

Airline ENTERTAINMENT INTERNATIONAL

SEPTEMBER 2009



What's inside?

- Connectivity
- Content delivery
- Handhelds

THE INTERNATIONAL REVIEW OF IN-FLIGHT ENTERTAINMENT & COMMUNICATIONS



paymentplan

"AIRLINES ARE STRIVING HARDER THAN EVER TO RAISE ANCILLARY REVENUES FROM PASSENGERS ONCE THEY HAVE BEEN TURNED INTO A CAPTIVE MARKET IN THE CABIN"

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fastforward

Recently described by Airbus's Bob Lange as "the most expensive system on the aircraft after the engine," today's state-of-the-art IFE and communications equipment faces intense scrutiny from airlines looking to ensure the best possible performance, value and reliability. In recognition of its importance as a fundamental cabin system and to the overall passenger experience, the team behind *Aircraft Interiors International* has decided to put together a special supplement dedicated to all things IFE and communications.

To help us in this task, we've drafted in Brendan Gallagher, an expert IFE writer and commentator who has followed the subject for the last 20 years – he began his career in IFE/communications in the late 1980s with Inmarsat. Brendan's chosen topics reflect the rapid pace of change at the heart of an industry desperate to keep up with terrestrial technology gains.

For example, we cover the fast-moving connectivity sector, which ultimately hopes to deliver the same broadband experience that passengers are used to in their daily lives back on the ground – but which satellite system is most suitable for the task?

We also take a look at the latest handheld players, which have helped a new tier of airlines previously unable to justify the expense of a full-blown legacy system to offer passengers a vital distraction during the flight.

Handhelds have of course aided the growth and acceptance of ancillary revenues from the IFE system – another hot topic covered in this supplement. A new generation of low-cost carriers has familiarised consumers with the notion of paying for 'extras' beyond the basic ticket price. IFE and connectivity perhaps offer the greatest revenue-earning potential of all – with passengers paying for premium content, to surf the web, send emails, make calls or order meals, drinks or goods on board. And that's before one even considers the advertising sums to be earned. However, we've all heard of 'cattle class' – the rise of à la carte fees threatens to treat customers as little more than 'cash cows' to be milked of every penny when on board. Established 'full-service' carriers need to approach such strategies with the greatest of caution.

Content delivery, another key area covered, will be essential to ancillary revenue models reaching their full potential – airlines will need to be able to refresh and exchange data with far greater efficiency than current procedures allow. Connectivity has a role to play here too, and it's easy to imagine a future scenario where passengers simply use the IFE system to purchase and download content onto their own devices, although still electing to use the onboard screens to playback their selections, with the airline earning a commission for every download.

Whatever the future holds, it's sure to be an exciting and at times, bumpy ride. We'll continue to do our best to bring you the latest news, views and trends, through regular coverage in *Aircraft Interiors International* magazine, on our website at www.AircraftInteriorsInternational.com and further dedicated supplements. Stay tuned!

Anthony James, editor

 AIRLINES ARE STRIVING HARDER THAN EVER TO RAISE ANCILLARY REVENUES FROM PASSENGERS ONCE THEY HAVE BEEN TURNED INTO A CAPTIVE MARKET IN THE CABIN 

EDITOR
Anthony James

ASSISTANT EDITOR
Izzy Kington

ART EDITOR
Anna Davie

ASSISTANT ART EDITOR
Louise Adams

DESIGN
Andy Bass, Andrew Locke,
Craig Marshall, Nicola Turner,
Julie Welby, Ben White

PRODUCTION MANAGER
Ian Donovan

PRODUCTION TEAM
Joanna Coles, Lewis Hopkins,
Carole Moyse, Emma Uwins

PROOFREADERS
Frank Millard, Christine Velarde

EXPERT CONTRIBUTOR
Brendan Gallagher

CEO
Tony Robinson

MANAGING DIRECTOR
Graham Johnson

ART DIRECTOR
James Sutcliffe

PUBLICATION MANAGER
Simon Hughes

INTERNATIONAL ADVERTISING SALES
Sally James

CIRCULATION & SUBSCRIPTIONS MANAGER
Suzie Matthews

published by **UKIP Media & Events Ltd**

Airline Entertainment International,
c/o: Aircraft Interiors International
Abinger House, Church Street,
Dorking, Surrey RH4 1DF, UK
Tel: +44 (0) 1306 743744
Email: aircraftinteriors@ukintpress.com

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shorts

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Dee Brady, IFE programming manager for British Airways

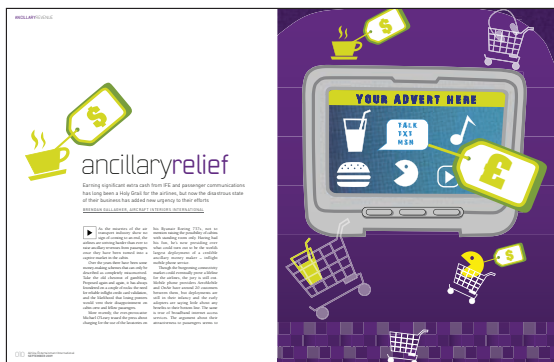
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Earning significant extra cash from IFE and passenger communications has long been a Holy Grail for the airlines, but now the disastrous state of their business has added new urgency to their efforts

BRENDAN GALLAGHER, AIRLINE ENTERTAINMENT INTERNATIONAL



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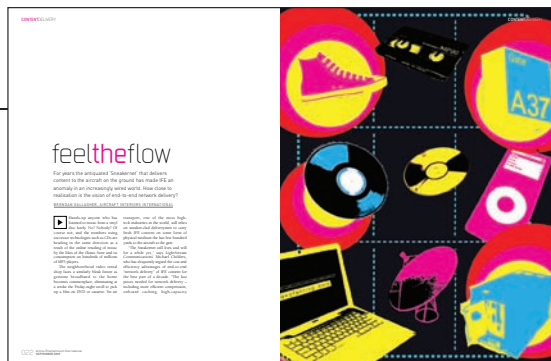
The argument about passenger demand for onboard connectivity is over, but it's still anybody's guess as to which technology will dominate in the long run

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For years the antiquated 'Sneakernet' that delivers content to the aircraft on the ground has made IFE an anomaly in an increasingly wired world – How close to realisation is the vision of end-to-end network delivery?

BRENDAN GALLAGHER, AIRLINE ENTERTAINMENT INTERNATIONAL



fist fight 026

The apparently low costs of entry have attracted a crowd of hopefuls to the handheld IFE market over recent years, but now there are just two main contenders, with a pack of B-listers fighting for the scraps

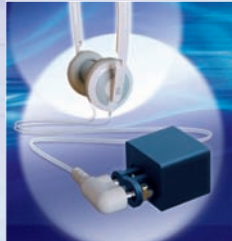
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Audio Jacks



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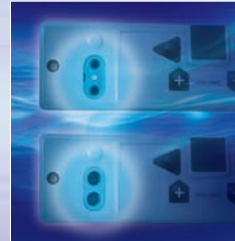
Deployment Arms



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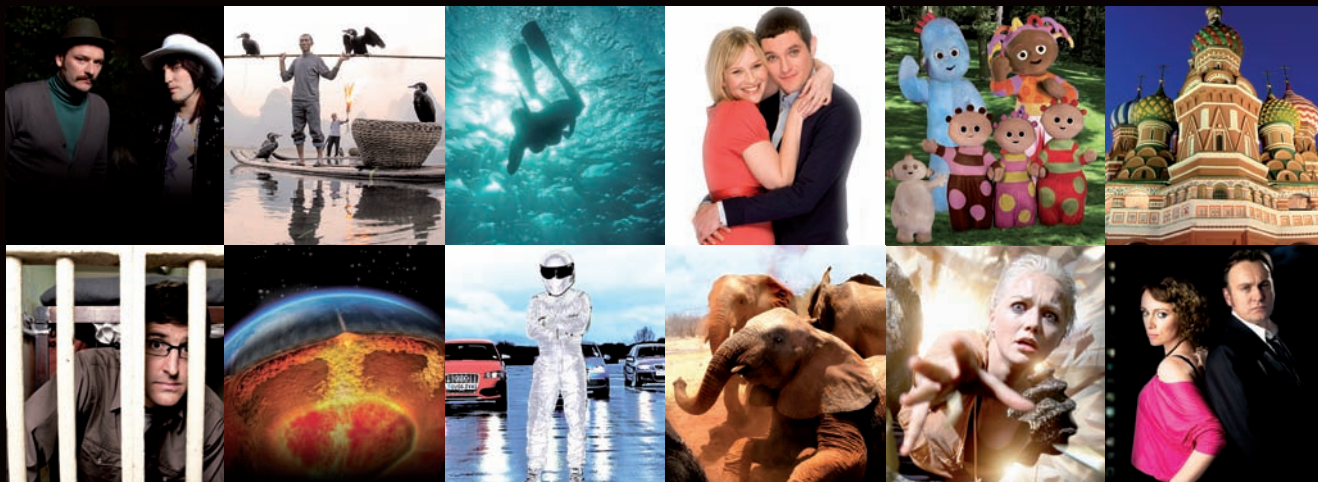
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IFPL Bloomsbury Park, Manners View, Newport, Isle of Wight PO30 5FA
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commercials



032 value for money
digEcor outlines how airlines can use portable IFE solutions to not only please passengers but also to generate revenue



all inclusive 036
Spafax believes that IFE is a huge opportunity for airlines to engage with their customers

038 future proof

Phantom Media looks to the next generation of consumers and says that a new approach to IFE content is needed to excite and engage them

040 refresh start

Airline Services, a new entrant to the IFE market, believes the economic downturn will see increased demand for its retrofit solutions

044 safety first

Skyline IFE says that the pre-flight safety message needs to grab attention without unsettling passengers

046 new player

Zodiac Aerospace has branched into the IFE market with a brand new AVOD system

048 great expectations

Bluebox Avionics looked to consumer trends when developing its AVOD IFE system

050 scale model

Bucher Aerospace Corporation says that modular, scalable video deployment solutions can save time over designing from scratch

052 from the ground up

VT Miltope is aiming to transplant proven IT network technology from the ground to the aircraft

054 fully loaded

Western Outdoor Interactive explains how airlines can save weight and please passengers by integrating everything onto the IFE system



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HOW, WHY AND WHEN DID YOU GET INTO IFE? I started my career working in TV commercials production then moved into broadcast TV and corporate video production in the independent sector before stepping over to work as an in-house producer for British Airways. Moving up to IFE manager has been a natural progression with my technical background proving invaluable in the development of BA's IFE proposition and hardware.

WHAT'S THE BEST BIT OF THE JOB? The fact that every day is different, even though the core of what I do is ensuring consistent delivery of IFE to all system types. We are currently going through one of the most exciting periods of innovation in the IFE industry and it's inspiring to be part of that.

AND THE WORST? There are certainly some elements I enjoy more than others – probably the most challenging is the project work we do, trying to ensure that we get the best out of the available technology, suppliers and operational processes.

WHAT IS THE BARE MINIMUM THAT PASSENGERS EXPECT FROM THE IFE WHEN FLYING LONG-HAUL? Full AVOD is now very much a hygiene factor with a good selection of new movies, TV, audio and games. The GUI needs to be intuitive and accessible to all. What we try to do where functionality allows is to deliver a similar entertainment experience to that available to passengers in their own home.

HOW DO YOU DECIDE ON CONTENT? Our strategy is to deliver the best possible content to meet our customer demographic preferences. We examine the box office revenues, cast, reviews, etc, as well as trying to find movies that passengers may have missed but we feel deserve to be highlighted for their quality or originality. We like to highlight British talent and British movies with our 'Best of British' programming. We take the best content that is on offer to us at the time of our editorial meetings. Passengers are often unaware of the fact that the movie distributors only release movies to airlines 90 days after theatrical release, therefore with global theatrical release dates, content can often seem old but it's new to us.

WITH COSTS INCREASING, DO YOU THINK AIRLINES SHOULD CHARGE PAX FOR IFE? As a full service airline it is not our intention to go for this model.

WHAT NEW IFE/COMMS TECHNOLOGIES FOR THE FUTURE OFFER THE MOST POTENTIAL? I think future cabin technologies will mirror our ground entertainment experiences even more. Already we're seeing the potential of personalisation via the IFE system, the use of personal devices interfacing with the systems, connectivity and live TV.

HOW DOES BA'S IFE DIFFER FROM OTHER AIRLINES? We differentiate our IFE from other carriers by focusing on our British heritage for great, quality programming, and forging relationships with broadcasters such as the BBC to ensure we are getting the best British content out there. We understand our passengers – for many, stepping onto a British Airways aircraft feels like coming home. We therefore work to reinforce this feeling through our programming. We recognise that not all of our passengers are British so we do our best to source the best and most popular entertainment out there to cover our diverse passenger profile.



Dee Brady, IFE programming manager for British Airways, and former president of the World Airline Entertainment Association (WAEA) provides a personal insight into all things IFE, including her admiration for a certain Mr. Clooney...



deebbrady

WHAT HAVE BEEN THE BIGGEST CHANGES TO AFFECT IFE OVER RECENT YEARS? The impact of technology has changed all our lives both on the ground (at home) and in the air. The past 10 years have seen a complete transition to digital content, which has enabled huge volumes of content to play on board with passengers now able to control their own content with on-demand functionality. The passenger experience has improved immensely. New systems are able to deliver new forms of media that previously we were unable to provide, including intranet sites, up-to-date content and the ability for passengers to use their own devices to display their own content on their seatback screens.

JUST HOW MUCH CONTENT DOES BA PROVIDE ON A DAILY BASIS? On an AVOD aircraft we provide up to 100 hours of movies, 40 hours of TV programmes and with 150 CD titles on board – there is a vast amount to entertain passengers, ensuring there is something for everyone.

What's your favourite?

- 1. FAVE FILM?** They constantly change. I have several all-time favourites, which make for a rather eclectic mix. I never tire of watching the great old Hollywood classics – my perfect rainy Saturday afternoon pastime – like *Roman Holiday*, *The Great Escape*, *Mrs Miniver*, *The Apartment* or *Angels with Dirty Faces* to name but a few! I also have a penchant for a movie with good tunes and gorgeous frocks! More recent favourites are *Midnight Cowboy*, *Cinema Paradiso*, *Baz Luhrmann's Romeo and Juliet* – and anything with George Clooney.
- 2. FAVE ACTOR OR ACTRESS?** Tough one – probably Steve McQueen or Gregory Peck and, of course, George Clooney.
- 3. FAVE DIRECTOR?** Billy Wilder, William Wyler, Frank Capra, John Ford, Steven Spielberg, the Coen brothers, Clint Eastwood.
- 4. FAVE ALBUM?** At the moment, I'm loving Elbow's *The Seldom Seen Kid*.



ancillaryrelief

Earning significant extra cash from IFE and passenger communications has long been a Holy Grail for the airlines, but now the disastrous state of their business has added new urgency to their efforts

BRENDAN GALLAGHER, AIRLINE ENTERTAINMENT INTERNATIONAL

▶ As the miseries of the air transport industry show no sign of coming to an end, the airlines are striving harder than ever to raise ancillary revenues from passengers once they have been turned into a captive market in the cabin.

Over the years there have been some money-making schemes that can only be described as completely misconceived. Take the old chestnut of gambling. Proposed again and again, it has always foundered on a couple of rocks: the need for reliable inflight credit card validation, and the likelihood that losing punters would vent their disappointment on cabin crew and fellow passengers.

More recently, the ever-provocative Michael O'Leary teased the press about charging for the use of the lavatories on

his Ryanair Boeing 737s, not to mention raising the possibility of cabins with standing room only. Having had his fun, he's now presiding over what could turn out to be the world's largest deployment of a credible ancillary money maker – inflight mobile phone service.

Though the burgeoning connectivity market could eventually prove a lifeline for the airlines, the jury is still out. Mobile phone providers AeroMobile and OnAir have around 20 customers between them, but deployments are still in their infancy and the early adopters are saying little about any benefits to their bottom line. The same is true of broadband internet access services. The argument about their attractiveness to passengers seems to





ILLUSTRATION BY ANNA DAVIE

have been settled by the rapid take-up of Aircell's Gogo by the US majors – but again nobody's talking about costs and revenues.

RED ROUTE One of Aircell's earliest airline customers has plenty to say about other ways of turning the cabin into a retail outlet, however. San Francisco-based low-fare operator Virgin America recently became the first Gogo airline to outfit its entire fleet. More significantly, the internet service is but one part of an array of measures designed to subsidise a superior cabin product by selling very effectively to airborne passengers, with the IFE system acting as the sales channel.

