The number of ancillary revenue products has been steadily increasing. Charles Williams examines the technologies and hardware that is stimulating this development, and the economic impetus airlines are experiencing to drive this development.

Hardware for growing ancillary revenue streams

Growth and development of ancillary revenues is one of the largest and most important revolutions in the airline industry. The importance of ancillary revenues has gone from accounting for a small percentage of total revenue, to an essential element for survival, illustrated by the International Air Transport Association's (IATA's) projection of annual global airline industry profits of $36 billion, versus revenues from ancillary products of $50 billion. And, revenues from ancillary products are growing at up to 20% per year.

The scale, volume and importance of ancillary revenues cannot be ignored. This has been triggered by the increased variety and level of technology and hardware available to generate revenues from passengers, combined with increasing passenger expectations.

Airline revenues

Ancillary revenue products remained a minor issue for airlines for several decades due to immaturity of available delivery technology. Airlines were limited to sales of duty free items on international flights, with limited quantities of physical stock being carried on board. These were, and in many cases still are, advertised via the airline's in-flight magazine. Passengers paid with cash or credit card. Credit card transactions were either handwritten on carbon ply forms or carried out on portable point of sale (PoS) machines. Actual completion of transactions had to be made several hours after landing by phoning or transmitting transaction data to credit card companies. This delay left airlines vulnerable to fraud. This is one factor that has restricted airlines to only making cheap items available for sale in the passenger cabin.

Few other ancillary revenue products have been available to airlines in the past.

In the 1990s some early generation satellite-based, in-flight phone systems were available for a few years. The system relied on a dedicated satellite communication (satcom) system installed on aircraft, and seatback phone handsets. Payment for the service was with credit card or cash. Service quality was limited, and uptake by passengers was low for the few airlines that adopted them.

Not only were airlines limited by the range of ancillary products offered in the air, but also by the small number of products available on the ground, usually only to premium cabin passengers in business-class lounges.

The change in ancillary revenue products, or the catalyst to expand scope and application, came with the arrival of low-cost carriers (LCCs) in the mid and late 1990s, triggered by the advent of the internet, which made it possible to achieve high volume direct sales to passengers at low cost. The fast growth in number, size and market presence of LCCs rapidly increased pressure on traditional, full-service and flag carrier airlines. The overall long-term effect has been a significant dilution of passenger fares and net yields, and an accelerated decline in unit revenues. This has only been partially offset by a change in revenue management (RM) strategies, and an overall change to higher passenger load factors to partially compensate.

The initial steps to today's wide and varied portfolio of ancillary revenue products, and the expanded techniques to generate them, was stimulated by the fall in unit revenues per available seat-mile (RASM). This fall was faster and greater than the drop in unit cost of cents per available seat-mile (CASM) that many legacy and full-service airlines were able to achieve. Once increased, load factors have played a part in preventing a larger drop in RASM, and airlines have adopted cost reduction measures to reduce CASM; the only remaining option is to

supplement RASM from ticket sales with revenues from ancillary products and services. Revenues from on-board sales were 5-10%, but have risen to 15-20%.

LCCs have a natural CASM advantage over legacy airlines, which in some cases has been large enough for them to offer low fares that only provide the basic guarantee of an unspecified seat. LCCs have found new ways to charge for extras over and above the basic fare, such as: seat reservation; early boarding; exit row seats; and charging for luggage.

It is harder for traditional airlines to generate ancillary revenue, so they are using more subtle techniques.

Passenger yields and unit RASM from ticket sales have declined to the level where ancillary products and services are essential for all or most airlines to cover CASM and generate an operating profit.

Although new ancillary products were under development 10 years ago, the technology to make these easily and cheaply accessible to passengers was not available or sufficiently mature.

IFE system development

In parallel with the economic pressures caused by increased competition and lower yields and unit revenues, a core element of the expansion in ancillary revenue products has been the advance in in-flight entertainment (IFE) and cabin connectivity systems.

IFE systems have evolved from basic hardwired, seatback-screen embedded systems with limited content into two distinct groups, each with sub-categories.

Embedded IFE systems

The first category is embedded IFE systems, based on traditional IFE systems. These have larger screens with superior resolution, and more content as a result of higher-capacity servers. Hundreds, rather than dozens, of movies and audio

Airline apps, that can be hosted on all types of IFE systems and passenger PEDs, can be used to carry diverse information. This includes electronic boarding passes, flight status, access to the IFE system prior to check-in, and the ability to pre-order drinks and meals.

files can now be made available.

