



No single factor looms with more uncertainty or greater complexity for investors in the hospitality sector than how the industry can best make technology investments to gain competitive advantage. Technology is a big-ticket item in terms of costs, and the amounts investors are being called to finance are growing. And if the industry plans to keep

worldwide? What will this mean for hotel operations, marketing and customer service?

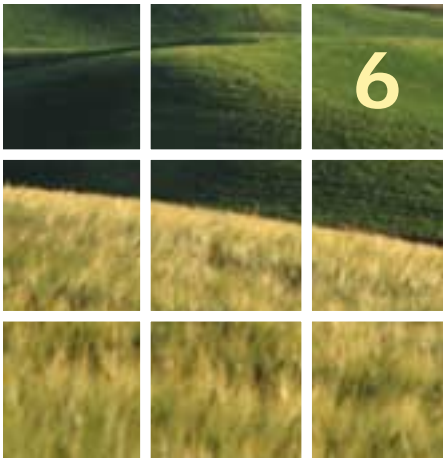
Open architectures in hospitality technology

Today's hospitality industry technology represents a legacy reflecting the computer industry's capabilities during

BY
ROGER S. CLINE
CHAIRMAN AND CEO

Investing in Technology for Competitive Advantage

The challenge facing the hospitality industry



on top of new advances, it will cost even more. Indeed, some hospitality companies have invested unprecedented sums in technology while others continue to face the challenge of persuading hesitant third-party owners of the merits of such investment.

These and other factors pose important questions. If investors do not support spending on technology, hospitality companies will suffer not just in information management but in service to guests. But what price tag for technology

the last two decades and the willingness of hotel executives to embrace its products. We stand on the latest wave of a historical evolution beginning with the early hotel accounting systems in the 1960s and early 1970s. These were followed by a variety of front-office systems introduced in the 1980s and finally to today's property management systems and the latest efforts in integrated customer information systems, data warehouses and the like.

But in recent years, critics have been increasingly harsh with their comments on the computer systems and software applications used by the hospitality industry. Typically custom-designed for proprietary application, these systems have not always been successfully integrated. In the past hotel owners and management companies would buy products from technology vendors specializing in one area or another (front office, back office, reservations, food and beverage, sales and marketing and the like) — and integrate these systems with varying degrees of success. The hospitality industry is thus beset by a multitude of

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is appropriate? Even more, what are the implications for the hospitality industry as technology ultimately creates seamless networks of information and opportunities



technology applications offered by numerous hardware and software vendors. There are, for example, no fewer than 85 different property management systems available to owners and managers of hotels offered by technology purveyors, some stable long-term providers to the industry, others much less so.

Meanwhile, most technology vendors continue to address individual parts of the industry's real needs with little regard

The industry has failed to cooperate in the development of shared technologies. And little change in attitude has been evident during the past three or four years as the technology revolution continues to roll forward at an ever-quicken pace. And when a sound system solution is delivered to address an industry need, there is no mechanism for it to become an industry standard and thus picked up by others struggling with the same problem.

to total system solutions. And hospitality companies tend to contribute to a fragmented marketplace quite simply by the way they purchase systems. It is often the case that a hotel company will buy a reservation system from one vendor, a property management system from another and a marketing system from yet another, depending on who makes the best products. And while there are proprietary "clusters" of related technology, the general fragmentation that has existed appears unlikely to change in the near future.

Even more importantly, the industry has failed to cooperate in the development of shared technologies. Moreover, little change in attitude has been evident during the past three or four years as the technology revolution continues to roll forward at an ever-quicken pace. And when a sound system solution is delivered to address an industry need, there is no mechanism for it to become an industry standard and thus picked up by others struggling with the same problem.

With the variety of applications for different parts of the business attended to by different vendors, it is not surprising that interface and integration are now major problem areas to be attended to. What some critics refer to as the industry's problem with closed architecture has undoubtedly cost the hospitality industry money, eroded efficiency and limited technology's benefits. But the race to put technology to work for the industry also leads to other questions

related to global marketing to consumers, as well as the expanding customer services that will ultimately include Internet access and other technology routinely placed in guest rooms. All this, of course, comes at a cost. The choices that hospitality companies make in the technology realm will have profound impact on competitiveness and return to investors. These choices are not easy. Indeed, they may be among the most complex the industry faces.

