

LODGING
TECHNOLOGY STUDY
2015

HOTEL TECH TO PASS "GO" IN 2015

IT Spending Increases as Hotels Bank on Mobility and In-room Upgrades to Meet Rising Guest Expectations

**Annual research includes:**

- Technology budgets and investment allocations
- Top goals and challenges for IT teams
- The role of IT leaders in business strategy
- Planned investments for in-room, guest-facing and property systems
- **PLUS!** New research on how hotel managers perceive technology

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Hotel Tech to Pass “Go” in 2015

IT Spending Increases as Hotels Bank on Mobility and In-room Upgrades to Meet Rising Guest Expectations

Rapidly rising guest expectations for technology are leading hotels to funnel more dollars into their IT budgets. Technology decision-makers have put mobile engagement, guestroom technology upgrades, and better bandwidth squarely in their sights for 2015. These budget increases are good news for IT executives who are under constant pressure to deliver not just technology solutions, but business solutions. There's one catch, however, and it's not to be overlooked. Hotels and IT leaders themselves have yet to champion a more business-savvy role for technology teams. Findings from *Hospitality Technology's (HT) 2015 Lodging Technology Study* suggest that — despite the increased focus on mobility and technology-enabled marketing solutions — neither business- nor marketing-savvy is a prized skill for IT leaders. With robust investments planned for 2015, there's no better time for IT leaders to step out of support roles and position technology as a compass for identifying trends and shaping business objectives.

HT's 2015 Lodging Technology Study is conducted with research support from University of Nevada Las Vegas (UNLV) Hotel College. It covers a wide body of research, ranging from objective findings — such as the size and allocation of technology budgets — to subjective insights around how technology and innovation are perceived among hotels. The research covers customer-facing technologies, guestroom investments, and property systems. This study also offers findings on the use of cloud computing and big data by hotels. In all, it represents the lodging industry's most comprehensive body of research for tracking and predicting trends in hotel technology.

About the Sample

Findings are based on a survey of subscribers to HT magazine, distributed via email in Q4 2014. This year's online questionnaire yielded 149 responses over a five-week period. Respondents stated that their decisions collectively impact a total of 28,350 properties in the U.S. According to the 2014 Lodging Industry Profile report by the American Hotel & Lodging Association (AHL&A), there are 52,887 hotels in the U.S., thus this study offers robust industry representation.

Almost a third of the respondents' primary job responsibility is in technology. Another 20% are CEOs, GMs or owners. The remain-

Study Highlights

- Hotel technology investments are on the rise, with an average IT budget that's 4.9% of total revenue, up from 2.6% one year ago.
- The number-one priority driving hotel technology spending will be to deploy customer-facing mobile solutions, chosen as a top pick by 4 out of 10 hotels in this study.
- Guestroom technology spending is on the rise in 2015, and will account for 17% of all IT investments.
- Hotels say that their number-one technology challenge is meeting high guest expectations, which are rising at a pace that's increasingly difficult to meet.
- Most hotels — 68% — don't have a technology steering committee to aid in their IT decisions.
- Bandwidth in public spaces and point-of-sale systems will be heavy investment areas for hotels in 2015, with nearly half of those in this study planning to add/upgrade those technologies.
- Inside the guestroom, investments will focus on adding new or boosting existing wireless Internet access (45% of hotels), adding bandwidth (40% of hotels), and adding/improving HD content (36%).

ing 50% of respondents span operations, accounting, finance, revenue management and marketing. About half of the respondents have responsibilities at the property level, 40% are at the corporate level, and the remaining 10% work at the regional levels. The survey spans corporate branded properties (~25%), management companies (~25%), and independent owners of non-corporate brands (~33%). In terms of industry segment, the break-down is: 15.4% luxury, 39.9% upscale, 33.6% midscale, and 11.2% economy.

This year's report also includes a unique set of findings based on a separate survey sample of hotel general managers and owners, made available through a partnership with the AH&LA Technology Committee. Through that work, the research is able to present unique insights into the similarities and differences in how hotel technology is perceived between corporate IT executives, and property-level general managers (see page 16 for this analysis).

Hospitality Technology thanks its survey respondents and this year's sponsors for their support in making this report possible.

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CHAPTER 1:

Hotels Increase Tech Spending to Meet Escalating Guest Expectations

Customer-Facing Mobility & Guestroom Upgrades take the Lead in 2015

Each year, HT's Lodging Technology Study places a laser focus on hotel technology budgets and the priorities that will drive IT investments. What business objectives do hotel IT executives need to meet? What is the size of their IT budget? How will those budgets be allocated in the year ahead? These questions and more are explored in the research. This year's findings show an overall increase in technology spending, particularly in guest-facing mobile solutions and in-room technology. Meanwhile, bandwidth remains a heavy investment area.

