HFTP
Hospitality Financial and Technology Professionals

HOTEL Yearbook 2018

FORESIGHT AND INNOVATION IN THE GLOBAL HOTEL INDUSTRY

SPECIAL EDITION ON **TECHNOLOGY**

protel hotel software

www.hotel-yearbook.com

This e-publication may be ordered online | € 19.50

ISBN 978-9-9701211-0-7

protel.I/O

HOTEL.TECHNOLOGY.

KNOW YOUR GUEST. BETTER.

Scan and learn!

protel.I/O combines existing hotel technologies making daily operations smarter.

www.protel.io/learn

HOTEL YEARBOOK 2018
Special Edition on TECHNOLOGY
www.hotel-yearbook.com

ISBN **978-2-9701211-0-7**

CO-PUBLISHER and EDITOR-IN-CHIEF
Woody Wade,
Wade & Company SA
CH-1091 Grandvaux, Switzerland
E-mail: wade@11changes.com
www.11changes.com

CO-PUBLISHER and MANAGING EDITOR
Henri Roelings,
Hsyndicate,
Maastricht, The Netherlands
E-mail: henri@hsyndicate.org
www.hsyndicate.org

PUBLICATION PARTNER
Hospitality Financial and Technology Professionals (HFTP)

DESIGN AND ART DIRECTION
Guus Vrencken,
extralarge | visual communication,
www.extralarge.nl

ORDERS
Copies of this publication may be ordered online at www.hotel-yearbook.com
Price €19.50 per copy.

Dear readers,

Welcome to *The Hotel Yearbook 2018 – Technology*. This is the fifth time we have published a special edition on this ever-changing theme, and we're very proud to present such a wide-ranging collection of articles, addressing the field from many different perspectives.

Contributing to this edition are some two dozen of the most thoughtful and respected opinion leaders and executives working in the technology arena – which is surely one of the most dynamic and challenging parts of the hotel industry today. Their articles are not only insightful, but practical and actionable. We'd like to thank them all for their outstanding contributions.

This year, we invited Lyle Worthington, Past-President of HFTP Global and CIO at The Student Hotel in Amsterdam, to take the Guest Editor's chair and help us put this edition together. With his understanding of the challenges in the technology landscape, Lyle was able to assemble a stellar group of authors from around the world to address what's going on – and offer advice for successfully navigating the currents and cross-currents. We'd like to thank Lyle for the excellent results he achieved!

We are also pleased to highlight a few interesting new start-ups offering creative digital solutions to a range of challenges faced by hospitality professionals (and their guests). We'd particularly like to thank METRO Accelerator for letting us profile some of the start-ups that they mentor in a highly respected mentorship program for tech start-ups across the entire hospitality value chain.

Lastly, *The Hotel Yearbook – Technology* owes a debt of thanks as well to HFTP (Hospitality Financial and Technology Professionals), our long-standing publication partner, for the valuable guidance they have given us, year in and year out. We sincerely appreciate the help and generosity of Frank Wolfe, CEO, and we look forward to working with him and his always helpful team at HFTP on future editions.

We wish you a good read!

Yours,

Woody Wade | Publisher

Henri Roelings | Publisher

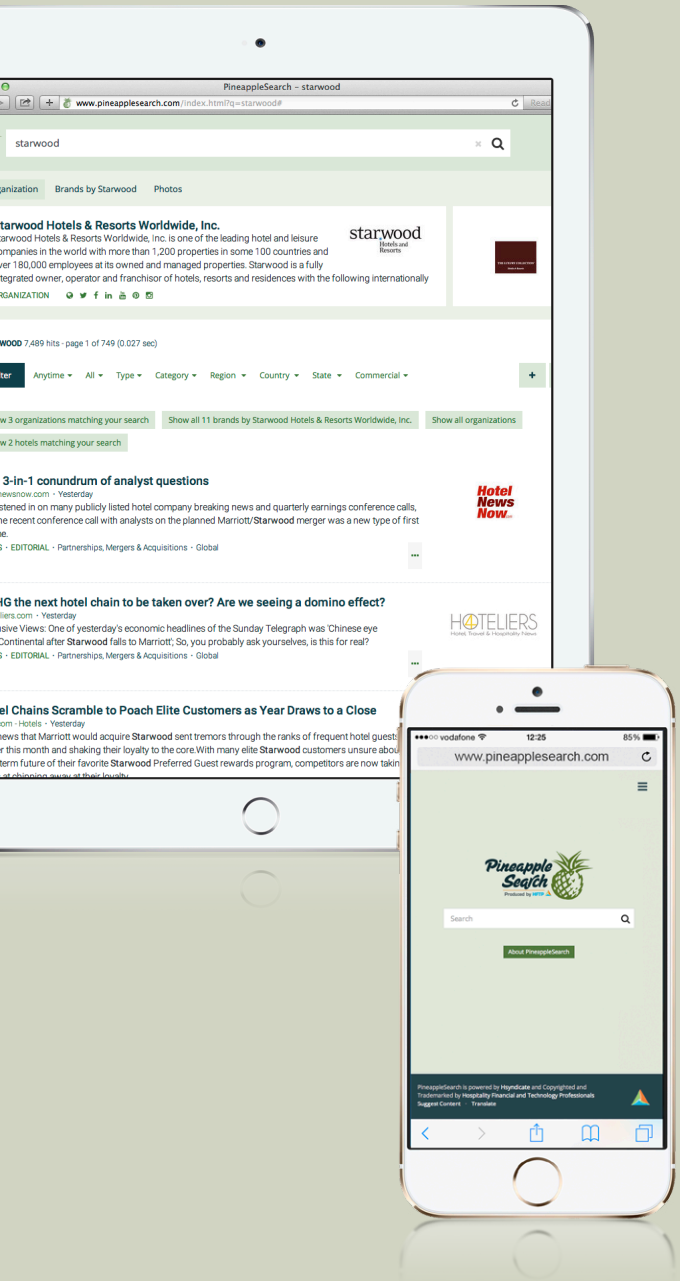
PS. If you are interested in contributing to the 2019 edition, please contact us!

Table of contents

Table of contents

Introducing

First-ever search engine focused solely on resources for the global hospitality industry.



Pineapple Search
Produced by HFTP

Curated content only

Pineapplesearch.com aggregates curated industry content from multiple sources into a single search platform, including articles, white papers, webinars and more. In addition, the site has an indexed industry directory.

Open platform

Pineapplesearch.com is an open platform ready for content submissions by all industry stakeholders.

Non profit

Pineapplesearch.com is operated by Hospitality Financial and Technology Professionals (HFTP), a global professional association in the world of hospitality.

start searching at **www.pineapplesearch.com**

Pineapplesearch.com is powered by Hsyndicate.org
info@pineapplesearch.com

A word from Lyle Worthington, our Guest Editor-in-Chief

Dear readers,

It's hard to believe a whole year has gone by since the last Hotel Yearbook on Technology. I guess time really does fly when you're having fun – and this was a fun year for hospitality technology.

We've seen a growth in the number, and quality, of pure cloud SaaS software, and not just hosted legacy applications claiming to be cloud applications. From new providers purpose-built for the cloud, to existing systems completely re-written for a cloud environment, we now have a large selection of core products mature enough to run in any cloud, on multiple devices, and with high availability. And speaking of migrating to the cloud, this has freed up IT resources to be more strategic. Instead of managing servers and applications, IT can begin shifting focus towards making the business more productive, reducing waste (like paper) and analyzing data in new ways.

We've also seen a real change in the way systems talk to each other, with the emergence and surge of hospitality-specific ESB and middleware solutions. The industry is beginning to push hard for open APIs, and we are now (finally) seeing the larger established hospitality software providers move to support a more open interfacing model. This is one of the most exciting developments in our industry, as it paves the way for innovation by allowing third-party software to more easily enhance core system functionality. Think about the impact the Apple App and Google Play stores have had on your mobile phone, and then apply this same logic to your PMS or CRM.