Improved integration

While integrating disparate systems is an important challenge for the industry, it is fortunately a somewhat easier task today than it has been in the past. Whereas previously hotel computer systems would tend to be free-standing and require modest maintenance, we are now migrating rapidly to environments that include Windows® applications and network solutions in which that middle component (the connection between the hardware and the application software) is

becoming a more significant element in the system. Integration is clearly an important step into the future, with connectivity established between individual property operations, customer information systems, data warehouses and centralized management.

The question for many hotel organizations remains how to achieve the ultimate open system that can be shared at all levels, whether it is the central reservation system, individual property management system or any other operational area. Until now, the center of the universe has been the property management system, but that era is ending as companies realize that an exclusive focus on the customer must be supported by fully-integrated customer information systems. Anyone who is arguing on behalf of a closed system in this kind of an environment is arguing against the market.

A question of industry standards

Not all the responsibility for integration, however, lies with technology providers. On the buyer's side there must be greater recognition of the commonality of needs regardless of the type of hotel property involved. Is it really necessary to continue to re-invent the wheel, for example, with all of the differing property management systems now available in the market? Even more, can the hospitality industry agree on technology standards, which are essential for full conformance and integration of systems? If the vendors can agree on interfaces between their products and other sub-systems, the hospitality industry could benefit greatly. The lack of industry-wide standards — or a hospitality industry organization to create or endorse such standards — is clearly a stumbling block.

There may be some rationale for keeping certain applications proprietary to individual companies and their properties. But failing to support development of shared interfaces between systems is short-sighted at best. And



ultimately it is not the hardware or even the software that delivers the competitive advantage — it lies in what management does with the information when it gets it. Note that the successful hospitality organization of the future is one which reduces the traditional bias towards analysis with an associated increase in creativity. If the industry is to come together and buy into the development of common standards, it will require acknowledgment of this reality.

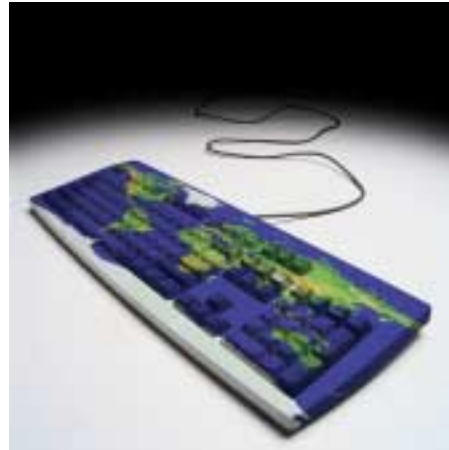
Technology cycles

Timing is everything in technology investments. For hotel management, knowing when to invest in technology and what new developments to purchase is critical to managing the long-term cost and the benefit of investment in technology. A recent survey suggests that the hospitality industry as a whole has been more conservative than most in making technology investments. Microsoft — in concert with *Lodging Magazine* and *Hospitality and Automation* — this year completed an industry-wide survey of technology applications in use and plans for the future. The survey results revealed that more than 70 percent of respondents are using property management systems, word processing, spreadsheet, accounting and point-of-sale applications. Fifty

On the basis of these results, even the biggest supporter of our efforts to systematize our processes would have to acknowledge that this industry remains far behind many others. But with the recent upturn in the industry's fortunes, together with the increased availability of technology at lower per-unit costs than ever before, there is clearly a plan to increase the spending.

percent have sales and catering applications, and 20 to 35 percent use presentation programs and scheduling. The Microsoft survey further discovered that 25 to 30 percent of respondents plan to install property management systems, e-mail, sales and catering, point-of-sale

and accounting systems in the next 12 months. On the basis of these results, even the biggest supporter of efforts to systematize our processes would have to acknowledge that this industry remains far behind many others. But with the recent upturn in the industry's fortunes,