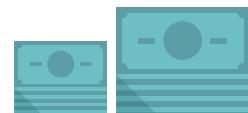
Technology priorities are coming at hotels from all angles: add mobility, add bandwidth, protect your data, move to the cloud. To track how hotels are prioritizing these and other technology-driven business initiatives, study participants were shown a list of projects and asked to choose which among them will top their must-do list in the year ahead. For 2015, hotels chose customer-facing mobile solutions as their top IT priority, garnering 39.5% of the vote and unseating "adding bandwidth," which occupied the top spot just one year ago.

Recent newsmakers support these findings as major brands race to add customer-facing mobile functionality. In November 2014, Starwood announced it would be offering door lock access via customers' mobile devices (mobile room key) in all of its 150 Aloft,

IT Budget as a Percentage of Revenue

- 3.5% Luxury
- 4.3% Upscale
- 6.6% Midscale
- 3.5% Economy

4.9%
INDUSTRY AVERAGE

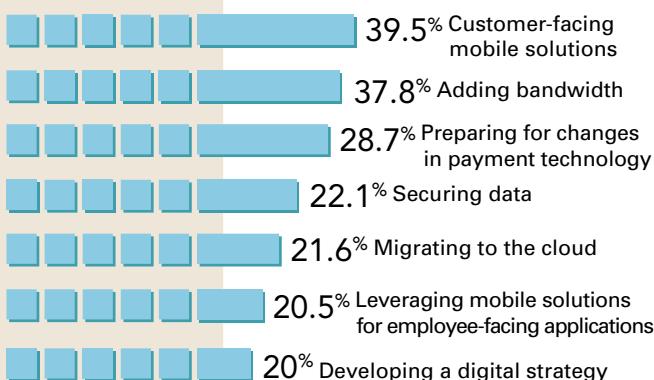


Element and W Hotels by early 2015. In July 2014, Hilton announced a global mobile initiative that today includes both mobile-enabled check-in and room selection, and announced plans for mobile room key across its 11 brands globally by 2016.

Adding bandwidth came in a close second in this year's study, with 37.8% of the vote. Rounding out the remaining top priorities (in the same rank order as last year) are: prepping for changes in payment technology (28.7%), creating a secure framework for data (22.1%), migrating solutions to the cloud (21.6%), and leveraging mobility for employee-facing applications (20.5%). Hotels ranked payment- and security-related technologies behind mobility and bandwidth. This suggests that, despite the impending need to become EMV-ready and the ongoing requirements to secure data, hotels have a degree of confidence in their ability to do so. Conversely, keeping up with mobile trends and skyrocketing bandwidth demands are larger hurdles in the year ahead.

Interestingly, despite the first-place ranking for customer-facing mobility, the more general objective of "developing a digital strategy" came in last place in this year's list — the same last-place ranking when it debuted in last year's study — with just 20% of the vote for 2015. This suggests that hotels have either already outlined a digital strategy and have prioritized customer-facing mobility as a part of that; or it suggests that hotels are going after customer-facing mobility, but have yet to fold these sorts of initiatives into a broader digital strategy. Both scenarios are likely true across the industry. Hilton's and Starwood's announcements, for example, are part of broader global initiatives. However, research data from HT's 2014 *Customer Engagement Technology Study* found that more

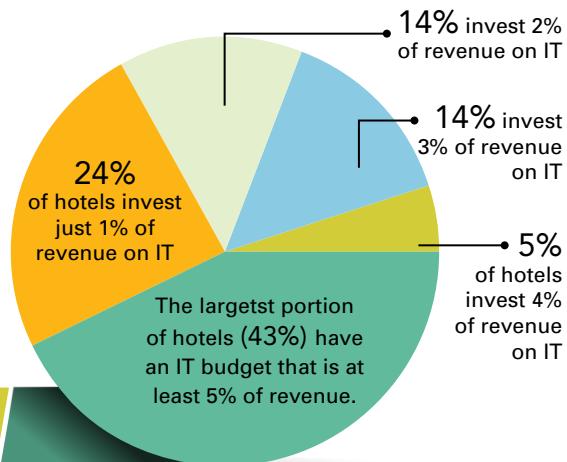
Hotels Reveal Top Tech Priorities in 2015



BUDGETS & BUSINESS DRIVERS

2015 LODGING TECHNOLOGY STUDY

Tech Budget as a Percentage of Revenue, by Investment Level



than half of hotel mobile apps lack the ability to make a reservation directly via the app. This suggests that these hotels moved quickly to get a mobile app into the market, but at the cost of functionality; and they have yet to go back and fold those mobile rollouts into a fully-developed digital strategy.

Tech Spending on the Rise as Guestrooms Go High-Tech

One of the core objectives of this study is to track technology investments. The research captures industry-wide average budgets, calculated as a percent of revenue spent on IT; and it measures how budgets are allocated across a variety of technology projects. The survey was fielded to hoteliers in Q3 2014, at a time when final budgets were not yet in place for the upcoming year. As such, the survey asked for 2014 actual budgets in order to report on the most accurate data available. In 2014, hotels increased their technology spending, having allocated an average of 4.9% of their overall revenue to IT. This is a marked increase over the 2.6% revenue allocation that went to IT in 2013. The highest investment levels took place in the midscale segment with an IT budget that's 6.6% of revenue. Luxury, upscale and economy hotels hovered much closer together, having invested somewhere between 3.5% and 4.3% of revenue on IT in 2014.