If you happen to do business in the European Union, and think PCI compliance just isn't enough work for you, then you're really going to love the general Data Protection Regulation, or GDPR. In all seriousness, it is great to see an emphasis put on the protection of PII and not just payment data. Even if you don't do business in the EU, you should evaluate how you treat and secure the private information of your employees and customers. And if you think blockchain is the solution to all your security woes, you might want to read about its limitations before investing too much.

Meanwhile, we've got robots cleaning our floors, checking us in, and acting as our personal concierge. Cars are driving themselves, and unsupervised machine learning algorithms are on the rise and getting smarter every day. We are already seeing more and more data analysis and decision-making done entirely by algorithms. Some are worried that AI will develop its own language (oops, that already happened), then rise up and destroy us… but I, for one, welcome our new AI overlords.

All of these topics and more await you in this year's Hotel Yearbook. Enjoy!

Lyle Worthington
Guest Editor-in-Chief

Harnessing technology for a competitive advantage

by ***Neil Foster***

The role of the hotel IT manager is evolving, writes Neil Foster. Today he or she is as an internal consultant and educator who makes sense of the "noise", a connector who seeks to understand the needs of the people and processes involved. Central to the hotel operation in terms of influence, the new role is more business analyst operating at the forefront, less technician working behind the scenes.

Are the extensive technology platforms and solutions available on the marketplace good for business or are they in fact overwhelming? For much of the hotel industry, the decision-making approach to technology remains largely unchanged: follow the leader. Getting the business-critical technologies right is just one element to consider when defining the overall strategy, ideally ensuring central technologies fit like a glove around highly customized processes. Optimally, hotel technology serves to support personalized guest service delivery, a high quality product, and improved internal efficiencies. The reality is often an imperfect match where universal, one-size-fits-all frameworks are chosen with a view to assimilate, which unfortunately also introduces unexpectedly high switching costs, process inflexibility, and ineffective support when needed. Vendor-formulated process flows become the post-implementation operating standards, whether they work well or not, and the technology intended for positive impact instead creates drag and friction for the operation. What is missing? In the homogeneous hotel space where differentiation is a struggle, software evaluation and selection often revolves around predetermined answers and assumptions from a disconnected group not always in tune with the specific needs, and few questions are asked. This is a fatally flawed perspective, if superior performance, differentiation, and innovation are expected.

Hotel IT management, with its roots as a subset of finance, has historically existed to quickly repair, refresh, and troubleshoot – a generalist, problem-solving "MacGyver". I've witnessed a revolution in the recent part of my 20-year career, suggesting a renewed focus on the role of technology. Below are a few key changes:

- New expectations based on consumer technology advances, and ubiquitous, cheap, fast, connectivity.
- Low cost of hardware replacement, greater reliability, reduced value of break-fix.
- Introduced emphasis on data security, and policy enforcement, contrasting with service-orientation.
- Reduced property-based IT resources in favor of shared service and outsourced solutions, mirroring a move away from on-premise management to hosted, Cloud-based providers

Notwithstanding the above pressures, much of the industry is slow to take an active interest to understand the changes and address the implications. Why is hotel broadband still being called "high speed" when the comparison to dial-up is certainly lost on an important and emerging new guest demographic? Why does much of the IT management activity still appear to exist in a silo, a lone wolf on the fringes of the rest of the operation? Who else in the organization understands IT besides the IT department?

*Vancouver-based **Neil Foster** CHTP has been a hospitality technology leader since 1997, working with hotel companies at both corporate and franchise levels, as well as with technology vendors and as a hospitality consultant. Neil is a past member of the HFTP Global Board of Directors, and he holds an MBA from the Richard Ivey School of Business at Western University.*

The greatest opportunity in the evolution of the hotel IT manager is as an internal consultant and educator who makes sense of the "noise", with the ability to match technology capabilities with needs. IT Manager 2.0 is a connector, careful with the use of technical jargon, and is central to the hotel operation from a position of influence, seeking to understand the needs of the people and processes involved. Looked at from another angle, the role is more business analyst operating at the forefront, less technician working behind the scenes; problem solving with a new spin.

ITM 2.0 exemplifies the following characteristics:

- Business acumen and a genuine desire to understand every facet of the hotel operation
- Internal facilitator, bringing to surface key pain points and opportunities for further analysis
- Critical thinker with ability to ask tough questions
- Staying current with technology developments through industry affiliation (HFTP, HTNG), reading trade publications, attending conferences (ie. HITEC), regular continuing education.
- General problem solver with an open mind
- Exceptionally strong communicator
- Expert negotiator
- Strong builder of external partnerships
- Process-driven
- Entrepreneurial

The above criteria should not only serve as a focal point for recruiting, but also as a blueprint for ongoing development. Surprisingly, many current job descriptions still reflect outdated and unneeded skills, reflecting a poor understanding of the hiring objective. For ITM 2.0 to be successful, strong working relationships must exist with all functional divisions, especially including senior management support.

Of the hotel companies I've been fortunate to work with, Starwood Hotels' introduction of Six Sigma cemented the importance of process analysis to my thinking. At essence to defining operational needs, a data-driven improvement cycle begins with clear problem definition, followed by the establishment of metrics, subsequent analysis, improvement, and a control phase to continuously iterate through a culture of kaizen.

A new wave of hotel thinking has emerged with a strong sense of self-identity, doing away with the traditional hierarchical hotel structure. The organizations operating here place strong emphasis on the hiring process, and empower associates to do whatever is needed in support of the mission. An organizational culture of continuous improvement lies at the heart of all activity. Non-core functions are quickly outsourced to trusted business partners, which are regarded as key allies. What sets these organizations apart is a laser focus on people and process, where technology is carefully harnessed for support. The rest of the industry would do well to look to these examples if meaningful differentiation is to occur. ■

Our journey to hospitality technology Nirvana

by ***Pete Simpson***

Hotel technology has seen some amazing progress – though it may seem to be in a state of chaos at the moment, writes Pete Simpson. In this article, he makes a compelling case for coming together to build an "Enterprise Hospitality Framework" that would allow the industry to extend the hospitality eco-system beyond the confines of the hotel, and deliver amazing, targeted, data-driven recommendations and offers to customers. To make this happen, he says, it will require fearless vendors and the combined voice of the hotel chains.

Status quo

The global hospitality industry is currently in a state of technology chaos. Hotel chains that have surrendered their inventory to the online travel agents are now looking for creative ways to drag customer business back to their websites.

PMS vendors continue to provide proprietary systems and hold the hotelier's own data for ransom.

The much-touted "360-degree view" of the guest's preferences and buying habits is constrained by today's lack of integration between applications.

Traditional point-to-point interfaces continue to complicate the exchange of data between hotel technology sub-systems. Global data-sharing between applications is limited at best.

Vendors continue to cash in on aging systems, preferring to take short-term profit rather than invest in R&D to repay intolerable levels of accumulated technical debt, killing innovation.

Market-leading applications have been retrofitted with multi-property functionality, rather than being designed to scale easily or perform well in larger deployments.

Innovative, agile start-ups are quickly consumed by larger vendors who see this as their only path for fast-tracking new

development. The productivity then grinds to a halt as the start-up is aligned with the acquirer.

Open integration is quashed as vendors opt to maintain proprietary systems that foster long-term customer lock-in.

So we forego integration. Instead, we build data silos that function well in isolation but do not talk to each other. The result is a significant loss in operational efficiency for the hotel and the expensive, complex integration of applications. This results in higher operating costs, which do not equate to improved operational efficiencies, guest experience or increased bottom-line for hoteliers.

So what is the solution?
Ultimately, we all want the same thing: technology Nirvana.