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The Microsoft-sponsored survey, in fact, went on to discover that 25 to 30 percent of respondents plan to install property management, e-mail, sales and catering, point-of-sale and accounting systems in the next 12 months. Longer

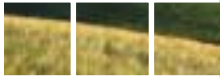
term (over the next five years), 60 to 70 percent plan to install property management, office automation, accounting and sales systems, while 50 percent plan on telecom and food and beverage systems. Forty percent will add in-room applications. Even with these plans, however,

there is clearly much to be accomplished in bringing the industry into the next millennium — at least from a technology standpoint.

Technology breakthroughs are generally considered to be cyclical. New applications are coming to market faster than ever before, and the time between conception and implementation grows shorter. It has been said that technology development in the industry once ran in seven- to nine-year cycles. This undoubtedly is no longer the case, however. In terms of pure technology, recycling appears to be occurring virtually every other year now. For the hospitality industry, the technology development cycle probably breaks into three- to five-year intervals. Indeed, the next breakthroughs in hospitality technology may occur when the property management system is finally dislodged from its place at the center of hotel computer systems. The next big cycle will focus on the fully integrated system that brings customer, statistical and financial information together through an integration of property management, central reservations, data warehouse and distributed database systems. This appears to be where a number of the larger chains already are heading.

Network centric computing

We are on the threshold of some major breakthroughs in the use of network centric computing, an expression coined by IBM to describe the remote off-site world of data collection, information processing and system application that occurs in cyberspace. The integration of computing, telecommunications and interactive cable television to move information is driving this evolution, which will eventually create a seamless bridge for global sources of information. It is only a matter of time until the Internet evolves into a single, powerful highway of information supported by diverse technology applications, many already in



development. At the same time, the hospitality industry will also benefit from the development of intranets, internal networks built with the same standards and infrastructure as the Internet and World Wide Web. Intranets today offer the potential for streamlined and enhanced internal communication, and may be particularly beneficial for large organizations with scattered operations.

Further out on the horizon is the prospect of an outsourcing vehicle that

at work, or at home. This will require a migration from today's central reservation systems to tomorrow's customer information systems using network-centric solutions. Development of customer profiles and guest recognition will make it possible for hotel organizations to interact in entirely new ways with customers, regardless of their physical location.

Clearly, the large hotel companies will need to be the first to address questions

systems will be required to mitigate the concern many will have with system security.

In the final analysis, networking solutions will drive down the cost of technology investment "on-property" where hotel real estate and business interests merge. The solutions that hotel organizations will be able to choose from in terms of networking should also be less expensive than the current profile of technology spending. And we can expect that change to occur sooner rather than later, given the present rate of investment in Internet-based technologies.

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can supply the computing service to all-comers, even single hotel property owners who otherwise face a distinct competitive disadvantage as the technology revolution passes them by. And lest the particularly demanding hotel chain be concerned about its unique needs, there should also be the opportunity within an outsourced networked system for appropriate customization at reasonable cost.

Network computing has enormous implications for marketing to customers on a global basis, as well as hotel operations. Consider the potential for the industry to connect with vendors worldwide for electronic purchasing, potentially achieving economies of scale and leveraging not yet possible. World purchasing functions will allow companies to customize their own catalogs. Virtual channels of distribution using computer networking capabilities will also allow hotel companies to market products and services — some traditional to our industry, others not — to customers whether they are in the hotel,

raised by global networking capabilities and what this will mean in terms of technology investment. But for many hospitality companies presently struggling with the high cost of technology and the confusing state of our industry's technology affairs, this will not be an easy task. And the decisions will ultimately become further complicated by the opportunity to outsource certain functions into subscription-based networks.

