Today’s world, including the business jet, is all about being connected. The executives now moving into the cabins of these aircraft are more aware than any previous generation of the need to stay in touch with events below.

These are customers for whom being isolated for just a few hours can cost a deal. Every day, in every way, they are connected—to the office, the broker, the stock market, the clients, and to the wife and kids.

Perhaps no piece of technology today is more representative of being connected than the cell-phone. The device is ubiquitous, and now it offers much more than phone service. Take the S-XGen from Seamless Wi-Fi, in which GSM cell access is actually a minor feature. The product has a four-inch display, Windows Pocket PC software, fold-out QWERTY keyboard, GPS, built-in Wi-Fi, Bluetooth capability, a 20-gigabyte hard drive and a camera. It also offers an eight-hour battery life from a single charge. The price, $1,400.

Even the iPod, once used for little more than storing and playing music, is being incorporated into the cellphone. At last month’s Consumer Electronics Show in Las Vegas, Apple introduced the iPhone, which has such nifty features as Wi-Fi and Bluetooth e-mail, photo library, wireless and a multi-touch display screen starting at a price of $499. The device will be available in June, with Cingular providing the phone service. Meanwhile, Samsung has introduced its S395 X380 cellphone, which incorporates an MP3 player with capacity for 250 songs.

While the airlines are firmly on board with the concept and are the initial focus of AeroMobile, the company has not been ignoring business aviation. But the segment is behind the curve for a number of reasons, said Coiley. Perhaps the most prominent is regulatory restrictions. At this point, AeroMobile has regulatory approvals from 25 countries, primarily in Europe and the Middle East. Approvals from the FAA and FCC in the U.S. are not expected until the end of this year or the beginning of next. However, added Coiley, the system can easily be adapted for use on business jets, and could be tweaked to support both GSM- and CDMA-based cellphones. “When business aviation is ready, we’ll be ready,” said Coiley.

The reliance on technology has evolved to a lifestyle, said Andrew Moore, principal marketing manager of cabin systems for Rockwell Collins. “And everybody is in high gear, trying to track trends and evaluate customer demand. We live in a world in which the digital lifestyle is the norm, and today’s business jet cabin has to support that lifestyle.”

“We see an increasing need by Fortune 1000 companies for greater connectivity,” said Jean
Menard, v-p of commercial and air transport sales for EMS Satcom of Ottawa, Canada. “As the older executives retire, they’re being replaced by tech-savvy 50-year-olds, and they know what they want in connectivity.”

Ken Snodgrass, director of technical sales for Honeywell, agrees. “They buy a $5 million house and the expectation is that they should have at least the same degree of connectivity in their $40 million airplane.”

He added, however, that the nature of the means of transport imposes some limitations on the use of technology. “Because the airplane is a rapidly moving means of transportation, we have to work hard to achieve that goal.” According to Snodgrass, research and development is now a major percentage of the budget of every electronics manufacturer, part of an attempt to keep up with the commercial electronics market, and it begins at the basic level. In some cases, larger companies are even providing R&D funding in support of their vendors.

Six to Eight Months Behind Commercial Technology

“We’re typically six to eight months behind the home or office electronics market,” said Mike Hammers of Audio International, the cabin entertainment division of DeCrane Aircraft. “The buyer wants everything—a high-speed Internet connection, satellite-direct television and radio reception, wide-screen, high-definition monitors, MP3 and iPod docks, and all of it integrated into the cabin system.”

Every manufacturer wants to be the first with the newest technology, whether it’s a lighter, brighter and bigger LCD monitor or more user-friendly and less expensive ground/air voice communication, or a true high-speed Internet connection.

In just the past year, LCD monitors have increased in size. Aircraft Cabin Systems in Redmond, Wash., recently introduced a 47-inch LCD priced at $39,500, and the company’s new 24-inch LCD is high-definition ready at a cost of $18,995. At the Consumer Electronics Show, Samsung displayed a 102-inch LCD monitor, Panasonic was showing a 103-inch model, and Sharp presented a 108-inch LCD monitor. If it’s available for the home theater, can the business jet cabin be far behind?

