams believes the actual threat to specialised IFE is overplayed. "Our experience is that there is interest from a marketing standpoint but the operational inefficiencies from tablet PCs usually dissuade airlines," he comments. "However, there will always be the American Airlines and Jetstars of the world that want to take on those issues hoping for a return in other areas. And I understand and respect that decision. So we, as IFE providers, simply need to be ready to help address the issues that tablets inherently bring with them."

CONNECTIVITY

Another recurring topic in IFE circles is the popularity of connectivity. Again, Williams believes actual usage by passengers is relatively low, with some US airlines reporting uptake at about 5%. However, the technology

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driving connectivity is evolving fast. "When Aircell launched, the bandwidth was low and speed slow – that's improved," he says. "Aircell is also testing streaming content over the inflight WiFi network (set to trial on American Airlines), which places the responsibility of having a device (with a full battery charge) on the passenger."

Williams believes the biggest opportunity for airlines in installing connectivity is its potential as a differentiator, rather than an ancillary revenue generator – he says the initial investment outweighs any profit that may be made from charging passengers, at least at first.

Whatever system is offered, if it doesn't work well or at all, then it doesn't matter how impressive it sounds. "Even with all of the changes in the market, the fundamentals really don't change that much," says Williams. "Passengers still first and foremost want to watch movies or some other form of entertainment. And airlines still need to focus on cost, operational impact, certification requirements, maintenance costs (so the total lifetime cost), time to install and competitive differentiators. And the technology should continue to evolve to better address those issues." ▣

01. digEcor's latest model, the digEplayer L7
02. An Apple iPad – the future of IFE?


01

cutting**the**cord

Aircraft cabins are becoming more wireless as technology evolves

Wireless access points have become a staple in homes, small offices and enterprises for internet access. And since 2001 they have increasingly been finding their place on commercial aircraft as well. Just as in hotels and coffee shops, as more airlines offer passenger internet and email services to remain competitive, there has been a growth in the use of wireless access points on aircraft as the primary passenger interface to these services.

"Wireless access points offer a lower equipment cost, lower installation cost, lower overall weight and higher overall availability than alternative seatback wired solutions," says Robert Guidetti, vice president for commercial products at VT Miltope, manufacturer of airborne computer, server/mass storage and network peripheral equipment solutions.

Gains in wireless access point data rates following the introduction of IEEE802.11g in 2003 and IEEE802.11n in 2009 have driven the implementation rate on aircraft. IEEE802.11n supports data rates in the range of 100Mbps, employing multiple antennas per radio to take advantage of multiple-input multiple-output (MIMO) to increase the number of possible applications on aircraft.

"The ever-increasing thirst for high data rates has been the primary impetus for evolution of wireless access point technology on aircraft," says Guidetti. "Certainly, data rates are important, but for the engineer designing the aircraft network, factors such as multiple radios, wireless security, authentication, quality of service, virtual local area networks (VLANs), as well as network management and configuration control are equally important."

SECURITY NETS

Wireless network security, just as in an airport terminal or hotel lobby, remains a primary concern for aircraft applications. For closed networks (like home users and businesses) the most common security is to configure access restrictions in the access points. Those restrictions may include encryption, MAC address-based filters, or disabling the SSID broadcast, making the access point difficult for outsiders to detect.

In Guidetti's view, WPA2 (WiFi Protected Access) or 802.11i are currently the best means for wireless security. "However, while there may be applications for WPA2 implementation on business jets or for flight crews on air transport, it is not common for passenger services which are essentially 'flying hot spots'," he says. "Alternatively, airlines (or more appropriately their service providers) employ authentication as a means for securing passenger access to the internet via wireless access points."

A passenger may initially have no access to the internet and possibly not to any local cached network resources airlines may elect to offer onboard. Passengers must first log

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on to the network, which usually entails the forwarding of all web traffic to a captive portal that provides for payment and/or authentication. "On business jets, the more common solution is to require the cabin passengers to connect securely to a private network using VPN," says Guidetti. "In either situation, authentication in particular is a fundamental prerequisite for network managers to administer passenger access to an airborne network."

So is centralised, remote management – the ability to manage and configure all access points simultaneously – important? "For a single business jet, remote management is normally not important," says Guidetti. "However, for airlines with multiple wireless access points per aircraft on a fleet of aircraft, remote centralised management becomes important for software updates, security patches, hardware status, session monitoring and setting configuration."

Available remote management interfaces include SNMP, SOAP and CLI. "Each management interface has lots of tools and settings available, which can be quite overwhelming to a novice network manager," warns Guidetti. Different domains can be established on an aircraft using VLANs and profiles, a feature called Virtual Service Communities (VSC) on VT Miltope's product. Up to 16 VSCs or profiles can be created. Each VSC is a distinct access point with its own service set identifier (SSID), user authentication, ingress and egress data mapping, user data rate limits, priorities and more. "This could be an important feature for airlines that would prefer a separate domain for the flight crew, premium passengers and economy passengers," says Guidetti.