If I could wave that magic wand… it would be a world where some clever vendor built a real Enterprise Hospitality Framework, composed of 3 key layers:

1. A collection of enterprise hotel management services
This multi-hotel services layer would provide a set of vendor-agnostic micro-services, front-ended by a highly customizable user interface. Administration, configuration, and management of multiple subscribing Property Management Systems and other associated technology solutions such as CRS, CRM, RMS, BO etc. These micro-services would be stateless, highly performant and horizontally scalable.

Global Hotel Registry provides centralized administration and management of the hotels, allowing groupings in any manner, such as traditional hierarchy (think corporation, chain, branded) and any other non-hierarchical combination such as country, region, demographic, etc. The global registry of hotels would determine the administration and distribution of role-based, user rights interacting closely with Global Identity Services.

Global Identity Services provide the security layer for all services, securing all via Single Sign-On and Multi-Factor Authentication. It also provides centralized administration of hotels' user rights and management of the hotels in cooperation with Global Hotel Registry.

Global Configuration Services push standardized configuration data to all, or subsets of properties that are present in the Global Hotel Registry.

Central Profile Services provide a secure store for all guest-data and preferences, history and communications. The central profile service also houses a sophisticated data cleansing, data standardization, and profile de-duplication processing engine. It would support full, 2-way integration to any external profile stores and can be either System of Record or the slave of an external system.

Global Reservation Services provide centralized management of reservations, availability, rates, and inventory. A central repository and master cache for global rate and availability data.

Global F&B Services provide centralized management of point-of-sale configuration, menus and one point of consolidation for inventory management.

2. The multi-hotel data communications services
The core of the data communications service is a framework of industry standard APIs, presented via an API Management platform. All data-messaging would be handled by a highly performant Enterprise Service Bus.

The data communications services would enable heterogeneous technology solutions to communicate easily, point to multi-point. Any technology vendor can subscribe to the Data Communications Services to receive/send data updates to/from subscribing services via the industry standard API framework.

↓

About protel

protel offers technology solutions specifically for the hospitality industry. This consistent focus on a single industry makes them one of the most experienced and successful providers of advanced Property Management Systems (PMS). The flexible and scalable software solutions cover the full industry spectrum, from small independents to multinational chains. Founded in 1994, protel hotelsoftware GmbH operates under the leadership of managing partners Ingo Dignas and Manfred Osthues. With headquarters located in Dortmund, Germany, branch offices in Berlin, Vienna, and Atlanta, plus a dense network of partner companies working in close cooperation, protel is enjoyed in over 93 countries.

www.protel.net

A robust Enterprise Service Bus (ESB) replaces the traditional point-to-point interface patchwork. A publisher/subscriber subsystem that reliably manages data exchange between systems.

3. Enterprise data services
The ESB subsystem provides the perfect data capture and transport mechanism to enable true Enterprise Data Services. Any data that traverses the ESB can be subscribed to an enterprise data store (data warehouse). Data is captured in real time, from any subscriber connected to the Enterprise Hospitality Framework. Hoteliers or data technology providers can now apply predictive and prescriptive analytic algorithms to drive real-time, targeted, dynamic packages or recommendations to any connected point of guest interaction in the hospitality ecosystem.

Where is the pay-off?

- *A win for the vendors.* With a well implemented Enterprise Hospitality Framework, software vendors can focus on developing their core business services. Today, significant resources are wasted on developing a proprietary mini data warehouse, reporting, mini CRM or duplicating other functionality that exists elsewhere in the hospitality ecosystem. The EHF allows vendors to leverage connected best-in-class functionalities instead of re-inventing this development. Time-consuming interfacing projects can be significantly reduced due to standardized messaging.

- *A win for the hoteliers.* Enterprise-level management of small, mid and large hotels. The ability to choose best-in-class solutions over complex and outdated technology. Shortened, simplified and less costly deployment of interfaces. Data-driven retailing. The ability to compete with the online travel consortiums with interesting, dynamic packages that the OTAs are unable to offer. The ability to rapidly adopt new technology and de-couple when this is no longer best in class would mean the end of vendor lock-in.

- *A win for the guest.* Better guest intelligence will lead to hotels more intuitively serving their guests. Predictive/prescriptive analytics provide hotel staff with an array of timely information. This intel delivered by “whisper screens” that provide attractive, real-time offers and suggestions for up-selling will boost revenues along with guest satisfaction. Extending the hospitality eco-system beyond the hotel to provide guests with interesting dining and activity options that were never before possible. Driving bookings back to the hotel’s website will mean a reduction in the hotel’s direct costs, which the guest could recover on the price of their stay. We are already seeing this today.

How do we get to hospitality technology Nirvana?
This is a complicated question. As technology has evolved, so has the web of applications designed to address key hospitality management functions.

A complex spaghetti of interfaces connect the countless applications that automate hospitality management. Previously, the Property Management System (PMS) was the center of the hospitality technology universe. In the Enterprise Hospitality Framework, the PMS is no longer the sun, it becomes just another replaceable component in the hospitality ecosystem.

There has been amazing progress in technology. Applying some of these innovations to build this Enterprise Hospitality Framework will allow us to extend the hospitality eco-system way beyond the confines of the hotel, and deliver amazing, targeted, data-driven recommendations and offers to our customers.

We need you, the hospitality technology consumers, to demand open data-sharing from your vendors. Don’t accept no for an answer from your vendors.

The Enterprise Service Bus was the first step towards openly connected systems. However, ESB technology cannot succeed in isolation. You need the overarching services of the Enterprise Hospitality Framework to provide the application services and business logic needed to govern and manage your hotels. It will take an open, vendor-agnostic, Enterprise Hospitality Framework to derive the maximum value from the levels of integration that a great API messaging framework and robust ESB data transport service can enable. This Framework will need to be developed by fearless vendors and will take the combined voice of the hotel chains to push their current technology vendors to drop their proprietary practices and fully adopt existing data-messaging standards.

In a world of demand-driven development, there are a small number of these future-focused, fearless development vendors. Hospitality technology Nirvana might be a lot closer than you think.

■

protel.I/O

HOTEL.TECHNOLOGY.

KNOW YOUR GUEST. BETTER.

Scan and learn!

protel.I/O combines existing hotel technologies making daily operations smarter.

www.protel.io/learn

Not your father's ERP

by ***Nick Price***

Hotel companies have been stuck for too long with an information systems architecture conceived well into the last century, and built around a notion of a Property Management System (PMS) at the center of everything that a hotel does or will do, writes NetSys Technology's Nick Price. Building on his ground-breaking article in last year's edition of the Hotel Yearbook, Nick further refines the Hotel OS architecture concept he described in 2017 by revisiting another legacy concept whose time has come: Enterprise Resource Planning.