New-generation embedded systems also feature enhanced and improved moving map displays. While this has a simple entertainment and passenger interest value, they can also serve as a portal or entry to an ancillary product distribution channel.

New-generation moving maps are interactive geoentertainment devices that can offer thousands of customisable points of interest, including excursions, hotels, restaurants and many others. These are displayed on the moving map as the aircraft flies in proximity to the city or point of interest. The viewer can then search further into these points of interest. This technology serves as a powerful tool to drive ancillary revenues.

Additional technologies have added to functionality, sophistication and appeal of embedded IFE systems. These include larger and higher quality screens for premium passengers, dual remote or hand controls, and recent development of a docking port for a personal electronic device (PED) or smartphone that provides a datalink with the IFE system using a near field communication (NFC) reader that can be used for contactless card payments. This system started flying with airlines in December 2016.

Thales has recently developed a technology demonstrator premium-class seat that incorporates the PED docking port hardware. When combined with NFC, it will create several new ways to generate ancillary revenues, and enhance the passenger experience.

Hardware provider IFPL has developed the small NFC that is combined with an embedded IFE system, and located near the seatback screen in economy-class seats and in a variety of locations in premium-class seats. The NFC reader can be used for contactless, real-time credit card transactions of small- and medium-sized value. The further advantage of NFC is that it has the security of payment card industry (PCI) standards, and allows passengers to use digital banking and digital wallet systems, such as Apple Pay and PayPal. This reduces the number of fraudulent transactions, and so increases revenues earned from ancillary products. "An embedded IFE system with an NFC reader could have the added facility of using a card PIN number on screen. We are now developing this," says David Thomas, vice president of business development at IFPL.

Wireless IFE systems

The second category of IFE systems encompasses wireless systems. All wireless IFE systems use an in-cabin WiFi signal transmitted from wireless access points (WAPs) in the cabin, which transmit content from the server to the portable devices.

Wireless IFE systems can be sub-divided into those that view system and content via tablets provided by a carrier, and those that rely on passengers' PEDs. Wireless IFE systems have the attraction of incurring low capital and installation costs that are further reduced by use of PEDs. Wireless systems that combine with passengers' PEDs are dominating the market, proving particularly popular with short-haul LCCs and leisure airlines.

A wireless system with additional and enhanced capabilities for generating ancillary revenues is Immfly's cabin management system, which offers digital services. "The system is actually an in-flight, digital services wireless IFE system," says Jimmy Korff, co-founder and chief executive officer at Immfly. "It provides access to content through the airline's portal on passengers' PEDs. The passenger connects in the usual way to the IFE server. The server has all the possible types of content, such as visual and audio, TV shows, shopping, destination-related products, as well as shopping services that are integrated with major retailers that include Amazon and large supermarkets."

Immfly actively manages all aspects of the IFE system and the portal, including: synchronizing content updates; completing purchases and credit card transactions post-flight; and managing the airline portal. This means the airline does not have to perform any management functions. In return, Immfly offers airlines a range of business models that includes financing the system for a low-risk airline, in return for a share of revenues. Another option is for the airline to finance the system, with Immfly taking a smaller share of the revenue.

A further category of wireless IFE systems is portable IFE systems. These are provided by vendors, such as Lufthansa Systems, Bluebox Avionics, and Arconics.

Portable IFE systems are small and light, with the main unit weighing just 2Kg (4.4lbs). This is a box that holds the server, content and WiFi transmitter, and occupies a small space in an overhead bin. The WiFi transmission is provided by a mobile steering unit (MSU).

Portable IFE systems are the lowest capital cost IFE systems available, and are quick to install. The systems can serve up to 50 passengers simultaneously.

"Our portable IFE system, called 'Bluebox Wow', has content, such as advertising, simple catering for order, duty free items for sale, and other items that can be bought," says David Brown, business development director at Bluebox Avionics. "A portable system has the advantage of bringing a low-cost IFE system to charter and leisure airlines, and LCCs. It is a low-cost system that has the capability of providing entertainment and ancillary products for sale.

"It is certainly possible to have a digital payments capability for on-board sales using NFC readers with the system," continues Brown. "This would be possible via airline apps on the

passenger PEDs using digital banking and digital wallet payment systems. These payment methods require on-line connectivity, and so an external connectivity system. It is more of a challenge to do shopping using IFE systems when the aircraft only has an internal connectivity system."