It is unlikely that the hospitality industry will be forced to bear the entire burden for networking infrastructure. Strategic alliances with major technology companies will be the catalysts in building this capability as they become strategic providers of networking capabilities to hospitality and other industries. And as network-centric computing comes of age and a company's proprietary information is stored in cyberspace, security will become an ever-more important issue requiring solutions. Whether it is an e-mail gateway through an internal network or customer access via the Internet, network fire walls and encryption

The technology-savvy guest
Meanwhile, the hospitality industry's customers — hotel guests at large — have become increasingly dependent on technology — and more demanding in terms of in-room technology support. This is particularly true for the business traveler whose laptop computer often serves as a mobile office. Technology-driven entertainment options for guests — both business and leisure — also will require investments in the future. Indeed, Internet access will likely be a routine guest service at some point for hotel organizations seeking to remain competitive. And it is hoped we will find inexpensive reengineering solutions that will allow technology to be introduced into physical spaces (such as hotel rooms) without necessitating huge expenditures on re-wiring and re-tooling of existing equipment. The signs of late are encouraging.

Both IBM and Oracle are working on low-end PC products that will provide all of the relevant network interfaces and windowing required. With prices expected in the range of \$300 to \$700 per device, these appliances will serve an exclusive networking function for economical use in the home. And there are more such products to come as other major technology companies go to market with similar offerings. Clearly,



such devices have implications for use in hotel guest rooms. The industry has historically “mortgaged” its guest room space to third-party providers of entertainment service. In this coming wave of in-room technology, there may be an opportunity for hotel companies to become more proactive in the development and provision of in-room communications and networking solutions that will inevitably need to be provided in the hotel product of the future.

As technology evolves in our industry, we can expect customers to do more and more for themselves. This is already the case with lobby check-in kiosks and use of the Internet as an electronic travel agent to book hotel rooms. Indeed, those capabilities call into question the future of travel agents. What role will travel agents play in the face of increasingly direct customer access to the industry’s reservation systems? If your title has the

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word “agent” in it, it is probably time to be concerned about the tightening of the direct relationship between hospitality companies and their customers, which is now being facilitated by technology.

Ultimately, customers may use Web casting devices that will allow them to create the best itinerary for travel based on a custom-designed profile. The workforce has become increasingly mobile as people work at home and from hotel rooms all over the world. In the future, it is likely that travel-related companies will provide booking software modules for use by large corporate customers and individuals alike that will

work on home or office computers — with customized profile information that includes hotel and airline preferences or restrictions set by company travel policies. Such a trend will increase the pressure on hospitality companies to respond with sophisticated yield management systems and marketing approaches.

Maximizing revenue

Yield management — often today referred to as revenue optimization — has come to the hospitality industry via the airline business where high-tech solutions to forecasting based on complex algorithms have generated tremendous improvements in yield. But for yield management to become truly effective in the hospitality industry, much more will need to be accomplished in terms of technology support and the interface between the market reality at the property

level and the centralized reservations systems that have now become such an important part of the industry’s distribution system.

Consider what the industry was like before automation. All of the room inventory existed at the individual property level. Over the course of time, hotel companies fractionalized that inventory. Some remained at the property, while other parts moved to a central inventory or out to a global distribution system. Of the various challenges facing hospitality companies in the future, the task of bringing that inventory back to a central location is a significant one. Such

an inventory would produce a single image that can be accessed by all points in the distribution system and would generate consistent information as to availability and pricing — a simple concept with tangible benefits but one that has yet to penetrate this industry. With revenue enhancement opportunities variously estimated in the five- to seven-percent range as such systems are centralized, this should be a quick win for our industry.

Telecommunications and computing

The current state of telecommunications is confusing to most business people in those countries that are privatizing and deregulating their telecom industries. In these countries, we can thus assume that the hospitality industry is in a similar state. The telecom business is in a state of flux worldwide and with deregulation, we can expect more options and competitive pricing. In the United States, for example, it is conceivable that hoteliers will eventually be able to look to one vendor for all telecom needs — local, long distance, 800 number services, cellular, in-room entertainment, data services and Internet access.