To measure trends in IT investments, the study asks participants to report on how their budgets will be allocated across a variety of specific projects in the year ahead. The results are broken into three categories: top-tier investments that receive 14% or more of the budget (and this year will collectively account for nearly half of all hotel IT spending); mid-tier investments that will account for between 8% and 13.99% of IT spending; and low-tier investments that account for less than 8% of IT spending.

Year-over-year results, going back to *HT's* inaugural 2011 *Lodging Technology Study*, confirm that hotels consistently allocate the largest chunk of their budgets to three areas: guestroom technology, networking/bandwidth, and property management systems. This year, these three areas again make up the top-tier of IT spend-

ing and will collectively account for 45.5% of the tech budget in 2015. Investments in guestroom technology are expected to edge up higher in 2015 compared to the prior year, pushing this category to the top of the list. Looking at specific guestroom technology investments, study results show that hotels are aggressively adding in-room bandwidth and wireless access to the guestroom, and those that haven't yet upgraded to flat screen televisions and HD content will do so in 2015. Looking longer term, next-gen locking will be a priority. Investments in networking will remain largely flat, but still will account for a sizable 15% of overall IT spending. Meanwhile, investments in property management systems will dip slightly, likely as more hotels move to a cloud-based PMS.

Looking at the second tier of allocations, this year's study shows a planned increase in spending for payment security technology as hotels allocate funding to EMV-ready solutions. There's also a planned increase in point-of-sale systems, likely to add tablets to the POS.

TECH BUDGET ALLOCATIONS

| | 2015 | 2014 |
|-----------------------------------|--------|--------|
| TOP TIER | | |
| Guestroom Technology | 16.87% | 15.27% |
| Networking/Bandwidth/Connectivity | 14.59% | 15.25% |
| Property Management System | 14.11% | 17.05% |
| MID TIER | | |
| Payment Security/PCI Compliance | 10.39% | 6.87% |
| Point of Sale System | 9.36% | 7.25% |
| LOW TIER | | |
| Customer Relationship Management | 7.61% | 5.31% |
| Revenue Management | 7.2% | 5.47% |
| Workforce Management | 5.33% | 5.77% |

Customer relationship management will account for 7.61% of IT budgets, up more than 2% from last year. This increase aligns with the high priority that hotels are placing on customer-facing mobile solutions. With the continued reduction in the price of tablets, the accessibility of mobile app developers, and the fact that many mobile initiatives are carried out on guests' own devices, hotels anticipate they'll be able to add customer-facing mobile functionality within a modest budget.

Finally, the research finds that the distribution of hotel IT budgets still leans a bit more towards operating expenditures, which would include licensing and subscriptions, system maintenance, and compliance (at 54% of the overall budget) versus capital expenditures/new technologies (46%). However, this year's distribution does show a shift towards capital investments compared to prior years, when the opex/capex split was much closer to 60/40%. This is on par with the shift towards adopting cloud and as-a-service solutions, which frees up IT resources for guestroom technology, mobile functionality, and bandwidth. **HT**

CHAPTER 2:

The Subjective Side of Technology

Hotels Grapple with Escalating Guest Expectations and Elusive ROI

Examining increases and dips in budgets and planned investments is one key way to measure trends in technology. Beyond these tangible indicators, the study also explores perceptions across a variety of subjective variables — for example, hotels' top IT challenges, the skills sets that are most important to their IT departments, and how innovation takes place at their companies. This line of investigation offers a glimpse into how innovation and its champions are perceived within the greater business context.

When asked to evaluate a list of challenges and identify the one that has the greatest impact on the success of IT projects, respondents agree that guests expect greater technology advancements than hotels can reasonably keep pace with. Escalating guest expectations overtook budget constraints as the top challenge in 2013, and has remained at the top of the list since that time. In fact, the gap between guest expectations and IT budgets is widening. This aligns with the increase in IT budgets reported. Hotels are increasing their investments in technology — with a specific focus on guest-facing mobile solutions and the guestroom — but guest expectations are rising too rapidly for even the best-funded IT projects.

This year, a new potential stressor was added to the list of challenges: the struggle to sufficiently measure the return on investment (ROI) for technology roll-outs. This challenge debuted at second place in the list. This suggests that, as IT projects become increasingly guest-centric and intertwined with digital marketing, the nuances of how we measure and manage technology must change.