The carrier's Airbus A320-family aircraft are the arena for an IFE offering called Red. Based on eFX hardware from Panasonic and software from New York-based company CoKinetic, Red is what enables Virgin America to square the circle of low fares and high service.

One of a number of third-party applications developed to run on Panasonic's X-series hardware in response to the company's open-system approach, CoKinetic's Airplay software is designed to support exceptionally fast and flexible user interfaces in IFE systems and other applications. Among other things, it supports multiple simultaneous on-screen windows. But it also facilitates onboard transactions, and last year Charles Ogilvie, who as

Virgin America's director of IFE and partnerships was responsible for the creation of Red, explained how it could help airlines earn more from their passengers.

Indicating that Virgin America was making thousands of dollars a day from onboard sales of food and other offerings, he described Red as the foundation of the airline's ancillary revenue effort. "We charge for everything except water and soda, so we make money from food and drink, and also from things like premium IFE content," he said.

Flight attendants receive food and drink orders via a tablet PC on the

trolley, saving labour to such an extent that Virgin America has reduced the standard cabin crew from four to three. "And because the flight attendants have far less sales administration to do, they can de-plane more quickly at the end of the flight and move on to pick up another shift," said Ogilvie. "Their on-duty time is used much more efficiently."

Virgin America also stands out in its willingness to talk about its revenue-generation activities – other carriers are less forthcoming. But leading IFE equipment manufacturers Panasonic and Thales have put a lot of work into developing the cash-raising capabilities of their products and are keen to see them understood by the airlines.

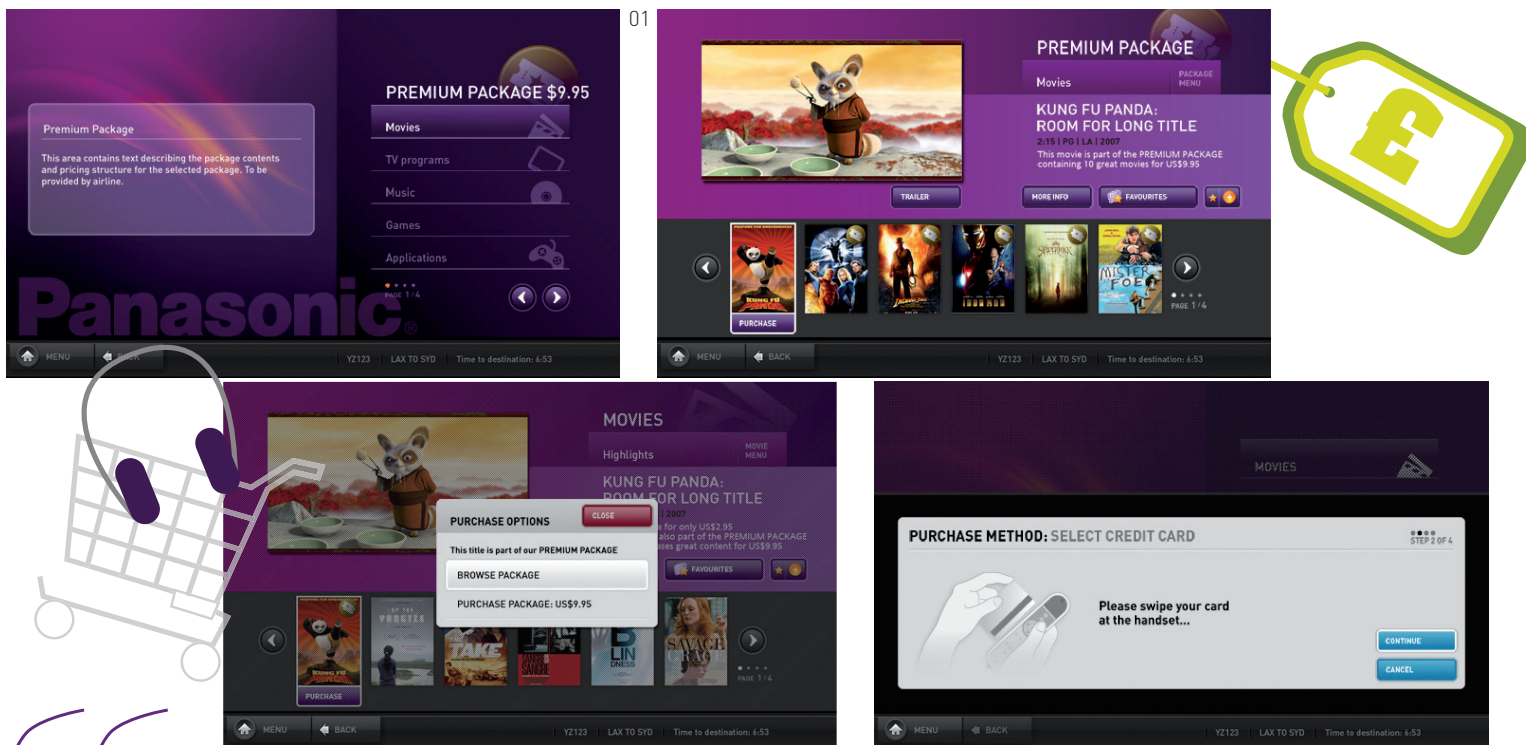
FANTASTIC FOUR "We see four main strands to ancillary revenue generation," says Cedric Rhoads, Panasonic's product marketing director. "They are pay-per-access (PPA), advertising, shopping and connectivity, with the last acting as both an enabler for the first three and a source of earnings in its own right."

The company's PPA provision in its eFX and eX2 systems allows airlines to charge passengers for access to premium films, games, music and other content. Carriers can finesse the way they serve up entertainment, offering some content free of charge and the rest in one or more price bands. And they can closely monitor passengers' buying patterns and adjust pricing as necessary during a single aircraft turnaround.

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WE MAKE MONEY FROM FOOD AND DRINK, AND ALSO FROM THINGS LIKE PREMIUM IFE CONTENT 99





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US\$5 PER PASSENGER? US\$10? US\$20? THEY'RE ALL POSSIBLE, BUT IT DEPENDS ON THE SCOPE OF THE SOLUTION SELECTED BY THE AIRLINE 99

OneMedia is the name of Panasonic's advertising support capability. Designed to mimic web-based advertising on the seatback screen, it helps the airline to bill advertisers for viewings of their material and allows ads to be aimed at the passengers most likely to respond to them. Advertisers are ready to pay more for the ability to deliver such 'targeted' ads, and the technique also plays a major part in the revenue-generation package offered by Thales.

Panasonic's inflight shopping represents a big advance compared with the rather despairing efforts of cabin staff with their duty-free trolleys. Passengers can browse through catalogues, place orders at the seat and opt to collect the goods on the aircraft or at the arrival gate, or have them delivered to a hotel, home or office.

Panasonic is due to become a connectivity provider in its own right within the next few months, when it introduces the eXconnect Ku-band

01. Screenshots showing pay-per-access menu options offered by Panasonic

satellite service. "As an enabler, it will support things like credit card validation, inventory checks and order confirmations," says Rhoads. "As a revenue source, connectivity can be 'sliced and diced' in many ways – laptop users can buy access time, mobile phone users can make calls and send texts, and passengers using the in-seat IFE system can be offered access to low-bandwidth services such as text and instant messaging for a very low, all-inclusive fee."

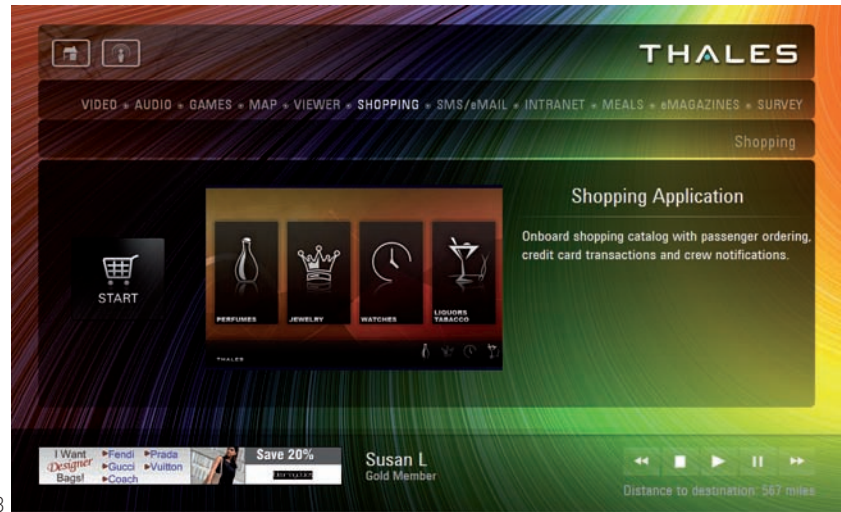
Panasonic has been working to build money-making potential into its products for the past four years. "While the recession has certainly further stimulated airline interest, the desire was already there before the economy turned down," says Rhoads. "We now have several customers in the process of deploying ancillary revenue strategies."

Cutting to the chase, what can the airlines expect to earn from these programmes? "There's no simple

answer," says Rhoads. "US\$5 per passenger? US\$10? US\$20? They're all possible, but it depends on the scope of the solution selected by the airline. For example, if you implement OneMedia with banner ads only, you will make far less than if you also included microsites, interstitial ads and video/audio." Meantime, Panasonic is backing its own judgement by entering into revenue-sharing arrangements for OneMedia.

TREAD WITH CAUTION Thales Avionics, which with its TopSeries product range is nose-to-nose with Panasonic for the domination of top-end IFE, is pinning its hopes on the same quartet of applications as Panasonic – PPA, advertising, retail and connectivity. But media services VP Stuart Dunleavy is cautious about some of the prospects.

"We see pay-per-access for movie and TV content following developments in the terrestrial market, where more and more is provided free of charge and subsidised through advertising," he says. "Pay-per-access for blockbusters and special events remains an attractive concept but has so far been hampered by the time lag between terrestrial broadcast and upload to the aircraft."



02

03

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THE AIRLINE PASSENGER DEMOGRAPHIC IS STILL VERY ATTRACTIVE TO MANY OF THE WORLD'S LEADING BRANDS 99

Dunleavy has few doubts about the potential of advertising, however. “More and more airlines are creating a wide range of placement opportunities, including traditional pre-reel advertising spots and web-based banner advertisements with click-through access to advertiser micro-sites and embedded video promotional content,” he says. “The airline passenger demographic is still very attractive to many of the world’s leading brands. The addition of route-based content, personalised content delivery and the ability to closely track system usage have all increased the value and revenue potential of this advertising arena.”

- 02. Virgin America’s Red system
- 03. Screenshot showing a shopping application on a Thales IFE system

ON TARGET? While the two leading IFE providers are agreed on the importance of advertising as a revenue source, they differ when it comes to the immediate value of targeting. Thales



last year announced that it would integrate Jetera’s Targeted Content Delivery System into TopSeries. Connecticut-based Jetera opened up shop with much fanfare in 2006 and since then has been promising big things for the system, which is designed to support insertion, delivery, targeting, financial reconciliation, analysis and other aspects of online advertising.

“We’re working on a range of personalised and targeted delivery concepts at the moment,” says Dunleavy. “The core benefit of targeted advertising is clear to all. But the inflight market lags some way behind the terrestrial market. If we consider the way that targeting has exploded via the Internet, it seems natural that the inflight market will follow suit eventually.”

Jetera chief executive Jeff McChesney is cranking up expectation levels even higher. Announcing the completion of core software development earlier this year, he said: “Our secret sauce will allow us to quickly and easily repurpose and customise for each airline’s particular needs. It will also revolutionise the way ads are inserted into IFE systems by replacing the traditional labour-intensive method with a dynamic and highly responsive ad network.”

Panasonic’s Rhoads takes a more measured view of targeting: “We’ve been involved with targeted advertising for several years through OneMedia,” he says. “And while the advantages are clear, it’s probably going to be some

time before we fully understand its worth in revenue terms. Complex targeting – using customer relationship management (CRM) data held by the airline, for instance – is very complex to implement. The resulting ad revenue is certainly higher, but it comes at what cost?”

Thales’s Dunleavy is no less hard-nosed about other aspects of the revenue-generation game. “We have to be very careful with pricing,” he warns. “The inflight market has been seen to tolerate a slight premium for some time now. But any abuse of this tolerance will see the passenger simply wait until landing to make the purchase.

“We also have to understand that no single model will necessarily meet the needs of a particular airline or even of a particular route. Destination, time of day, passenger demographic, inflight service mix and seasonal factors all significantly influence demand for revenue-generating products and services.”

Some time ago a British statesman demanded “Give us the tools and we will finish the job.” In the last few years the two leading IFE suppliers have heeded the cries of their customers and greatly enhanced the ability of their products to help earn revenues that could prove critical to business survival. The tools are there, but for many carriers the job is only just beginning. ■

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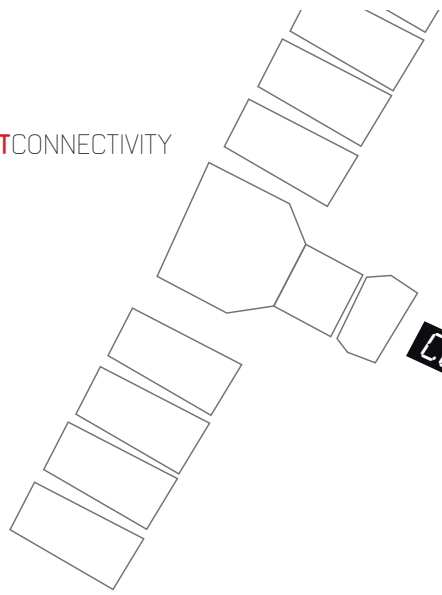
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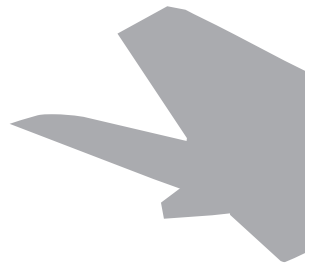
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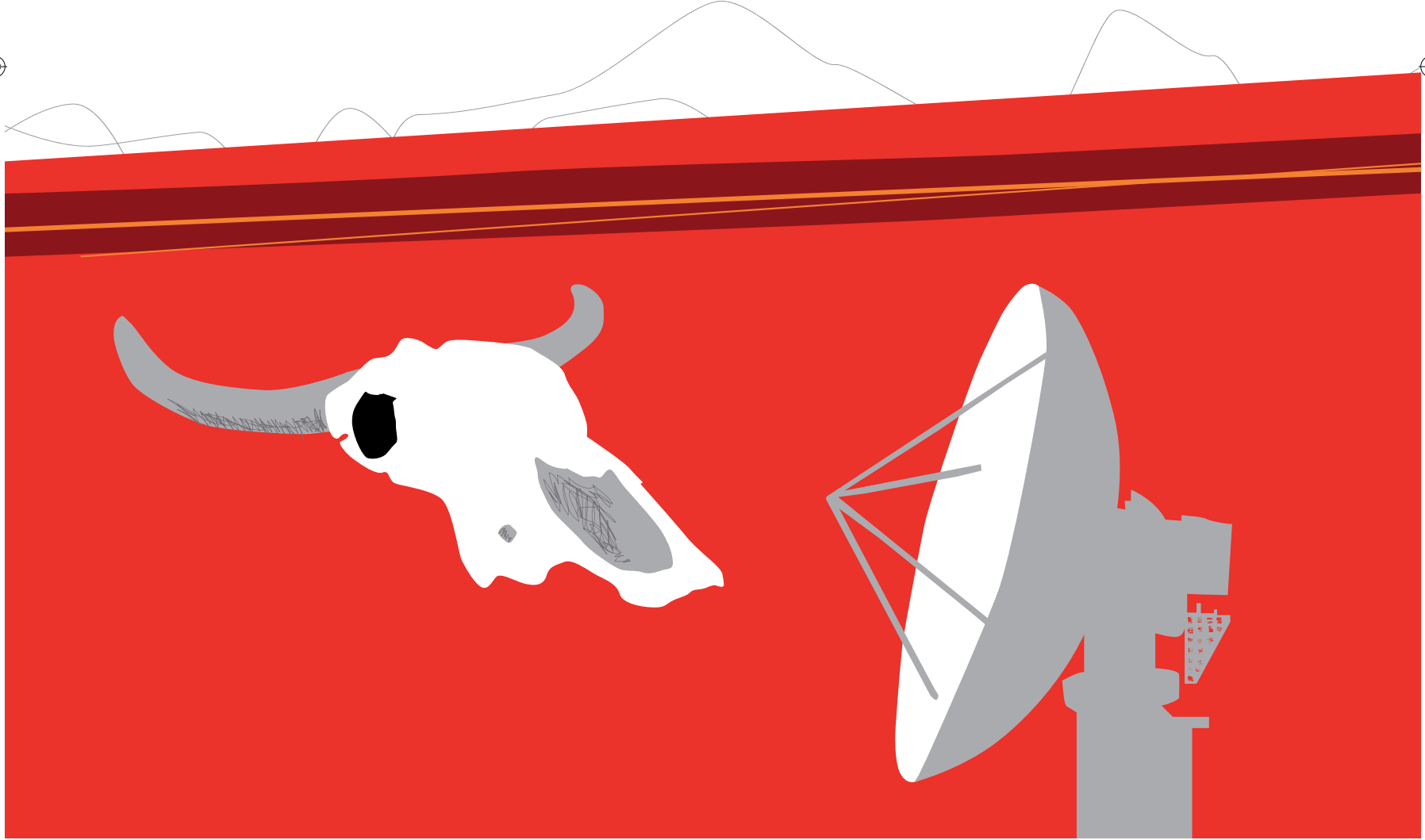
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band to band combat

The argument about passenger demand for onboard connectivity is over, but it's still anybody's guess as to which technology will dominate in the long run

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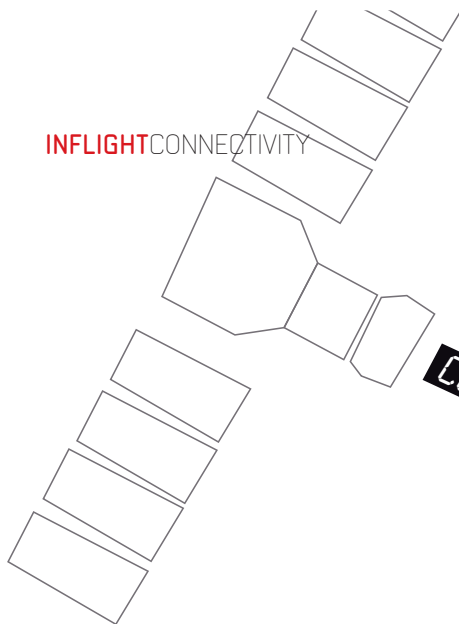
“The king is dead – long live the king!” English courtiers would use this formula to announce the passing of one monarch and the accession of his successor. Now, centuries later, the same could be said about the debate over the reality of the market for inflight connectivity services.