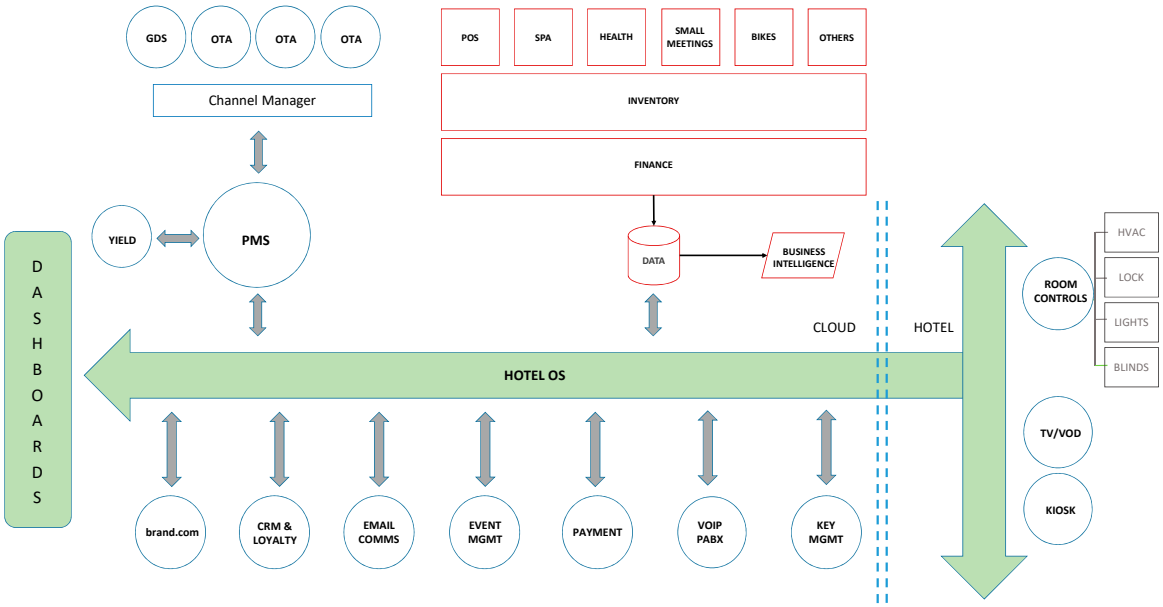
This central role for PMS has seen it become, or attempt to become, the Swiss Army knife of the hospitality systems toolkit. Anyone who has purchased hotel systems – and that's most of the people reading this article – will be very familiar with the ubiquitous "hub and spoke" capabilities diagrams from PMS companies, positioning the PMS in this central role, and claiming near-total solution functionality through satellite applications integrated with the PMS in various ways. And we, the purchasers of PMS's, will have asked countless times of up and coming satellite systems suppliers, "Does your application interface with PMS X?"

Had its day

This notion of PMS-centricity has had its day, and it's time now to move on.

Last year in HOTEL Yearbook 2018, we looked at Service Bus – a modern method to integrate applications within an architectural concept that we called, for want of a better name, Hotel OS. We contrasted Hotel OS with the commonly found PMS-centric architecture that came before it, and identified some benefits of a Service Bus architecture, not least of which was a reduced dependency on the PMS. Additional benefits also accrue from the decoupled best-of-breed systems architecture that Hotel OS espouses:

- Hotel OS is a single distributed architecture that can span both Cloud and on-premise, thus providing visibility of, and control over, both Cloud and hotel-resident applications through the same toolkit.
- Unlimited scalability: from the smallest to the very largest application need, and the ability to scale up, or down, as the need arises.
- Being both native Cloud and on premise, Hotel OS allows for optimum placement of system components to suit the need, and this choice of placement can even be different between hotels without changing or breaking the architecture.
- Hotel OS abstracts the specifics of any one system, so multiple similar systems can be used across the enterprise. Think multiple payment, multiple POS, even multiple PMS.
- Hotel OS provides the basis for consolidation of fundamental information across dissimilar source systems – a unified customer record across multiple customer profile and loyalty systems perhaps, or a unified reservation record.
- And because it is built on a modern public Cloud infrastructure that is itself being continually updated, Hotel OS brings with it modern reporting and business intelligence tools that are not just some add-ons, but comprise a fundamental and aligned part of the core technology stack.
- And lastly, the more systems that are connected to, and communicate over, the Hotel OS bus, the more derived value can be realized. When all systems participating in a business process (think check-in, check-out, web reservation etc.)



communicate over the bus, an opportunity arises where we can correlate events to visualize and map the processes in real time, providing an opportunity to take immediate and possibly automatic corrective action – the dream of any hotelier.

Our title for last year's article was "Not Your Father's Service Bus", and for good reason – we were introducing a concept called Service Bus that some might have regarded as legacy if they were brought up in old-school, big-iron IT shops with exposure to the Enterprise Service Bus systems (ESB) of the past. Of course the Service Bus that we were referring to last year, and to which we refer today, is not legacy at all. No, it's a contemporary take on ESB that draws from previous historic ESB concepts, while substantially refining and extending them. The new implementations take Service Bus into the modern age through up-to-date public Cloud deployment, and with it, Public Cloud's global reach and almost limitless scalability.

For Hotel Yearbook 2018, we will further refine the Hotel OS architecture by revisiting another legacy concept whose time has come, and for the same reason – the growing availability of systems hosted in the global public Cloud. This time, we'll be discussing Enterprise Resource Planning (ERP), and how ERP, alongside Service Bus, can significantly add to our capabilities within Hotel OS in pursuit of our objectives to improve business agility while at the same time distancing ourselves from historic dependence on PMS.

So what is ERP?

"Enterprise Resource Planning (ERP) is the integrated management of core business processes, often in real-time and mediated by software and technology" – or at least that's what Wikipedia thinks it is. For our purposes, it's a rather loosely defined label attached to a set of integrated applications that manage and automate back-office functions that for the most part are common to all businesses. Think finance, procurement, inventory management, project management, and HR.

The key phrase here is "back-office", often the forgotten application backwater of our industry. Our focus as hospitality systems professionals is quite rightly on systems that market, price, sell, or engage and understand customers. These are the unique systems that define our hospitality business, and these are the systems that should command most of our attention – and they do. All too often, though, they do so at the expense of mundane back office functionality that is in many senses equally important, but often forgotten.

The reasons that this is important now are twofold: Firstly, the highly integrated nature of these ERP systems is extremely desirable. They offer very functional, pre-integrated applications available off the shelf. And secondly, the growing availability of such ERP suites targeting the mid-market, which is where most hotel businesses are to be found.

Until now an issue preventing more widespread use of ERP in hospitality has been the cost and complexity of deployment. Large, expensive, and mostly on-premise deployments made these applications impractical for all but the very largest organisations, and this, together with the distributed nature of the hospitality organizational structure, meant that on balance, our industry was poorly suited to wide-scale deployment of class-leading ERP. That however has all changed thanks to Public Cloud and Software as a Service application delivery aggressively making its way down to the mid-tier where most hotel companies reside.

The impact on organizational structure

The move of our industry's technology solution set to Cloud has had one other consequence – an opportunity to rethink the hospitality organizational structure. With the growing availability of Cloud solutions for hospitality, it makes sense to start thinking about centralizing expert human resources above the hotels. Indeed, if you were starting up a hotel company today, it is unlikely that you would consider any other organizational model. Cloud solutions are a key element that enable this very beneficial change. ↓

But as a customer service industry with physical hotel products such as rooms and restaurants, we will most likely always have technology and applications installed at our hotels that are central to the customer journey and on-property guest experience. Cloud applications alone cannot fully service our industry need, and must be integrated with the systems that remain in our hotels. This is where Service Bus comes in. Through Service Bus, we can seamlessly integrate both Cloud and on-premise applications, allowing us to centralize human resources above property while retaining real-time reach into the hotel operation, providing the essential situational visibility and very necessary remote command and control. Service Bus therefore has the potential to become an essential foundational element of our industry's move to Cloud.

As we move to an above-property organizational structure, now enabled by new Cloud operational systems, the new mid-market SaaS ERP solutions become a viable choice for back-office automation for many hotel companies. Almost every month, a new ERP product appears in this space, but two I choose to highlight here, because of widespread adoption of other solutions from these companies, are Oracle's Netsuite product, and Microsoft with its newly launched Dynamics 365 for Finance and Operations. Both of these suites (and a number of others) combine POS, E-commerce, inventory and order management, business intelligence, CRM, financials, and certain HR functions. The ERP suites themselves are further enhanced through the ISV channel with applications for specific industry verticals, such as retail, and now hospitality.

The increasing availability and affordability of these ERP suites, now adapted for hospitality, provide hoteliers the opportunity to modernize the back office with contemporary, high functionality ERP product suites that offer a rich set of industry-specific back office applications pre-integrated out of the box. Imagine Restaurant POS, Retail POS, Spa, Health Club, Small Meeting Rooms, Bicycle Rental, and many other miscellaneous inventories, along with core HR and Time & Attendance, being properly managed as an integrated suite of applications sitting on top of a modern finance system. That's the promise of hospitality ERP.

So why is Hospitality ERP relevant for Hotel OS?