In his *Forrester* blog, Andrew Bartels, VP and principal analyst serving CIOs, wrote a piece on the challenges facing technology ROI titled, "Old ROI Methods are Holding Back the Adoption of New Technology," (October 2013). His essential argument is that financial models for calculating ROI for new mobile, cloud and smart computing technologies are a key factor holding back their adoption. ROI, he says, is stuck using old paradigms that measure benefits in terms of headcount and similar operating cost savings as a result of automation. These measurements no longer apply. Bartels writes:

These models for projecting the potential business value of a new technology investment have worked reasonably well for the past seventy years, when in fact the technologies coming to market were primarily focused on process automation and the benefits were mostly in allowing more work to be done faster and with fewer people. But for many of these new technologies — especially the new mobile technologies of smartphones, tablets, and mobile apps, and the new smart computing technologies of enhanced awareness, analysis, and collaboration — the primary business benefit is not doing more work with fewer people. Instead, the main benefit of these new technologies is reducing the probability of bad business outcomes, and increasing the probability of good business outcomes. If a firm tries to measure benefits in terms of headcount or operational cost savings, it won't find them — and as a result won't make the investment.

What's Holding Back Hotel Tech? Top Challenges Revealed



29%

Guests expect greater technology advancements than we can reasonably keep pace with.



21%

We struggle to sufficiently measure the return on investment for technology roll-outs.



16%

Our company doesn't have the IT budget to make necessary improvements.



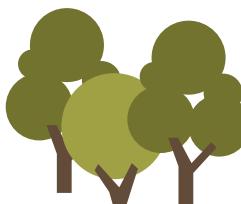
15%

Our company is resistant to technology upgrades.



11%

Our company doesn't have the IT talent to make necessary improvements.



MEASURING IT SKILLS: What Hotels Currently Value & What Skills Are Missing from Teams



The executives responding to *HT's Lodging Technology Study* are starting to experience the ROI mismatch that Bartels identifies. With hotel technology spending on the rise, executives across all key business units should prioritize the development of more appropriate metrics for measuring the ROI of IT investments. This will help prevent hotels from falling behind their competitors because they're looking first for justification that's inappropriate, and as such doesn't exist.

IT Skills: What's Most Important & Most Lacking?

Technology spending is on the rise. Despite this, meeting guest expectations for tech is increasingly difficult. Hotels are scrambling to add mobile initiatives and upgrade guestroom technology, while also facing relentless demands for connectivity. How are these trends impacting the skills that are most important to hotel technology executives, and the onboarding process? To find out, survey respondents were provided a list of skills that IT executives might possess, and were asked to indicate those that are the most important to their organizations. Given the same list of skills, respondents were further asked to identify which are most lacking in their current teams.

The rankings for "most important skills to the organization" create this profile for a hotel IT executive: they should be able to analyze and solve problems, they should possess technical expertise, and they should be willing to be proactive in solving problems. Far less important are familiarity with technology-enabled marketing solutions and strategies, familiarity with business strategies, and expertise in budgeting. This profile reveals a clear preference for analytical minds, and there's no question that technical savvy is central to the role. However, the lack of priority placed on both business savvy, and on technology-enabled marketing solutions is concerning.

CIOs are under constant pressure to speak the language of the business, to solve business problems rather than technology problems, and looking ahead, they're under pressure to retain relevance as more IT systems get outsourced, move to the cloud, or fall under the purview of new executive roles such as Chief Digital Officer, Chief Marketing Technologist, or even Chief Data Officer. History has shown that the CIO-to-CEO career path is far less common than CFO, COOs or even CMOs making the transition to chief executive. The cliché is that CIOs are technology executives first and business executives second. The research from *HT's* study suggests that, in the hotel industry at least, the cliché may have some basis in reality.

As previously established, the top challenge for hotels in 2015 is to meet exceptionally high guest expectations for technology — the sort of digitally-enabled customer engagement solutions that

require both marketing and technology to deliver. Meanwhile, executives struggle to measure the ROI of technology projects. These two trends suggest that hotels should proactively foster technology leaders that are analytical, yes, but that also have both business and marketing savvy.

What's more, when asked to indicate which skills are most lacking in their existing IT teams, survey respondents said they need more executives with the ability to manage complex integrations (at first place on the list), followed by the ongoing need for technical expertise, and the need for executives that have experience managing outsourced technology. These findings suggest that hotel technology teams continue to struggle with systems integration — a well-documented challenge that the association HTNG has been combating since its inception more than 10 years ago. The need for more management skills for outsourced solutions indicates that hotels are increasingly looking at "as-a-service" solutions for software, infrastructure, security and others, and that management of these relationships is distinctly different from developing and overseeing home-grown or on-premises solutions. For several years, technology theorists have suggested that the operational shift is moving away from "plan, build, run," toward a "broker, integrate, orchestrate" model that sees IT as responsible for overseeing cross-functional, integrated solutions within a business ecosystem.