While Sharp did not reveal a price, consider the $70,000 tag on Panasonic’s 103-inch set, and go from there. How long will it take for Sharp’s video giant to appear in an executive 747? Depends on whether the buyer is willing to fork over the big bucks necessary to get it certified for use in an aircraft.

Gas plasma monitors for business jets? Not gone, but close, as LCD monitors grow in size and shrink in cost. Audio International, said Hammers, “never really fooled with gas plasma.” And Rosen Electronics of Eugene, Ore., is no longer offering gas plasma monitors, even as an option.

But the iPod is in. The music player is finding favor in the business jet cabin often enough that Lufthansa Technik has begun offering it as part of its Nice digital cabin management and in-flight entertainment system. The iPod has a special docking station in the aircraft that streams the audio output into the Nice system, allowing access from any seat or over the cabin speaker system. The device can be controlled at the seat through a graphics user interface. The Hamburg, Germany-based independent completion and refurbishment center expects the docking station to be available this summer. It has been installed in Bombardier’s Challenger 300 mockup and is being offered as a standard option with the Nice cabin system.

There is also a new three-channel, FD900X3B 900-MHz audio transmitter from Flight Display Systems of Alpharetta, Ga. The $1,479 package is made for Sennheiser HDR140 wireless headphones that use off-the-shelf triple-A batteries. Flight Display says the headphones will reduce cabin noise by 10 dB, which is certainly welcome news for passengers, particularly those aboard helicopters.

Alto Aviation of Leonminster, Mass., is now seeing its lightweight audio systems going into widebody bizliners, and more recently into three Sikorsky S-92s and an AgustaWestland AW139. “We had a phenomenal 2006,” said director of sales and marketing Chris Curley. “If things were any better we’d have people spraining their arms putting themselves on the back.”

Midcontinent Controls, a cabin management and entertainment systems provider near Wichita, has a new offering likely to catch the attention of smaller business aircraft owners—lightweight, small DVD players “very appropriate for a very light jet,” said head of marketing Ryan Peterman. The company supplies the entertainment system on Cessna’s Citation Sovereign.

Peterman echoes the experience of other cabin management system providers, who note that virtually every owner of an airplane going through completion or refurbishment is asking for AC outlets for laptops, portable DVD players and other electronic devices.

French cabin electronics specialist PGA Avionics is promoting its new Paradize 3 in-flight entertainment system, notable for the incorporation of on-demand video capability. It comes with on-demand audio and video, DVD, CD and videotape players, external video cameras, live television, moving-map display, high-definition monitors, mood lighting and individual reading lights.

If Wi-Fi is a requirement, Blue Sky Network of La Jolla, Calif., has an answer. It has launched a wireless airborne router extending access to its satcom data or for surfing the Internet. It supports features for multiple cabin passengers—from mapping to multi-player games—and for pilots who can exchange files with electronic flight bags. Packages for the Iridium-based service include modem unit, portable or console phone, dual-channel antenna and amplified headset adapter, normally priced from $10,995 to $14,995.

High-Speed Internet Access—A Reality?

A high-speed airborne Internet connection equivalent to that of ground-based systems has always been the goal—often an elusive one that has left some customers wary of the new technology.

Boeing Connexion’s eXchange showed promise, and that promise might be realized, despite Boeing’s decision to pull out of the program. Arinc came to the rescue late last year by offering to bring eXchange into the SkyLink satellite data network. With the shift to SkyLink, eXchange subscribers will have access to data transfer and Ku-band satellite programming.

It is also good news for Rockwell Collins, which is providing eXchange on Bombardier’s Global 5000 and Global Express XRS. The Rockwell Collins technology will give eXchange customers access to the full SkyLink suite, including live Internet and corporate intranet, e-mail, voice-over Internet Protocol (VoIP) global telephone connection and video conferencing. Arinc guarantees a minimum 512 kilobits per second (kbps) data transfer rate to the aircraft and 98-percent system availability.

Among advantages offered through SkyLink are service costs for VoIP that are “drastically lower than any other satellite broadband service,” said Stephen Means, Arinc v-p for aviation solutions. SkyLink plans also allow rollover of unused minutes from month to month, and coverage includes North America and Western Europe, with North Atlantic coverage to begin early this year.

