

Plane Sense on Cabin Avionics



PHOTO COURTESY OF CESSNA

Take Your Pick:



With the numerous Cabin Avionics products and features available to corporate aviation departments, it is clear that you would have to give serious consideration regarding how to make the right selection. Fear not! This article is designed to help guide you through this arduous task, and ensure that you get the best value for your investment.

All of us are exposed to technology everyday, we check our emails and text messages at work, at home, the airport or at the local coffee shop. Pick any topic, enter a key word into your computer search engine and a myriad of links filled with information are at your fingertips. Nothing good on the local radio station? Not a problem - just plug in your digital recording device and listen to your favorite tunes. Is cable television offering nothing but re-runs? Again no problem: Audio, Video on Demand (AVOD) has arrived.

Most of us take these conveniences for granted and even though we might not admit it, we are quickly frustrated if our email doesn't boot up in the morning, our cell phone has poor coverage or the local WI-FI is down. Habitually, every day we reach for our cell phones, personal digital assistants and laptops which we conveniently place next to our car keys and wallets. In our vehicles, we load the address of our next client we have to visit and follow the synthesized voice emanating from our Global Positioning Device. With ease we hit 'speed dial' to let our client know we will be there shortly.

The populace is consumed with all their gadgets as they carry on their daily routine... until they enter the pressurized cylinder of their corporate aircraft, that is.

On board the aircraft, they can worry at the thought of not being adequately connected, while hoping among the limited selection of



With so many cabin avionics solutions available, what do you really need? **by Brian Wilson**

DVDs on-board, there is one not yet seen.

Perhaps you plan work on that word document if only you can find a place to plug in your dead laptop battery. 'If only I could have had another thirty minutes at the airport', you ponder, 'I could have finished the proposal and sent it to the customer'. By now, you are hoping the competitor will wait until you get off the plane in four hours time at your destination. The 'No Service Available' notification on your Blackberry has you wondering if you are missing a sales lead or important call or email. Even the distraction of that anticipated High Definition, surround-sound video you wanted to see is letting you down... it's too bad the monitor has no "HD", and the speaker positioned above your head over-modulates the stereo sound.

With companies expanding into the global market and long-range aircraft capable of flights of eight-10 hours, making sure you have

the right cabin entertainment and office-type capabilities are essential. Demand is growing for a cabin environment that is similar to what is enjoyed on the ground, and manufacturers have done a great job creating viable products that meet this demand.

THE SELECTION PROCESS

Usually one of the crew or the director of maintenance in your flight department is tasked with researching what features, pricing and products are available to maximize productivity of air-time in the corporate aircraft. They summarize their research and present their findings to the aircraft owner. This can be a daunting task, and usually results in the research being repeated because after further discussions with the owner you find they want equipment for, or have, different needs.

If your job is to research the correct cabin avionics for your company aircraft, it is vital

‘Making sure you have the right cabin entertainment and office-type capabilities are essential.’

Plane Sense on Cabin Avionics

PHOTO COURTESY OF DASSAULT



LARGE CORPORATE AIRCRAFT

The large corporate aircraft, including Airbus and Boeings, Bombardier Global models, Dassault Falcons and some Gulfstream models (just to mention a few), offer the best platform on which to expand cabin capabilities, because they are generally already outfitted with systems that just need to be enhanced to reach their full potential.

Cabin and fuselage size alone offer options that medium and small size aircraft just can't have - and typically, larger aircraft already have a radome that houses a Satellite Communication system supported by Inmarsat's global satellite network and a standard entertainment system.

It is important to remember that this class of aircraft is typically purchased because the client has the need to travel internationally; therefore, product selection and capabilities invariably need to match those requirements. With longer periods in the air, the need for acceptable levels of communication with the ground for business purposes increases with the need for comfort and relaxation.

In addition, inter-continental travel, and flights across oceans require the correct selection of products. Some products might seem like they are the perfect fit for the aircraft until you discover they only work domestically or in certain regions.

Others may require substantial fuselage or tail modifications that in turn require extensive downtime and add a lot of cost to the upgrade. We re-iterate, it may make the best sense to start with the systems you already have installed in the aircraft, and seek and pay for a solution that augments these systems.

Inmarsat's SwiftBroadBand provides worldwide coverage for voice and data and the upgrade is relatively quick. The pricing is a great value when you consider the productivity

you schedule a meeting with the owner before you do your research and discuss what features are needed from the outset. Maybe they read an article about email access on board the aircraft, or flew on another aircraft that had an advanced entertainment system. You need to establish the actual *needs* versus the *wants* when meeting at this stage and as a result of that, it would be very helpful if you could obtain an estimated budget they are willing to spend for this upgrade.