Arconics has developed products to complement IFE systems, including the . cabin management app, which integrates communications with flight attendants. The cabin management app uses the aircraft WiFi network to connect flight attendants' devices to passengers' devices and to ensure a more responsive and efficient flight experience. A passenger will use a PED to order from the IFE menu, and the Arconics system will relay this to flight attendants' tablets for immediate processing. Arconics has extended this to the flight attendants' smartphones and smartwatches.

Airline apps

In parallel with development of IFE systems has come introduction of airline apps that can be hosted on all categories of IFE systems, as well as PEDs. Airline apps carry diverse information, including: flight schedules and status; electronic boarding passes; luggage tracking; information on connecting flights; and access to passenger frequent flyer account information. The more advanced airline apps allow passengers to browse content of the IFE system, including the shopping portal. This function can be used to reserve video and audio content, and pre-order meals and drinks before departure.

With this content and information hosted on airline apps, they are becoming a core tool for engaging passengers. This includes optimising journeys, as well as providing airlines with an ideal channel for maximising opportunities to generate ancillary revenues.

From a design and appearance point, airline apps will ideally look similar to the website and they will be associated with each other. The app also serves as an airline branding tool. An airline is also intended to make the passenger feel in control. The app can be used several days before departure, engaging a passenger from a journey's beginning to the end.

Besides basic functions, some airlines allow passengers to conclude booking upgrades, make IFE selections prior to flight, provide destination information, in-flight and on-board shopping, passenger feedback services, and even visa application services.

As an example of new technology enabling further ancillary revenue generation or enhancement of the passenger experience, the PED docking port combined with the NFC reader in the technology demonstrator seat built by Thales will allow passenger selections, which have been made via the app hosted on a PED, to be transferred to the IFE receiver in the seat. The passenger can make meal, drink and entertainment choices on the way to the airport via the airline app.

Ancillary products

While some airlines have persisted with the traditional on-board carts for selling a limited number of relatively low-price items in the passenger cabin, ancillary products and services have grown into seven or eight categories.

Connectivity

A third main factor in stimulating the development of ancillary products has been the adoption of internal and external connectivity systems for the passenger cabin.

Airlines choose between offering internal connectivity only, usually in the form of a WiFi network via WAPs in the cabin, or a combination of internal cabin connectivity and some form of external connectivity system.

An external connectivity system is either an air-to-ground (ATG) link that is only possible for overland operations, or a satcom system for operations in all global areas.

The prime ATG system for use over North America is Gogo's trans-continental network, based on 250 cellular transmitter towers that provide coverage. ATG1 was launched in 2008, but was superseded by ATG4 in 2012. The high demand for ATG1 led to the launch of ATG4, which has a downlink rate of 9.8 mega bits per second (Mbps). About 1,400 mainly US- and Canadian-registered aircraft have been equipped with ATG1, and 1,100 with ATG4.

Inmarsat has recently launched a European ATG service, known as the European Aviation Network (EAN). EAN will provide an ATG system across the 28 member states of the EU, provided by about 400 terrestrial cellular transmitters that are operated by Deutsche Telekom. These provide a data transmission rate of about 70Mbps.

The full EAN service also includes S-band satcom service to provide connectivity over the oceanic areas of the EU that include the Mediterranean and the Bay of Biscay. Inmarsat has been allocated a frequency spectrum on the S-band satellites.

Satcom systems are either Ku- or Ka-band services. Ku-band is the original high bandwidth satcom system for cabin systems, and is provided by Global Eagle Entertainment (GEE), Gogo, Panasonic, and Thales.

These providers use the services of several major satellite operators. GEE, Panasonic and Thales all provide a basic Ku-band service that has data download rates of 1-2 megabits per second (Mbps), while the latest generation satellites provide up to 10Mbps. Gogo provides a unique service called 2Ku-band, with a

IFE systems are growing in sophistication. Not only is the content held growing in size, but portable, small and lightweight systems are now in operation with all the technology and software for on-board shopping.

data download rates of up to 70Mbps.

Ka-band is a younger generation, higher bandwidth system. Inmarsat is the only satellite operator with global coverage of Ka-band satellites. Ka-band is available through distribution partners that include Honeywell, Rockwell Collins, SITA OnAir, and Thales. These satellites provide higher downlink rates of up to 5.0 Gigabits per second (Gbps).

