

The *Marriage* of Form and Function in VIP AIRCRAFT

BY DEL WILLIAMS

As technology proliferates, interior designers, electronics integrators and completion centers turn to a new breed of reliable, flexible In-Flight-Entertainment (IFE)/cabin management system for custom design, fail-safe function, and easy modification.

Despite the troubled economy, VIP air travelers today are still demanding impeccable style and function. This means everything from access to breaking news, market data, sports, weather, and flight info to custom creature comforts controlled via an expanding array of in-flight devices such as PDAs, laptops, touchscreens, and in-seat displays.

The technology genie is out of the bottle, so to speak, and it's the increasingly complex job of aircraft interior designers, electronics integrators, and completion centers to transform production-line aircraft into the personalized, flying offices and playgrounds of the world's elite.

As the effort to marry aircraft form and function is complicated by the staggering pace of new technology, a reliable, flexible IFE and cabin management system is becoming ever more crucial.

"IFE and cabin management systems are the biggest, most important single element in a VIP interior," said Rick Roseman, founder and director of RWR Designs, an aircraft design firm based in Dallas, Texas. "Each

system must be aesthetic and functional as well as completely custom. You'll never find another exactly like the one you just did.

"Getting it right depends not only on understanding the needs of the owner, guests and crew, but also on implementing an operationally flawless system," continues Roseman. "The designer, while broadly familiar with industry trends, simply can't keep up with every emerging technology. The skills of the designer, engineers, completion center, and IFE/cabin management group all come into play."

IFE and cabin management reliability is a chief concern of both aircraft interior designers and electronics integrators, as VIP air travelers—whether owners, guests, or execs—understandably demand perfection in the aircraft they or their organizations probably spent \$50 million or more to acquire and outfit.

"Like the flight crew depends on cockpit avionics, the aircraft owner, guests, and crew similarly depend on IFE and cabin management systems during the flight," said Leonard Olson, president and CEO of Future Jet Aerospace, a Dallas, Texas-based integrator of avionics and aircraft electronic systems. "Any flight without full IFE and cabin management reliability, while not being dangerous, may feel like being stuck in an elevator for the duration of the flight. VIP owners

and their guests pay for and expect more than this.”

On par with reliability, IFE and cabin management systems must allow flexible, easy modification in a range of areas likely to change. From design, implementation, compliance and troubleshooting issues to upgrades, owner whims, and evolving technical standards, investing in an adaptable IFE/cabin management system will save considerable grief down the line.

“Cabin design needs flexibility to encompass all the new technologies coming online,” explains Roseman. “Once an aircraft is delivered and put into service, you don’t want to tear out half the overhead to perform long repairs for what should be simple modifications. The best IFE and cabin management systems can be easily tweaked, adjusted and repaired in the least amount of time possible.”

“For design and implementation, programmable systems are best as they allow quick easy changes,” continues Roseman. “And they let the owner, guests, or crew conveniently customize their environment. For example, with a single touch pre-programmed lighting can be changed from a seductive cocktail setting, to a brighter study setting, to a fully lit exit or clean-up setting.”

Besides design adjustments required by new technologies, it’s common for owners to change their minds even after sign off. And one design change can lead to others, such as when walls, furniture or fabric are changed. This, for instance, can change sound absorption and lighting properties, which may require design modifications by sound and lighting engineers.

Compliance issues must similarly be addressed in many design changes. “To change some IFE/cabin management systems, its necessary to replace equipment, rewire the connectors, and

reintegrate the system,” says Olson.

“This can entail addressing a whole list of Federal Aviation Regulations (FARs) that may bring up stress, structure, wiring, flammability, containment, integration and interference issues.”

“Pulling a component from an aircraft to send to the manufacturer, for instance to have EPROM memory changed out, can cause headaches and a lot of downtime,” continues Olson.



It’s the increasingly complex job of aircraft interior designers, electronics integrators, and completion centers to transform production-line aircraft into the personalized flying office and playgrounds of the world’s elite.

“It’s a maintenance nightmare to open up the aircraft to remove a unit. When a multi-million dollar plane is grounded, any repair needs to be done quickly—so the owner is flying again, and not waiting on what should be a minor repair or upgrade.”

Olson adds that a good IFE and cabin management system allows troubleshooting by phone modem, since VIPowners may fly anywhere in the world. “You don’t know if something will go wrong in Trinidad or Tabago, but eventually the system will need to reboot for maintenance or to upgrade software. For flexibility that doesn’t inconvenience the owner or

interrupt his schedule, remote troubleshooting by phone modem is very desirable.”