Verizon Airfone, which had been the service...

Chatter-box Assures Chatter-free Environment

From down under comes a device its inventor says will provide in-flight cellphone users access to a variety of data functions without interfering with aircraft avionics and terrestrial cellular networks.

From Asio and its president Ron Chapman is SafeCell, and perhaps its more attractive feature is the elimination of audible, and annoying, voice calls through the cabin.

The unit will attach to cellphones with Bluetooth data connection capability or cable connection. SafeCell will muzzle the cellphone transmitting function, preventing users from making voice calls but allowing them to use the phone for SMS text messaging, e-mails and other data functions, such as games.

Chapman claims the device can function with all cellphone networks, adding that aircraft operators will benefit by offering passengers access to a low-cost data service without the need for expensive and complex pico-cell-based equipment.

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Verizon Airfone, which had been the service...
provider for MagnaStar, also did little to install consumer confidence. The company announced last year that it would discontinue service effective December 31 this year. On Verizon’s Web site FAQ page, the company advised users of the service to “seek an alternate hardware and service provider that specializes in airborne telecommunications.” It continued, “At this time we are unable to provide recommendations.”

Dassault Falcon Jet and satcom hardware manufacturer Thrane & Thrane of Denmark offered a proof-of-concept demonstration of its Swift64-enabled Aero-HSD+ last October aboard a Falcon 900. With Swift64, the Aero-HSD+ was capable of receiving data at rates of up to 423 kbps by simply switching high-speed units. It will also accommodate SwiftBroadband service, which is expected to be fully accessible via Inmarsat 4 (I-4) demonstration of its Swift64-enabled satellite array in November.

Cabin Management Systems Bring It All Together

If there is a single key to making all this work, it is in cabin management systems, a market in which Honeywell and Rockwell Collins are engaged. It’s all about integration of every aspect of cabin electronics into a single system, with capacity to expand and interface with new technology as it becomes available.

Honeywell is promoting its Ovation E series, with a one-gigabyte Ethernet bus. The company installed the first on its own corporate Gulfstream G550 about a year ago. “The one gigabyte allows it to run all the cabin systems, even on a BBJ, from lights, shades and satellite television to waste management,” said Honeywell technical sales manager Jason Yates. The advantages of a system based on an Ethernet backbone are considerable, not the least of which is weight. Instead of five wiring harnesses, said Yates, there is a single wiring harness, which saves a couple of hundred pounds. There is also built-in redundancy in the form of multiple routing, which Snodgrass described as “a mega-trend.”

Honeywell began selling its E-series cabin management system late last year, and the product is now finding its way into aircraft.

Honeywell began deliveries in November of its multi-channel MCS 7100 system, which uses EMS Satcom’s eNfusion SwiftBroadband technology. EMS Satcom is supplying SwiftBroadband hardware and software, as well as a range of Inmarsat satellite antennas and CNX cabin gateways for the MCS 7100 series.

Rockwell Collins’ Airshow 21 cabin management system is based on IEEE 1394 FireWire technology, rather than an Ethernet backbone, but the objective is the same: total cabin support. According to Moore, the system reflects a fundamental design principle for all future systems, specifically reliability and maintainability, from system monitoring, problem diagnostics, software uploading to content delivery.

Moore said the company isn’t offering mission rate of 384 kbps and reception rate up to 432 kbps per second.

A single-channel SwiftBroadband system is expected to give users a send-and-receive rate up to 432 kbps per second.

Ringertz was reluctant to reveal exact pricing, noting there are a lot of “ifs, ands and buts” remaining. “We don’t set end-user pricing, but savings are expected to be about 75 percent over existing service—about one dollar a minute for voice and a data rate of roughly $3.50 to $6.50 per megabyte.”

It’s Still All about Being Connected

Travelers on airlines today accept that air transportation is inconvenient, with a bland box lunch if you’re lucky, tiny seats, surly service, lost luggage and entertainment systems that deliver poor quality or don’t work at all.