Keep in mind that if the upgrade seems substantial, you will need to consider the benefits with the owner of waiting until your next maintenance inspection is scheduled to reduce downtime for the aircraft. Perhaps the interior is coming out, and is part of the inspection. This can reduce costs usually associated with larger cabin upgrades.

By establishing some budget and timing guidelines, you are better prepared to do your research.

In addition, most flight departments have a local avionics shop manager or salesperson that they rely on for information - and this would obviously be a great place to start. But proceed with caution! Before scheduling a meeting, make sure this person keeps abreast of the latest products by attending trade shows and is educated on your aircraft type and how it is currently outfitted. Confirm that they have experience and/or testimonials with similar work previously performed on other aircraft.

Does the Manager take the time to listen to your requirements, and do they ask the pertinent questions? More importantly write down all the details. Just because the local person is reliable and knowledgeable on King Airs and Citations, doesn't mean they are the right

person to help consult on your upgrade for your Gulfstream or Falcon aircraft. There are many differences in options available to the larger business aircraft than the mid-size aircraft!

Since your meeting with the boss revealed some necessities he is looking for, and with discretionary monies ever-so tight in these economic times, it's critical that you match product features and capabilities with costs and aircraft type to achieve the maximum productivity for the passengers in the cabin.

It may make very good sense to start with a review of what is currently installed on the aircraft to see if the existing systems can be enhanced to achieve your objectives - thus reducing costs and possible downtime associated with installing an entirely new system on the aircraft.



Plane Sense on Cabin Avionics

that now can be performed on board the aircraft. By simply replacing one of the existing SatCom components and adding a WI-FI router/ accelerator, passengers can enjoy data rates up to 432K that can be compressed and accelerated up to four times faster - and you will have just transformed your cabin into an office, offering Blackberry Internet Service, access to your company email, the Internet - all in a wireless environment. Downtime for this modification is six to eight days, and for convenience, can be done in your own hangar if needed.

For those larger aircraft that do not have a radome or a SatCom currently installed, it is worth considering adding an Intermediate Gain Antenna to your fuselage. This will alleviate the need to add a radome and larger antenna that are not just costly, but adds considerable downtime to the project. There are numerous companies offering such a solution, which lowers installation costs. But at a lower cost, this solution does have some limiting features when compared to the previous solution. The data rate, for example, is reduced to 332K - and at this time there is no acceleration/compression feature available. On the plus-side, the solution

does offer you a WI-FI environment and will interface with almost all existing phone systems.

Moving on to consider entertainment, there are many offerings for you in the large category. Size of the bulkheads, cabin area and existing platforms allow you to perform upgrades that provide exciting features for your passengers. The DVD player could be replaced with an Audio Video On Demand (AVOD) unit that allows storage of up to 400 videos and thousands of audio titles - even photos. Movie and Audio selections are displayed on the existing monitors and you can search by artists and titles, from the comfort of your seat. And replacing the old DVD system will save significant space in the cabin when factoring the space used for DVD storage.

A growing number of passengers own personal entertainment devices, such as an iPod, and expect them to be accommodated. Adding a simple docking station either at a specific seat and monitor for privacy, or alternatively interfaced to the existing entertainment system is possible.

High-definition (HD) monitors ranging in size from 17 to 42 inches are now available as

well as Blu-ray high definition DVD players. Going a step further by adding surround sound, optimized and acoustically mapped for your entire cabin can deliver full movie and live concert experience to all seats in the cabin.

Installed correctly, these components provide the same quality as high-end home entertainment systems. Upgrade your existing Airshow box to incorporate a point-of-interest panel that displays image and text information along your route. Domestic and Multi-regional satellite television provides standard and premium home channels from the United States to the Middle East, allowing multiple operators to view different channels, and all commands can be controlled with one remote.

MEDIUM-SIZE CORPORATE AIRCRAFT

Whether a Bombardier Challenger, Cessna Citation, or a Hawker, most aircraft in the medium size category do not have a radome or Inmarsat based SatCom installed; their fuselage is smaller and typically owners of aircraft fly domestically more than internationally. A smaller fuselage and cabin will also start to limit the options available to you for a cabin avionics upgrade - and this should be a key

Plane Sense on Cabin Avionics



AN EXAMPLE OF CAREFUL CHOICES FOR A SMALLER CABIN

Once again, your choices for upgrades should be firstly based on what is currently installed in the aircraft. Then consider where the aircraft primarily flies.

factor in your research. For a few models that have the proper hardware installed, thought the upgrade for SwiftBroadBand involves the same as for the larger aircraft.