A New Breed of IFE/Cabin Management System

For utmost reliability and necessary design flexibility, Future Jet Aerospace turns to the Smart-Link III (SL-III) Cabin Management Operating System on a regular basis. The SL-III system—created by

LaVerne, Calif.-based DPI Labs, integrates and orchestrates reading/cabin lighting, IFE and air gasper control, as well as attendant call functions in a centrally managed control panel, with scaleable system architecture that easily accommodates future aircraft enhancements.

The SL-III modular cabin management system not only triples in-flight reliability, but also cuts the need for maintenance spares tenfold, for significant inventory management savings and faster pre-flight checks that VIP aircraft owners and their guests will appreciate. SL-III features a bi-direc-

Continued on following page

VIP AIRCRAFT

Continued from page 63

tional bus and “smart pack” components, each with an embedded microprocessor and dedicated CPU that routes and processes information independently. This stands in stark contrast to client-server-based cabin management systems, which depend on servers for data.

When a server crashes, even on multiple server systems, a third or more cabin support systems may stop functioning. This can stress passengers who have trouble distinguishing critical functions from non-critical ones. In contrast, if a SL-III component fails, the remaining “smart packs” continue operating without interruption.

“Because the SL-III system is modular, it has built-in redundancy and keeps working even if a single device crashes,” says Olson. “It prevents the single point failures and crashes that took many earlier generation IFE/cabin management systems offline. This keeps the VIP owner, guests and crew comfortably functioning throughout the flight.”

Since SL-III’s parts are software configurable, the system also provides Future Jet Aerospace with the design flexibility needed to handle both proliferating technology standards and changing customer requests. Automated actions can be linked to a single event, much like PC macro commands.

For instance, a painting may cover a TV screen for space savings and aesthetics, and an overhead lamp can illuminate the painting when it covers the TV screen. For timesaving convenience, however, SL-III can be programmed so when the painting is slid sideways, the TV turns on and the overhead light goes out, all without pushing a single button.

“The system’s configurable modules minimize the need for redundant

maintenance spares,” says Olson. “Since the modules can be custom configured, there’s no need to carry three spares of every type of IFE or cabin management component. A stock of perhaps ten can be configured on demand, as needed. This tremendously increases reliability, while reducing cost, inventory and flight weight.”

Using SL-III, designers can create programmable lighting or air gasper sequences, as well. For example, on a hot tarmac, while waiting for takeoff or departure, a single button can turn on all air gaspers for better air circulation, or all lights for safer exit and faster cleanup. Individual lighting for the entire plane can be customized. For example, on a corporate jet, controls in a work area can be set to on/off, controls next to an entertainment center can be set to on/dim/off, and controls next to a bed can be set to continuous dimming.

“One VIPowner controls everything off his PDA using the system,” says Olson. “The system has also worked fine in an executive sports team configuration. This lets NBA, NFL or NFL coaches override each player’s custom settings to review game play. From a touchscreen at his seat, the coach can pause video feed to interject on the aircraft PA system.

“Because the SL-III system has an open architecture, it allows us to meet a wide variety of design needs,” continues Olson. “Since minimal changes are required for changes or updates, it streamlines the DER [Designated Engineering Representative] review and approval process.”

Moreover, for unparalleled service and technical support flexibility, SL-III even enables technicians to service, troubleshoot or upgrade cabin management functions via the Internet—anytime and anywhere a connection is available.

“If you were having car trouble, wouldn’t it be nice if you could pull to

the side of the road, connect to the Internet by phone and have a technician fix the problem for you?” asks Olson. “For system reboots, upgrades, or troubleshooting, that kind of help is available via the Internet using the SL-III system. This keeps the IFE/cabin management system fully operational for VIP jet-setters and execs, who don’t want grounded aircraft to interrupt their schedule or lifestyle.”

SL-III’s reliability and flexibility make it an ideal IFE/cabin management operating system for expedited design-management services, which handle engineering and certification issues during design to avoid costly delays and later re-design. Compared to traditional methods, this can speed aircraft completion and delivery into service by four to six months and save up to a million dollars in financing and leasing costs for aircraft owners.

As VIP aircraft interior designers, electronics integrators and completion centers grapple with proliferating technologies and escalating customer demands, robust flexible IFE/cabin management systems such as DPI’s SL-III will serve as stable ally. This offers hope in “saving the marriage between form and function.”

“The SL-III system is well suited for changes today and down the road,” concludes Olson. “It’s an evolutionary milestone. Like in the movie ‘2001 A Space Odyssey,’ as an industry we’re going from bone-banging apes toward putting a fully-crewed rocket ship in space. Only for our VIP customers, merely getting into space won’t be enough. They’ll be viewing the stars in comfort, with impeccable style and fail-safe function.”

For more information about the SL-III IFE/cabin management system, call DPI Labs Inc. at (909) 392-5777 or visit www.dpilabs.com. □

Del Williams is a technical writer based in Torrance, Calif.