TECHNOLOGY PERCEPTIONS: An Uncomfortable Picture

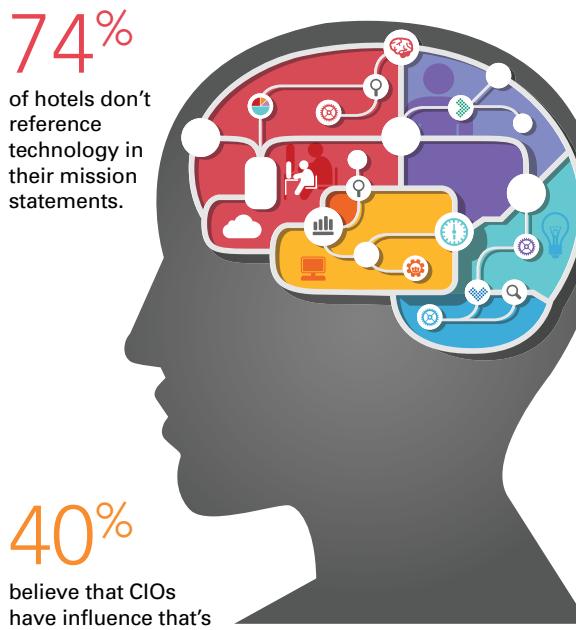
Here as well, it would stand to reason that hotels would also seek greater business savvy for their technology executives who are now more likely to manage outsourced supplier relationships rather than develop code. However, not only is business savvy rated low on the importance rating, it also came in dead last in skills sought during the onboarding process. Is this a scenario of “not knowing what you don’t know?” It would appear that hotels do not prioritize, nor do they seek, business-savvy in their technology executives. They may well have their proverbial heads in the sand when it comes to the future of technology at their organizations. The remedy will likely have to come from within IT leadership itself: lead the charge in making a transition to a “business first, technology second” mentality for your teams.

The Perception of Innovation

We've established that technology investments in the hotel industry are increasing, and that guest expectations are a key driver. We've further identified that measuring ROI is a challenge for technology projects, and that looking ahead hotels will need to put greater emphasis on fostering business- and marketing-savvy IT leaders. Are there other ways that hotel organizations can contribute to more successful technology projects? To look for answers, the study focused on several key areas that help to expose how technology is perceived and integrated into overall business decisions: the use of IT steering committees, the integration of technology into the overall mission statement, and the general perception of innovation via technology.

In the first instance, we find that most of the hotels in this study (68%) don't use IT steering committees. Interestingly, the findings also show a pattern that hotel companies with IT steering committees invest slightly less in technology, which begs the question, are they investing more wisely because there's clearer direction?

Similarly, most hotels (74%) don't have any reference to technology in their mission statements. Vision statements are the “North Star” for an organization. They offer a succinct picture of an optimal future state — what the organization wants to achieve over time. The mission statement, however, lives in the present, concisely ar-



ticulating an organization's purpose today, and typically covers what the organization does, who it does it for, and how it does it. There's no singular confirmed best way to craft a mission statement, and indeed they should reflect the character of the individual organization rather than follow a canned formula. Business strategists do agree that employees should know their company's mission statement because it affords them a better understanding of their role in achieving goals. In the hotel industry, the greater mission is certainly to provide guests with hospitable service and a comfortable place to stay.

If technology is a key factor in how a hotel meets that objective, then including a reference to that end in the mission statement will help technology become an integrated and influential business unit rather than a support team.

Finally, to evaluate overall perceptions around innovation, respondents were asked if their companies seek to be innovators in both general business practices, and in the application of technology. Overall 45% said their companies seek to be innovators in business practices. A desire to be innovative often leads to heightened priority for leveraging technology. Yet, only 30% of respondents felt that their respective organizations were seeking to be an innovator in the application of technology. The 15-point gap reveals a potential perceptual disconnect in corporate strategy between the application of technology and its role in overall business innovation. Further, when asked to evaluate the perception of executive influence at their workplace, only 40% of respondents believe that the impact of senior IT leadership (e.g., CIO, VP technology) is equivalent to the impact of senior leaders who are not in IT roles (e.g. those in operations, marketing, or other areas). This could indicate issues with organizational culture, particularly if IT is perceived mainly as a support-center.

Hotels are investing more heavily in technology and they are prioritizing guest-centric solutions. These are substantial bright spots for CIOs and their teams. The increased investment creates an opportunity for CIOs to step out of support roles, and instead serve as a compass for identifying trends and helping to shape business priorities. **HT**

CHAPTER 3:

Tracking Current Use & Roll-out Plans

Purchasing Heats Up For Guestrooms & Public Spaces While Property Systems Remain Status Quo

A core objective of HT's *Lodging Technology Study* is to track current technology adoption rates, and to offer a predictive look at the technologies that hoteliers plan to add in the coming months. Technologies were broken into three core areas of investigation: 1) customer-facing tech (such as tablets at the front desk, digital signage, loyalty programs, and more); 2) guestroom technologies (including in-room Wi-Fi, televisions etc.); and 3) operations/property management technologies (such as PMS, CRS, business intelligence, etc.).

Respondents reviewed a variety of technologies in these areas and were asked to indicate if they: a) don't use the technology at all, nor do they plan to; b) don't currently use the technology, but plan to add it within the coming 18 months; c) currently use the tech-

nology with no further upgrade plans at this time; or d) currently use the technology and have plans to upgrade it further within the coming 18 months. This line of investigation allows the research to pinpoint which technologies have reached market saturation, which ones are likely to experience significant investment in the year ahead, and which ones are largely not of interest to hotels at this time.