Also worth note is that the majority of aircraft in the medium size category have Iridium-based satellite phones, which in most cases are due an upgrade. Although Iridium was a good solution for International voice coverage, it simply cannot provide data at a rate which is acceptable today.

At the time of this writing, many leading manufacturers were offering great trade-in programs for existing systems with discounts exceeding \$10,000 USD, so if you can upgrade now, you may find you offset your upgrade costs. Keep in mind that once the demand to outfit aircraft with data begins in earnest, these boxes will have no value and the discounts available will disappear.

Once again, your choices for upgrades should be firstly based on what is currently installed in the aircraft. Then consider where the aircraft primarily flies, and what type of coverage and usage is required by the passengers?

The Intermediate Gain Antenna mentioned earlier will generally work well and deliver voice and wireless data at speeds up to 332K. For those operators that fly primarily in the United States, a new "must-have" technology currently on-board select domestic commercial carriers, is receiving rave reviews, and preview demonstration flights confirmed Internet access as rapid as ground-based DSL connec-

tions, and even live video streaming. This system will be available to corporate operators later in the year.

Entertainment upgrades are similar to those offered for larger aircraft - but keep in mind that HD monitors are typically 17 to 42 inches and it's difficult to even fit a 17 inch model into this category. Rest assured that Audio, Video on Demand, iPod interfacing and theater surround-sound works well in a medium size aircraft - but since the bulkheads are smaller, consider ceiling mounted, flip down, or slide-out monitors if an area is blocked by a rear facing seat. Even individual plug-in monitors that come in wide screen format are worth consideration here.

SMALL-SIZE CORPORATE AIRCRAFT

This time last year, there was only talk of a high speed data solution for this category aircraft - but as soon as the second quarter of this year, operators of Beech King Airs, Bombardier Learjets, smaller Cessna Citations, Piaggio Avantis and Pilatus PC-12 aircraft will have a solid solution available.

The smaller size of the fuselage and larger-sized antennas available on the market always prohibited a viable solution, but due to advances in antenna technology, the Intermediate Gain Antenna will fit these aircraft. You may have to re-locate an existing antenna to relieve close proximity issues, but that is a small price to pay to have the same conveniences as the "big guys". By simply

adding a WI-FI router and wireless handset, you will be able to enjoy simultaneous Internet and email access while another passenger makes a call - and that can only boost cabin productivity.

Technology advances have also allowed operators to enjoy almost all the entertainment features previously mentioned in this article - so your considerations certainly don't necessarily become less when you are looking to upgrade the cabin avionics of an aircraft of this size! The only limiting factor should be what is actually needed for your own mission requirements.

Locating units in the cabin may also take some creative thinking sometimes, but again, most units can be mounted vertically, horizontally or sideways to help find a suitable spot. Don't forget the many slide-out, pop down, plug in monitors available to suit and enhance any tight cabin configuration.

IN CONCLUSION

As you can see, no matter what type aircraft you currently operate, there are a number of products available to improve productivity on board and entertain the passengers - ensuring they arrive at their destination rested and ready to efficiently take care of company business at their destination.

That certainly does not mean they every product available will be right for your specific aircraft or mission needs. There will be considerations to make all the way along the research process regarding costs, space, and specific usefulness of the product in an airplane-by-airplane upgrade.

Having participated in many cabin avionics installations, it's always a pleasure to hear that the passengers enjoy the flight more, and feel more productive at the same time. After all, your home life and workplace are becoming increasingly borderless, your on-board entertainment and broadband solution can be too.

Brian Wilson oversees all activities related to Banyan Air Services' avionics department; including sales promotions, aircraft avionics installations, bench and line troubleshooting, engineering and used avionics component sales. His avionics career started 30 years ago, when he joined the U.S. Navy as an Avionics Technician. Wilson has also worked at Midcoast Aviation, Raytheon, Bombardier/Learjet and most recently at Jet Aviation in West Palm Beach where he headed the Avionics, Engineering and Interior departments. He also serves on the Rockwell Collins Dealer Board. He can be reached at 954-232-3606 or email bwilson@banyanair.com



BRIAN WILSON