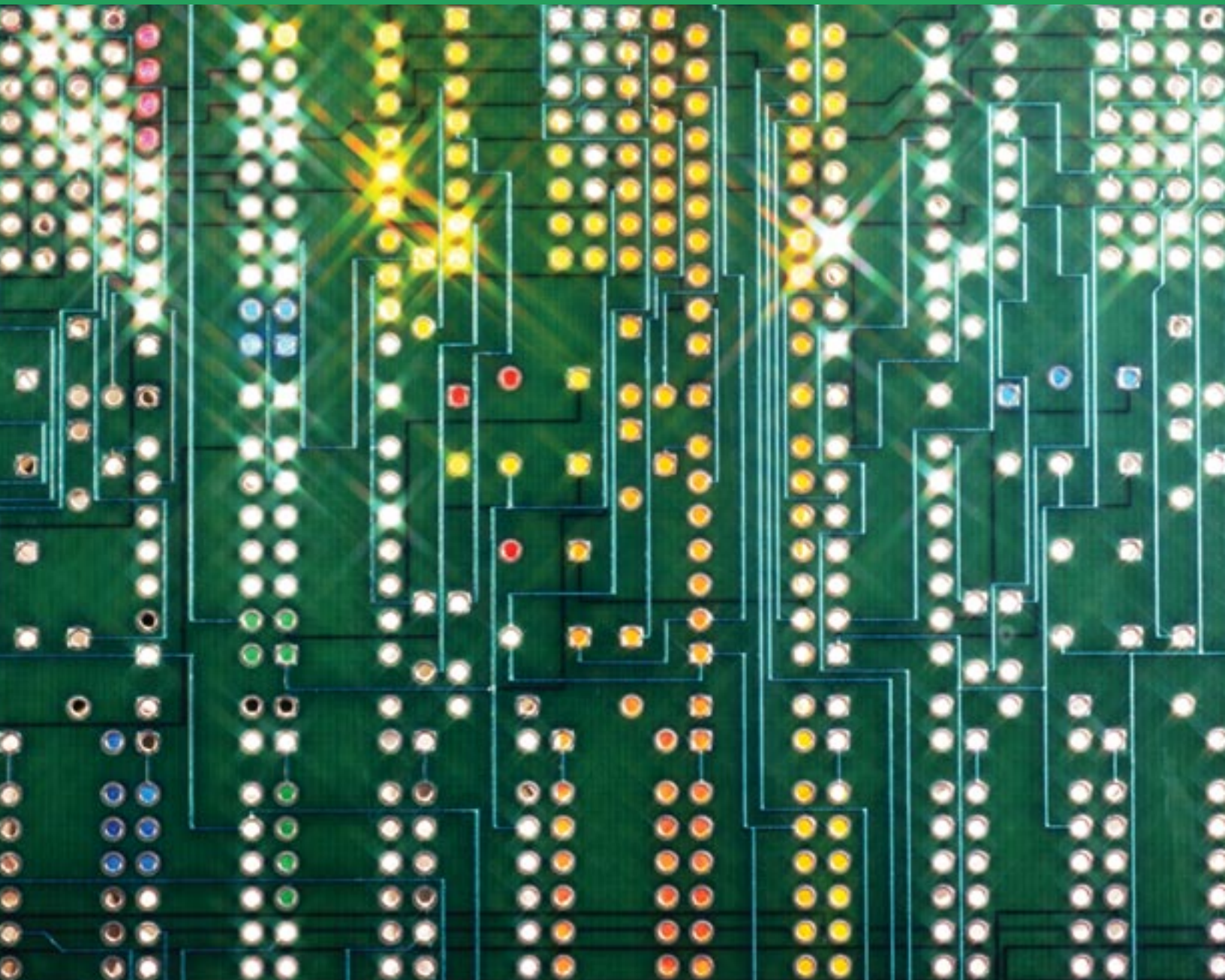


# BALANCING HIGH-TECH and HIGH-TOUCH IN HOSPITALITY

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Technology applications used by management and guests in the hospitality industry are changing rapidly. This article takes a futuristic approach in explaining the impact of these applications on business, customer satisfaction and safety, based on business travelers' technology preferences in selecting a hotel.