With the financial sales and purchase records for all these non-rooms inventories flowing straight through to the finance system, the PMS is no longer needed as the system of revenue recognition for anything other than guest room sales, or possibly large meeting and event management, and this further de-emphasizes the PMS role in the hospitality information architecture, which is a very desirable outcome.

The availability of record-level detail across all inventories, both purchases and sales, provides opportunity for 360-degree business intelligence, something that has proven extremely difficult for our industry with its historic model of PMS being responsible for sales analysis and the Finance GL providing rearward-facing, month-end profit and loss reporting.

Carving out a sizable role for Hospitality ERP as part of our overall solution allows us to segment our focus and resources properly. We can be agile and responsive to changing demand in our primary selling and customer service functions through a combination of applications suited to our particular needs, all interconnected via Service Bus. And we can inject efficiency and stability into our back office through a pre-integrated ERP that is both functionally rich and highly productive for our back office through the removal of manual processes and excel interfaces. This agility-where-desirable (selling, rooms, customer), and stability-where-needed (back office) systems strategy is a winning combination for the next chapter in our evolution of Hotel OS as we move away from PMS-centricity of the past.

What is next for Hotel OS?

Our objective when developing concepts around Hotel OS is to provoke industry discussion around the need for modern information architectures suitable for our industry, and through this discussion, to encourage awareness that alternatives exist to our industry's long-held traditional beliefs.

In our two published articles, we have discussed modern concepts for systems design and integration using a Service Bus model aimed at providing business agility through the assembly of unique collections of best-of-breed customer-facing applications and services fine tuned towards customer-specific business models. We then looked at how we might improve back-office productivity using newly available Cloud ERP suites from major-name companies. Our ambition for Hotel OS as a discussion platform doesn't stop there, though, and there are many further opportunity areas for future critique. CRM, Payment, and Product Distribution are three potential topics, but there are surely many more.

We look forward to your comments.

■

Nick Price *is the founder of NetSys Technology, a technology consulting company focusing on the hospitality and travel sectors. As part of his current portfolio of hospitality industry responsibilities, Nick holds the post of CIO at citizenM (www.citizenM.com), a happening Amsterdam NL based Hotel Company with global aspirations. He has worked with citizenM since early 2013 and is responsible for a large and growing set of digital technologies, including traditional IT. Prior to starting NetSys, Nick worked as CIO for global luxury hotel brand Mandarin Oriental over twelve years, where he was fortunate enough to participate in a significant global expansion of the company from its base in Hong Kong. In addition to his CIO role at citizenM, Nick holds strategic IT and advisory board positions at several hotel and hospitality technology companies. He is an inductee in the HFTP (Hospitality Financial and Technology Professionals) Hall of Fame, and a co-founder and past-president of HTNG (Hotel Technology Next Generation). In late 2016, Nick was elected to the Board of Hospitality Financial & Technology Professionals (HFTP).*

65 YEARS

OF PROVIDING HOSPITALITY FINANCE AND TECHNOLOGY PROFESSIONALS OPPORTUNITIES TO EXCEL IN THEIR CAREERS

MAKE MEANINGFUL CONNECTIONS

GAIN INDUSTRY KNOWLEDGE

ADVANCE YOUR CAREER

DEVELOP NEW SKILLS

ACCESS USEFUL TOOLS

HFTP®

JOIN TODAY

WWW.HFTP.ORG

Connecting the dots to improve your hotel operations

by ***Samantha Noll*** *&* ***Inês de Castro Fernandes***

In a hotel, providing service to guests can be a physically strenuous job. There's a lot of bending over, stretching, lifting, picking things up, carrying things, rushing around… any of which, with just a little bad luck, could cause an injury, not to mention lower back pain and a host of other maladies. Novility's Samantha Noll and Inês de Castro Fernandes explain how some of this can be mitigated, through ergonomics.

Work-related injuries in hospitality

Hotel employees are faced with physically demanding work on a daily basis in operations: lifting luggage, pushing carts, making beds, carrying service trays… and the list goes on. It is no surprise that the hotel industry is characterized by high numbers of work-related injuries. Moreover, this industry experiences one of the highest growth rates in injury occurrence over the previous years, according to data from the EU Labor Force Survey.

Accounting for roughly a quarter of the hospitality workforce are housekeepers, who are also known to be most affected by injuries in hotels. Studies indicate they have the highest annual injury rate of 7.9% compared to the overall injury rate for hotel workers of 3.2%. CKI Risk Solutions shares that nearly 62% of all hotel housekeeping injuries are musculoskeletal disorders (MSDs), affecting the muscles, tendons and nerves; tension neck syndrome and low back pain are common examples. The cause of MSDs is a mix of excessive force, awkward postures and repetitive motions, combined with the duration of long shifts. If muscles don't get enough time to recover, they cannot produce the same amount of force, resulting in fatigue, and injuries are more prone to occur.

In the case of housekeeping, employees deal with heavy lifting during bed-making as well as awkward postures of trunk and extremities when cleaning high or low surface areas, repetitively each day. (Speaking from first-hand experience here!) Pain levels are high, which greatly influences staff members' ability to effectively carry out their tasks and can even increase absenteeism or result in turnover; this largely affects work performance and causes a significant loss in productivity. So how can we best tackle high injury rates in hospitality?

Introducing ergonomics and its benefits

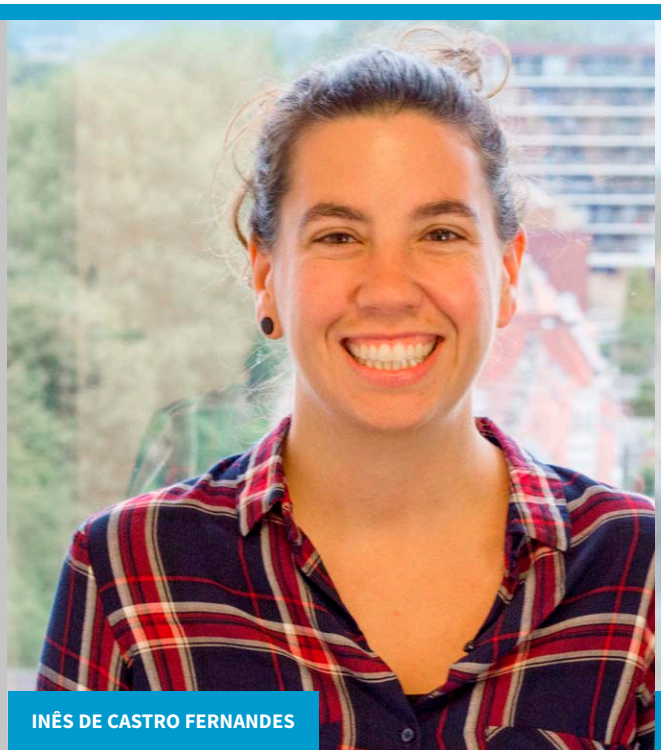
Essentially, ergonomics is a people-first discipline, taking into account one's capabilities and limitations. It aims to ensure that there is a "fit" between each person and his or her work, aligning the tasks, tools, information and environment to be suitable. In scientific terms, it is concerned with the understanding of interactions among humans and other elements of a system.

The benefits of integrating proper ergonomic practices within your workplace are to promote the well-being of your team, allowing them to work more efficiently with fewer injuries and perform at a higher quality. Productivity will increase and so will your employees' morale!

Three stages for ergonomics to help prevent injuries at work are as follows:

1. Provide a **well-designed job and workplace with proper tools** to ensure that the worker is able to accomplish what is required in a safe and healthy manner.
2. Deliver **employee training** for effective use of their body and of these tools to fit their tasks and needs.
3. Promote **open communication and support**, reducing injury risk by raising awareness.

What's more? ***Technology*** can help improve the integration of ergonomics in work operations. Let's connect the dots!