Customer-Facing Technology

Respondents were asked to review a list of 12 customer-facing technologies and share their current use and/or upgrade plans. Two technologies rose to the top of the list as "emerging" — that is, they're not currently heavily used by hotels, but 20%+ of respondents have plans to roll-out new technology in the coming 18 months. Namely, these were tablets at the front desk, and location-based technology such as beacons and proximity marketing.

In terms of upgrades to existing technology, three areas will be priorities in the coming 18 months: point-of-sale systems (with 47% planning an upgrade); bandwidth in public spaces (with 43% planning to upgrade existing networks); and mobile websites (with 31% planning an upgrade to their existing mobile website). Mobile apps for customer use will also see plenty of investment in the year ahead. Just 26% of hotels don't have a mobile app, nor do they plan on building one. Meanwhile, about 26% have an app that they're satisfied with. Looking ahead, 22% plan to build one and 25% plan to upgrade their existing app.

Overall, these findings are in-line with greater business objectives around adding customer-facing mobility. Tablets at the front desk, mobile apps and websites, location-based technology and more robust bandwidth are all part of a hotel's strategy to enable mobile engagement with guests. This is a clear indication that mobility is a priority for the lodging industry.

It should be noted that cellular infrastructure was not a high priority for respondents, despite the common concerns expressed by many hoteliers about the service levels offered by carriers.

Guestrooms Get More Bandwidth

Guestroom technology will account for the single largest investment area for technology in 2015. To find out what hotels are planning for their guestrooms, respondents were asked to review a list of 12 in-room technologies and indicate if their respective organizations are currently using or planning to upgrade/add any of the technologies listed.

Consumer-driven trends were evident. In terms of upgrades to

Customer-Facing Tech Plans

| | Do not use | Do not use but have plans to add within 18 months | Currently use, with no further upgrade plans | Currently use, and plan to upgrade within 18 months |
|---|------------|---|--|---|
| Bandwidth in public spaces | 3% | 3% | 51% | 43% |
| Mobile website | 13% | 14% | 43% | 31% |
| Point of sale technology | 13% | 2% | 38% | 47% |
| Loyalty program | 21% | 8% | 46% | 26% |
| Mobile app for customer use | 26% | 22% | 26% | 25% |
| Customer relationship management | 27% | 12% | 42% | 18% |
| Cellular infrastructure | 39% | 12% | 31% | 18% |
| Static digital signage | 40% | 9% | 36% | 15% |
| Interactive digital signage | 48% | 15% | 22% | 15% |
| Tablets at the front desk | 56% | 20% | 11% | 14% |
| Kiosks | 61% | 11% | 24% | 4% |
| Location-based tech (beacons, proximity marketing) | 65% | 20% | 12% | 3% |

These technologies are hotels' top investment areas in 2015.

Guestroom Tech Plans

| | Do not use | Do not use but have plans to add within 18 months | Currently use, with no further upgrade plans | Currently use, and plan to upgrade within 18 months |
|---|------------|---|--|---|
| Flat screen television | 2% | 2% | 67% | 29% |
| HD television content | 14% | 8% | 51% | 28% |
| 3D television | 91% | 7% | 0% | 2% |
| In-room bandwidth | 9% | 8% | 52% | 32% (circled) |
| Wireless Internet access | 0% | 0% | 59% | 45% (circled) |
| Next-gen room locks (e.g., RFID, mobile phone) | 47% | 22% (circled) | 19% | 12% |
| Energy management | 30% | 15% | 40% | 15% |
| Room control devices | 59% | 8% | 23% | 10% |
| VoIP phone system | 50% | 14% | 28% | 8% |
| iPad/tablet provided in guest-room | 81% | 12% | 5% | 1% |
| Video on Demand | 37% | 5% | 44% | 13% |
| IPTV / "Smart" TV | 67% | 16% | 11% | 5% |

These technologies are hotels' top investment areas in 2015.

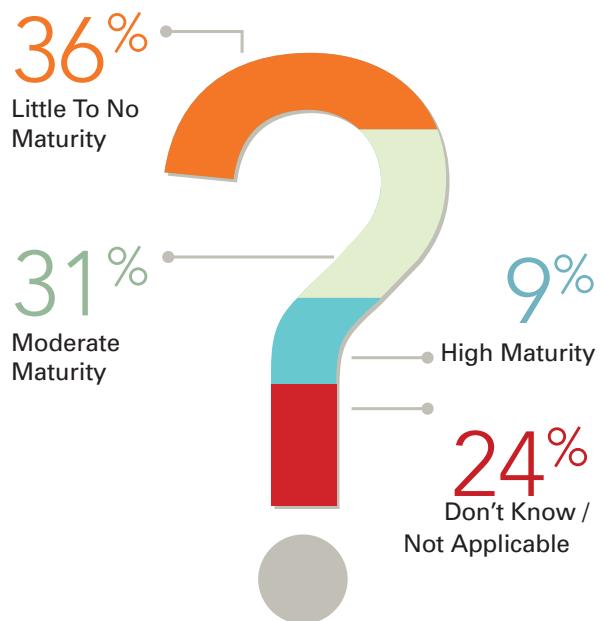
existing technology, beefing-up in-room bandwidth and wireless Internet access led the list, followed by flat-screen televisions and HD content. When it comes to investing in new in-room technologies, next-generation electronic locking systems (RFID, mobile key, etc.) will lead the pack, followed by Smart TVs, energy management and VoIP phone systems. As in previous years' studies, there is very low activity in terms of 3D televisions.