**I**magine typical Americans traveling for business or pleasure. The travelers check out a hotel's Web site, select their accommodations and make an online reservation, download the confirmation number and directions to the airport and hotel to their personal digital assistant (PDA). When they arrive at the hotel, a bell person meets them at the door and types their relevant information into a wireless, hand-held PDA, enabling them to skip a check-in line at the front desk. They're given a card that electronically unlocks their room — a room complete with Internet access, digital movies on demand, and high-speed phone line. During their stay, a computerized system keeps track of any extra charges they incur, adding them automatically to the bill.

All that reliance on technology is just the part of the hotel operation that's visible to the customer. Behind the scenes, computer software revenue/yield management is continually adjusting room prices according to changing supply and demand, controlling energy use within the building, providing online training programs for employees, tracking and ordering inventory in the hotel's restaurant, setting employee work schedules and monitoring the security of operations."

Hotel management is both an art and a science. In the past and today, technology centered on the science of the business — automating reservations, accounting and check-in/check-out of a hotel. Today, we are more "state of art" where we are forming closer customer relationships to better understand and serve "individual" guests. This is referred to as "customization." Technology is constantly expanding hospitality "horizons," benefiting companies to better serve their customers and their bottom lines. How companies apply this stream of advances in technology and telecommunications will be a factor in their future success or competitive challenge.

Digital e-communication allows a hospitality firm to obtain secure customer data. Companies are strategically using such information to build profitable relationships with their customers and vendors. They are using data mining and data warehousing

by leveraging the information to provide an "individual experience" for guests based on their preferences in the IT database.

The Internet has allowed companies and customers to learn from each other, communicate, and conduct business. Hospitality companies are making the technology of the Internet part of their core competencies for future success.

What the future of technology will bring to the hospitality industry is only limited to human "imagineering."

### Taking the customer's pulse

Four thousand business travelers were surveyed recently to identify important technology amenities and services to them when they select and stay in hotels. About 600 business travelers responded to the survey.

The average business traveler this study surveyed:

- stayed two nights per business trip (43.6%)
- took 12.81 trips or less per year
- took family with them (51.5%)
- combined business trips with vacation (60.7%)
- spent \$100-\$150 per hotel night (42.0%)
- stayed in upscale hotels (52.9%)
- was a member of a hotel frequent guest program (62.5%)
- used a travel agent to book a hotel (46.44%)
- attended trade association meeting/convention (25.6%)
- had access to Internet at home or work (99.8%)
- had an email address (99.8%)
- spent 30 minutes to one hour on the Internet per day (32.8%)
- purchased something on the Internet 1-4 times a year (43.8%)

The top ten most important technology amenities and services for business travelers were in-room temperature controls, easily accessible electrical outlets, alarm clock, remote control TV, phone on desk, additional data line accessible to desk, electronic key cards, high-speed Internet access, express check-in/check out, and voice-mail. (*Please see sidebar.*)

The least important technology amenities were smart card read capability, in-room electronic safety boxes, wireless Internet access in hotel, pay per view, video-conferencing capabilities, in-room personal

computer, in-room printer, in-room fax machine, wireless access to hotel Web site (Palm), and Web TV. (*Please see sidebar.*)

Based on this information, in the following section, the technologies hoteliers will use to be able to gain competitive advantage are predicted. In addition, predictions about the future travelers' technology needs as well as technological solutions to hotel guest safety issues are included.

### Handheld "Palm" and wireless devices

Handheld devices have a long history in the lodging and restaurant industry, but their major impact will be in the future. Handheld calculators were among the first business devices that allowed managers to forget about being plugged in. Mobile cell phones became so ubiquitous by the early 1990's, they were beginning to hurt hotels' telephone revenues.