INÊS DE CASTRO FERNANDES

SAMANTHA NOLL

Ergonomics driven by technology
Technology is developing at a fast pace, with an ever-increasing number of gadgets on the market. In terms of the ergonomics process, there are three main phases where technology comes in handy:

1 **Risk assessment** of the workplace and tasks
2 **Design** of tools and the work area
3 **Training** for effective implementation

In risk assessment and design phases, **motion capture devices** can be used to track one's movements and analyze postures to help reduce injury risks. In addition, **virtual and augmented reality** are great technologies to help immerse in the environment to assess the risks of a certain task or workstation and evaluate if it is feasible to implement. **3D printing** can allow for prototyping ergonomic tools (e.g. a tool to help clean high surface areas), and the designer/engineer can test it before manufacturing. Ford Motors is a great example using what they call virtual manufacturing to assess the proper tasks and tools in the workplace. Why not explore these avenues in hospitality as well?

We can begin to use similar technologies in the hotel industry to improve operations, starting with training people: the heart of your business. With a user-friendly motion capture tool, for instance, you can onboard teams in an interactive manner on core procedures as well as correct body movements and postures, while having all the training data recorded. Such immersive learning techniques are known to help increase user engagement and can lead to higher knowledge retention, alongside muscle memory.

Awareness is the fundamental pillar when it comes to ergonomics. If we don't know we are injuring ourselves, we won't change the way we do things. We must be aware of our body, our strengths and our limitations to be able to protect ourselves from injuries. The ergonomics process is evolving, and employers are now more aware of its importance for each employee in their company to keep them motivated and healthy, increasing their productivity and well-being!

■

Novility

About Novility
Novility is a hospitality training and technology pioneer with a team of ambitious hospitality specialists, entrepreneurs, developers, designers, IT experts and ergonomists from around the globe. With a shared passion to reinvent training in hospitality, Novility designs and develops advanced solutions that improve operational productivity and human capital. Join the revolution with Novility to transform the next generation of hospitality growth: building the most trusted and technologically advanced training solution to drive the future of your business.
www.novility.com

Preventing and handling cybersecurity breaches

by ***Tanya Venegas***

In November 2017, HFTP is distributing a report, "Cybersecurity: Where It Stands Today," researched and written by the HFTP Research Center. For readers of The Hotel Yearbook, Tanya Venegas summarizes its content.

Reports of hackers breaching systems is nearly a daily occurrence. The hospitality and tourism business is a major target because of the amount of information processed through its systems on a daily basis. According to the US Travel Association, Americans took 2.2 billion trips for business and leisure purposes in 2016 and projected 75.6 million international arrivals in the U.S., including 37.6 million from overseas markets. Globally, the World Tourism Organization (WTO) reports there were 1,235 million international tourist arrivals, overnight visitors, in 2016. Looking down the road to 2030, the WTO estimates there will be approximately 1.8 billion international tourist arrivals. These numbers seem staggering when you think of the amount of data which is being collected and processed by the hospitality and tourism industries and must be safeguarded.

In November 2017, HFTP is distributing a report, "Cybersecurity: Where It Stands Today," researched and written by the HFTP Research Center. The purpose of this report is to provide knowledge and understanding of cybersecurity as it stands today. Readers will learn about safeguards they can implement in their businesses today and tips on how to continuously improve their security processes. Technology is changing at a rapid pace and hospitality businesses big and small must be ready for cybersecurity threats both now and in the future. The following is a summary of the information outlined in the report.

The National Cyber Security Alliance (NCSA) has outlined steps businesses can take to help prevent and handle cybersecurity breaches in their operations. These steps include: identify, protect, detect, respond and recover.

Step 1 – Identify
The first step in protecting a business from a cyber security breach is determining the types of data which need to be safeguarded. This information would include information that is central to the core operations of the business and would fetch a high payout for cybercriminals. Overwhelmingly, in the accommodation and food services sector, payment receives the greatest attention with 96 percent of all data compromises involving payment data as reported in the Verizon Data Breach Investigations Report (2017).

Once all systems have been analyzed and valuable information has been identified, the work is not complete. A detailed listing of the data must be developed and updated on a regular basis. The listing should include data and technology assets in an inventory list and should note where data and technology are stored and who has access to both.

Step 2 – Protect
What comes to mind when you think about these terms: attack, invasion, harm and defend? These are all terms which would describe a battle; and, on a grander scheme, a war! In this step of the process, businesses are preparing for war by defending their assets and training their troops.

Step 3 – Detect
Detecting a cybersecurity incident early is key to mitigating the long-term impact. In many cases, businesses are unaware of cybersecurity breaches for days, weeks or even months after their systems have been breached. How can a business detect breaches and stop the bleeding of information from their systems before it reaches a critical peak?

Strategically, there are several ways companies can prepare and plan for detecting breaches within their business. First, know the threats applicable to their business. Also, have cybersecurity products or services in place which help monitor company networks. Another method that goes a long way towards detection is having well-trained employees who can spot things that are out of the ordinary and report these incidences. Last, businesses can educate their customers to alert them of phishing attacks utilizing their brand.

Step 4 – Respond
Unfortunately, even with the best risk control practice, it cannot prevent information security incidents such as data breaches from happening. It is of significance to have an effective response plan for all businesses. Companies who are unprepared with a proper response plan in place will not be ready when an incident occurs.

First, a special team should be established to handle and respond efficiently and effectively. The team should not only include technical support professionals, but also needs someone who can make financial and strategic decisions, such as a CEO and CFO. Second, before the incident occurs, a risk management framework should be designed, including response protocol based on different incident types according to its influence and urgency. Once there is a breach, the security response team members should be assembled and begin the investigation. Finally, ensure the threat caused by the incident is eradicated, keep records and recover the business operation.

Step 5 – Recover
When a company enters the recovery stage, it has passed the immediate need to handle the cyber event and is now focused on the full restoration of normal systems and operations. During this stage, ongoing efforts are continued to mitigate the cyber event but focus is also turned to the future and continuous improvement over time.

By following the five steps, businesses will be better prepared to face off with cybercriminals. The hospitality business is connected to its guests in a myriad of ways… hotel guest data, spa health data, private club member data and restaurant guest data. The key to collecting data is to collect only the information of utmost importance for your business and to purge the ancillary information. Secondly, safeguard the data your business retains to ensure that cybercriminals cannot access the data and destroy the confidence of your guests.

Read the full report with detailed information on all these steps on PineappleSearch, a hospitality-specific search site.

■

***Tanya Venegas**, MBA, MHM, CHIA is executive director and HFTP Fellow at the HFTP Research Institute based at the Conrad N. Hilton College, University of Houston. She does custom, HFTP member-requested research as well as specially-commissioned research and reports for HFTP, analyzing the latest industry trends in hospitality finance and technology. She has overseen the development of the recently released whitepaper "Standards in the Travel Distribution Industry", in addition to the Cyber Event report.*

Closing the loop on the travel journey

*by **Max Starkov** & **Margaret Mastrogiacomo***

Hotel marketers can no longer afford to have a fragmented customer engagement and acquisition approach, but should engage online travel consumers throughout their complex journey, write Max Starkov and Margaret Mastrogiacomo. How do you achieve a 360-degree past and future guest engagement, retention, and acquisition strategy? They outline an action plan here.

Today's hotel planning and booking customer journey is becoming increasingly complex in this multi-device, multi-channel and multi-touch point digital landscape. According to Google, the average consumer engages in 38,983 digital micro-moments in just under two months. That's over 38,000 digital moments in a 60-day booking window. As consumers live their lives digitally connected, when they embark on the travel planning journey, which on average includes 19 different touchpoints before making a booking (Google research), each one of these touchpoints presents an opportunity for a hotel to build a brand connection, influence intent, and be there for every step of the journey.

In light of this complex digital landscape, hotel marketers should engage online travel consumers throughout their complex journey, and can no longer afford to have a fragmented customer engagement and acquisition approach.