The passenger on the modern business jet expects—and demands—more. While the quality of the airline experience reflects a dumpling down of air travel, passengers on a business jet expect a seamless transition to the lifestyle to which they’re accustomed at home or in the office.

If the passenger experience is paramount, then the reliability of that experience comes in a close second. In the past, said Snodgrass of Honeywell, cabin systems have gotten a rap for poor maintainability. “That’s changing quickly,” he said. “In the future, built-in unreliability will be commonplace, remote monitoring and repairs will be possible, as will the remote download of software upgrades.”

If it’s all about connection, any break in that connection is a failure, “and that’s what we want to avoid.”

Is it important to the end-user, the guy in the back who writes the checks? One new business jet owner, speaking recently with the cabin designer and airing an opinion not likely shared by the pilots up front, said he would rather lose an engine in flight than his high-speed Internet connection.

Peterman of Midcontinent adds, “It’s a challenge just to look a year ahead and determine what new technology is going to be available, but with OEMs building up backlogs into 2010, it becomes at best an educated guess.”

Arinc and Starling Launch Broadband Partnership

Arinc Direct and Starling Advanced Communication have announced an agreement to jointly provide "fully integrated broadband Internet solutions for business jets.”

Arinc’s SkyLink system and service is currently limited in its installation to business aircraft large enough to accommodate a mechanically steered tail-mount antenna. Under this agreement, Arinc will combine SkyLink with Starling’s MiJet and MiniMiJet fuselage-mounted broadband antenna systems, which Starling claims will open the in-flight broadband Internet market to thousands of mid-size and small business aircraft.

Arinc of Annapolis, Md., and Starling of Yokneam, Israel, will jointly develop and carry out service demonstrations, customer visits and sales support and according to Arinc senior director of satellite services Robert Thompson, “As of next year we will be able to offer connectivity solutions for all midsize and large business jets.”

With SkyLink, the system is expected to provide data speeds of three megabits per second. A preconfigured service will allow wireless connection.

Starling’s MiniMiJet antenna is 16 inches long and four inches high. Set to its highest level of performance it allows a data transmission rate of 384 kbps and reception rate of three to five Mbps.

AirCell’s Axxess is gaining traction in the world of high-speed Internet access. While Iridium-supported technology is several years old, allowing two-channel, voice and low-speed data communication, it is designed specifically to plug into broadband, either AirCell’s or another provider’s. It is one of the strengths of AirCell Axxess, and it will accommodate a wide variety of technology from other manufacturers. “We refer to the system as ‘network neutral,’” said Myers.

More recently, AirCell introduced Iridium-supported Axxess EZ, an equipment package designed to replace the MagnaStar system, which was supported by Verizon Airfone. “It’s a box-for-box replacement.”

Satellites Are the Electronic Highway

All of this electronic wizardry hinges on the satellite service providers, prima rily Iridium and Inmarsat.

Iridium, which has gained more than 8,000 aircraft customers since 2002, is currently operating a low-earth-orbit constellation of 66 satellites, which will reach the end of full-capacity lifespan by 2012. Meanwhile, the company is investing billions of dollars in the next generation of satellites to accommodate the current and future technology. Launches for the new satellite constellation are to begin in 2010. Meanwhile, said a spokeswoman, “We’re working to bring costs down, including new antenna technology and lower-cost equipment from vendors.”

Iridium closed 2004 with 200,000 subscribers and posted revenue figures topping $159 million through the first three quarters of last year.

Competitor Inmarsat is in the process of launching its fourth-generation satellite array and expects to launch the third satellite in the series to add Pacific coverage and ultimately fourth-generation global coverage by year-end.

The company demonstrated its Internet protocol-based SwiftBroadband service on a Honeywell Gulfstream last fall and “the products to accommodate SwiftBroadband are already available,” said Inmarsat head of marketing Lars Ringertz.

AirCell’s ST 3100 Iridium-supported package includes cordless handset and patch-style Iridium antenna.

It’s a challenge just to look a year ahead and determine what new technology is going to be available, but with OEMs building up backlogs into 2010, it becomes at best an educated guess.”