The enthusiastic response of airlines and passengers to Aircell’s Gogo service in the USA seems to have proved once and for all that onboard internet and email will be snapped up if offered at a reasonable price. Gogo costs a maximum of US\$12.95 for a coast-to-coast flight, and travellers with the likes of American Airlines and Virgin America are voting with their wallets in large numbers.

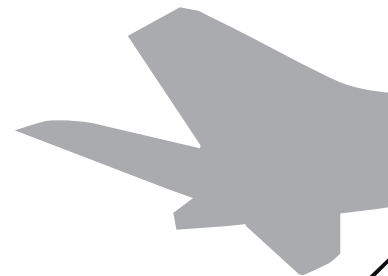
But this success has raised a new question. Gogo is based on a network

of ground cellular towers across continental USA. But on the long routes where such services will really thrive – across the oceans, over the deserts of North Africa and the Siberian steppe between Europe and the Far East, only satellites can do the job. But which satellite?

The current choice for an airline that wants to offer cabin internet on long-haul international routes lies between the Inmarsat L-band system and an array of emerging Ku-band services – from California-based Row 44, IFE giant Panasonic, and ViaSat, a satcoms equipment manufacturer that has announced big service ambitions. Broadly speaking, it’s a choice between a known quantity with bandwidth limitations, and three commercially unproven players who can offer more in the way of raw megabits.



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L-BAND LEADERS Two companies lead the way in providing cabin connectivity over the Inmarsat system, with its maximum throughput of two 432kbit/sec channels per aircraft. AeroMobile, owned by ARINC and cellular operator Telenor, launched its mobile phone offering with Emirates last year and has three more customers in Qantas, V Australia and current triallist Malaysia Airlines.

Rival OnAir, a subsidiary of Airbus and SITA, this year launched its mobile phone service with Kuwait's Wataniya Airways, is also fully operational with Royal Jordanian and is engaged in a massive trial-cum-full introduction with Ryanair. It boasts a customer list that now exceeds a dozen carriers worldwide, the latest to sign up being Egyptair and Hong Kong Airlines.

These two carriers are particularly significant. While neither OnAir nor AeroMobile has yet introduced internet access via laptops, both Egyptair and Hong Kong Airlines have opted for the full range of OnAir services – Mobile OnAir data and voice to hand-helds, and Internet OnAir to laptops and the in-seat IFE system. The company demonstrated the services, including wireless laptop access to the web, on a 10-hour trial flight in an Airbus A340 this summer, and says that the internet offering will be introduced by two long-haul carriers – one of them could be Qantas – before the end of the year.

“Passengers will have WiFi access to the internet and email at speeds just a little below what they are used to on the ground,” OnAir chief commercial officer Stephan Egli said earlier this year. “It will be a fully workable web browsing and email service.” That, and possibly more, is already available to passengers on the aircraft in which Alaska Airlines

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WE BELIEVE THAT AIRCRAFT-TO-SATELLITE TECHNOLOGY IS THE MOST ROBUST

SOLUTION 99

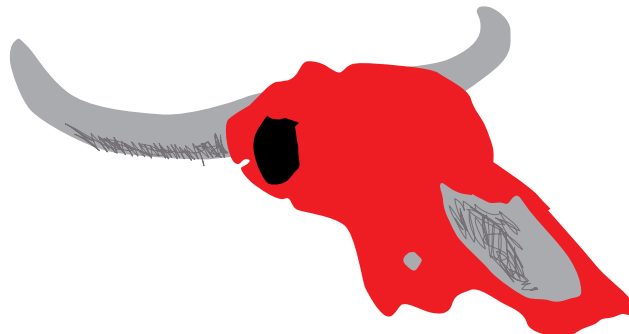
and Southwest Airlines are trialling the Ku-band internet service from Row 44.

ROBUST THINKING With their North American route networks, the two carriers could have opted for Aircell Gogo, joining American, Virgin America, AirTran, Delta/Northwest, United and US Airways. Instead they forsook the advantages of a small, light, easily installed equipment fit and decided to try Row 44's Ku-band solution, with its necessarily complex and expensive antenna. “We believe that aircraft-to-satellite technology is the most robust solution, and we look forward to hearing the feedback of our customers,” said Dave Ridley, Southwest's senior VP for marketing and revenue management, when the carrier launched its trial in February.

The two carriers have yet to announce a decision, but passengers who sampled the service in the single Alaska Boeing 737 equipped so far were fulsome in their praise when early results were announced. The airline described the reaction as “overwhelmingly positive,” with more than 96% of survey respondents planning to use the service again.

While the two US carriers were mulling things over, a European carrier, Norwegian Air Shuttle, beat them to the draw to become the first airline in the world to commit to a new-generation Ku-band service. The low-fare operator plans to use the Row 44 link – nominally rated at 4Mbit/sec to the seat, 0.5Mbit/sec in the opposite direction – to offer passengers internet browsing, live TV and mobile phone voice, email and text messaging across its entire route network. Installation work on the first of as many as 50-plus Boeing 737-800s is due to start in the fourth quarter of this year.

The fourth quarter was also to have been a momentous occasion for Panasonic. Earlier this year the other main Ku-band player was confidently forecasting that launch of its eXconnect internet offering with the first of five committed customers would take place within the period, but that target has



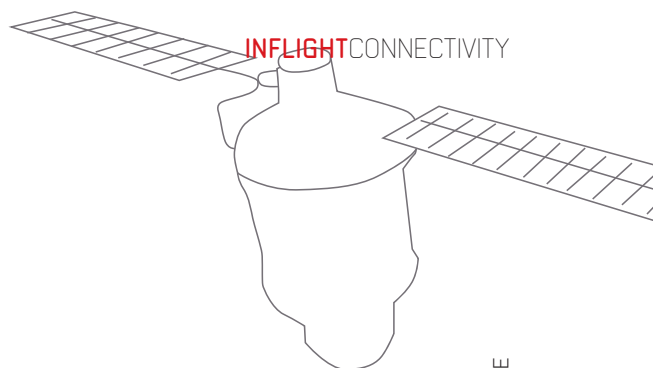
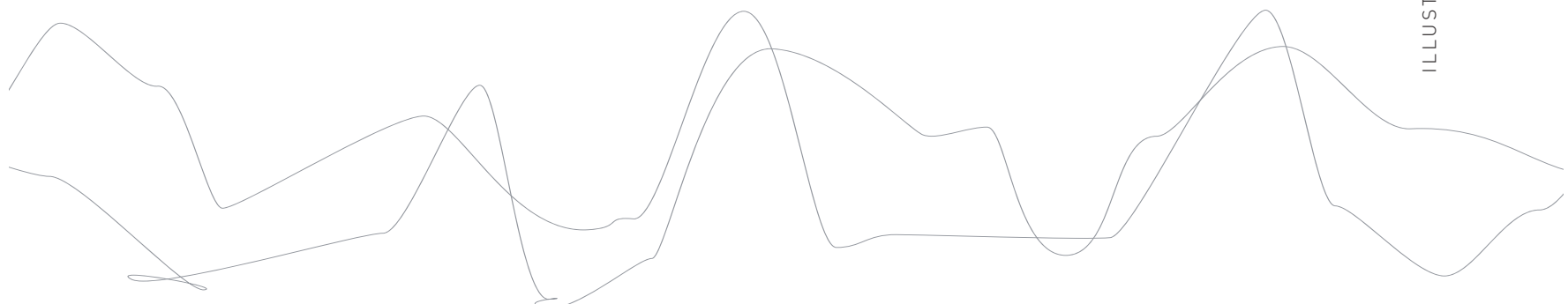


ILLUSTRATION BY ANNA DAVIE



since slipped by a couple of months. “It’s been an interesting time since April,” says global communication services vice-president David Bruner. “Airlines have changed their plans, but as one thing slid out, another thing moved in and I think everything is going to work out okay.”

Panasonic’s customer list has also evolved, with one airline dropping out and another signing up to leave the total unchanged at five. Industry sources suggest that the number could include Lufthansa, with Panasonic the last man standing after the German carrier’s long campaign to find a successor to the technically effective but weighty and expensive Connexion by Boeing.

Panasonic is “absolutely on track” with its advertised roll-out plan, according to Bruner. eXconnect will be available initially on the North Atlantic, with Asia and South America, the South Pacific and Africa following a few months later. “If anything, the two-month slip has helped us a little,” he says. “We are actually ahead of the game in terms of national regulatory approvals, so there will be no impediment there when our early customers are ready to receive service.”

But Bruner is more cautious about a technical aspect of the programme, highlighting one of the potential



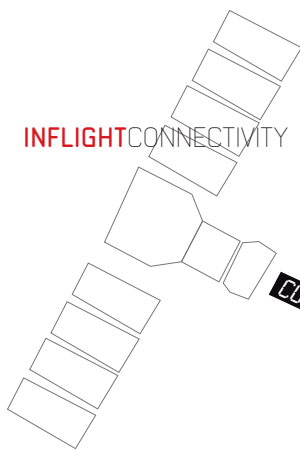
on the one band and on the other...

L-band

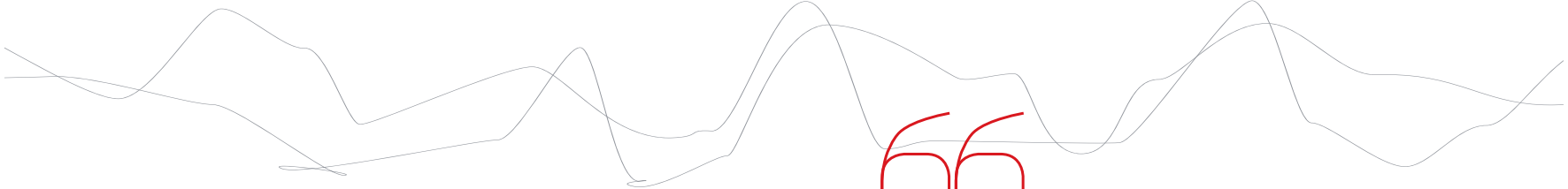
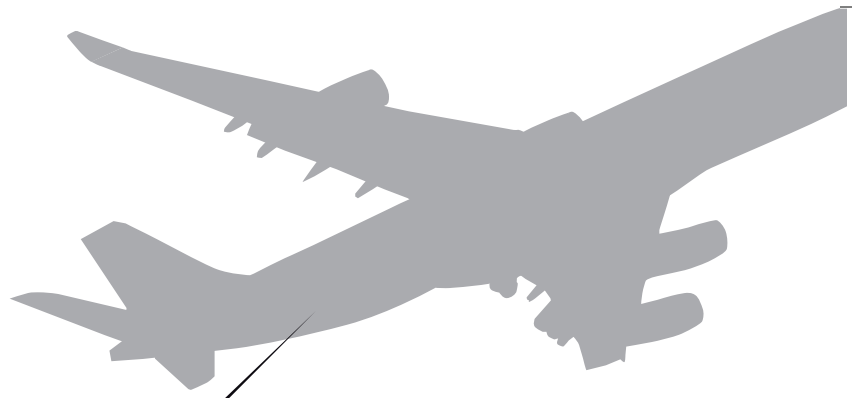
Inmarsat has used frequencies in the L-band (1.5-1.7GHz) part of the electromagnetic spectrum for the link between the satellite and the aircraft since the early 1990s. The technology is well understood and antenna sizes have declined over the years to the point where a unit measuring as little as 2.5in high and weighing 20 lb can support Inmarsat’s Swift-Broadband 432kbit/sec-per-channel service.

Ku-band

Emerging aero satcoms providers Row 44, Panasonic and ViaSat have created their services by leasing capacity on existing satellites operated by companies like Intelsat for a wide range of telecommunications tasks. These satellites carry payloads working in the Ku-band (11-15GHz). Since potential data throughput is related to frequency – the higher the frequency the higher the data rate and system capacity – Ku-band can supply significantly more bits to the aircraft than L-band. But Ku-band antennas are more complex and expensive than L-band units because they have to point more accurately and form tighter beams to avoid interference with adjoining satellites.



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THE SIREN VOICE OF KU-BAND
COULD ALSO BE CALLING
AEROMOBILE AND ONAIR 99

Achilles' heels of the Ku-band approach. "Because of the demanding things it has to do, the antenna is a much more difficult animal than the satellite modem," he observes. "Making a Ku-band antenna work the way it needs to is very challenging. That said, supplier EMS Technologies is doing a good job for us, developing something that is both very reliable and able to make exceptionally efficient use of satellite bandwidth."

LOOK OVER YONDER The newest kid on the Ku-band block is already familiar with the challenges posed by the antenna. As the supplier of equipment and networking services for the ARINC SKYLink Ku-band service for business aircraft, California-based ViaSat has developed a wide variety of products to meet the needs of a range of aircraft operators. Now it is rolling out coverage of its recently announced Yonder service, aiming to achieve some form of round-the-world availability next year. The company has announced no airline customers so far but makes no secret of its desire to address the air transport market.

On the face of it, the international airline industry has some clear decisions to make among three different technology camps – Aircell's air-to-ground (ATG) cellular solution, Inmarsat L-band satellite and the various flavours of Ku-band. But it's actually nowhere near as simple as that – the future of connectivity could be one of cross-technology coalitions rather than a multitude of warring camps, each defending its own solution to the last.

One of the first signs of these shifting sands came earlier this year, when Aircell

announced that it wanted to extend Gogo outside North America and that it was working with a Ku-band satellite provider to obtain the necessary geographical reach. "We plan to give our customers something very similar to what Gogo delivers over the USA," says Robin Salem, senior vice president for strategy. "We aim to use Ku-band satellites, combining them with our ATG network, and to trial the arrangement early next year."

The siren voice of Ku-band could also be calling AeroMobile and OnAir. The former's mobile phone capability has been integrated with Panasonic's IFE systems and is being offered by the manufacturer under the eXphone brand. It doesn't call for too great a stretch of the imagination to see the two parties cooperating when eXconnect is introduced some time in the next nine months, all the more so because AeroMobile has made it clear it is ready to offer service over any link available.

In public OnAir and primary equipment supplier Thales loudly protest their loyalty to L-band satellite. But earlier this summer a senior Thales executive admitted that the Irvine, California-based operation was taking a close look at Ku-band, and it has since emerged that a request for proposals is going out to potential suppliers. The logic of the move is hard to fault. Prime IFE competitor Panasonic will soon have a Ku-band megabit capability built into its eX2 and eFX systems – Thales can hardly offer anything less if its TopSeries is to go on competing effectively.