Eutelsat and Viasat provide regional services. Viasat has three first-generation satellites that provide coverage for the North American continent, and these have a combined capacity of 149Gbps.

The second-generation Viasat satellites will have a total capacity of about 300Gbps that will provide coverage to part of the North Atlantic and Europe, as well as northern South America. The third-generation Viasat satellite, Viasat-3, will each have a capacity of 1.0 Terabit per second, equal to 1,000Gbps.
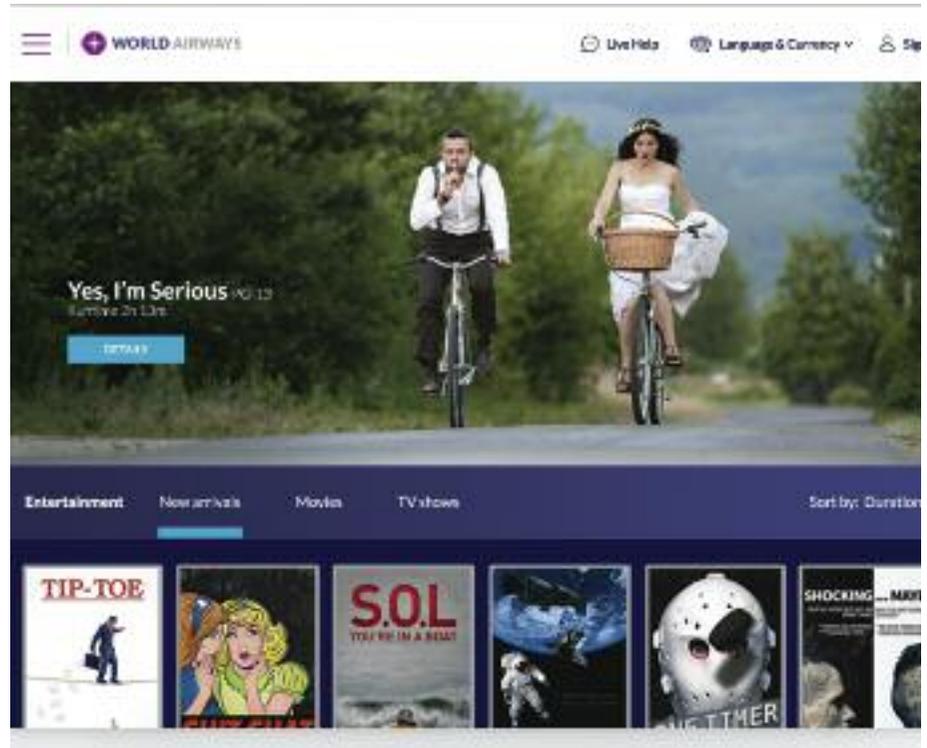
An external connectivity system links the aircraft to ground sources. These include internet and telecom services. An external connectivity system makes it possible for an airline to offer a wider range of services compared to an internal connectivity system, but also incurs the additional cost of operating the system as well as the penalty of increased drag.

Connectivity choice

Airlines have charged passengers to access both internal-only, and internal and external cabin connectivity, spurred by increasing passenger expectations, particularly from younger passengers, to be connected whenever possible.

External connectivity will allow a wider range of ancillary products to be sold through the IFE system, compared to a system that only has internal connectivity. These additional products include destination-based products, such as hotel bookings and car reservations, that require real-time information of inventory and availability.

"External connectivity incurs higher costs for airlines in respect of capital outlay for hardware, cost of operation, and fuel penalty of increased drag of the antenna. It is mainly provided by premium and traditional airlines," says Jan-Peter Gaense, director of project

certification at Lufthansa Systems. "As external connectivity becomes cheaper, more airlines will use it to broaden their range of ancillary products."

The connectivity systems required for live credit card transactions, reservations capability and the ability to send and receive emails and text messages, only need the capacity of a L-band satcom system. "These are simpler and cheaper to operate than a Ku- or Ka-band system," says Gerald Schreiber, chief executive officer at PaxLife.

Meanwhile, Gogo has developed the ability to perform real-time credit card transactions via tablets used by flight attendants, and which uses a secure external connectivity link.

