

Plane Sense on Cabin Avionics

This Month:

Page 82 - Tools For Productivity

Page 88 - The Upgrade Process

Page 92 - Digital Make-Over

Tools For Productivity



Defining your mission and choosing the right tool will maximize your investment. **by Brian Wilson**

Looking at a few photos of my father recently reminded me of when I used to work with him around the house or in the garage. He would always say, "Right tool for the right job". It's a simple enough statement, but it can be applied to many situations.

Gone are the days when the business traveler wanted to just relax during flight, to catch up on some needed rest, or read the latest best-seller. Today businesses and their management teams seek to have every technical advantage to give them an edge as they work to secure the next business opportunity - even while in mid-air.

A recent No Plane No Gain testimonial featured an operator who claimed that having the right aircraft outfitted with the right tools allowed his company to secure a lucrative contract over the weekend, before his competitor could arrive via the airlines the following Monday morning.

The CEO mentioned that having a corporate aircraft gave his company the edge to arrive

before his competitor - but that having the right tools on his aircraft was the driving factor.

Within one hour, the operator's flight department was able to get the aircraft ready for departure, and since the aircraft was outfitted with the latest SwiftBroadBand (SBB) and Wi-Fi technology, the necessary research and presentation was prepared in flight, and en route to the client. The management team was able to access its VPN, receive scanned documents and other vital reports emailed from its support team back at the office, and even review the presentation on the aircraft entertainment system before landing.

DEFINE YOUR MISSION

A recent MRO report indicated that Cabin Avionics will be the fastest growing modifications category due to the desire for sophisticated onboard connectivity. I can personally attest to the results of this survey, as my phone rings daily from operators and flight departments inquiring about

Plane Sense on Cabin Avionics



connectivity because the folks flying onboard need to stay connected.

I always respond with two simple questions:

- Where does your aircraft fly?
- What are your passengers' expectations for connectivity?

Let us discuss the first question, and how it affects which product you may want to purchase. Typically, operators fly primarily in the country they are based with a percentage of international flying to other countries.

Keep in mind that some products are designed to work in just one particular geographical area. These types of systems need to be augmented with yet another ship set when international coverage is required – which will surely add cost and downtime when performing the installation.

In today's global economy, keep in mind that companies who only fly domestically presently

could expand internationally in the next few years as business grows. It is a good idea to include the decision-makers within the company in the selection process for Cabin Avionics, so as to fully understand their business model for the next few years (as opposed to their immediate demands). This will prevent you doing the installation twice in the long-term.

Turning to the second question I always ask, this often proves to be a question the caller is unable to answer with any detail initially.

A common mistake I have observed is that the caller underestimates the speed needed to successfully address the passengers' requirements for connectivity. They are often more concerned about a specific price-point that they have in mind, missing the focus of having the right tool.

Let us digress for one moment as we establish that the allocated speed for SwiftBroadBand is 432Kbps which is laggard to any land-based web access since the days of dial up. (Yes, acceleration ►

Keep in mind that companies who only fly domestically presently could expand internationally in the next few years as business grows.

Plane Sense on Cabin Avionics



can be used to increase the speed upwards to, and exceeding 1 Mbps, but speed comes with a price, along with geographical and technological limitations).

Another mistake is to underestimate what the owner is willing to pay for the type of service they desire. A client once said to me when I was trying to caution him about pricing, "Son, let me determine what is too expensive..."

When assessing the correct product, you should put issues of cost to the back of your mind, and see a live demonstration of the product. Seek out an experienced avionics shop that has done different types of installations on varying aircraft, and they should be able to give you a comprehensive quotation comparing speed, service and price, so the owner has numerous options to consider, and far more information than cost alone.

IRIDIUM VS INMARSAT: GET THE FACTS

In virtually all cases, when you make a voice call in a corporate aircraft you are communicating with a satellite which relays the call to a ground station support center that transfers the connection to the standard telephony infrastructure.