Even L-band satellite operator Inmarsat no longer sees itself as bound forever to the technology it used to

pioneer aero satcoms 20 years ago. It's in the running to use S-band for broadcast services in Europe, and its strategists are considering Ku, Ka and even X-band for its fifth-generation constellation, now at the definition stage. What's more, the company recently obtained maritime Ku-band assets by acquisition, and it's not beyond the bounds of possibility that it could buy or partner its way into the aeronautical Ku-band game to obtain extra capacity in the shorter term.

In the meantime, there's little doubt that internet connectivity services have reached flying speed. All the US majors have signed up for Aircell Gogo, and some are looking to go offshore. Of OnAir's dozen or more customers, at least three want to enable passengers to go online via Inmarsat. Row 44 has a customer for its Ku-band service, plus a couple of high-profile triallists, while Panasonic claims a total of five commitments. Connexion by Boeing's aborted take-off is now history – onboard internet is off the runway and climbing. ■

CONTACTS

- AeroMobile: www.aeromobile.net
- Aircell: www.aircell.com
- OnAir: www.onair.aero
- Row 44: www.row44.com
- ViaSat: www.viasat.com



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For years the antiquated 'Sneakernet' that delivers content to the aircraft on the ground has made IFE an anomaly in an increasingly wired world. How close to realisation is the vision of end-to-end network delivery?

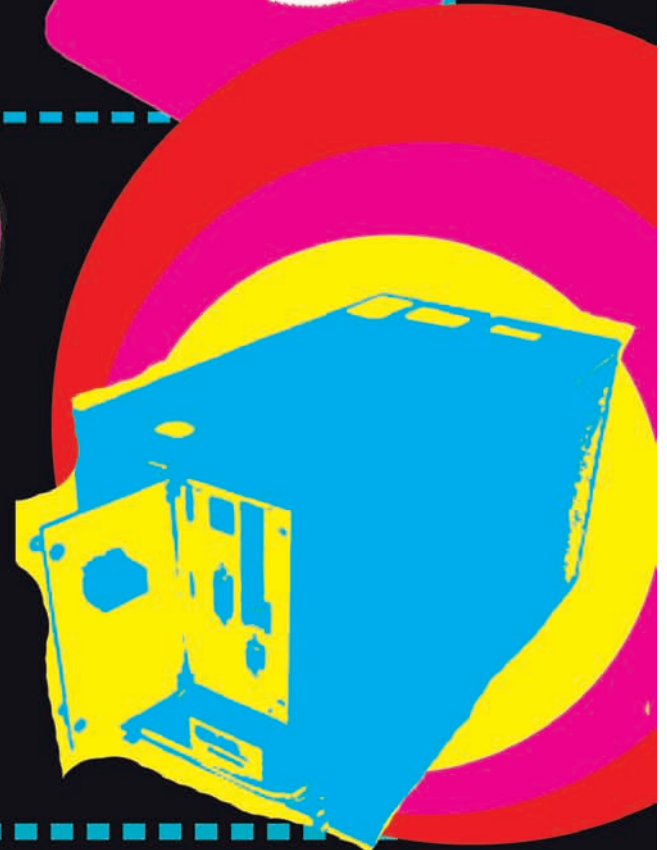
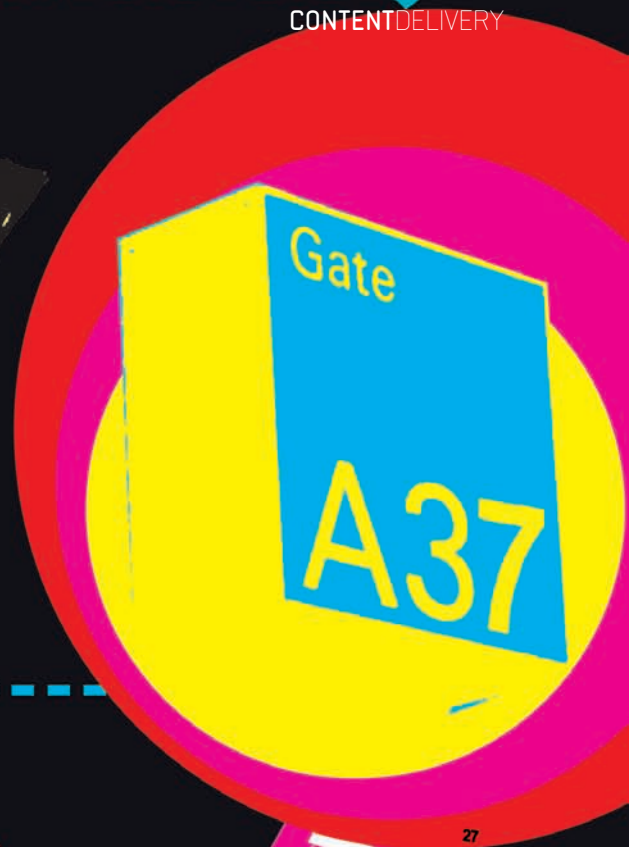
BRENDAN GALLAGHER, AIRLINE ENTERTAINMENT INTERNATIONAL

 Hands-up anyone who has listened to music from a vinyl disc lately. No? Nobody? Of course not, and the numbers using successor technologies such as CDs are heading in the same direction as a result of the online retailing of music by the likes of the iTunes Store and its consumption on hundreds of millions of MP3 players.

The neighbourhood video rental shop faces a similarly bleak future as genuine broadband to the home becomes commonplace, eliminating at a stroke the Friday-night stroll to pick up a film on DVD or cassette. Yet air

transport, one of the most high-tech industries in the world, still relies on sneaker-clad deliverymen to carry fresh IFE content on some form of physical medium the last few hundred yards to the aircraft at the gate.

"The Sneakernet still lives and will for a while yet," says LightStream Communications' Michael Childers, who has eloquently argued the cost and efficiency advantages of end-to-end "network delivery" of IFE content for the best part of a decade. "The last pieces needed for network delivery – including more efficient compression, onboard caching, high-capacity





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IT TOOK SIX YEARS TO ESTABLISH THE TECHNICAL STANDARDS FOR COMPRESSION ALONE – IT COULD TAKE A FEW MORE TO STANDARDISE DELIVERY OVER THE ‘LAST MILE’ 99

wireless data pipes at the gate – are coming into place. But it took six years to establish the technical standards for compression alone, and I think it could take a few more to standardise delivery over the ‘last mile’ to the server on the aircraft.”

The switch from analogue to digital technology over the past 20 years has made it much easier to acquire, process and integrate content into a package of files ready for loading onto the IFE system on the aircraft. But in one respect there has been no essential advance on the days when videotape cassettes had to be carried on to the aircraft and slotted into banks of players. Stored on a USB stick, removable hard drive or high-capacity disc or tape, the new content load still goes by hand to the aircraft.

There it’s received by permanently installed devices designed to accept a variety of physical media and transfer their data to the IFE server, where it will be available for delivery in flight to

overhead and in-seat screens. Rockwell Collins’s dPAVES broadcast IFE system, for example, incorporates the Flyable Data Loader, designed to absorb up to 50 gigabytes in five minutes from a single Blu-Ray disc and automatically transfer it to the server. The IMS Company’s Terminal Data Loader can handle a 640Gb removable hard drive and is also set up to receive content wirelessly via 3G cellular, WiFi and WiMAX.

MANAGEMENT ISSUES Devices like these, with their huge data capacity and short load times, are far less labour-intensive than the analogue tape decks. But people like Michael Childers and his colleagues in the World Airline Entertainment Association’s Digital Content Management Working Group want to abolish that labour completely, replacing it with a seamless digital flow all the way from the initial order for content to its appearing on the screen in front of the passenger. Underpinning

this view of the world are two concepts – digital asset management (DAM) and digital rights management (DRM).

DAM embraces the storage and cataloguing of each item of digital content – films, songs, captions, subtitles and so on – so that they can be retrieved when needed. It also covers such things as file compression – ‘encoding’ – to ensure that they run satisfactorily in the high-pressure environment of an AVOD IFE network being accessed by up to 400 people at the same time.

The material must also be protected against piracy by keeping it secure while it is in the archive and – more challenging – when it is en route to the airline. This calls for the use of a secure content delivery network (CDN) – typically a virtual private network (VPN) that could combine both high-capacity cable for long hauls and wireless technologies such as cellular, WiFi and WiMAX for the last mile. “We see content delivery networks becoming



increasingly automated, with less and less manual processing and potential for human error,” Childers remarks.

Also fundamental to the network delivery vision is a recognition that content is created by studios, musicians, games companies and other originators who have a right to be paid for their efforts. This is where digital rights management (DRM) – ensuring that usage is properly licensed and billed for – comes in.

Tracking each item of content for DRM purposes is achieved by attaching to it a ‘metadata’ label defining who is cleared to access and use it, and spelling out the terms of the relevant licence. The authorised content provider can use the label to follow and manage the item on its journey through the CDN and during its time on the aircraft server.

Most of the elements of the ideal content delivery supply chain already exist. Films and television programmes made available for use by airlines are

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MOST OF THE ELEMENTS OF THE IDEAL
CONTENT DELIVERY SUPPLY CHAIN

ALREADY EXIST 99

stored in data centres at post-production providers like the US-based Crest Digital, Post Modern Edit and Cinemagnetics. A CDN ‘backbone’ operated by secure digital media delivery specialist SmartJog connects these three companies with content integrators like Thales, Panasonic and The IMS Company. But there are still two links more or less missing from the chain – one relating to DRM, the other to last-mile delivery.

In a truly integrated supply chain, the terms of the contract governing the use of the content would be captured electronically at the order-entry stage and automatically attached as metadata. But so far Walt Disney Non-Theatrical

is the only one of the big content providers to have implemented an automated order-entry system for content licensing.

“While all most every major studio content provider maintains a website carrying availability information, only Disney offers automated order entry,” Childers observes. “Most of the time orders have to be placed by fax or email from the airline or service provider to the content provider. Automated ordering has been available for more than a decade – at LightStream we offered one as long ago as 1996. But the content providers have worried about security, and the content service providers fear that it could do them out of a job.”

GOING THE LAST MILE In the telecommunications world the last mile has always been a challenge. Laying trunk cable into a neighbourhood may be affordable at first sight, but costs soar when every household has to be connected. Fanning out wires from the main line is an expensive business, and a lot of work has gone into finding a better way.

The same problem confronts network delivery of IFE content. Data packages arriving at the airport by long-haul cable then have to be distributed across a neighbourhood of aircraft parked at any number of widely dispersed gates. Michael Childers knows from direct experience that the networks fall short at this point.

The Blast! service that he developed for The IMS Company delivered video news from Reuters to American Airlines's 767-300s for display on personal media players in business class. A process based on Web Services 2.0 pushed the news from Reuters to IMS's network operations centre in Brea, California, where it was packaged with an American Airlines-branded graphical user interface and sent by VPN to the airport for loading via IMS's Terminal Data Loaders to the portables at the gate.

"The biggest limitation on this form of delivery is still the speed of the data connection at the gate," says Childers. "Network delivery is at its most efficient when the content can pass seamlessly and at high speed through the gate and into a cache on the aircraft for ultimate playback to passengers. At

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YOU CAN COUNT ON US TO GET THE RIGHT INFORMATION TO THE RIGHT AIRCRAFT AT THE RIGHT TIME 99

present the weakest link is the size of the pipe at the gate."

With WiFi continuing to proliferate at airports and the even more capacious WiMAX and 3G cellular coming on stream, wireless is the obvious solution, and now the necessary infrastructure is beginning to emerge. Florida-based LiveTV plans to use its WiFi-based Wireless Aircraft Data Link (WADL) to deliver up-to-date web content to aircraft servers during ground turnarounds as part of its KiteLine instant messaging and email service for US domestic routes.

ARINC is marketing the similarly WiFi-powered GateFusion as a way of quickly and effortlessly shipping large volumes of data – electronic flightbag and flight operations quality assurance (FOQA) information, as well as IFE content – to and from the aircraft while it is parked at the gate. "You can count on us to get the right information to the right aircraft at the right time," the company says. "And if your aircraft pushes back while information is still loading, GateFusion will mark where the transfer was suspended and then send the remaining data to the next equipped airport for resumption of delivery."

Thales announced last year that it was developing the WiMAX-based TransMax service. The Californian-based IFE systems provider has teamed with wireless performance management specialist Proximity to develop the service, which will use the partners' GateSync WiMAX network hardware and software. The companies claim that their offering will move content and other data to and from aircraft at the gate between 25 and 50 times faster than other solutions. It will also be used to support wide-area networking for other airline and airport operations



on and around the ramp and across the airport.

It has also been reported that Thales is studying the possibility of using WiFi to 'daisy-chain' content loads from one aircraft to another on the ramp.

The stars are beginning to align for network delivery of IFE content. When the finishing touches have been applied in the form of automated ordering and seamless high-speed links into the aircraft server, the cash-strapped airlines are sure to welcome the efficiencies and cost savings that it will bring. ■

CONTACTS

- ARINC: www.arinc.com
- IMS: www.ims-consultants.com
- LiveTV: www.livetv.net
- Thales: www.thalesgroup.com



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fistfight

The apparently low costs of entry have attracted a crowd of hopefuls to the handheld IFE market over recent years, but now there are just two main contenders, with a pack of B-listers fighting for the scraps

BRENDAN GALLAGHER, AIRLINE ENTERTAINMENT INTERNATIONAL

► Everybody knows the story of Bill Boyer, the youthful baggage handler and entrepreneur credited with launching the handheld IFE sector. Like all great ideas, the proposition he put to Alaska Airlines just six years ago was a simple one. The airline wanted to offer IFE but was reluctant to spend a lot of money plumbing a conventional system into the aircraft. Boyer's brainwave? Take the digital portable media players just coming on to the consumer market, beef them up, load them with movies and music, and make them available in the cabin.

Alaska jumped at the idea and young Boyer was off and running. His original digEplayer debuted at the World Airline Entertainment Association show in 2003 and is still in everyday service with more than a dozen airlines. In the ensuing

years the apparent simplicity of the task has seduced many a wannabe into trying his luck at the handheld game – for most of them success has proved elusive.

Some projects, from the likes of Global AirWorks, TranStar and Watermark, did the rounds of the trade shows and then sank without trace. Several other providers, with a more mature understanding of the challenges, have knuckled down to developing the kind of end-to-end service demanded by the airlines. Yet even these are finding it heavy going.

They fall into four categories. The most recent entrants are talking a good marketing game but have yet to secure a customer. Then there's a stratum that has been around for a while, with solid offerings and a small customer base but little in the way of recent new-contract



ROOOW

IN-FLIGHT CONTRACT

THE TOP THIS WAY

LAD

EEV

PORT-A-PLAYER

POINT OF NO RETURN



success to report. Completing this B-list is a company that has managed to win fresh business in the teeth of the recession, suggesting that it may have some 'secret sauce' that the others lack.

At the top of the tree, where they have been for some years, are two providers – The IMS Company and digEcor. Both seem to have mastered to the satisfaction of their airline customers the complexities of end-to-end content licensing and delivery and equipment provision and support, and between them they have most of the market.

Currently standing on the outside and peering wistfully in are San Diego-based WiseDV, and Cineinfly, a venture by French media giant TF1. The former made its bid for IFE action in 2007, the latter just over 12 months ago. Neither has yet landed a customer.

OUTSIDE BET? WiseDV was set up in 2006 to provide spectators at live sports events with an extraordinary new perspective – mobile video action replays and multiple views of other activities going on simultaneously at the venue. Called Lvis (Live Viewing Systems), the overall WiseDV system combines a wireless-enabled handheld smaller than a paperback book with a powerful head-end server and coded orthogonal frequency-division multiplexing (COFDM) video transmission technology. Feeds from cameras at various points in the stadium are delivered by cable to the server and then broadcast wirelessly to the handhelds.

Lvis was trialed in April 2007 with the Anaheim Ducks ice hockey team and has since delivered the goods at events like the US Open tennis championship and golf's PGA championship. Prompted by a Northwest Airlines flight attendant and tennis fan, the company went on to develop ALvis, an air transport version

combining a 160Gb onboard server and a handheld with an eight-hour battery, 4.3in screen and graphical user interface offering audio and a total of eight video channels. When last sighted WiseDV was working on airworthiness approval and securing agreements with studios for the supply of content.

Cineinfly is promoting a turnkey handheld service based on personal media players from market leader Archos, which also supplies IMS. The company demonstrated some of the proprietary capabilities that it hoped would give it an edge in the scramble for the handheld dollar – instant docking, automated content refresh, and a protective casing for the Archos 705 player – at last year's Aircraft Interiors Expo. Since then, however, all the action has been confined to a website with that slightly dusty air typical of operations that have nothing to report.