Brown at Bluebox Avionics maintains that the data indicate that most passengers are prepared to pay $5-10 per flight to access external connectivity, mainly to send and receive email and access the internet, particularly social media. If airlines are able to charge -- and can continue to charge -- passengers for external connectivity this will improve the overall economics of offering a wider range of ancillary products.

"We expect to see an increase in the number of airlines equipping fleets with external connectivity systems," says Brown. "The Inmarsat EAN system is an example of one that should bring down the cost of providing external connectivity for flights operating over Europe. There is, however, growing passenger expectations that they should receive external connectivity for free."
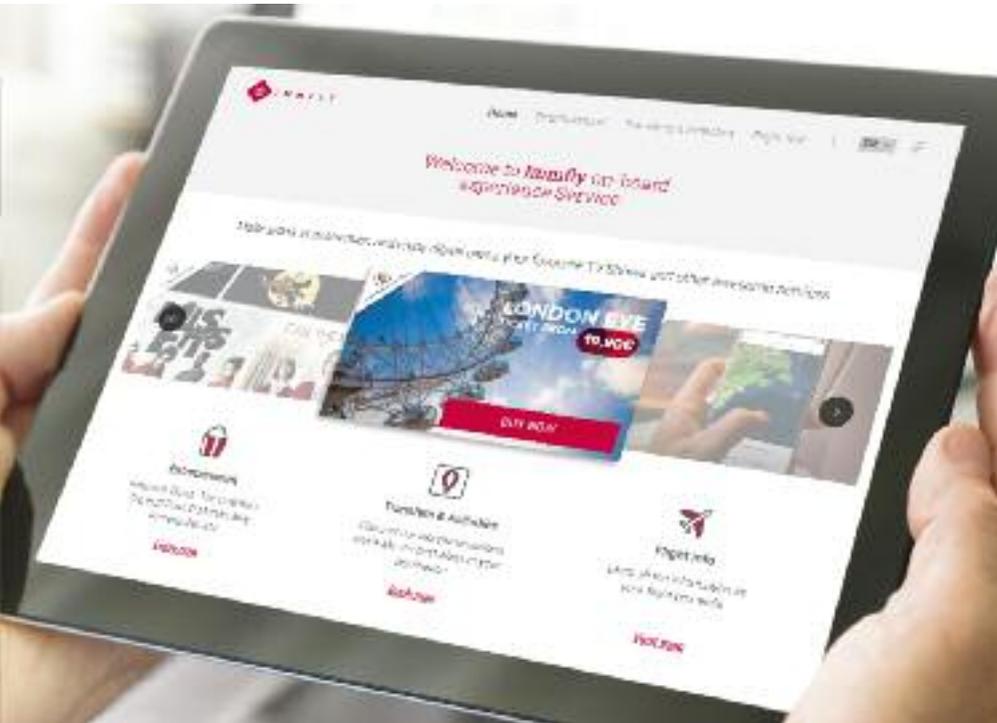
Examples of airlines that provide WiFi connectivity for free are Norwegian in Europe, and jetBlue in the US. Examples of tariffs in Europe are: €7.95

($9.95) for one hour and €14.95 ($18.95) per flight on Aer Lingus; and €8.99 for one hour, €24.99 for four hours, and €24.99 for a full flight on Iberia's A330-200. Most US domestic airlines offer Gogo. Examples of tariffs are $16.00 for an all-day pass on both American and Delta. Southwest charges $8.00 per day per device for WiFi connectivity.

While an internal-only connectivity system means internet and telecom access is not possible, content that can be accessed on passengers' PEDs transmitted wirelessly from the IFE system is demand, since it alleviates passenger boredom.

This generates opportunities to extract revenues. "What happens when an aircraft does not have an external connectivity system is that the airline has control over everything the passenger sees on the IFE system," says Gaense. While destination-related products cannot be sold without an external connectivity system, it is possible to sell movies, small catering items, and some low-cost shopping items. Credit card fraud is more likely for expensive and high value items, and some airlines are willing to risk in-flight shopping without having external connectivity.

"The ancillary revenue platform used on the aircraft, therefore, has to be flexible," continues Gaense. "It has to be able to interface with various internal and external connectivity systems, since new or different systems may be added at later dates. The platform also has to integrate with new partners, such as advertisers and sponsors in the future, and with new solutions and application programme interfaces (APIs), as well as big data analytics systems that are used to analyse passengers' buying behaviour."