Iridium's constellation consists of 66 interconnected Low Earth Orbit (LEO) satellites which provide worldwide coverage both on the ground and in the air.

The Inmarsat-4 (I-4) series of satellites consists of three satellites that fly in geosynchronous orbit 22,240 statute miles above the earth. They provide coverage both on the ground and in the air, but are limited to no coverage above and below the 70 degree latitude marks.

Typically the small- to medium-size corporate

jets use Iridium systems, while the Inmarsat systems mostly prevail in the larger airframes. This is primarily due to the size of the antenna and the number of channels required on larger aircraft that carry more passengers. (The standard number of channels for Iridium is one to two while the Inmarsat systems can have up to seven channels.)

All similarities end when the subject of data communication is discussed.

Iridium serves well for tracking and monitoring of the aircraft's position, but can fall short of the data rates needed for Internet, email and video streaming. Having held many discussions with customers about connectivity in the cabin I feel compelled to clarify some common misconceptions. Attractive marketing terminology combines Iridium with Short Burst Data (SBD), free text messages and Data link services, but all of these applications derive from services provided to pilots in the cockpit, not the cabin.

Iridium is limited to 2.4Kbps and has no feasible way to send and receive data. Iridium NEXT is a second generation constellation scheduled to begin launching in 2015 and I have attended forums where specific data rates have been discussed, but even the rates mentioned are not confirmed on their website.

For worldwide coverage and connectivity both in the air and on the ground, Inmarsat offers the best solution today: In early 2009, Inmarsat completed the repositioning on its three I-4 satellites, and introduced SwiftBroadband (SBB) to the world.

SwiftBroadband is an IP-based service that provides an "always on" data connection with speeds ranging from 200Kbps to 432Kbps per channel. Although two channels are allowed per

installation, this simply increases the bandwidth, and does not double the speed (864Kbps) - a falsification I have seen in a few articles.

[Think of one channel as a four-lane highway packed with cars going at the same speed. If another group of cars were to come onto the same highway the speed would slow down accordingly. By adding another channel, we add another four lane highway to allow all the cars to go the same original speed.]

KU, KA - HOW ABOUT 500 (K)?

When Boeing launched the Ku-Band satellite service titled "Connexion by Boeing" it cost Boeing more than \$1 Billion to develop, never caught on with the passengers and was scrapped in 2006.

Other companies have sought to re-ignite Connexion - including eXConnect from Panasonic, and Yonder from ViaSat - but their business models are based around the airlines and a very small fraction of large cabin aircraft.

Recently a leading MRO facility introduced its new Ku-package with an installation price starting at \$500,000 USD, and a monthly service fee of \$6,000 USD. That's \$72,000 USD per year just for the service, and many installations when completed exceed the quoted \$500,000 by tens if not hundreds of thousands. In fact, said operator claimed their "gold" package installation price was \$795,000 USD, which exceeds the budget for the majority of operators.

The opinion of the experts is that the Ku Band is already saturated and will not meet the bandwidth required for future connectivity requirements. Based on the economics of supply and demand, Ku Band is not going to get any cheaper.

Ka Band is the source of the latest buzz in the

Plane Sense on Cabin Avionics

satellite industry. In 2010 Inmarsat signed a \$1.4 billion contract with Boeing for three Ka Band satellites for its new I-5 network. The first satellite is to be completed by 2013, with full global coverage expected by the end of 2014.

It is worth questioning how long it will take to test/align the satellites, verify the service and test the new products/account for any delays. The new network will be called Inmarsat Global Xpress and offers data rates up to 50Mb/ps, at a cost less per megabit than current rates.

Ka Band is in the frequency range of 26.5 to 40GHz and Inmarsat believes this under-utilized range has the bandwidth and capacity to meet an ever-changing consumer demand over its 15 year life cycle.

The Ka Band satellites should be capable of transmitting more power; hence this will reduce the size of the antenna needed for the installation.