Pagers and other handheld communications devices such as two-way radios allow management to be in contact with staff throughout the hotel. The most obvious handhelds were wireless or infrared order pads used in restaurants, so that servers could communicate orders directly to the kitchen from the dining room.

PDAs like 3Com's Palm are poised to play an ever-greater role. PDAs and cell phones may soon double as remote controls inside hotels, and allow guests to check-in, unlock room doors, send e-mail to guest-room printers, pay vending machines and control room temperature with PDAs equipped with Blue-tooth technology. This Blue (sky) tooth, (Blue tooth = more info), enables electronic devices to talk to one another over short distances wirelessly.

"While it's mostly upscale properties that are focusing on gadgets, some mid-price outfits are also trying them out. If all goes as planned, guests soon will be able to check in from their taxis, then walk into their room to find the radio set to their favorite station. Travelers will use their Palms from home to select everything from room service to pillow preference and, once there, talk to other guests via in-room cameras." (*Wall Street Journal* April 27, 2001, p.9)

### (Wire) less = More

Hotel companies, seeing an increase in online bookings, are now entering into



## HOTEL TECHNOLOGY AMENITIES AND SERVICES BUSINESS TRAVELERS WANT

In order of importance (1=Not important at all, 2=A little important, 3=Somewhat important, 4=Important, 5=Very important)

In-room temperature control . . . . .	4.51
Easily accessible electrical outlets . . . . .	4.32
Alarm clock . . . . .	4.25
Remote control TV . . . . .	4.19
Phone on desk . . . . .	4.16
Additional data line accessible to desk . . . . .	4.01
Electronic key cards . . . . .	3.56
High speed Internet access . . . . .	3.55
Express check-in/out . . . . .	3.53
Voice-mail . . . . .	3.50
Business center . . . . .	3.46
In-room coffee maker . . . . .	3.38
Central 800 reservation number . . . . .	3.31
On-line reservation capability . . . . .	3.27
Automatic teller machine at hotel . . . . .	3.08
Extended information about hotel on-line . . . . .	3.07
Portable/speaker phone in room . . . . .	2.91
Smart card read capability . . . . .	2.76
Wireless Internet access in hotel . . . . .	2.68
In-room electronic safety boxes . . . . .	2.67
Pay per view . . . . .	2.44
Video conferencing capabilities . . . . .	2.41
In-room personal computer . . . . .	2.27
In-room printer . . . . .	2.27
In-room fax machine . . . . .	2.15
Wireless access to hotel web site . . . . .	2.10
Web TV . . . . .	2.00

the wireless world. Six Continents Hotels allows customers to reserve hotel rooms on wireless devices such as the handheld Palm VII or on Web-enabled cell phones like Nokia 7110. Hilton has introduced a Palm VII reservation system and Marriott and Starwood are exploring options for selling rooms wirelessly. Sabre, Galileo and Goto.com have Internet travel portals where guests can make (and update) reservations with the use of cell phones and PDAs. Starwood is piloting a check-in/check-out terminal at a Sheraton using a handheld device named "Starwalker." This allows employees to check-in customers, give them a room key and print a receipt. A wireless printer can be worn.

It is a bold new wireless world. Here are a few predications for more innovations to come:

■ "Cyber trainers and cyber servers" will provide instructions remotely via wireless telecommunications. For example, a mas-

ter baker will monitor and instruct workers in a bakery through video- and audio conferencing technologies. Restaurants will be able to remotely consult seasoned wearable computers, "Superstar Servers," to assist inexperienced servers trying to handle their increasingly demanding customers. Virtual service managers will be able to see the monitor, and then mentor servers on technique from a remote location.

■ Technologies will enable self-service and self-paying at restaurant, similar to some grocery stores; look for the "cashierless café."