Spanish vendor Immfly provides a wireless IFE system that has a range of digital services. The server has all the possible types of content, and Immfly manages all functions for the airline user. This includes updating content, completing purchases and credit card transactions, and managing the airline user's portal.

In-flight phones

The second category of ancillary products and services is linked to connectivity, and is the ability to use in-flight phones. This requires an aircraft to have external connectivity, and service providers offer business models that involve sharing the revenues generated with the airlines.

Passenger take-up of in-flight phone services has been poor in most cases, however, and there have been complaints in aircraft cabins from adjacent passengers being disturbed by voice calls. Most passengers use the service for text messages, but this generates small volumes of revenue for the airline.

The availability of an external connectivity system used for in-flight phone systems has, however, led to the development of other ancillary products.

In-flight shopping

There are several categories of in-flight shopping. This has evolved from the standard printed catalogues combined with manual sales via carts in the cabin.

Guestlogix is a major vendor of systems and hardware to manage all aspects of in-flight and on-board shopping. It has more installed devices on airlines' fleets than any other vendor. Shopping requires its own separate hardware, since most installed IFE systems are not yet sophisticated enough to have the software and in-built technical capability to manage the shopping process.

Guestlogix has manufactured point of sale (PoS) systems and hardware for traditional on-board shopping. In more recent years it has provided airlines with

a combination of tablets that perform the various retail management functions, and host the software to perform the POS transactions. Because banks and credit card companies require certifications for credit card transactions to be held on payment terminals, retail tablets are held in close proximity to payment terminals in a dedicated holder. The two are then connected wirelessly with a Bluetooth connection. This system works for a traditional on-board shopping system, rather than being an element of a new-generation IFE system.

The first category of in-flight shopping is an enhanced version of the traditional system, with available items displayed via the IFE system and airline apps viewed on PEDs. The IFE system can either be an embedded system, with hardwiring connection from the content server, or a wireless system which transmits content to tablet devices or PEDs from WAPs in the aircraft cabin.

In the future, Guestlogix will provide all the retail technology and software to the main IFE hardware vendors. The IFE system will include technology to perform all the management functions of inventory control, promotions, analysing sales data, various reconciliation processes, and the retail transaction processing engine.

An enhanced in-flight shopping experience expands on the available inventory, but also automates the process. Passengers are able to make product selections, and can buy at any time without having to wait for flight attendants. There are further advantages of this IFE system, since its electronic nature means that passenger purchasing behaviour can be analysed through the large data processing systems now

available. The second main advantage is that credit card transactions can be performed live with an external connectivity system. Credit card fraud can be minimised or even eliminated.

The further advantage is that airlines are able to offer high value items. The traditional method of in-flight shopping often limited the purchase value of items to drinks, alcohol, tobacco and confectionery, because the risk of fraud posed only a small financial loss. An external link and live credit card transactions allows high value items, such as jewellery, to be carried on board and sold, without the risk of non-payment.

Pre- & post-flight shopping

A further development of evolving in-flight shopping is shopping for goods to be delivered either at the passenger's destination, or at their home address. Examples are duty free items, which may be required at a holiday destination, but do not need to be carried on board the aircraft. Instead they can be delivered from the airport or inventory holding to the buyer's hotel. Duty free and other items may also be required by a traveller on return from a holiday or a business trip. They may be ordered prior to the passenger using all available credit on their credit card, but delivered several days or weeks later.

"One example of an airline already using this approach is Thomas Cook," says Schreiber. "Passengers usually buy items on the outbound flight or while they are on holiday, and then collect them during or after the return flight. There is a surprisingly high uptake for these products, because their prices f are low, since they exclude taxes. Purchasing outbound gives the airline the time to acquire the inventory."

A further issue here is that once in-flight and on-board shopping gets established by airlines following the installation of new-generation IFE systems and low-cost high bandwidth external connectivity systems, it will become more convenient for passengers to shop on board compared to in the airport. This will give airlines at least an hour to capture passengers' attention on board the aircraft, compared to just a few minutes while they are rushing through the airport. This may lead to major airport retailers forming partnerships

with airlines via their IFE systems in the future.

This level of in-flight shopping is unlikely to require external connectivity, since both orders and credit card transactions can be processed after landing. Any fraudulent or blacklisted credit cards can be detected at processing, and any orders associated with a fraudulent card can be cancelled.