SLOW YEAR The next four providers, to their credit, have got product in service and flying. Unfortunately, the year to date has seen scant evidence of any of them managing to go any further by adding to their small existing customer bases.

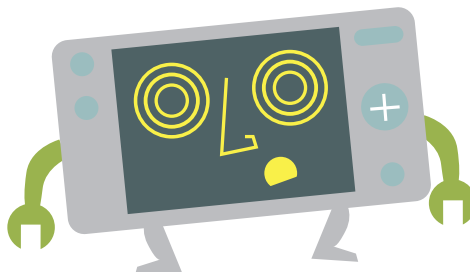
One of them, Panasonic, is admittedly a special case. While the rest of the pack are pinning everything on handheld, the IFE systems industry leader sees it simply as a supporting act for the main attraction. As a result, the excellent but pricy eXpress has been acquired only by a few of Panasonic's existing full-system customers, who want the handhelds for service-recovery back-up. The other three providers – Dublin-based Airvod, Mezzo of the UK and California's e.Digital – are becalmed on the customer totals they had 12 months ago.

In February last year Airvod emerged from a self-imposed news blackout to claim a flying – if belated – start to its commercial operations. "It took longer than planned to get our offering where we wanted it to be," admits chief executive Terence Bonar. "But we started delivering players in the third quarter of last year and we have already shipped 3,000 units."

Airvod's first programme was with Singaporean low-fare operator Tiger Airways, which currently operates 10 Airbus A320-family aircraft, with a further 57 on order for its own use and that of its Australian and Korean sister companies. Then came a fleetwide deployment with Qantas-owned low-fare carrier Jetstar Airways, which operates 38 A320-family aircraft, with a further 41 on order, and six A330-200s. The third announced customer to date is Geneva-based VIP charter operator PrivatAir, with a fleet of eight Airbuses and Boeings.

Airvod's last flirtation with the media was more than 12 months ago, when it announced a new handheld device, the

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 WE STARTED DELIVERING
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 SHIPPED 3,000 UNITS 99



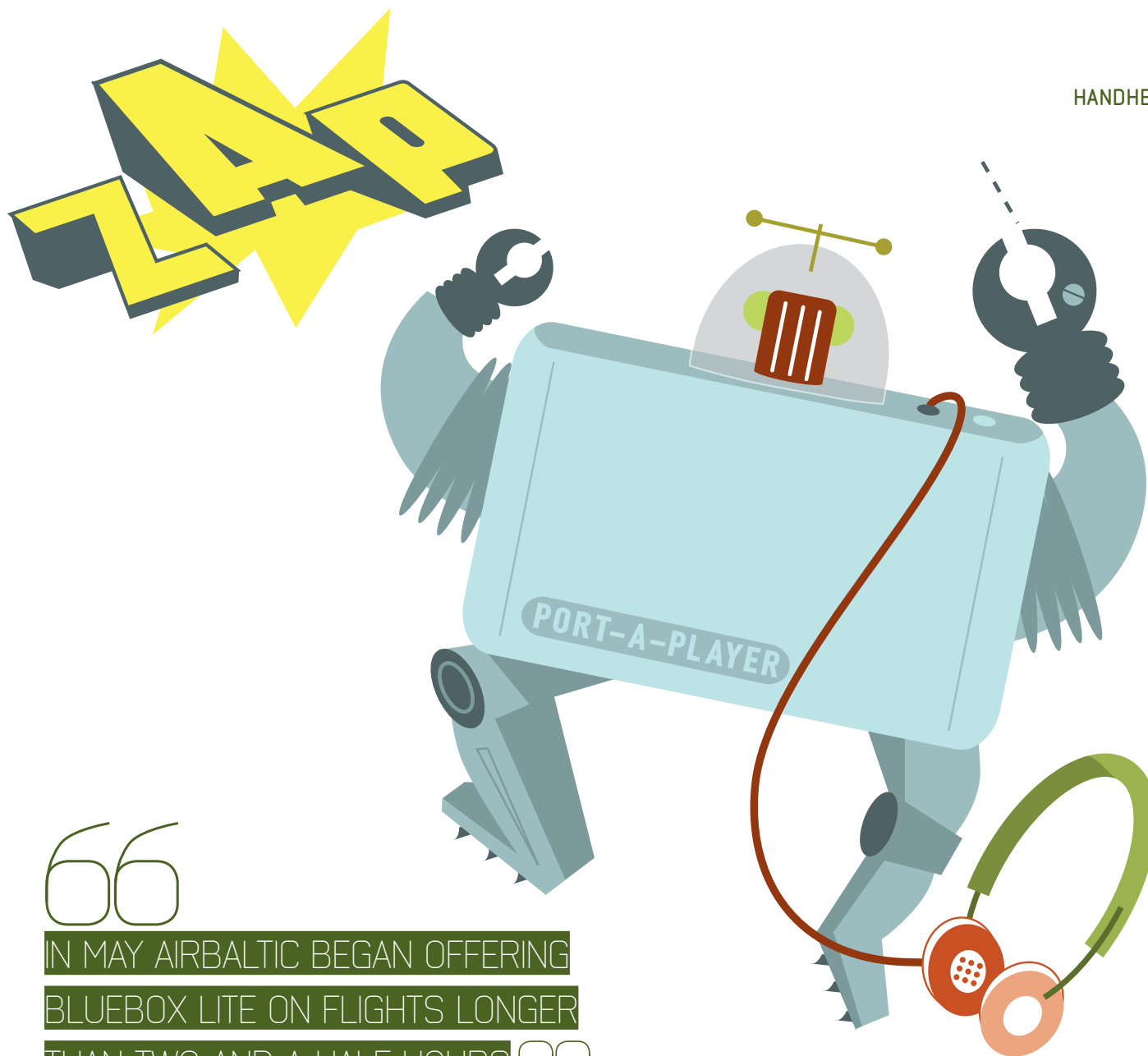


ILLUSTRATION BY RUSSELL BROCKLEHURST

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IN MAY AIRBALTIC BEGAN OFFERING
BLUEBOX LITE ON FLIGHTS LONGER
THAN TWO AND A HALF HOURS 99

Crystal. Similar in functionality to the original Mach5 player, Crystal is lighter and more compact.

London-based Mezzo was created by a team of former executives of British supermarket giant Tesco with the aim of providing an end-to-end turnkey IFE service for small and medium-sized airlines. Mezzo acquires and manages content and runs the logistical side of the operation, while e.Digital supplies the eVU players.

Mezzo last announced a new client 18 months ago, when British corporate and VIP charter operator Titan Airways joined a group that also includes TUI Group charter carriers Arkefly of the Netherlands and Thomsonfly (UK), British low-cost carriers Flyglobespan and Jet2.com, and charter operator XL Airways.

e.Digital also has direct customers of its own. The most recent, signed up last September, is Austrian Airlines. e.Digital, which remains mired in a messy

intellectual property dispute with digEcor, also supplies Air France, Alitalia, Lufthansa, Malaysia Airlines, Corsairfly of France and Italian leisure carrier Neos Air.

In a category all of its own is Bluebox Avionics. Although this British company is just as much involved in the low-level dogfight for customers as Airvod, Mezzo and e.Digital, it not only has some fresh business to report but it is also involved in a trial that suggests it may have stolen a technical march on its rivals.

In May airBaltic began offering the Bluebox Lite portable on flights longer than two and a half hours. The Latvian national carrier is Bluebox's fifth customer, following El Al of Israel, low-fare operator Iceland Express, the UK's bmi and a private BBJ operator. But even more significant is the trial of its wireless, semi-embedded system that it is carrying out with Airbus.

The system is based on Bluebox Lite and is controlled via WiFi wireless.

Airbus is trying it out in the A380 cabin mock-up in Hamburg, looking to see if a wireless solution really can deliver the weight savings and other efficiencies promised but not delivered by the abandoned Thales and Panasonic WiFi programmes for the Boeing 787. If Bluebox can deliver, it could find itself involved in a piece of business beyond its wildest dreams.

SO WHO'S NUMBER ONE? And so to the Big Two – digEcor and The IMS Company. With a fluctuating customer base of 30+ carriers between them, the two US companies outweigh all the other players put together. Utah-based digEcor led the field for years, having inherited the digEplayer when parent company Wencor acquired Boyer's APS operation in 2003. But in recent times it has been challenged increasingly by IMS, to the point where the latter last year claimed market leadership.

HANDHELD PLAYERS

"If you put together the number, size and quality of the airlines we serve, our customer retention record, the number of units we have in service, our follow-on sales to existing customers and the positive trend in our sales, we're number one," declared IMS's sales and marketing vice president Harry Gray. He was rebutted earlier this year by digEcor's chief executive, Brad Heckel, who invoked research by international consultancy Frost & Sullivan: "They reported that we were the leader, with IMS right behind us."

The recent facts point to IMS being in marginally the better shape, however. digEcor has just unveiled a new device – the digEplayer XLP, offering 16 hours of continuous video playback – and announced an order from long-time customer Jetairfly. But IMS can boast fresher new-customer announcements, vital in a sector that's almost as susceptible to churn as the consumer mobile phone market.

This spring IMS took the wraps off deals with Kuwait Airways and African carrier Gabon Airlines. The former is deploying several hundred examples of the PAV-705 7in-wide touchscreen device in the business- and first-class cabins of five Airbus A300s and four A340s and a pair of Boeing 777s. A recent start-up, the African international operator has introduced PAV-705 in business and economy in the Boeing 767s it flies on routes to France, the Congo and South Africa.

IMS includes among its announced customers OpenSkies, the British Airways premium-only operation flying four 64-seat Boeing 757-200s between New York JFK and Amsterdam and Paris Orly. Passengers are offered IMS handhelds

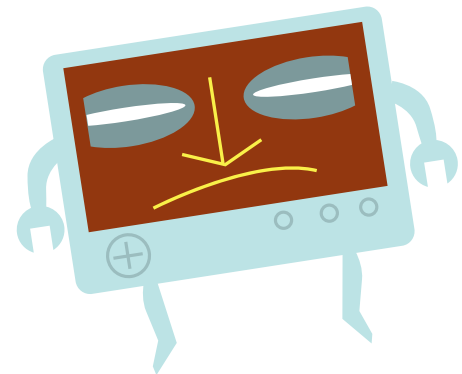
providing more than 50 hours of programming. The beleaguered British carrier is also sticking to its plan to offer an all-premium service from London City Airport to JFK, and it is reported that IMS players will also be aboard the single Airbus A318 earmarked for the service.

A recent independent count put the digEcor and IMS customer tallies at 15 and 17 respectively. digEcor is still aboard with launch customer Alaska, plus other big names such as Aeroflot, KLM and Hawaiian. But IMS can boast an almost complete hand of US majors in American, Northwest/Delta, United and US Airways, along with the likes of Aeromexico, Royal Jordanian and TAM of Brazil. digEcor has around 15,000 players in the field, according to Brad Heckel, while the IMS number is believed to be in the region of 16,000.

BIGGER PICTURE digEcor and IMS are never happier than when they are disputing the leadership of the handheld market. But as questions go, does it really matter? Of greater concern is why, with all its apparent advantages in terms of cost and flexibility, Bill Boyer's Big Idea still hasn't made the inroads into the market that might have been expected a few years ago.

By one estimate a total of around 60 carriers have given handheld a try at various times, with the current tally now standing at around 50. At the same time, the plumbed-in AVOD and broadcast systems from Panasonic, Thales and Rockwell Collins continue to sell well.

There are some natural constraints on the spread of the handheld gospel. These include flight duration – as Ryanair found



66

AN HOUR OR TWO JUST ISN'T LONG

ENOUGH FOR THE PASSENGER TO

GET THEIR MONEY'S WORTH 99

to its cost when it trialed IMS, an hour or two just isn't long enough for the passenger to get their money's worth and for the cabin crew to distribute, collect and charge for the players. And even when there is plenty of time, cabin crews can resent the extra work and show a want of enthusiasm that eventually does for the service. Nor is handheld quite as low-cost as it looks at first sight. The logistics of refreshing content and recharging batteries are complex and call for plenty of human intervention.

Whatever the reasons, the handheld sector has not yet reached the point where even its keenest supporters could say that it has cemented its place in the cabin service mix. From clientless new entrants to seasoned operators, the handheld IFE suppliers face some very interesting times in the next few years. ■

CONTACTS

Airvod: www.airvod.com
Bluebox: www.phantommedia.net
digEcor: www.digecor.com
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01

valueformoney

In the current economic climate, airline executives need more than ever to assess what programmes are essential, and what could be done to maximise profits.

Chase Craig, manager of product development and market research at Alaska Airlines, is one such executive who has faced many of the same questions. In 2004, Alaska took a leap of faith and invested in a baggage handler called Bill Boyer to pioneer a new way of providing IFE – through a portable unit. The result was a new company, digEcor, and its product, the digEplayer.

As with many new ventures, the headwinds threatened to overturn the champion of change. Under new management, digEcor worked closely with Craig to identify profitable routes for strategic expansion and a business model that would cover costs and drive profit to the airline. "At times, the path has been unclear," admits Craig. "However, the dedicated team at digEcor has committed long hours and tremendous effort to addressing each need and issue. For example, to maintain a strong chain of communication with all the right stakeholders, from IFE vendor to airline frontline employees, digEcor's Seattle-

based do-it-all John Clark meets regularly with our inflight team to hear concerns and give our employees a voice," he continues.

digEcor says the key to success has been in authoring a flexible business model and supply chain that works well for different airlines. "The essential components are low-cost hardware and content, a strong rental programme, and additional sustainable revenue streams," says Adam Williams, director of marketing at the company. "Each factor, when carefully considered and implemented, has the opportunity to lower costs, produce net positive revenue, and ultimately bring a smiling customer back to the gate time and time again."

The IFE hardware business is divided into two fundamental alternatives – embedded and portable. Within each division, an array of options exists. For example, embedded options include traditional seatback units with mass cabling versus the emerging fibre optic cabling systems. Further options include inflight connectivity and live TV.

"Assuming for a moment that all systems perform equally (or near equally), two considerations stand out from the group for any

Airlines can use portable IFE solutions to not only please passengers but also to generate revenue

- 01. digEcor's latest offering – the digEplayer XLP
- 02. The digEplayer XT portable IFE device
- 03. The digEplayer 5500

02



03

airline seeking to reduce costs," says Williams. "The first consideration is the upfront cost of acquiring the hardware. Financing a system can be done through purchasing, leasing, or revenue sharing. When purchasing, an airline has to either use cash reserves or arrange for financing. Leasing usually requires a down payment and monthly instalments. Alternatively a revenue share agreement requires neither a down payment nor the use of cash reserves, but does require foregoing a portion of future profits. Each option has benefits and costs and must be carefully considered."

The second consideration is the system weight. "With constant fluctuations in fuel prices, the system weight can at times greatly increase the cost of offering IFE on a given flight. With fewer passengers on board, the increased fuel cost resulting from an IFE system quickly outweighs the benefits of an IFE system," says Williams. "Therefore, capable, lightweight systems should be a priority to decision makers. In the case of Alaska, digEcor's portable solution, which incurs significantly reduced fuel costs, was the best fit for the airline."

With an IFE system selected, airlines then face recurring content charges. A typical content supply chain might include five or more parties completing all of the necessary tasks. An

alternative favoured by digEcor is the vertically integrated supply chain, which eliminates certain parties and groups more tasks with the integrator. "Eliminating extra parties and shifting the workload to the integrator removes middleman mark-up effectively reducing the cost to an airline," says Williams.

So, when facing economic challenges and determining which programmes to keep, should IFE be a target? "It is important to recognise that IFE adds value for passengers and is an influencer in the airline selection process," says Williams. "As evidence, a recent study of 873 passengers conducted by digEcor revealed that after ticket price and number of stops, the type of entertainment provided on board was the most important factor in choosing an airline."

digEcor says that instituting an IFE rental programme therefore serves two purposes – firstly to help offset the cost of an IFE programme for the airline; and secondly, to provide passengers with a desired service. digEcor believes that passengers are willing to pay for access to content – and cites Alaska Airlines, which sees rental uptake of 100% on certain routes.