VLANs compliant with IEEE802.11Q allow for the establishment of different levels of security and qualities of service. For example, premium passengers could be set up with a higher priority, minimum bandwidths and a higher level of security.

These capabilities, in addition to many other features, perhaps explain the growing uptake. "Wireless access point capabilities have evolved over the last 10 years to the point where they now are established as critical components of many leading-edge cabin entertainment and communication systems," concludes Guidetti. ■

01. nMAP, an 802.11n wireless access point by VT Miltope

HOW DID YOU GET THE JOB REPRESENTING AIR NEW ZEALAND? Job? I haves no job! I am simple manimal who love travelating the world. Ever since man withs camera ask if I wants be in movie flim, everyones think I work for hairline. I am big fan Air News Zealand and fly on whenever I cans – I now clock up 294,604,867 hair miles in totalitarianism.

WHAT DOES YOUR JOB INVOLVE? Is not job as I says, is way of wife. I travel world and discovery new palaces and peoples a long way. I blogging ands take photogaphings of my exploitations on the Face, and just now make new shorts flims with Hollyswood celibates to promote the Economiyaki Skycouch.

WHAT IS YOUR BIGGEST ACHIEVEMENT SO FAR? My claim to flame is song I makes with big Uncle Snoop Dogg. It call *Hello Sunshine* and 566,000 pimples now have see this on YouTube. On the Facebook, I have 39,000 fiends who like me, which I am wrapped up about.

WHAT WAS IT LIKE WORKING WITH STARS SUCH AS DAVID HASSELHOFF, SNOOP DOGG AND LINDSAY LOHAN? Mr The Hoff is so great; *Night Reader* was one my favourite shows when I was kneeled on by a grasshopper. It was such a horror to finally meet him! Big Uncle Snoop was in a different leg, he have so many lady friend! My eyes fall out of head when I visit him to make song and see so many beautiful womans walking through mist from his special smoke machine.

WHAT IS THE SECRET OF YOUR POPULARITY? My secrete? In mating time, my kind secrete special aroma to attract lady friend and yes, I think this maybe one raisin people find me so appetising. Also, I think is important to be Yusef. Don't shave yourself for anyone! Miss Lindsay say this to me, and is good advise I think.

HAS FAME CHANGED YOU – DO YOU STILL TRAVEL IN ECONOMY? The flame has not cooked me in any way – I still same Rico I was before mans with camera flim me on new plane. I still haves no home, but loves travelling all the time and meet with peoples who are so friend to me everyday. Sometime I get upgradered now but most time I still fly economy, especially on Skycouch. They gives nice warm cover and tucking me in when I going sleep, and I love this. ▣

Q&A

Air New Zealand's furry ambassador, Rico, on hanging with the stars and finding fame on YouTube – in his own, inimitable (and unedited) words!

Rico – a masterclass in social media marketing

Rico was created for Air New Zealand in 2010 by Jim Henson's Creature Shop, which is famed for its work on programmes such as *The Muppets* and *Sesame Street*. He was first put to work in online advertising promoting the airline's new long-haul products, particularly the economy SkyCouch and premium-economy Spaceseat, and starred in safety videos for flights with these products.

"Each of the videos tells a story about Rico's interactions with passengers on board the new aircraft, but with English as a second language he tends to muddle his words resulting in the sort of comedic moments and double entendre that have elevated him to an online favourite," says Mike Tod, Air New Zealand's general manager of marketing and communications.

Rico has also toured New Zealand in a campervan, producing video diaries about his experiences, and in March 2011 recorded a song and video with rapper Snoop Dogg, which has been seen by 566,000 people on YouTube. Most recently (July 2011), he launched a series of interviews on the video site, with celebrities including David Hasselhoff (The Hoff) and Lindsay Lohan. Each was interviewed on the Skycouch, and the airline estimates that gossip about the interviews has already reached more than 60 million people via twitter and mainstream media. The airline is now leveraging Rico's success by offering selected travel discounts to those who watch his videos on YouTube.

"Social commerce is in its relative infancy. As Air New Zealand continues to push the boundaries of social media engagement, we're creating the opportunity to capitalise on the tens of millions of people who have engaged with the airline and may now be interested in travelling with us," says Tod. "Much like the internet first opened up the opportunity to sell directly to customers via a company website, so, too, do many of the social media channels that have now become a part of our everyday lives. For a small airline at the bottom of the world, we could never afford to reach so many potential customers through traditional marketing channels. The opportunity for both Air New Zealand and New Zealand's tourism industry is huge."

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