■ Cashless credit/debit systems of payment will proliferate. All transactions will be conducted via "smart cards" containing all possible customers information. This information will be collected and used for more efficient target marketing. In the future, PDAs and cell phones will replace smart cards as a way to charge services. "Speed-pass" like those used on toll roads, will be used in hospitality (and built into a cell phone for example).

## Tourism and Terrorism: Technology Solutions

**Biometrics.** Roughly 200 small companies have been preaching for several years that the way to make sure of someone's identity is through biometrics, the use of automated systems to confirm physical characteristics such as fingerprints or the pattern of blood vessels in the retina. September 11 is giving them the chance to prove it.

A host of technologies has been available, at least in development form, to match people with their known attributes. These include fingerprint and retinal scanners, facial recognition software, pen-sized accelerometers that can measure the precise hand movements used to sign one's name — data far more difficult to disguise than the signature itself — and a host of other parameters. Many of these techniques are now deemed reliable enough for practical application. In Malaysia, national identity cards now carry a fingerprint scan to confirm the holder's right to them. Compaq and Dell are building scanners into high-end laptop computers to discourage theft.

At a recent Super Bowl, the Tampa Police Department tested video technology to scan the faces of everyone who entered the arena and run the scans against a database of known criminals. The police department was able to identify nineteen such persons, but chose not to make any arrests. The software program used is called FaceTrac, and can be purchased for commercial security uses, and therefore is a plausible biometric addition to hotel security. Though biometric devices in use today are not generally linked to police files, they could be in the future, thus increasing security in public areas, but also raising privacy concerns.

Hotels could use facial scanning software to identify who enters and stays in a hotel. Hotels are not required to provide accommodations for known criminals, so with the ability to monitor entrances, guests would be more secure in the hotel. Criminals that travel or are fleeing and stay in hotels would have a much more difficult time finding lodging, or they would be arrested on site at the hotel. These scenarios lead to concerns about what the perception would be of other guests or if innocent people's privacy is

being compromised. Based on facial scanning, hoteliers could turn away business, but are they obligated to turn in the criminals they identify?

While facial scanning is almost a fool-proof method of identifying people, it may not be appropriate for internal hotel activities, leading to the consideration of other forms of biometric identity, mainly used for access control. No longer do guests have keys to their rooms, everyone is given a small card to insert into a slot in the door, including housekeeping and other employees. Electronic locking doors were introduced in the late 1970's and reduced break-ins by 80 percent. These cards can be programmed for a specific room and length of time, they are also inexpensive and reusable, which is why they are so popular. Key cards allow the hotel to monitor who has been in and out of a specific room as well as the time they entered. Unfortunately, key cards, like normal keys can be stolen or given to others. Even if hotels only give two cards per room, there could be many more people staying in the room, of whose presence the hotel is unaware.

If hotels implemented a fingerprint entry system, there would be lessened concern about improper entry. By using a fingerprint entry system, hotels also could more accurately regulate the number of people staying in a room and charge appropriately. Only registered guests would have access to the room via a fingerprint. On the downside, check-in could be a more difficult process the first time because all guests would have to be registered in the system.

In addition to room access there are other guest benefits with the use of a biometric system. If outlets in the hotel are equipped with fingerprint input devices, room charges could be greatly simplified. For example, guests would be able to charge juice at the poolside café without having to bring anything with them to secure the purchase. Repeat guests would not need to have their information put into the system, making check-in much smoother and allowing for more efficient use of lobby kiosks and other quick check-in methods. Just as reservation systems are linked, one day it may be the case that once guests stay at any chain location, their information is stored and transferred to other locations.

Ultimately, the guest would have increased security during their stay. Most people would appreciate the convenience, but it must be explained to them that their entire fingerprint is not stored, just a few key parts, and if their image was scanned, it would only be scanned against known criminals and would not be stored for future use.