But there are certain conditions to success. "The successful implementation of a strong rental programme is tied to forecasting usage on specific routes, developing a high-value content



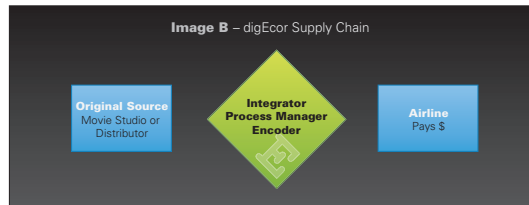
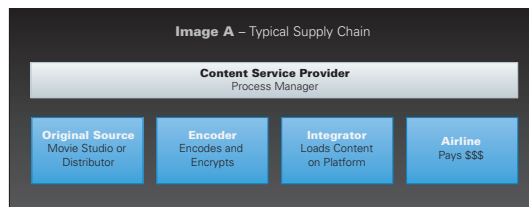
04

04. The digEplayer XT
05. Two models for the content supply chain

programme, implementing a strong and responsive customer support capability, maintaining an open line of communication with flight attendants, and structuring a marketing campaign to passengers,” says Williams. “Further, the success at Alaska is enhanced through the use of an online reservation portal – digEplayer.com. Not only do advanced reservations aid in usage forecasting, but they also increase customer retention and satisfaction.”

The IFE system can also be used to drum up ancillary revenue. “Value-added services and products can and should be offered to passengers with a return benefit to the airline,” says Williams. “Some value-added services and products are free to the passenger while others may be offered at a reasonable price. For example, placing a limited number of high-quality advertisements in key locations throughout the IFE experience helps inform passengers of relevant opportunities, and airlines benefit from the premium price that advertisers are willing to pay.”

Other services such as inflight shopping or gaming can pose a monetary cost to passengers if they decide to participate. “Browsing through a digital catalogue of products is something to which most consumers are accustomed. If the decision is made to purchase an item, then the passenger has benefited by finding a product that is deemed desirable and the airline shares in the profit gained from the sale of the product,” says Williams. “As a key strategic initiative, digEcor has created high-value and sustainable ancillary revenue programmes that can be tailored to specific airline operations.”



05

The keyword here is ‘sustainable’. “In this case, sustainable means that the IFE provider has created a proven business model and developed strong relationships with key partners,” says Williams. “Additionally, sustainable means that the airline and IFE provider work together to promote ancillary products and services in a relevant, meaningful way, and continuously gather passenger feedback in order to refine the ancillary services and products offered.”

Poor economic conditions have the ability to turn the world on its head but can also provide an environment for new beginnings. “Through strong partnerships, new technology and creative solutions, airlines can continue to offer competitive and profitable IFE services to loyal passengers,” says Williams. “As partners and as a community, solutions will be increasingly defined by teamwork and a strong supply chain.”

Adam Williams
+1 801 489 2031
awilliams@digecor.com
Reader Enquiry No. 501



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01



02



allinclusive

Spafax creates media and entertainment products for the IFE industry. Its CEO, Niall McBain, says that while the industry recognises that IFE has evolved beyond just movies, airlines are still missing opportunities to engage with their customers: "The world's airlines have been slow to fully exploit the potentials of IFE. The opportunities in enhanced entertainment offerings, social media and community building are just too powerful to leave on the ground," he says. "The proliferation of digital and social networking platforms allows airlines to use content to engage with customers, inspire purchase decisions and build a return. Airlines have the audience – and the media – to build a 360° coordinated, integrated experience, tactically delivering content at selected touchpoints of the journey."

Spafax calls this 'the journey cycle' – the linked system of experiences that exists at every step of

a customer's contact with an airline brand. From the itch to travel, to booking the flights, to the communication and entertainment on board, and the photos and memories that accompany the passenger on their return – Spafax says the brand can play a role at every step.

"This experience can leverage engagement into increased revenues, cross-selling and cost savings," says McBain. "IFE is still movies, TV and audio on aircraft – but it's also community, social media, advertiser-funded programming, e-zines, loyalty newsletters, microsites, portals and more. Content is not confined to the aircraft because so many more channels to the consumer are open and increasingly addressable. The sky is no longer the limit."

Content is king

The key to engaging the customer, McBain says, is through original, compelling content. "Content bridges platforms and media, connecting inflight

IFE is a huge opportunity for airlines to engage with their customers

01. Virgin Atlantic's v:port AVOD IFE system

02-04. Air Canada's onAir e-zine

05. Land Rover's microsite on Virgin Atlantic's v:port system

03

The screenshot shows the 'onAir' website interface. At the top, it says 'Europe Bound' with a date of 'Apr 2008'. Below this are sections for 'TOP STORIES', 'WHAT'S NEW', 'EDITOR'S SPOTLIGHT', and 'TRAVEL STORIES'. The 'TRAVEL STORIES' section includes articles like 'Newfoundland Labrador', 'Flight Passes', and 'Loden'. There is also a 'SEARCH FOR FLIGHTS' section with a search form. At the bottom, there are logos for Air Canada and other partners.

04

This screenshot shows a 'Sun Destination' article on the Air Canada onAir website. The article is titled 'On the French Caribbean Rum Trail' and features a large image of a beach in Barbados. The text includes 'Destination: On the French Caribbean Rum Trail | Sip: A Tale of Two Cities | Tour: Hawaii, if by Sea or Bed: At the Copacabana | Weekend: Business Travel, the Out-abouts'. There is also a sidebar with a 'WIN a trip for 2 to Jamaica' promotion.

05

This screenshot shows the Land Rover Sport website interface. It features a 'MAIN MENU' with buttons for 'NEW DIRECTION', 'THE VEHICLE', 'TECHNOLOGY', 'FIND OUT MORE', and 'V:WEB'. A large image of a silver Range Rover Sport is shown on the right. Below the image, there is a description: 'With its exciting new design and balance of strength, agility, speed and performance, Range Rover Sport delivers dynamic on-road performance. And its off-road capability is unquestionable.' At the bottom, there are navigation buttons: 'MORE', 'BACK', 'NEXT', 'HOME', and 'INFO'.

experiences with online and offline 'between-flight' experiences. It allows airlines or brands to weave messages into the traveller experience," he says. A brand that previously was limited to conventional advertising could now expand its reach with everything from the design of bespoke furniture in the lounge, to branded content and interactive microsites on the IFE system. A good example of this is Land Rover's content-based microsite on Virgin Atlantic's v:port audio/video on demand (AVOD) system.

For airlines other ideas include an online duty-free 'magalogue' that pops up when customers book an international ticket – which could accelerate passenger revenue away from the airport shop to the onboard shop – and a loyalty e-zine sent out to frequent flyers, which could inspire travel thoughts through well written and illustrated travel pieces. "These connections might be used by the airline to increase sales of surplus inventory, push points redemption and confirm its scope and global access through its route network and alliances," says McBain. "E-zines such as Air Canada's onAir are flexible platforms that can easily be personalised in order to foster greater customer loyalty."

Engagement is queen

"The key here is engagement, which happens naturally when customers interact with content that fits their lifestyle or frame of mind. Engagement can happen throughout the cycle so long as the media tools deployed are appropriate and intuitive," says Raymond Girard, president of Spafax Interactive.

Airlines have an advantage in this respect, as they probably already know a lot about their customers through loyalty programmes and the nature of booking a flight. "This gives them the opportunity to engage the customer in ever more substantive ways as they expand their capacity for trip planning and trip sharing. They can use these advantages to build better content bridges, say,

between consuming travel content then booking flights, or flying then sharing travel experiences, or any other pair of stages in the cycle," says Girard. "Airlines have realised the efficiencies of driving traffic to their online booking engines. They can further build this traffic by leveraging their position as travel experts through not only seat sales and web specials but also through interactive, destination-related content in an editorial environment. British Airways' Metrotwin and Air Canada's enRouteonline are prime examples of this concept."

People power

Some airlines are already using social media to engage with their customers on the ground but Spafax says they could take it a lot further – using Facebook and Twitter on mobile devices to communicate with travellers, to recommend restaurants, or to encourage customers to form communities while on the aircraft. "Inflight AVOD systems already allow for this kind of community building – all that's required is a change in attitude among airlines that are afraid of losing control of the conversation," says Girard.

"They lost control a long time ago," says David Meerman Scott, author of the marketing blog Web Ink Now. "And that's a good thing. It means companies are now free to harness the power of the world to get their message out – meaning getting consumers to do the work for them."

"We're currently experiencing a convergence of factors that will see a complete rethinking of IFE over the next few years. Substantial changes to the economy, advertising, media, content, the advent of social media and user generated content – not to mention the advent of inflight broadband – mean exciting times for airline media, marketing and IFE," says McBain. "But no matter the medium, there's one thing brands will always need – content that's fresh, relevant and, above all, engaging."

Niall McBain
+44 207 906 2001
nmcbain@spafax.com
Reader Enquiry No. 502

01



futureproof

The investment bank Morgan Stanley recently ran a report prepared by a teenage intern on the media and entertainment habits of his generation. The gist of the thesis was that what young people today value above all else is 'free stuff'. Free music, advert-free TV, no pay channels and pirated content where possible.

"As a sign of things to come, these trends spell trouble for most commercial media in the wider world," says Stuart McGeachin, creative director at Phantom Media, an IFE content provider. "Some patterns, even beyond the reticence to pay up, are predictable – an inclination to reschedule broadcast media to suit their timetables, an active resistance to advertising of any kind, and a total lack of interest in newspapers and magazines."

But the picture is not all gloomy: "Young consumers will still pay the quite hefty price of a cinema ticket, for example," says McGeachin. "Most notably they love to interact, with console games or preferably with real people, online via social networking sites. For the forward-thinking IFE planner this suggests that tomorrow's passenger is no passive media consumer, but a techno-literate, hands-on media user – a creator, commentator and competitor. The media itself needs to change to meet his needs, and it will. Advertising in old-style linear media will mutate, lurking undercover as product placement, while immersive games and other wholly interactive experiences flourish."

McGeachin believes this could have a positive effect for airlines. "Newspapers and magazines,

while valued today, are heavy in weight and heavy on crew's time. Spot advertising has never significantly supported electronic IFE, so would barely be missed, and some would migrate from redundant print products in time. The reluctance to pay for IFE is something we're historically used to, and customers will still want those blockbuster movies," he says. "How IFE is made available, and how the passenger interacts with the platform will be key."

Phantom Media is bringing in IFE innovations to prepare airlines for that customer. It is introducing media products and applications this year, not only for its own PC-standard bluebox systems, but for any others that can support them. These applications include cabin-networked, gamepad-driven platform games; seat-to-seat Skype; live updated video podcast news; multilingual audio podcasts; interactive e-mags and brochures; and (most critically, says McGeachin) device-loaded online tools for systems linked to the current crop of onboard connectivity providers. These range from bespoke 'browse-offline-buy-online' retail sales to concierge services, ticketing and more.

Then there are the new device-independent applications. Phantom Media is introducing applications delivered from digital servers on board to passengers' laptops, smartphones and PDAs. "This is already a whole market-in-waiting among non-IFE equipped low-cost and short-haul operators, and must be the low-emission, low-fuel cost ideal for many a full service operator too," says McGeachin.

01. Phantom Media's new crop of IFE applications includes connectivity tools

A new approach to IFE content is needed to excite and engage the next generation of consumers

Stuart McGeachin
+44 207 886 8370
stuart.mcgeachin@phantommedia.net
Reader Enquiry No. 503



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www.phantommedia.net

tel +44 207 886 8370

info@phantommedia.net



refreshstart

With 25 years experience in servicing aircraft interiors, the decision by UK-based Airline Services Limited (ASL) to move into the in-flight entertainment (IFE) market may be surprising to some but closer inspection reveals a company aiming to bring strong values of reliability and customer service to an area which has so often been driven by technological advances.

The company launched its ASL 175 AeroScreen, a 17.5in LCD high-definition (HD)-ready monitor, designed and developed by its own in-house engineering team, at Aircraft Interiors Expo in Hamburg in April, coinciding with the unit's debut just a few weeks earlier on board an Astraeus Boeing 757 flying on behalf of bmi. The company reports that so far the monitor has received a terrific response from passengers and crew alike with no technical faults to date.

The AeroScreen is the first in a series of new IFE products being developed by the company for the retrofit market with the mantra "lighter, brighter, faster". The company says its AeroScreens offer

improved reliability, reduced weight and lower energy consumption, whilst delivering a screen image of remarkable clarity and brightness – all at highly competitive pricing. The screens also boast a viewing angle in excess of 160° horizontal and 130° vertical. The HD-ready screens are compatible with all input formats including PAL, NTSC and SECAM and video inputs from composite to RGB and S-VHS. AeroScreen conforms to the latest D160 standards.

The 17.5in screen is currently available for centre-aisle installation with a fully approved automatic retraction mechanism, or as a bulkhead-mounted unit, also with an approved mount. Further versions available from next year include a 10in retractable overhead bin system, plus seatback and in-arm mounted versions.

ASL is also offering a new distributive digital audio and video content delivery unit, AeroStream. This compact, digital, multi-channel device is designed as a new-generation replacement for heavy and outdated legacy systems. Planned for

A new entrant to the IFE market believes the economic downturn will see increased demand for its retrofit solutions

01-02. ASL 175 AeroScreens
03. The StarStream moving map application



launch in the first quarter of 2010, the AeroStream system will feature a touch-screen cabin control interface for use by cabin crew. Each unit will deliver broadcast/distributive content across six video and 12 audio channels – additional units can be added to increase the number of channels. AeroStream has been designed with space, weight, cost and energy saving in mind, and the company bills it as “offering the speed, clarity and flexibility of a digital delivery system with improved reliability”. It will come with ASL’s own moving map application StarStream, bringing satellite-enhanced imagery in a range of visual configurations including a head-up display perspective, and will interface with existing monitors as well as ASL AeroScreens. At a later stage ASL will offer an enhanced AeroStream model capable of delivering full audio/video on demand (AVOD) either to existing seat screens or in conjunction with ASL’s planned seatback-mounted AeroScreens.

All ASL’s products are backed-up by a warranty and full in-house capabilities for workshop and on-wing maintenance and repair, as well as technical and engineering assistance via ASL’s EASA Part 145 and Part 21 approvals.

“Following research carried out by ASL into the IFE market, we saw an opportunity to develop a new range of IFE products tailored to the demands of modern airlines with particular emphasis on the retrofit market,” says Bryan Bodek, CEO of Airline Services Group. “It is an exciting new field in which to put to good use the experience and skills of our engineering team, adapting the latest, proven developments from the world of consumer electronics and combining them with our long-standing experience as a service provider in the aircraft interiors business.”

The company identified several key factors that shaped the way it approached its product and service offerings.

“Firstly, as a result of the global economic downturn many airlines are deferring delivery of new aircraft or cancelling orders altogether. At the same time, the long awaited new generation of long-haul aircraft, such as the B787, are facing lengthy launch delays. All over the world, airlines are faced with the difficult challenge of operating older aircraft fitted with outdated, legacy IFE systems for longer than had originally been planned,” says Bodek. “In many cases this will



04. ASL's booth at this year's Aircraft Interiors Expo in Hamburg

inevitably involve improving, refreshing or upgrading the onboard offering to meet modern passenger expectations, but a lot of airlines are extremely cost conscious, not wanting to spend vast sums of money which simply won't be recovered in the remaining lease or operating period of the aircraft. Our products are aimed squarely at this highly cost-conscious retrofit market."

Secondly, the rising cost of fuel has put weight saving high on the agenda again. "Modern LCD monitors and digital servers offer significant weight saving against legacy CRT-driven monitors and multiple tape or DVD player arrangements, strengthening the economic argument to replace them, even in a downturn, as a cost-saving measure," says Bodek.

Thirdly, ASL recognised an opportunity for a company well versed in customer service and support. "In-service reliability and after-sales service have proved to be a major headache for airlines and OEMs. Although reliability and in-service support is improving, the increasing complexity in each new generation of IFE systems also increases the risks and consequences of in-service failures," says Bodek. "ASL is a service-orientated company, these are the origins and values that have made us successful and these attributes will be heavily emphasised in our IFE offerings."

Customers buying ASL products will receive full engineering, field, on-wing and workshop support from the company's own in-house functions, headquartered in Manchester, in the

UK. ASL's sister company, Airline Services Technics Limited (AST) already provides full on-wing support for existing IFE systems from its Heathrow Airport facility and at other locations worldwide. "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 systems and will allow us to hit the ground running as our products enter service," says Simon Sixsmith, ASL's director of engineering.

ASL performs engineering, design and workshop activities at its Manchester facilities, holding EASA Part 145 approval for the repair and overhaul of avionics, galley and IFE equipment along with EASA Part 21 J Design and G Manufacture approvals. ASL also has a soft furnishings division specialising in the design, manufacture, supply, fit and care of seat covers, curtains and other accessories in both high volume and smaller bespoke quantities, and is one of the UK's biggest providers of aircraft ramp operations (de-icing, interior and exterior cleaning, carpet fitting, presentation and laundry services), with facilities at nine UK airports.

"We predict an increase in retrofit activity but with a strong emphasis on value for money, weight saving and in-service reliability," says Bodek. "We believe the downturn in the airline industry has increased the argument for simpler, more reliable and cost-effective solutions for onboard passenger entertainment in certain areas of the market and we have positioned our products accordingly."

