New trends for in-flight connectivity

In-flight connectivity (IFC) has come a long way in its relatively short history, and is today a great enabler for customers on-board who want to stay connected while 38,000 feet above the Earth. Ten years ago, the idea of using the Internet while flying between destinations would have been pure fantasy, but today, that fantasy has become a reality. IFC still lags behind terrestrial Internet services, but many companies are working hard to bridge the gap, and stand to benefit greatly from increased adoption among airlines.

In the communications sector, in-flight connectivity (IFC) is one of the greatest growth areas right now. While some passengers see a flight as a respite from the digital world, many wish to make use of that time in transit to stay in touch with loved ones, keep up with current affairs, or stay on top of a busy workload. IFC might not be the be-all and end-all for short haul travel, but when it comes to flights exceeding eight hours, it can be a great way to prevent boredom.

Research and Markets’ ‘Global In-Flight Broadband Market 2016-2020’ report estimates that the in-flight broadband market will grow at a compound annual growth rate (CAGR) of 10.98 percent in 2016-2020, while Persistent Market Research asserted in its ‘Global Market Study on In-Flight Wi-Fi: Asia-Pacific to Witness Highest Adoption By 2021 – Driven By Increasing Demand For In-Flight Connectivity And Entertainment Services By Passengers,’ report that in-flight broadband would grow at a CAGR of 14.9 percent in 2015-2021. The consensus at the GVF’s Applied Innovation Conference in October 2016 was that revenues from IFC would grow from US$525 million in 2015 to US$4.4 billion in 2025, with passenger connectivity and the ‘Smart plane’ driving growth. Such impressive growth rates certainly provide a lot of opportunities for those companies active in the market.

Demand for IFC from business customers on board business jets or private aircraft have been highlighted as one of the leading growth enablers. Many airlines are reacting to this trend by offering premium economy class seat-centric solutions to passengers. Research and Markets states: “This growing demand is driving airline operators to provide connectivity services to the passengers as a value-added service. This is a win-win situation for the passengers, service providers, and airlines, as service providers, and airlines get paid to provide services and passengers get to enjoy the comfort of accessing the Internet during flight.”

Regionally, North America remains the market leader, dominating 60 percent of the IFC market in 2014. However, according to Persistent Market Research, the Asia-Pacific market will have the highest CAGR in 2015-2021, at 26 percent.

Both reports highlighted IT security challenges as one of
the top factors hindering growth of the IFC market, with concerns over aircraft security growing among users.

**European Aviation Network (EAN) prepares for commercial launch**

In November 2016, the European Aviation Network (EAN), the world’s first integrated satellite and air-to-ground network dedicated to providing a ‘true in-flight broadband experience’ for the European aviation industry, completed a programme of successful test flights. Inmarsat, Deutsche Telekom, Nokia and Thales all contributed expertise to the project.

“We are happy that we achieved a major milestone in building the European Aviation Network. With these successful tests, we once more underline our goal to be the leading European telecommunications operator,” said Claudia Nemat, Board Member Europe and Technology at Deutsche Telekom. “The EAN allows us to offer our customers outstanding connectivity services, not only on the ground, but also in the sky. The new technology based on LTE standard makes sure that EAN is flexible for any further technology developments in the future. Deutsche Telekom’s aim is to drive technology leadership to bring best network experience to our customers.”

Deutsche Telekom and Nokia have adapted Nokia’s LTE base stations and Remote Radio Heads (RRH) to the frequency used for EAN, provided by Inmarsat, and build a specific base station antenna to cover the sky to achieve EAN’s live connection of the LTE ground network. The LTE ground network for EAN differs from ‘normal’ LTE networks as it needs to work at speeds of up to 1,200km/h, at cruising altitudes requiring cells of up to 150km. Nokia will manage the operations for the network from its global delivery centre in Romania. In addition to the live network, Nokia and Deutsche Telekom have established a full end-to-end ground network reference system in Stuttgart, Germany, including all components and integrated on-board equipment from Thales, to prepare for technical challenges.