With fingerprint readers on guest room doors, management could accurately monitor who is entering which areas of the hotel and at what times. Security access could be given without having to scan key cards. Employees could clock in and out using their fingerprint, leading to a more accurate time keeping method. Computer terminal use could be regulated by way of fingerprint identification rather than passwords. Each employee would have access to certain programs based on the requirements for a particular job. As mentioned before, a password could no longer be stolen or used without a person's knowledge.

The use of biometrics would nearly eliminate the need for passwords or PINs. Passwords derive user identity through user knowledge, which has nothing to do with their actual identity. Inevitably someone gives his or her password away or someone else finds it out, allowing access to the system under a false identity. Many times managers will give codes to do voids, comps, etc. to front-line employees. This leads to misuse and security concerns, especially when dealing with sensitive guest information, and guest safety.

As with any new technology there are issues that must be addressed before a system can be put into place. Biometric systems in public places may not be readily accepted because of prevailing "big brother" concerns. It will be the responsibility of the hotel to educate guests and staff on the specifics of how the system works in order to quell the fear that the government is processing all of their information. In addition, individual choice must also be addressed. Because of the stigma associated with fingerprinting (i.e. one has committed a crime), hotels may initially lose business when they implement biometric systems. At the very least there will need to be some transition period where guests have a choice of which system they use.

However, reliable technology is not the

only requirement before biometrics can be used to protect credit cards and other financial resources. Facial recognition software, for example, will be of little use in airports until someone — most likely the government — provides photographs of terror suspects. (Clearly, this is not a problem in the case of credit cards, where the applicant can be required to supply a picture before the card is issued.) Although privacy issues have faded from public attention in the wake of the World Trade Center and Pentagon attacks, they remain a concern whenever organizations gather data about individuals. And whatever biometric technology is chosen to secure credit cards, or any other potential target of fraud or terrorism, the cost of rolling it out is likely to be substantial.

Yet biometrics still beckons as the best hope for anyone concerned with establishing someone's identity beyond doubt. In the age of the war on terrorism, credit card issuers may have no choice but to adopt it in some form. Of course, biometrics can be used for enhancing guest services. For example, facial recognition as a guest approaches the front desk can electronically trigger the name of the guest checking in or requesting service of the front desk clerk to personalize the service.

#### **National ID Card for Hotel Security.**

More than 100 countries have a national identity card or some equivalent system to identify citizens with certainty. The United States could join them in the near future. The threat of terrorism has finally eroded the barriers of "don't-tread-on-me" individualism that once made a national identity card unthinkable. According to recent polls, Americans no longer worry greatly that it will give the government unprecedented access to databases full of personal information; they fret that its absence will allow would-be terrorists to escape detection until it is too late.

Establishment of a national ID card is not as great a change in current practices as most people imagine. Get stopped for a traffic violation, and the police are almost sure to check with the National Crime Information Center database to make certain that you are not a wanted criminal. The IRS has contracted with a company called ChoicePoint to give its agents instant access to some 10 billion

public records of financial, housing, and other personal information about virtually every individual in the country. And the federal government has set up a database that includes the names, addresses, Social Security numbers, and wages of virtually every working adult in the country, as well as those who have recently changed their jobs.

One alternative to the national ID card is to standardize driver's licenses, so that government agencies can more easily capture information from them in their own databases. However, establishing such a system would require each state to change its own software and then roll out the new cards over three or four years, as drivers get re-licensed. Some move to make driver's licenses mutually compatible seems highly likely, but as an adjunct to a nationwide ID, not as a substitute for it.

**Data Mining = Marketing.** The term "data mining" often refers to the practice of searching through large databases in an attempt to find common factors among the individual elements, or useful information in their relationships. For example, an issuer of credit cards might use data mining to identify a subset of customers who appear to be credit-worthy by normal models, but nonetheless are likely to experience trouble in paying their debts. Alternatively, they might use this process to identify customers who will respond unusually well to promotions and special offers. Hotels are looking at a way to combine the efficiency of high technology with the "high-touch" personalization that technophobes often fear will be lost as computers continue to "take over the world." In the context, data mining refers to the practice of keeping detailed records about customers in a form that can be used to tailor future interactions to their preferences. Amazon.com's carefully tailored sales efforts are one good use of this technology.