One example of this highly fragmented approach is keeping past guest engagement efforts (CRM) in a silo from new customer acquisition and marketing efforts. Less than a third of hotel guests on any given night are repeat guests, while two-thirds are first-time guests. This means the reality that General Managers and DOSMs face every day is having to secure about 70% of occupancy on any given night with brand new guests they know very little about while trying to ensure they have a pleasant and meaningful stay. Furthermore, once the property has acquired this new guest, there is no guarantee they will stay again, resulting in a vicious cycle that affects the bottom line.

hebsdigital

About HEBS Digital

Founded in 2001, HEBS Digital is headquartered in New York City and has global offices in Las Vegas, London, Europe, Singapore and Auckland. Through its Smart Guest Acquisition Suite, including the smartCMS®, Smart Personalization Engine, Smart Data Marketing, and full-stack digital consulting and marketing solutions, HEBS Digital helps hoteliers drastically boost direct bookings, lower distribution costs, and increase lifetime value of guests. Together, HEBS Digital and Serenata CRM, the most comprehensive Hotel CRM Suite today, are the creators of the hospitality industry's first Fully-Integrated 360-Degree Guest Engagement & Acquisition Platform..

www.hebsdigital.com

Here are some examples of today's fragmented approach:

- **Hotel website**: The property "intimately" knows their guests: home address, credit card number, what they ate, and more. Yet, when these same guests visit the hotel website, they are treated like complete strangers.
- **Data islands**: Property customer data lives in multiple "data islands" that do not talk to each other: PMS, CRM, CRS, social media, web analytics, marketing data, BI, etc. In other words, past guest data (CRM Data) is not being utilized to engage and retain past guests, as well as target new guests and sharpen the focus of digital marketing campaigns to acquire new guests similar to past "best guests."
- **RFM**: Practically non-existent capabilities to identify the property's "best guests" (high RFM value) and engage them throughout their hotel planning and booking journey, and throughout the customer lifetime, as well as use this knowledge to acquire new "best guests".
- **Technology & digital marketing silos**: Hotels tend to use a myriad of vendors that do not "talk to each other": one for CRM, one for the website, a third for SEO, a fourth for SEM, a fifth for online media, another for social media marketing, etc. Managing digital marketing campaigns without taking into consideration who past guests are, who the "best" guests are, their preferences, stay and booking behavior, and failing to capitalize on these insights to fuel digital marketing campaigns to reach the right guest.
- **CRM data not "talking" to intent data**: Knowledge from past "best" guests is not being used to identify "Marketing Personas" and target look-alike audiences, thus significantly expanding the marketing reach to acquire new guests similar to your "best" past guests and "in market" i.e. planning to travel to the property's destination.

What is the solution?

Embrace a fully-integrated 360-degree approach that "closes the loop" on the customer travel planning journey with a seamless ecosystem that capitalizes on knowledge from past guests to acquire new guests. This means integrating the guest acquisition, engagement and retention strategy. CRM is a critical component to this type of strategy.

CRM (Customer Relationship Management) means using data to develop a 360° view of each guest, and ensuring they receive the most targeted, dynamic and relevant communication throughout the entire guest journey. CRM also allows hotels to know who their best guests are (and treat them as such on property by recognizing and tailoring the experience to their preferences), in terms of how often they stay at the property, how recent their last stay was, as well as how much revenue they extract from each guest.

A good CRM technology platform must integrate into a hotels' existing IT landscape and connect with PMS, CRS, ORM, RMS & other data sources.

What are the fundamentals of a strategy for engaging past guests?

- **One central view of the guest:** A Guest Data Management Platform (DMP) should be Cloud-based and able to store data profiles and provide one clean view of the hotel guest. This DMP should serve as the "smart" data layer incorporating past guest data extracted from the PMS, CRS and other guest data sources, and continuously updating, cleansing and enriching customer profiles to serve as the main "guest knowledge depository" for ongoing guest engagement and retention, as well as new guest acquisition efforts. This platform should be able to dedupe and combine several guest profiles if they belong to one guest (i.e. one guest may have different profiles because they have provided different e-mail addresses in the past). This allows the hotel to recognize their loyal guests on property, as well as on the hotel website and throughout digital marketing initiatives.
- **Guest communications:** Automated transactional e-mails and engage customers with personalized guest communications, such as pre-stay, in-stay, and post-stay e-mails, cancellation e-mails, guest surveys, and more.
- **Guest marketing automation:** Marketing automation tied to CRM data allows a hotel property to initiate or schedule targeted and highly personalized e-mail marketing campaigns and "drip" campaigns to smart customer lists with unlimited targeting options.
- **Loyalty/guest recognition:** Mid-size and smaller hotel chains, luxury or boutique hotel brands, or even independent hotels and resorts must be able to recognize and reward repeat guests through either a comprehensive Reward/ Loyalty Program (points or perks) or through a Guest Recognition & Appreciation Program (based on number of room nights).

How can CRM go a step further?

Through the use of CRM data, hotels can acquire new guests by capitalizing on the knowledge of past guests i.e. CRM data. Everything should function in one seamless ecosystem to "close the loop" in a hotel's past and future guest engagement, retention and acquisition. This includes:

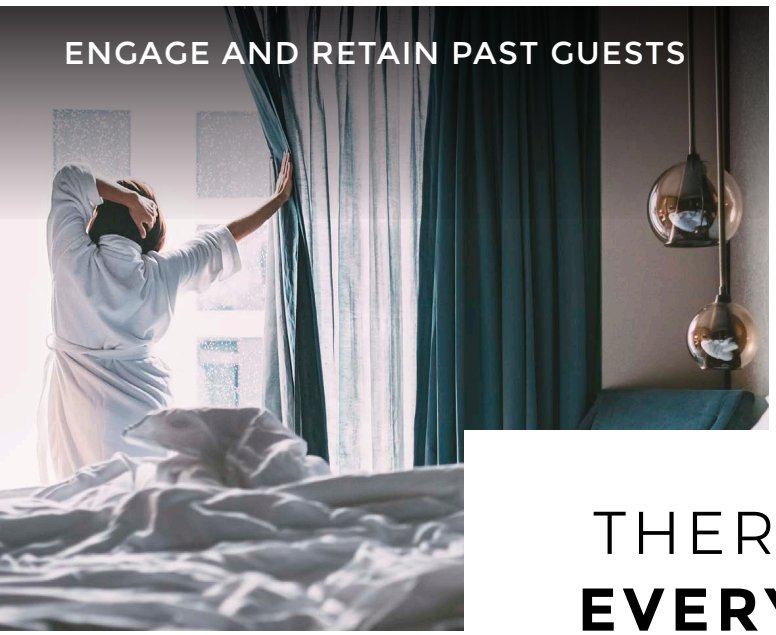
- **Personalization:** Fully integrated with the Guest DMP, hotel websites should be able to deliver dynamically personalized content and promotions based on users' past booking history, guest preferences, loyalty program affiliation, demographics, geo location, website behavior, or market segment affiliation.
- **Smart data marketing:** Smart data marketing takes full advantage of "owned data" (past guest data, demographics, website data, etc.) and then layers on real-time travel planning insights and intent data points to target in-market potential guests *during* the travel planning process to a property's destination. Smart data marketing should utilize programmatic advertising and dynamic rate marketing (DRM).
- **Acquisition marketing:** This type of marketing should utilize knowledge from past guests to target and acquire new guests through direct response and evergreen digital marketing initiatives such as SEM, SEO, GDN, online media, programmatic display, and dynamic rate marketing. Acquisition marketing also includes seasonal and targeted multichannel campaigns with one cohesive message across channels to answer occupancy needs, target current and new segments, capitalize on events and holidays, and more.