Respondents were also asked about how their companies currently manage pricing models for high speed Internet access (HSIA) in guestrooms. Almost 60% said they provide it free to the guest, and another 30% provide some form of tiered access. The more popular choice is to offer a free level, and then up-charge for higher bandwidth needs (24%), and it's increasing in popularity compared to prior years. The remaining 6% of tiered-access hotels charge guests at both lower- and higher-use levels. This approach is on the decline, compared to last year. Finally, about 9% of hotels charge a flat fee for HSIA access, with no price or bandwidth tiers. Just 1% of respondents do not offer HSIA in guest rooms.

Big Data a Big Question Mark

Beginning with last year's annual *Lodging Technology* study, questions on big data were included to clarify chatter about this topic.

Big Data? Not Yet



Specifically, the study sought to uncover maturity levels that hotels have around processing and using big data to make decisions. For the purposes of this study, big data was defined as "information assets that are high in volume, velocity and variety that, when captured, stored and analyzed through advanced techniques, can provide enhanced insight and decision making."

More than a third of respondents (36%) reported little to no maturity — this is a positive trend compared to the 49% that reported little-to-no-maturity last year. An additional 31% reported moderate maturity. Just 9% reported high maturity levels for their use of big data — however, last year not a single hotel reported having high maturity. Moreover, almost 24% of respondents selected "don't know/not applicable." These results indicate that big data in hotels is still in its infancy, but is slowly gaining ground.

A follow-up question was asked of those respondents who indicated that their organizations do use big data. This question sought to identify how big data is used at their organizations. Just 7% reported that their organizations use big data for advanced reporting; a drop from last year's 12%. Far more are using big data to identify trends (26%, no change from last year), and 21% are using big data for predictive analysis (up from 14% last year). This is a clear indication that most activity is happening in predictive analysis. Most of

TECHNOLOGY INVESTMENTS

2015 LODGING TECHNOLOGY STUDY

Tracking Cloud Adoption

| | Currently Running Cloud | Moving to Cloud | |
|--|-------------------------|-----------------|---|
| Email | 17% | 8% |  |
| Revenue Management Systems | 12% | 12% | |
| Property Management Systems | 9% | 15% | |
| Central Reservations Systems | 9% | 11% | |
| Customer Relationship Management (CRM) | 8% | 12% | |
| Sales and Catering | 7% | 14% | |
| Accounting and Financials | 7% | 12% | |
| Point of Sale | 4% | 14% | |

the respondents (46%) selected “don’t know/not applicable” when asked about how big data is used in their organization. It is evident that the industry is in need of more education on what big data really is and how it can be employed as a technology strategy for the lodging industry.

Property Management & Operations: Status Quo

To learn about property management and operational systems, study respondents were asked to review a list of 13 relevant technologies — ranging from PMS, to CRS, to labor management tools, and more — and indicate current use/upgrade plans. Overall, results show that of all of the technology areas this study investigates, this category of property management and operational systems has the greatest stability and maturity within the industry. Most hotels are maintaining the status quo. For 9 of the 13 technologies evaluated, more than half of respondents said they currently use the technology, and have no further upgrade plans at this time.

In terms of new investments, though still comparatively small, the biggest activity will be in recruiting tools (10% plan to add them) and mobile back-office capabilities (11% plan to add them). That said, more than half don’t use mobile-back office, and have no plans to do so.

In terms of upgrades to existing systems, property management systems led the list: 59% have no upgrade plans, while 34% have upgrades in store for their PMS in the coming 18 months. This is distantly followed by upgrades to payment security technologies, cloud-based applications, and revenue management systems.

To find out about hotels’ use of cloud-based systems, respondents were asked to review a variety of major technology applications and indicate if they are currently running these applications in the cloud or planning to move these applications into the cloud. Not surprisingly, email topped the list of those apps currently running in the cloud. Looking ahead, property management systems and point-of-sale systems will see the greatest cloud adoption in the coming 18 months.

Looking at payment security technologies, 60% of hotels said they currently use payment security solutions and have no further

upgrade plans. Those with upgrade plans (23%) are likely prepping for the switch to EMV. Just 10% of hotels said they don’t deploy any specific solutions to ensure payment security. The use of tokenization at the card swipe is growing in its use: 40% of hotels in the study do this today, compared to the 29.8% that did one year ago. The use of end-to-end encryption is holding steady for the time being (41% this year compared to 42% one year ago).