The hospitality industry lags far behind Amazon in this regard, but the potential applications are obvious. Whenever a return guest arrives, he/she should be gently asked a host of questions: do you want the same breakfast as last time? Black coffee, with Equal? Should we credit your stay to the same airline-miles program? Do you want a 7:00 wake-up call again? Allergies to down pillows? Reservations for the opera

again? Dinner at the same restaurant? All this information is automatically collected on his or her first visit. It can be retained and used transparently to make future stays as comfortable as possible.

Similar techniques can be applied to virtually any industry. To tailor each customer's experience to individual needs and preferences. The spread of this brand of "data mining" will be one of the most significant changes in business of the coming decade.

**Artificial Intelligence (AI).** Forms of AI, called expert systems, have been in general use for years. An expert system is based upon a set of guidelines that are preprogrammed into an application. It basically takes the knowledge from experts and encodes it into software. A system, for example, can be programmed to monitor staffing levels and sales and make recommendations to send people home or call additional people in based on staffing requirements to sales volumes.

When the system looks at trends, learns, and acts on its own, this is a form of AI. In an automated hotel check-in situation, AI can be used to guide the quest in selecting a room based on biometric data gathered. For example, customizing the room amenities for male or female, or automatically adjusting lighting and heights of showerheads in guest rooms based on age and anthropometrics, etc.

AI also could help guide interactions with customers. For example, biometric systems are currently being tested in a variety of retail environments. The systems make educated guesses about gender and age, as to, whether an individual is a child or an adult based upon measurements of height and weight.

### **The High-Tech Hotel Guestroom of the Present and Future**

Many hotels now provide interactive television and Internet services including music, news and targeted advertising, as well as high-speed Internet access, on in-room TV. Guests will find a wireless keyword in their rooms allowing them to order movies and music on their television, check e-mail and surf the Net on their TV set. A digital box in each room will operate everything from the lights to the television and the curtains.

At some properties guests can have

almost any newspaper delivered to their door, thanks to a system that downloads the pages and prints them on sheets. An added bonus: the service uses high-quality paper to prevent smudging.

Guest can sip Merlot and not feel lonely at the bar, because the hotel installed outlets for laptops. Most properties also have 24-hour "technology concierges" to help guests. Along with poolside "laptops," guests at some properties have everything from DVD players to Web-enabled TV's. Room keys may be obsolete also, replaced by smart-card system allowing guests to use a credit card to bypass check-in. For hotel housekeeping, a vacuum cleaner that uses sonar to recognize walls and objects in the hotel as it sucks up dirt, and a robot assistant to lift, push, pull, or haul anything weighting less than 150 pounds.

Other high-tech developments in hotels could include:

- In-room virtual-reality entertainment center or "edutainment: delivery on-line "cyber courses."
- Robots that clean specially designed bathrooms and vacuum the guest rooms and public spaces.
- Soothing white noise at the touch of a button to help guests unwind.
- Biometric keyless locks that scan a guest's eye or finger to allow access to the guest rooms.
- Electronically-controlled mattresses for the right level of support, and bed comforters that monitor body temperature to adjust the temperature ("not too hot and not too cold").
- Alarm clocks that can increase the amount of light in a room rather than the standard "loud" sound.
- Windows that project virtual guest-selected scenes or works of art to create a comforting environment.

### **The Bottom Line**

In all of the afore mentioned innovations, it is important for technology to blend as part of the hotel environment — balancing "high-tech with high-touch."

Technology should enhance the guest experience and assist staff and managers to perform "guest friendly service." The goal is to "make life better away from home" for the guest and create as near a seamless reality as possible by blending home and hotel in harmony. ■