The flight trial tested the performance of Thales’ on-board equipment and the ground network provided by Deutsche Telekom and Nokia. Tests were performed to see if the network could successfully attach to the ground system, which it did at all four test sites in the south west of the UK. The systems performed multiple successful handovers between sectors and cell towers, and maintained a stable connection. The transfer of data to and from the aircraft was also tested. The outcomes exceeded expectations and provided valuable data for the development teams.

Full commercial launch of the EAN is expected in the middle of 2017, around the same time as the launch of Inmarsat’s new S-band Global Xpress satellite, Inmarsat-5 F4, which will serve the EAN. The launch was originally scheduled with SpaceX, but the delay to SpaceX’s schedule prompted Inmarsat to switch to ArianeSpace for a mid-2017 launch date.

“We are delighted with flexibility that ArianeSpace has shown in being able to provide a launch slot that enables us to place our European Aviation Network S-band satellite in orbit by mid-2017,” said Michele Franchi, CTO of Inmarsat. “This launch schedule supports the introduction of our ground-breaking integrated satellite and air-to-ground network, developed by Inmarsat and Deutsche Telekom, which will deliver a very high capacity broadband Wi-Fi experience for passengers flying throughout Europe.”

With the launch of the EAN, airlines stand to benefit from scalable solutions, high-speed Internet access, low installation and maintenance costs, lightweight drag antennas, and competitive operational costs.

**Inmarsat targets multiple IFC markets**

Leading mobile satellite services (MSS) company Inmarsat has taken note of the boom in IFC demand to launch several new initiatives targeting airline customers in 2016.

In November 2016, Inmarsat commenced a soft launch of its next generation in-flight broadband service, GX Aviation, with Lufthansa. According to Inmarsat, GX for aviation is the world’s first IFC solution with reliable, seamless high-speed global coverage provided through a single operator. The service allows passengers to browse the Internet, stream videos, check social media and more mid-flight, with a connectivity experience on par with broadband services available on land.

“GX for Aviation is not a patchwork solution. Our customers are not subject to the intermittent services and handover issues experienced by others providers. Billions of dollars and years of engineering have been invested to ensure that GX for Aviation delivers a solution that is not just robust, but transformative. Passengers using GX for Aviation will have on-the-ground levels of connectivity and uninterrupted access to the applications they use day-to-day, including email, web browsing, social media, video and music streaming, and online shopping, among others,” said Leo Mondale, President of Inmarsat Aviation.

Airlines will be able to connect with the GX network using JetWave terminals produced by partner company Honeywell Aerospace. The terminals were designed for ease of installation and maintenance to keep downtime to the minimum. There are already more than 300 aircraft connected to the system, and many more committed going forwards.

Also in November 2016, Inmarsat launched Jet Connex, the only global high-speed broadband platform for business aviation. Like GX Aviation, Jet Connex provides on-board connectivity with speeds comparable to terrestrial broadband, enabling web browsing, live TV streaming, and downloads, among others, with a seamless global coverage. The service includes data plans and speeds to accommodate the needs of multiple users, all at the same time, in the same aircraft.

“Jet Connex has been developed over a number of years as a transformative connectivity service for the business aviation industry. Interest from the market has been overwhelming, and we are delighted to have now reached the exciting milestone of commercial service introduction,” said Kurt Weidemeyer, Inmarsat’s Vice President of Business and General Aviation. “A rigorous testing process for Jet Connex was successfully completed over the past eight months, with the support of our customers, distribution partners and Honeywell, the only authorised manufacturer of the hardware needed to access the service. We logged thousands of flight hours, flew to every continent in the world and ran hundreds of tests to put the system under stresses that are well beyond that expected in normal business passenger use. All to ensure we have the most reliable, high speed broadband for private jet flights in the world.”
Panasonic Avionics launches aircraft management and monetisation solutions

2016 was a busy year in the IFC field for Panasonic Avionics as well, although the company focused its new offerings on marketing and analytics services for airlines rather than purely on IFC programmes.