Dan Hepworth
+44 161 495 6951
sales@airline-services.com
Reader Enquiry No. 504



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safetyfirst

The pre-flight safety announcement is a necessity in air travel – its purpose being to demonstrate procedures and reassure passengers that safety is the highest priority on board the aircraft. The announcement was traditionally performed live by the cabin crew routinely at the start of every flight. However the repetitive performances coupled with the need to engage customer interest in the message led to ad-libbing by some cabin crew, which in some cases was actively encouraged by marketing departments. Well-known examples include: “There may be 50 ways to leave your lover, but there are only four ways out of this aircraft” and “In the event that our flight should unexpectedly become a cruise, you will find that your seat cushion may be used as a flotation device, and as you kick and paddle your way to the nearest beach you can rest assured that your flight crew will be following close behind you, bringing the peanuts and alcohol”.

“While these may be amusing, giving the crew the option of ad-libbing live does not always hit the spot and can unnerve some of the more sensitive passengers,” says Richard Barsby,

managing director of Skyline IFE, which has its own animation studio dedicated to producing high-quality airline safety videos in CG (computer generated 2D imagery). “Enter the safety video, a pre-recorded video announcement that can be reproduced in exactly the same way, every single time. No more bored-looking crew performing the demonstration or thinking up ways to relieve the monotony with some successful and some not so successful attempts to add light relief to the recital.”

There have been many different takes on the safety message within the video format. The clip from Virgin Atlantic is well known for its wild and wacky portrayal, Delta has the finger-wagging hostess, Norwegian some gentle humour between a mother and her son (pictured above), and for Air New Zealand, the cabin crew demonstrate the procedures wearing nothing but body paint.

“Whatever the idea, producing a safety video guarantees that the original concept created by the safety and marketing departments is reproduced exactly as intended, every time,” says Barsby.

The pre-flight safety message needs to grab attention without unsettling passengers

Richard Barsby
+44 144 971 1011
RichardB@skyline-ife.co.uk
Reader Enquiry No. 505



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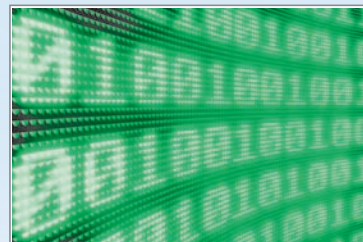
Looking for a company to take care of your IFE programming? Our licensing division has access to the latest and most popular content from a global network of film, television and audio distributors. We also offer European movies from our own stable of producers, with full edit rights and very flexible licensing terms.

Production »



Need a new Safety Video? Our animation studio boasts Hollywood CG talent. You will be amazed at what we can achieve on your budget. On a musical note, give your passengers the comfort of their homegrown tunes and the excitement of an international music mix from our audio production team.

Laboratories »



Our FACT accredited film and video laboratories produce all analogue and digital media formats, including approved Mpeg4 video files now flying on customers' aircraft worldwide. Our IFE subtitling software was designed and built in house to ensure razor sharp and stable subtitles in any language or picture format.

Management »



Whether you need one Hi8 tape for one aircraft or you have a mixed fleet of multi-language multi-platform digital and analogue systems, Skyline can help you create and deliver your entire IFE product the way you want it, at prices that won't break your budget. For an independent view of your needs, call us today.



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newplayer

Zodiac Aerospace has developed a new AVOD IFE system – SiT (Seat integrated Technology), designed to meet airlines' needs for reliability, reduced weight and low cost. The company says that because of its relatively simple architecture, SiT is able to reduce weight by 50% and make considerable cost savings on most aircraft platforms.

At the heart of the SiT concept is the Smart Display Unit (SDU), a powerful computer embedded in each seat, containing all the multimedia files (up to 250GB) and replacing central servers. The SDU is an autonomous display that increases system capabilities for 3D video games and animated or 3D graphical user interface (GUI) solutions, but is also designed to speed up access to content.

Copper cables remain for in-seat connections only, while the system backbone is designed with multimode optical fibres. This allows Ethernet high-speed (1GB/s) communication, which the company says reduces weight and simplifies raceway integration.

In-seat boxes including power conversion and network connections (for up to four SDUs) are daisy chained by optical fibres without row number limitations. With this design, no under-floor data equipment is necessary – simplifying aircraft installation.

To ensure reliability, Zodiac Aerospace has built in a high degree of redundancy. It says that no negative effects will be noticed by passengers even if 75% of all SDU storage devices crash in the

cabin. Even if several in-seat boxes are inoperative, the entire optical backbone will remain functional.

Zodiac Aerospace currently offers a 10in touch-screen SDU (16:9) that is compatible with all standard integrations (in-arm video, tilt, or fixed to the backshell), as well as 15in and 7in (16:9) touch-screen versions.

The SiT system provides the passenger with functionalities including films and music on demand, 3D and 2D games (single or multiplayer), text news, HTML navigator, and power supply connectivity for USB devices. To complete this offer, the system can interface with digital air map solutions, in-seat power supply systems, and satellite connection for access to the internet, email and live TV.

Content is refreshed simultaneously on all SDUs through a centralised access point, designed to limit human operation time on board. SiT's content protection is approved by major American film studios such as Walt Disney, Fox and Universal.

Zodiac Aerospace says that SiT is a fully embedded solution that is compatible with both narrow-body and wide-body aircraft, as well as regional jets. On the wide-body platform the system can also be used for cabin management applications such as calling a flight attendant and controlling reading lights.

The system has already secured its first customer – Royal Jordanian. The airline will incorporate the system in economy and business class across its A340 fleet.

Zodiac Aerospace has branched into the IFE market with a brand new AVOD system

Loïc Bouet
+33 672 727 776
Loic.Bouet@zodiac aerospace.com

Jérôme Marquet
+33 678 851 720
Jerome.Marquet@zodiac aerospace.com
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great expectations

IFE systems have come a long way since those old 16mm projectors, and the arrival in the mid-1990s of digital audio/video on demand (AVOD) heralded a brave new world.

"The trouble is that the industry hasn't moved on much over the past 10 years, and a few movies, some TV and music are now no longer good enough for the tech-hungry, media-savvy consumer of today and (far less!) of tomorrow," says Rick Stuart, managing director of Bluebox Avionics. "The 'Gamepad Generation' (Generation XYZ, perhaps?) has come of age. These people are now the airborne majority, not a minority to be seen off with low-tech games dating from, in ever more cases, their parents' day. This maturing audience demands and expects immediacy in its entertainment – whether that's traditional IFE content or more exotic online infotainment."

Stuart says that with consumer choice on the ground ever expanding, passengers' expectations of IFE are also rocketing, but airlines can also benefit from the technological developments that are driving demand: "The competitive zeal of electronics manufacturers to converge and miniaturise has seen phones, media players, computers, games consoles and satnavs all start to homogenise into a single device – a kind of digital Swiss army knife! There can be no environment where such a compact miracle brings such benefits than an aircraft cabin, where the need to hold the attention of hundreds of bored and restless souls conflicts with

restrictions on weight, space and power never faced on the ground," he says. "Yet fitted IFE systems remain as heavy, bulky and power hungry a 'solution' as you could ever dream of."

Four years ago, the technology and media specialists at Bluebox Avionics set out to define what their ideal IFE system would be like. Firstly, they decided it should be decoupled from critical aircraft systems to help on certification cost and timeline processes. It also needed to be ultra-lightweight, operating without cabling in a WiFi network to aid fuel efficiency and help reduce emissions. They realised it should offer a negligible cost of ownership over its lifecycle, to cut down on obsolescence and help to justify a sustainable upgrade path. To increase operational flexibility, the system needed to be easy to upgrade, with core components that could be moved from aircraft to aircraft easily. The team also decided that seat-centred storage was preferable to centralised servers, as they believed this would improve operational reliability and make it easier to rectify failures in flight. The system also needed to support high-definition resolutions, multiple file formats and closed captions – in the world beyond the cabin these features have become basics, not extras. Finally, content loading should be possible on the ground and in the air, wirelessly.

The end result – the wireless, fully controlled, streaming, internet-connected AVOD IFE system bluebox – took flight in September 2008.

Bluebox Avionics looked to consumer trends when developing its AVOD IFE system

Rick Stuart
+44 207 886 8370
rick@blueboxavionics.com
Reader Enquiry No. 507

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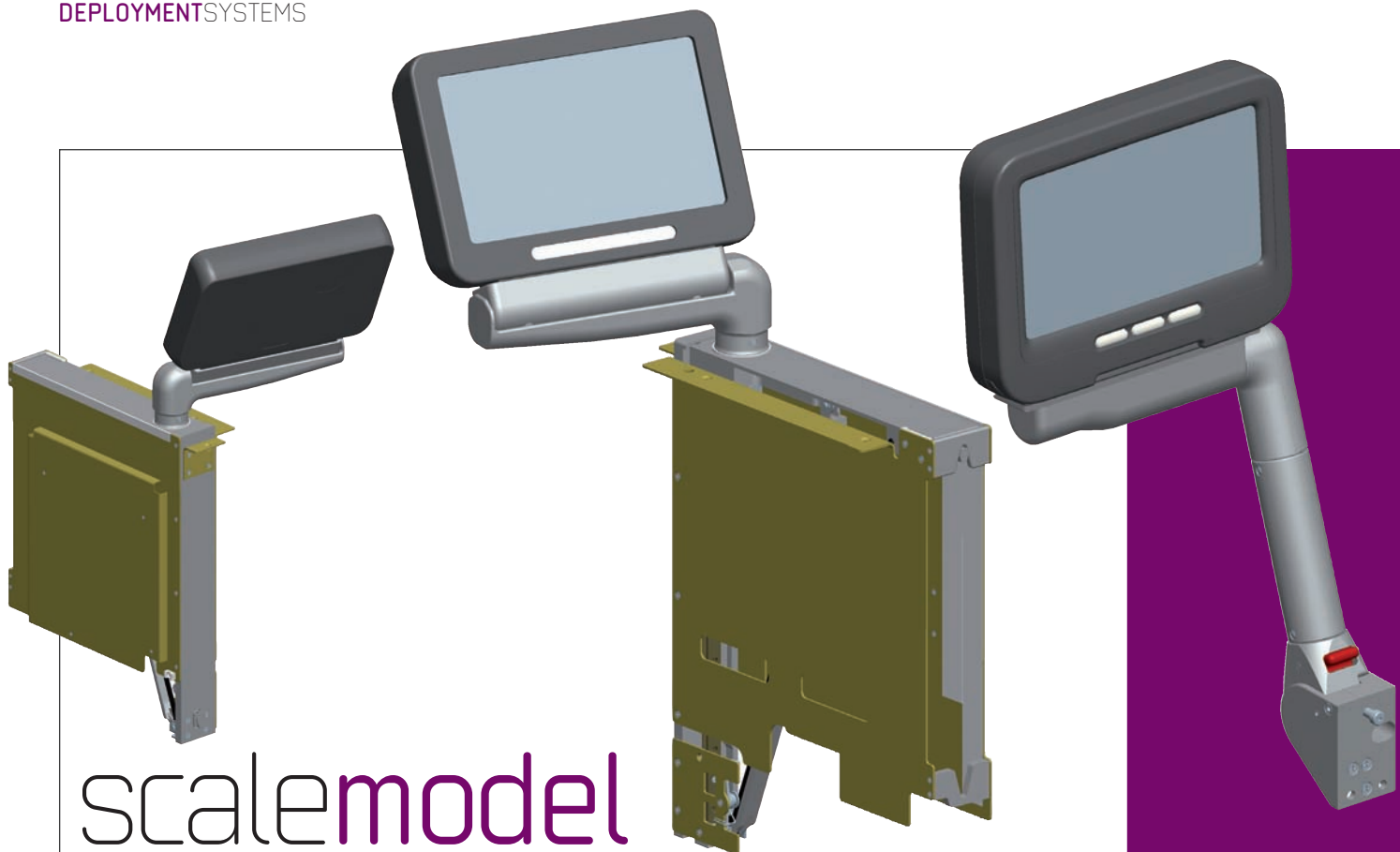
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 **bluebox. IFE evolved.**



scalemodel

Bucher Aerospace Corporation's video deployment systems can be found all over the world in economy, premium economy, business and first-class seating solutions from almost all the major seat manufacturers. A multitude of custom variations has been developed from the array of standard styles on offer, the two most popular of which are the in-arm pop-up and the front-row deployment systems.

Both systems have been developed in recent years to accommodate the latest smart monitors and large-diameter wire harnesses. The pop-up unit's design has been updated to accommodate the cooling requirements of these newer IFE systems, while the front-row units have developed into a second-generation tube-style system. "Elegant, compact, lightweight, robust, reliable and service proven, these units form readily customisable solutions for the aircraft seating industry," says India Rochel, head of product support at Bucher Aerospace.

As the air travel industry becomes increasingly competitive, airlines are continually striving for unique interior design solutions to differentiate their services. In this market scenario, Bucher Aerospace reports that it constantly receives requests for unique video deployment solutions to address seat manufacturers' challenges. "Although this would seem to, and often does, drive ground-up design efforts, there is another approach that can be taken," says Rochel. "Bucher Aerospace is able to identify the commonalities between its customers' challenges and address these overlapping, constantly changing sets of requirements by

offering modular, scalable solutions. These deliver what's needed fast, while maintaining the high standards of quality, functionality and reliability that Bucher's customers have come to expect."

Two common challenges are the need for highly efficient use of space in seat consoles, and providing passengers in the front row with similar video offerings to the passengers with seatback-mounted screens. The pop-up deployment system and the tube-style front row video offer scalable solutions to address these respective issues.

To bring the commonality theme a step further, both units are designed for user-friendliness. By simply pressing down on the top of the monitor, the pop-up system's push-to-unlock feature disengages and the screen smoothly and vertically deploys from the furniture or console. Similarly, at the touch of a lever, the tube-style unit springs gently forward from its stowed position under the front of the seat arm. In each case, the user can then rotate and tilt the screen to the optimal viewing position and enjoy the IFE. Push down once more and the video screen is stowed and locked with similar ease.

With thousands of deployment units in use by multiple airlines, Bucher Aerospace credits the success of these two systems to careful design, attention to detail, effective communication with customers and suppliers, and extensive testing. "Both units are reliable (35,000 cycle-tested), rugged (SAE ARP 5475 compliant) and of high quality," says Rochel. "These modular IFE deployment systems (true line-replaceable units) allow seat manufacturers to concentrate on what they do best – design and build seats."

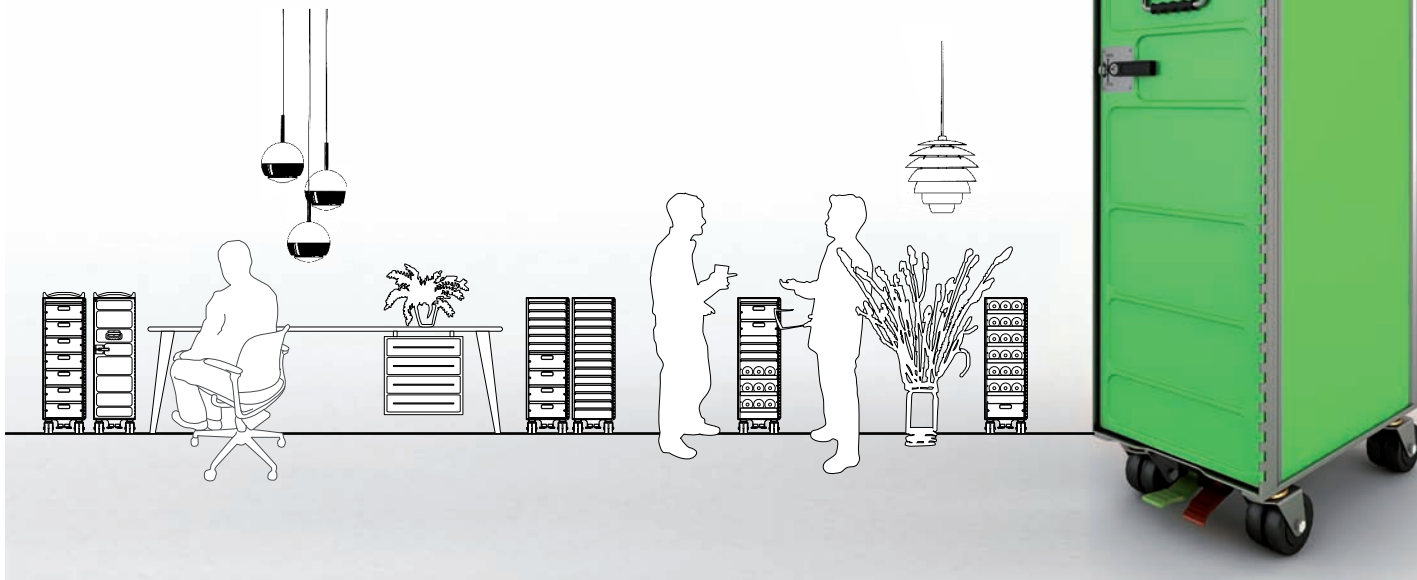
Modular, scalable video deployment solutions can save time over designing from scratch

India Rochel
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iro@bucheraero.com
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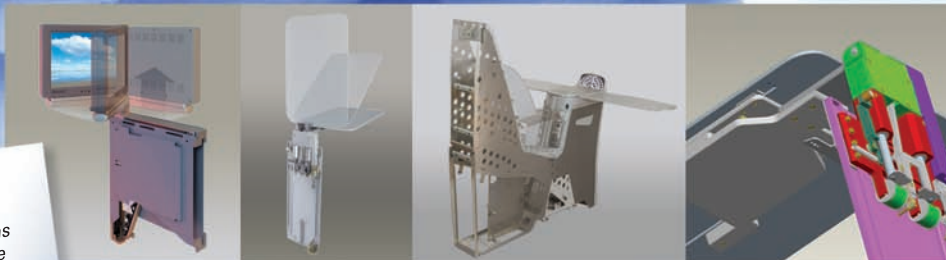
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from the ground up

VT Miltope is enabling networking architectures and products to move from the ground to the aircraft by championing the development of aviation standards and using a building block approach for aircraft networks.