A new concept in on-board shopping is shopping integrated with the large retailers. These include Amazon and outlets such as large supermarkets. This will be used by travellers returning from a long trip away from home, for example, to deliver groceries to their home on return. This type of shopping may work without external connectivity, but is more likely to operate better with it.

Destination-related shopping

A third and new level of in-flight shopping is for destination-related items. These apply to both types of IFE system with just internal, and both internal and external connectivity. Destination-related products include hotel reservations, car hire, transport services, restaurant and theatre bookings, and excursions to attractions. These are likely to be sold by traditional airlines and LCCs.

Some of these products can be sold in advance without the need for reservations systems, but most will require live information on availability of inventory and a reservations capability. This is because items such as hotel rooms, car hire and theatre or excursion bookings will experience a constant stream of sales and reservations, and available inventory is constantly changing.

Destination-related shopping and purchases generate revenues for airlines through sales commissions.

Besides conventional external connectivity systems, the use of NFC readers in seatback IFE systems provide an additional enabler. "An NFC reader provides a connection to the WiFi local area network (LAN) in the cabin, and so access to the IFE server," says Thomas. "With a connection to the external connectivity system, passengers could then buy destination-related products using contactless payment."

A further technology enabler to stimulate the sales volume of destination-related products is the new-generation moving map displays that indicate points and items of interest to the viewer as the aircraft passes close to them.

An interesting destination-related product is being offered by ASIQ of Australia. ASIQ equips an airline's aircraft on a complimentary basis with a short-range Bluetooth cabin connectivity system. When combined with the aircraft's L-band external connectivity system it provides high enough bandwidth to allow text messaging and e-mails. Moreover, the system can serve 200 passengers simultaneously.

The level of uptake by passengers is high, but only works when a passenger downloads the ASIQ app onto their PED. The app has a revenue-generating element which is a series of discount coupons for 50 products related to the destination that the aircraft is operating to.

The coupon is electronic, and gives the passenger a discount for their particular destination product. The coupon is provided by the product vendor, and if used the vendor pays a commission, split equally between ASIQ and the airline.

Pay-to-access IFE content

A seventh category of ancillary products and services is pay-to-view and -listen items on the IFE server. This requires an embedded or wireless IFE system with internal connectivity. Some airlines are charging for connectivity, while offering IFE content on a complimentary basis, while others are also charging for both connectivity and to access content. An example is Southwest, which charges $5 per movie.
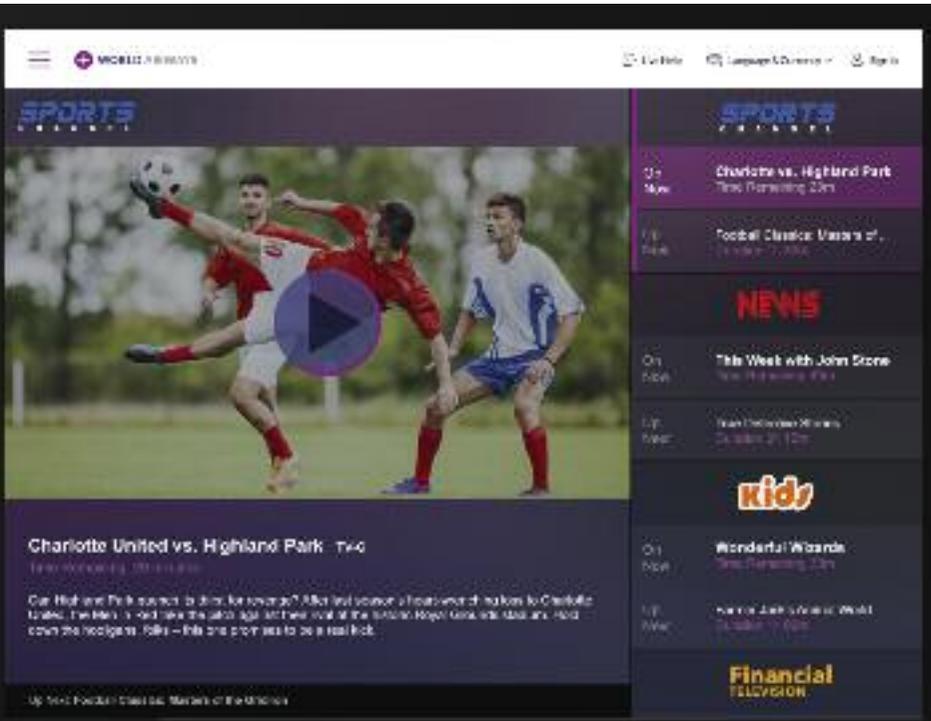
The ability to provide affordable live TV on board varies widely with global region. Factors include TV licensing laws, number of languages and live channels required, and IFE system configuration.