In October 2016, Panasonic Avionics launched Captify Inflight Marketing Advertising Services, marketed as the industry’s most advanced in-flight marketing platform.

“Airlines are increasingly focusing on non-ticket revenue to deliver profitability. At Panasonic, we view the modern aircraft as a ‘business platform’ – because our systems play an integral part in helping airlines reach their ancillary-revenue goals,” said Paul Margis, CEO of Panasonic Avionics. “Inflight media and marketing are rich with distinctive opportunities, and Panasonic is leading the way and is committed to supporting our airline partners as they adopt the technology.”

Captify enables airlines to target by seat class, route, device, language, and passenger data and, with no changes to on-board media, it can increase or decrease advertisement loading times, cap the frequency of marketing campaigns, and deliver detailed usage data in real-time. This allows airlines to optimise promotions for a wide range of optional services, partnerships, loyalty programmes, and paid advertising. The platform delivers video, native display, and sponsorship options for high-impact, fraud-free marketing with best-in-class targeting and results. Captify helps airlines and their marketing and sales partners learn more about their customers by bringing together all the passenger and behavioural data, so airlines can gain intelligence and inform business or service strategies. This affords accurate, integrated, actionable and fully-supported marketing and media data.

The Captify solution can be built to fit any airline’s business model, with access for internal marketers, external sales teams, and ongoing trafficking and testing support from Panasonic. The full-service platform includes ground-side tools for scheduling and analytics of marketing campaigns, air-side servers and APIs to integrate with any aircraft's in-flight entertainment or connectivity systems, and Panasonic’s dedicated service teams working hand-in-hand with airlines partners, media agencies, and content providers.

Also in October 2016, Panasonic Avionics launched its ZeroTouch service, a unique system that provides airlines with real-time visibility into performance, improves maintenance operations efficiency, and enables data transfer of passenger-facing content.

“Using the ZeroTouch service, our customers gain a seamless and efficient method to operate and manage their aircraft - from any location, at any time. They'll have real-time visibility into fleet performance. They'll use a robust infrastructure that lets them continuously and seamlessly improve their operations and the passenger experience. In essence, they'll be able to solve real business challenges,” said Paul Margis, CEO of Panasonic Avionics.

As all interactions can be managed through a virtual dashboard, ZeroTouch reduces the need to physically access the aircraft. Real-time access to passenger data will enable software, media and content updates to be data-driven, delivering a relevant and personalised passenger experience.

Updates will be delivered to the aircraft via three high-speed pipes; Wi-Fi at the gate, aircraft cell modem, or Panasonic’s eXConnect service. Strategic planning will also be made easier through the actionable insight provided by ZeroTouch, enabling more informed decision about system health monitoring, aircraft maintenance, and media consumption, amongst others. The service automatically downloads critical operational data during flight meaning maintenance teams are notified of upcoming tasks and are able to prepare solutions prior to landing.

The ZeroTouch solution is currently in Phase One of its roll-out, delivering up to 700Mb payloads to aircraft over cell modem and eXConnect multiple times per day. The Phase Two trial will have commenced by the third quarter of 2017, when a new, more robust and more efficient core infrastructure and an enhanced management console will be available. During this period, the enhanced cell modem with advanced Wi-Fi capabilities will also be launched. Full commercial availability of ZeroTouch is expected to be available immediately after the third quarter trial.

More than just connectivity

We can see from the biggest stories on IFC to make the news lately that the market has moved beyond the supply of simple in-flight broadband. Today, companies are focusing on the fastest growing market segments like business customer use, while others are looking at new ways to help airlines generate higher revenues from non-ticket sales. This trend is likely to continue for some time in line with expected market growth.
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