"Networking technology has certainly changed how we communicate for both personal and business purposes. It's hard to keep pace with the rapidly evolving technology and our ever-expanding appetite for higher data rates, data storage and processing speed," says Robert Guidetti, vice president, commercial products at VT Miltope. "Ethernet, USB, Internet Protocol (IP) and modular network building blocks are the cornerstones of office networks."

Guidetti says the difference between networks on the ground and those on aircraft, however, is that corporate IT networks enjoy the benefit of established industry standards and common practices that provide a scalable, interchangeable and upgradeable design. "Historically, aircraft network systems developed by a single supplier were designed for a specific function based on custom specifications. These single-purpose systems were often proprietary, non-standard solutions requiring a fixed configuration. This may work well for flight deck avionics, but is

fundamentally opposite in design, administration and maintenance to the scalable, open network architecture of today's office communication systems," says Guidetti.

VT Miltope says that standardised packaging, electrical interfaces, software services and protocols would allow the aviation industry to design and tailor their networks in a manner similar to office networks. "This approach offers both airlines and business jet operators greater freedom of choice in aircraft network solutions," says Guidetti. "Even across mixed fleet types, networks can be tailored to the operational needs of the carrier as well as the entertainment and communication services required by passengers. Once integrated, these network products are managed using accepted commercial network approaches already in place at most airline or business jet corporate IT organisations, which results in lower training costs."

Standardised tray wiring and connector index keying enable system integrators and airframe manufacturers to define the space needed for network components before the operational requirements have been finalised. This approach creates the airborne equivalent of the standardised equipment racks used in corporate

VT Miltope is aiming to transplant proven IT network technology from the ground to the aircraft

- 01. Remote Ethernet Switch (RES)
- 02. nMAP 802.11n access point
- 03. Network Server Unit (NSU)
- 04. nPrinter



IT data centres. To support this strategy, VT Miltope has developed a family of airborne network products in standard packaging and tray wiring specifications such as specified in ARINC 763 and ARINC 600. "Once integrated, these products form a network that optimises the combination of interfaces and computing resources to meet the spatial, operational, and functional requirements of desired services," says Guidetti.

VT Miltope says the basic hardware building blocks for an aviation network are no different than those commonly used in small offices. The basic hardware needed consists of servers (NSU, CRU); Ethernet switches (ESU, RES); access points (nMAP); wireless bridges (TWLU); network printers (nPrinter); network attached storage (NAS); and a network interface or control panel (NCP). At the core of any network is a server which runs the network middleware and applications required to enable the services.

Networks do not run on hardware alone. Middleware and software applications running on servers are essential to facilitate the wide array of services now demanded by passengers, flight

and cabin crews, maintenance, operational personnel and data centres. "Ongoing support of these applications is necessary as periodical upgrades for improved security, enhancements, or improvements are normal," says Guidetti.

VT Miltope's integrated airborne network solutions are designed to support communication services such as air-to-ground telephony, internet and email; IFE content provisioning such as gaming, music, internet protocol television (IPTV) and IFE content updates; flight crew support of electronic flight bag (EFB), portable sales terminals, and electronic log books; and operations and maintenance support for such services as electronic aircraft manual, cabin inventory management, centralised maintenance and remote network management.

To build integrated wired and wireless networks, VT Miltope offers networking solutions using standardised hardware and software building blocks. With over 30 years of experience developing and manufacturing computers and networking products for flight decks and cabins, VT Miltope says it is well placed to achieve scalable, interchangeable and upgradeable airborne networking solutions.

Robert Guidetti
+1 303 473 0388
RGuidetti@Miltope.com
Reader Enquiry No. 509

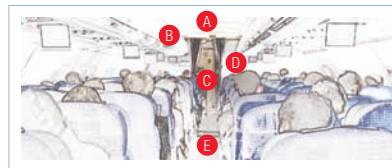
CAN YOU FIND VT MILTOPE IN THIS PICTURE?



[Scalable — Upgradable — Interchangeable]

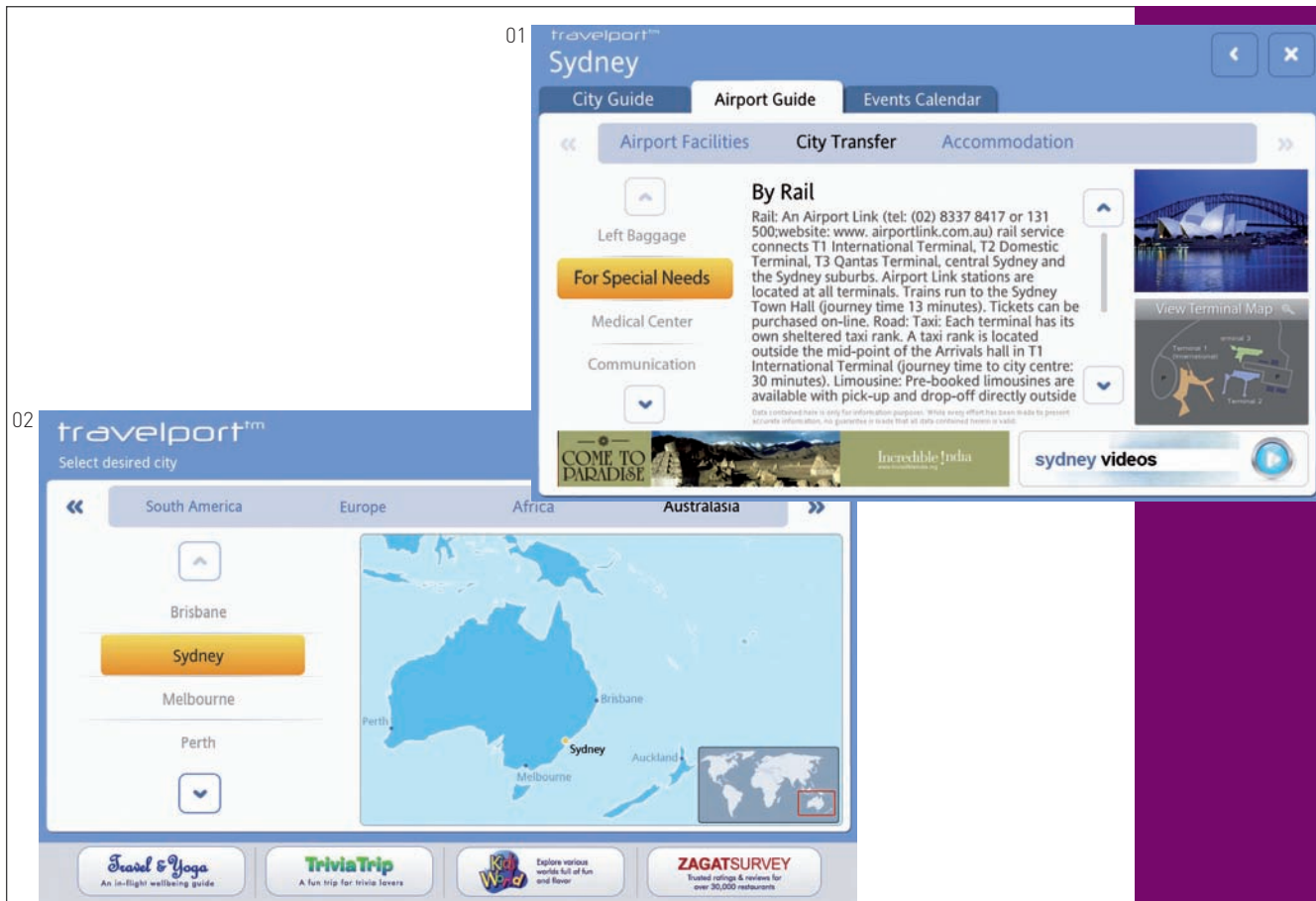
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- A Multi-Function Access Point (above ceiling)
- B Telephony Server (in overhead compartment)
- C n Printer (on flight deck)
- D Network Control Panel (in galley)
- E Network Server, Ethernet Switch and Application Server (in electronics bay)





fullyloaded

IFE specialist Western Outdoor Interactive (WOI) is aiming to keep airlines, advertisers and passengers happy, all while doing the right thing for the environment, with two new offerings – travelport and Seat Pocket.

Customised portal

Designed in collaboration with leading content providers, travelport is an IFE portal packed with ready-to-use and customised content, specific to each airline’s geographic region.

Highlights from travelport’s off-the-shelf menu include an IFE browser-compatible version of the Zagat Survey, which provides hotel and restaurant reviews; destination guides by World Travel Guides, which lists current information on visa regulations, public holidays, duty-free allowances, exchange rates, local cuisine and more for every country in the world; and Kids World, an interactive children’s programme. For health-conscious passengers the portal even offers a Travel & Yoga application that features body and breathing exercises to keep travellers comfortable on long flights.

Through its customised content offerings, travelport allows airlines to promote travel destinations, products and services from their associates, while generating revenue through advertisements. Hotels, resorts, national tourism boards, rental services, leisure travel services and other affiliated partners have a captive audience to exhibit their products to, while the income generated through advertisements can help to offset IFE costs. Promotional material is positioned intelligently, to ensure that the passengers only see relevant information in a way that is visually pleasing and relatively unobtrusive. In addition, travelport can be customised to reflect airline branding.

Paper-free cabin

WOI’s other recent offering is Seat Pocket, designed to ease the load on the environment and airline staff by transferring the information usually conveyed via printed material in the seat pocket to digital versions on the IFE system. “With an average of 1.5kg of paper per seat pocket and 200 seats, airlines carry at least 300kg of

Airlines can save weight and please passengers by integrating everything onto the IFE system

01-02. The travelport IFE portal
03. Onboard menus can be integrated onto the IFE system via Seat Pocket



paper per flight, which is estimated to be 0.1-0.2% of the total flight weight," says Sumedha Binaykia, general manager of WOI's business department. "In this time of heightened environmental consciousness and global economic slowdown, airlines are looking to reduce printing costs as well as their carbon footprint by switching to Seat Pocket."

Through Seat Pocket, duty-free shopping, past and present editions of the airline magazine, the airline catalogue and safety information and videos are all available on demand at the push of

a button. Passengers can browse inflight menus on their screen, and even order their meal from it. WOI says Seat Pocket can also trim down cabin crew duties, printing costs and extra weight (and consequently help to improve fuel efficiency), while giving airline brand managers a powerful talking point to grow their business. Another advantage of the offering is that information can be updated quickly.

WOI has been designing interactive software applications, games and content for IFE, system integration services, cabin and ground applications and update services for airlines and system providers since 1996, with its designs appreciated by over 50 airlines for over a decade. WOI has also been working in partnership with IFE hardware provider Panasonic for the last 12 years, and Thales for the last five. The company is dedicated to IFE, and offers turnkey solutions for games and unique content applications as well as customised airline applications.

"With travelport's all-round utility and Seat Pocket's environmentally and economically conscious service, WOI demonstrates how easy it is for airlines to trim costs and deliver value," says Binaykia.

Sumedha Binaykia
+91 226 680 1515
sumedha.binaykia@w-o-i.com
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HOW DID YOU FIRST GET INTO IFE? I first got involved in IFE when I was appointed product management director, intercontinental services, for Lufthansa in 1996, back when the first interactive systems were in their infancy. My appointment as vice-president product management and innovation in 2007 coincided with the end of the cycle where we retrofitted all our aircraft with our new business-class seat and a new IFE system. Of course all of us within the airline industry are frequent travellers and as a result we all have experiences that help when starting in a new job like mine.

WHAT NEW FEATURES HAVE YOU RECENTLY ADDED TO YOUR IFE? After concentrating on innovations for our international business class over the past few years, we have recently completed the integration of individual in-seat screens in economy class on our entire Airbus A330/A340 fleet. And with the introduction of the A380 we plan to enhance the passengers' IFE experience even further.

HOW DOES LUFTHANSA KEEP TRACK OF WHAT PASSENGERS ARE WATCHING? Of course we do not actually 'track' individual passengers but we do carry out a lot of surveys and studies to discover how to improve our IFE service even more. For the future, we believe e-learning modules will become more important, and it's also interesting to note how popular cartoons and games are with passengers from all age groups.

HOW DO YOU CATER TO THE NEEDS OF DIFFERENT PASSENGERS? We listen very carefully to customer feedback and we also rely on the experience of our in-house team, which works day-to-day on the content of our IFE – news, info trailers, music programmes by special DJs, etc. Content selection takes into consideration the cultural diversity of our customers, but not just in terms of the languages available. Since we switched to AVOD, we are able to customise more content according to the demographics of our customers on specific routes, helping us to decide on language and content selection. For example, for kids, we complement our ground and catering services with special movies, cartoons and games.

WHAT ARE YOUR VIEWS ON ALLOWING PASSENGERS TO USE MOBILE PHONES ON BOARD? We feel an onboard internet solution is much more suitable than a service to enable mobile phone voice calls. Especially when other passengers might get disturbed. As a large international carrier that flies through various time zones, Lufthansa naturally has a different set of priorities from continental carriers.

ANY PLANS TO RESURRECT LUFTHANSA'S ONBOARD INTERNET SERVICE? Our previous Connexion by Boeing-delivered onboard internet service was very successful when introduced, as it opened a totally new world of communication for passengers. Unfortunately at the time it didn't pay off for the provider. At Lufthansa, we strive to stay innovative and work continuously to find new solutions for passengers. I hope we can get back to the community with some positive news very soon.

Q&A

Christian Köerfgen, Lufthansa's recently appointed vice-president of product management and innovation, says the airline continues to seek a replacement for its now ceased Connexion by Boeing onboard internet service.



christianköerfgen

WHAT CHALLENGES LIE AHEAD? The next two years will be particularly challenging for us as we are taking delivery of our first Airbus A380s featuring a totally new first class; and just a year later the new Boeing 747-8 is scheduled for delivery. As the launch customer for this aircraft we are already looking into new innovations, particularly in business class.

WHAT NEW PRODUCTS OR TECHNOLOGIES ARE LIKELY TO HAVE THE GREATEST IMPACT ON IFE? Most innovations are likely to be focused on content developments. Behind the scenes, however, improvements regarding system modifications and maintenance are vital to reduce costs for airlines, as well as to improve overall reliability and turnaround times.

SHOULD PASSENGERS PAY FOR IFE? The more an airline can provide individual solutions to its passengers, the more likely it will become that passengers will be prepared to pay for certain services. But I can reassure you that there are currently no plans for charges on board our aircraft. Never forget a good IFE offering is a major onboard comfort factor and is therefore essential for long-haul flights.

WHAT'S WRONG WITH A GOOD BOOK?! Absolutely nothing – books were the first 'IFE' available on aircraft! Ultimately frequent fliers crave variety, from the ready installed IFE system through to their own personal media player, book or magazine.

What's your favourite?

- 1. FAVE FILM?** 'Diva' directed by Jean-Jacques Beineix.
- 2. FAVE ACTOR OR ACTRESS?** Moritz Bleibtreu and Penelope Cruz.
- 3. FAVE DIRECTOR?** Andrea Camellieri.
- 4. FAVE ALBUM?** 'Songstress' by Anita Baker.

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Greg Askelson, Koito Product Support North America

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