In response to this prospect, we are likely to see a greater integration of the computing and telecommunications functions. Voice activation systems will soon arrive in central reservations offices, announcing the beginning of the early breakthroughs in the linking of computing and telecommunications. And as the telecom business continues to privatize and deregulate, the battle for customers will escalate. Clearly, the industry’s leadership will need to keep an eye on this. It will probably take a while for all the dust to settle especially in the United States where there appears to be a free-for-all in this arena. But the end result should be lower unit pricing — an essential element for the hospitality industry as it seeks to align a seamless



integration of the telecom and computer systems sides of its business.

For international hospitality companies with chains of properties in countries around the world, the outlook should be more circumspect. For such enterprises the delivery of consistent basic telephone service in some countries will clearly need to precede further advancement of telecom technology.

Technology investment — the future

From a pragmatic view, hotel organizations vary widely in their ability and willingness to track the cycles of technology advances. Some organizations are early-adopters, while others embrace advancements after they have been already tested by others and the investment risk is reduced. Selling the newest technologies outside a small circle of early-adopters in our industry is not easy. And because of the special relationships that exist between hotel companies and the third-party owners of the hotels they operate or between franchisors and their franchisees, selling the technology investment idea to these constituents is also a major challenge. It is essential that technology investment be sold as part of an integrated business plan where the technology is supporting the plan. In this manner there will generally be greater buy-in from otherwise cynical owners and franchisees who may have other things on their capital spending agenda.

As to the investments required for technology, we can safely predict that there will be significant demands for capital to cover technology investments in the years ahead. The quandary for investors in the hospitality industry, as indeed in many other industries, is how to balance the need to keep up with rapidly evolving technologies with the need for satisfactory returns on capital over the short-term. This will require sound planning. As suggested previously, technology investments must support a

company's vision and long-term strategy. Given the costs of these investments, no hospitality company can afford to have senior management going in one direction and the information technology function in another. While many companies remain focused on the hardware and software of the technology equation, not to be lost sight of is the critical need for technology leadership either within the organization — or appropriately outsourced by a management team that understands how to manage these processes.

It is also clear that technology planning cannot be cast in stone when new advances are emerging every few months. Historically, the industry has made smaller, one-time investments in technologies. In the future, there will be a need for contingencies allowing for ongoing maintenance, support and upgrades. Plans will need to be revisited continually to ensure that sound, ongoing investments are made — consistent with an organization's needs and what is available in the marketplace. Hotel organizations for years have recognized the importance of reserving capital to replace furniture, fixtures and equipment. A similar approach may prove beneficial in the technology arena. FF&E reserves will begin to share prominence in the financial planning of hotel investments with I.T. (or Information Technology) reserves. Smaller, more frequently planned technology investments should generally pay higher dividends in the long-run, as compared to the one-time, major investment followed by years of neglect. Further complicating the long-range planning for technology investment in an era of network-centric computing is the question of whether to invest in company-based systems or to wait for the availability of network subscription services provided by outside technology utilities. This may still be a long time in coming but given the big numbers involved for large hospitality companies,

it is something to keep on the radar screen.

Hotel companies are not in the technology business. But there will clearly be a price for organizations that do not keep up with customer service and operational efficiencies that technology makes possible. That raises significant questions in terms of investments. Is there a cost for investors supporting lower forms of technology in hotels in terms of competitive disadvantage? Will capital availability draw an even wider line between the technology "haves" and "have-nots" in our industry? How can that competitive disadvantage be mitigated?

Stockholders will be called on to spend money on technology, and those investments are critical for hotel organizations not just in terms of the process improvement opportunities but also in terms of service to customers — who are, after all, the ultimate arbiters of a company's success or failure. In the end, however, management will need to understand that technology and information alone confer no competitive advantage. Leadership and sound planning will be required to ensure that these investments and the highway of information they generate ultimately produce the shareholder returns required.



Roger S. Cline
Chairman and CEO
Roundhill Hospitality

85 Roundhill Road
Roslyn Heights NY 11577

p 516.621.4499
f 516.625.9282
e roger@roundhillhospitality.com