"NFC can be used as a short-range internal connectivity system," says Thomas. "It is used for small data packets. This can be transmitted 5-10 centimetres, so passengers can use the hardware to buy content from the IFE system. This personalises the passenger experience."

A further development of IFE content is the provision of live TV, and the access of live streamed movies from suppliers such as Netflix. This requires a high bandwidth external connectivity system, which incurs additional cost.

There is also a growing trend for airlines in certain parts of the world to provide connectivity and allow complimentary access to IFE systems. This happens in the US in particular, where airlines are seeking to gain a competitive advantage by offering IFE content for free, so as to enhance the travelling experience for their passengers.

Provisioning live TV on board aircraft has varying levels of complication, depending on geographical area and configuration of the aircraft's IFE system. Ku-band was already used for broadcast TV to domestic residences in North America, and was simply adopted for live TV on aircraft. The issue is relatively simple because only one or two live channels are usually required across the continent, and so the bandwidth available is sufficient. The Ku-band from some operators, such as Direct TV which provides broadcast TV, only works with a hardwired IFE system.

Other Ku-band systems work for both broadcast TV and Internet Protocol TV (IPTV). IPTV requires a higher downlink rate, and so a higher bandwidth, new-generation Ku-band satellite system. IPTV can be delivered wirelessly, however, and so can work with low-cost IFE systems. Southwest Airlines uses IPTV; and Gogo's live IPTV service, Gogo TV, will work together with its 2Ku-band system. The launch customer is Brazilian carrier GOL.

Live TV is more complex in other areas of the world where a large number of languages and cultures have to be considered. Examples are Europe and the Asia Pacific. This may mean that 70 or so live TV channels are required, which in turn means a high bandwidth satcom system at low cost is required. This probably means that IPTV is the only practical way to offer the service. The issue is complicated by each country's licensing laws not permitting transmission outside of their borders, unless an additional licence fee is paid.

Providing live TV that is either complimentary, or charged for at a reasonable cost is therefore straightforward in some parts of the world, but more complex in others.

Sponsorship

As a development of providing either connectivity or content access for free, there is now a growing trend for airlines to seek sponsoring partners. These providers are companies such as telecom service provers, car hire companies, and hotel chains. These pay or subsidise the airlines' cost of providing internal and external cabin connectivity, in return for having a high profile presence or being branded as the portal supplier on the airline's IFE system or app used by frequent flyers on their PEDs.

Such sponsorship and financial support are particularly advantageous where airlines incur the additional and high cost of providing high bandwidth

external connectivity, such as in the form or Ku- or Ka-band. "There is a growing expectation among passengers, especially younger ones, that they should receive external connectivity for free," says Brown at Bluebox Avionics. "Ancillary revenues can be used by airlines to subsidise the cost of providing external connectivity, so that passengers do not have to be charged for the service. Once an airline has started doing this in a particular market, others usually have to adopt the same practice in order to remain competitive. Airlines are also likely to use sponsorship to partly subsidise or fully cover the costs of acquiring external connectivity."

There are various business models that airlines can follow when considering providing connectivity, and various levels of in-flight services and entertainment to generate ancillary revenues. Some airlines are willing to pay to provide external connectivity themselves, while others will only provide it when a third party pays for it through sponsorship, thereby enabling the airline to provide it on a complimentary basis. Airlines are willing to offer external connectivity for free since it gives passengers a perk and enhances the overall travel experience, which is an important element in acquiring a competitive advantage. More importantly, it also encourages passengers to buy another ancillary product.

Advertising

The eighth ancillary revenue product is revenues generated from advertising, either via the IFE system or the airline app hosted on PEDs. While the concept of advertising is not new, the technology of IFE systems and airline apps means that passenger behaviour, such as responses to particular adverts can be monitored on a demographic or individual passenger basis. Adverts can therefore be targeted at particular age or demographic groups, or individuals through airline apps, or even the IFE system if sufficient information is held about a passenger.

Advertising revenues can also be used to subsidise the cost of providing external connectivity. **AC**

To download 100s of articles
like this, visit:
www.aircraft-commerce.com