In a nutshell: Ku Band is here now and Ka Band should arrive in 2015-2016 - but the cost of installation and the yearly service fees are expensive.

Let's not forget that the size of the antenna inhibits many airframes. Operators can incorrectly believe "something better is coming just around the corner", and that speeds are going to be faster, and installations are going to be cheaper.

Competition should make the installations cheaper, and technology will make the data rates faster - but is it worth the wait? Are you not in business today?

WHAT SHOULD YOU DO NOW?

I don't consider myself an electronic gadget geek, but I was one of the first to carry a smart phone that had email and web browsing. I recall how I joked with my colleagues that only had cell phones that by the time they get off their flight and get to the hotel room to check their email on their laptops, I would have already sent a quote to the client.

My favorite line was "every business person will be carrying a smart phone in the next few years, or they will not be in business".

The same can be said for connectivity on board your aircraft; if you can't stay in touch you will find yourself behind your competitor. Charter and Fractional companies, are you listening?

The leading companies in this category are outfitting their fleets with connectivity and In Flight Entertainment (IFE) to attract clients and increase market share. Have inquiries and capture rates declined, even though your customer service evaluations are high? You might want to compare what you have for Cabin Avionics with that of your competitor.

THE IN-FLIGHT BUSINESS CENTER

There is a misconception amongst the general public that a business jet is similar to a Maserati or a luxury boat, but it's not - it is a business tool, and the right companies that will lead today's



global economy realize this. Having an on board entertainment system that includes a satellite television system sounds like a luxury until you consider how many companies recently were effected by the unrest in the Middle East.

Business executives don't outfit their aircraft to watch the latest action movies; they are watching current events on leading business channels. Executives with companies around the world need to be informed and have the right tools to quickly implement a contingency plan directly from their aircraft.

Maybe we should change the acronym from IFE to IFBC (In Flight Business Center). Maybe this would appease our politically-correct audience. The overall objective is not to entertain our business traveler, but to provide the right tools with which to do business. Productivity is a measure of efficiency, and effected by labor and technology. Personnel can only work so fast before mistakes start to increase, but technology continues to drive productivity.

A case in point: today's laptop computers will slowly be replaced by smart tablets. The limitations with the current generation of tablets are being resolved as I write. Many of the executives I know currently carry both a laptop and a tablet when traveling on business, and most agree that the laptop soon will be left at home.

NEW MEANING

'Cabin Avionics' takes a new meaning as technology has changed the playing field. Can you imagine your passengers walking on board your aircraft with their tablets; settling into their seats and securing their seatbelts. They then lower their window shades; review their latest emails, select

and watch the latest world news on their High-Definition monitor, and adjust the speaker volume with all features controlled by their tablet.

Cabin temperature control, printing documents just emailed by headquarters - the tablet can control all such functions. Cabin Management Systems (CMS) are software-controlled, and 'Applications' are the name of the game. [Recently while doing my research with a leading CMS company, I was transferred to the applications engineer. I can tell you for a fact that position didn't exist five years ago!]

Open architecture has allowed the convergence of High Speed Data, Wi-Fi and smart phones with today's Cabin Management Systems. Applications have opened the door for unlimited capabilities for today's generation of Cabin Avionics.

Although all aircraft are candidates for Cabin upgrades, surveys have indicated that aircraft aged 7-15 years are prime candidates to perform these types of modifications. This group of aircraft is generally currently outfitted with legacy phone and entertainment systems. Most will have had only one or two owners, and are due a major inspection, cabin retrofit or paint refurbishment.

Downtime is critical to these medium- to large-size business aircraft, and this would be a perfect time to perform an upgrade. The last few years have found discretionary money to be tight, and upgrades have been delayed.

2011 brings a year filled with promise and prosperity as the world economies start to correct themselves. The technology to give your company an edge in business is here today; passengers literally have "contact" with the world at their fingertips. Don't be left behind! ■