Satisfied, or Not?

This year’s study included a new area of investigation: to uncover hoteliers’ current satisfaction with a variety of technologies. The technologies selected for evaluation were chosen based on their high installation plans reported in last year’s research. As such, the study is able to identify if these heavy investment areas are measuring up to hoteliers’ expectations. We’ve pulled their top choices out for “most satisfied,” “most dissatisfied” and for “neutral.”

Payment Security: What’s being Used?

43%

Third-party for Managed
Security-as-a-Service

40%

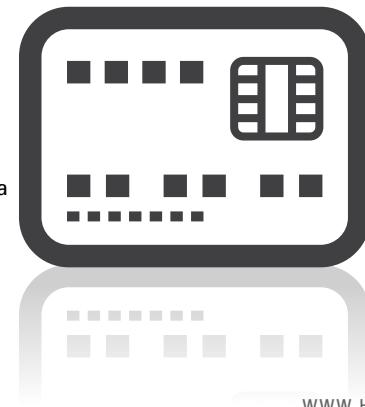
Tokenization at
the card swipe

41%

End-to-end
encryption for
cardholder data

27%

Breach
protection



Dissatisfaction: Top 3 Technologies Not Making the Grade

23% In-room bandwidth

21% Video on Demand

21% Cellular infrastructure



Jury's still out on...
Tablets at the front desk:

56% of hotels are neutral.



Satisfaction: Top 3 Technologies Winning Praise

67% Bandwidth in public spaces

66% Property management systems

64% Payment Security

The highest satisfaction scores went to bandwidth in public spaces, property management systems, and payment security technology. Topping the list for dissatisfaction is in-room bandwidth: 23% of hotels were dissatisfied, and 54% were satisfied. Despite this, investments trudge on. Hotels remain both frustrated with and committed to improving in-room connectivity. Hotels are also less-than-pleased with video-on-demand offerings (21% dissatisfied; 41% satisfied), and with existing cellular infrastructure (21% dissatisfied; 47% satisfied). The remaining percentages, in all cases, were neutral. Winning out in the "neutral" category are the use of tablets at the front desk: 56% are neutral. Interestingly, this was also one of the top growth areas for customer-facing technology, with 20% of hotels planning to add the technology in the coming 18 months. Time will tell if this technology measures up to expectations. **HT**

How Hotel Managers Perceive Technology

This year's edition of the *HT Lodging Technology Study* includes a unique opportunity to uncover similarities and differences in how hotel technology is perceived between corporate IT executives, and property-level general managers. As with prior years of this study, all of the analysis in the main report is based off of the *HT* readership base; they are largely senior IT executives at corporate, property management, and independent hotels. This year, a separate version of the same survey was fielded to members of the American Hotel and Lodging Association (AHLA). The respondents in the AHLA sample are largely general managers at the property level, or hotel owners. Working in conjunction with the AHLA Technology Committee, *HT* magazine analyzed the similarities and differences between the two groups.

There are a few areas where hotel IT executives and the managers they support are in lock-step: namely, the challenges they face in keeping pace with rising guest expectations. The groups also agree that guestroom upgrades will top their tech priority list in 2015. They differ, however, in how they plan to deliver guest satisfaction. At the property-level, it's largely about adding bandwidth, which addresses an immediate need. IT executives, however, are feeling pressure to deliver customer-facing mobile solutions. Property managers will likely appreciate mobile programs once available, but their immediate focus is on the guest in their hotel today, clamoring for more bandwidth. AHLA's members are, however, keenly aware of the need for more marketing savvy among IT executives – perhaps more so than IT teams themselves. The figure below shows how the two groups stack up across a variety of topics.

| | HT Readers (IT Executives) | AHLA Members (Hotel Managers) |
|---|---|--|
| Tech priority in 2015: top choice | Leveraging customer-facing mobile solutions | Adding bandwidth |
| Tech priority in 2015: bottom choice | Developing a digital strategy | Migrating solutions to the cloud |
| Top technology challenge | Keeping pace with guest expectations | Keeping pace with guest expectations |
| Top IT investment area in 2015 | Guestrooms (16.8% of IT budget) | Guestrooms (17.7% of IT budget) |
| What IT skills are most lacking in current teams? | Ability to manage complex integrations | Familiarity with technology-enabled marketing solutions & strategies |
| Are you satisfied with in-room bandwidth? | 54% satisfied | 67% satisfied |
| Are you dissatisfied with cellular infrastructure at your hotel(s)? | 21% dissatisfied | 32% dissatisfied |

LODGING TECHNOLOGY STUDY

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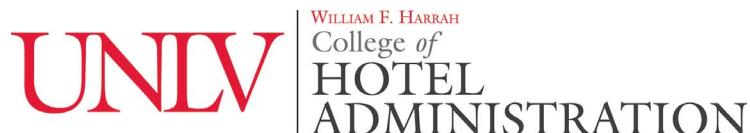


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