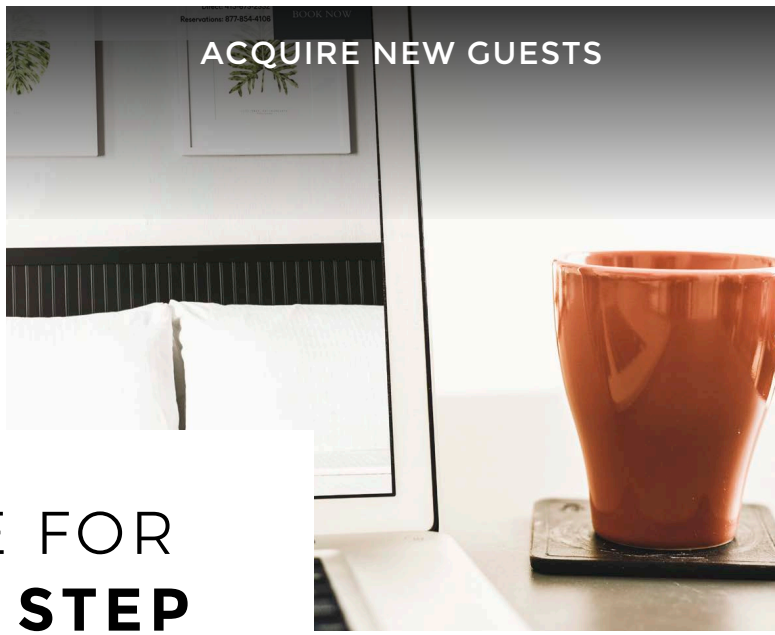
When a hotel CRM strategy is incorporated into their overall strategy of acquiring guests, then they can truly engage a travel consumer at every touchpoint in their travel planning journey.

■

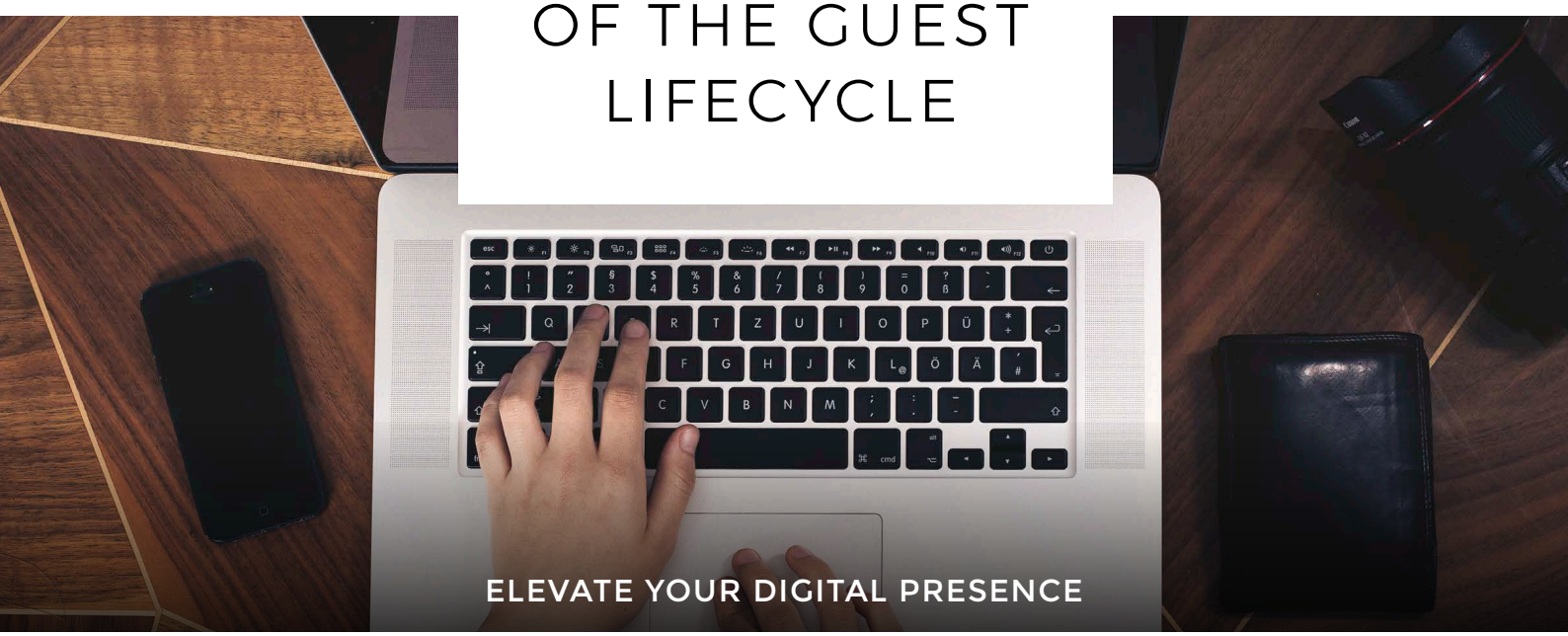
hebsdigital

serenataCRM





THERE FOR **EVERY STEP** OF THE GUEST LIFECYCLE



THE FIRST FULLY-INTEGRATED

GUEST ACQUISITION, ENGAGEMENT & RETENTION PLATFORM

We are closing the loop on the travel journey and helping hoteliers increase direct bookings, lower distribution costs, and retain their best guests by being there every step of the guest lifecycle.

EMAIL **SUCCESS@HEBSDIGITAL.COM** TO LEARN MORE OR VISIT OUR WEBSITE.

Cloud-based hotel software has failed, but a new paradigm is on the horizon

by ***Keith Gruen***

Most hoteliers agree that the Cloud is the way to go. This is not new. They believed in the Cloud for five to ten years already. However, penetration of Cloud hotel software is only around 1%. It's even lower in chains. Why didn't the Cloud revolution happen? Keith Gruen explains, and proposes a future solution.

The first generation of hotel Cloud software solutions didn't do anything radically different from the legacy hotel software vendors. The first generation hotel Cloud software was basically the old stuff, but available via the internet. The user interface ran inside a browser instead of a desktop window, but otherwise all the other problems of legacy software remained:

- Complicated and expensive installation and configuration
- Closed, proprietary systems
- Integration with other components complex or impossible
- High dependence on a single software vendor
- Extending the system, if possible, requires expensive, custom software development

What's more, the Cloud systems were often missing features and functionality that the legacy software had. Plus, the Cloud vendors generally lacked a sales and support infrastructure or partner network that many of the legacy vendors enjoy.

So there just wasn't a strong enough incentive for hotels or chains to move the Cloud.

So if Cloud-based hotel software is not the solution, what is?
Let's look at the most successful business software environments available today. I specifically use the word "environment" because we are not talking about a single vendor but rather an eco-system of vendors that fit together. One of these eco-systems revolves around the SAP Cloud platform HANA.

SAP provides standard ERP functionality, but, more importantly, no less than 1,372 other companies have written apps which fit seamlessly into the environment. Examples: auditing, lead management, HR services, time and attendance and hundreds more. So as an SAP user, you don't have to use all the modules from SAP. Is the SAP HR module too cumbersome? No problem. Shut if off and activate one of the many other HR apps instead in the SAP app store. Anyone who has used the Apple or Google app store already knows how this works.

The eco-system around salesforce.com is another excellent example of a business-oriented eco-system with over 3,000 apps to extend the system. Here, too, the process of plugging in an app is just a matter of a few clicks. Words such as "interface" simply disappear.

A third eco-system example is one we tend to forget but almost all of us have used it. It's the Microsoft Office environment. Countless plug-ins and add-ons fit right in to Word, Excel, Outlook and more. In fact, these products themselves are so well integrated with each other that they feel like a single product.

However, no such eco-system exists for the travel industry today. I am convinced, however, that this is the only way to go. Needless to say, one vendor alone can not build this eco-system. It will take a consortium of 5-10 innovative companies to launch this eco-system jointly, though one company may

Keith Gruen is the co-founder of Fidelio Software and the main designer and developer of Fidelio's property management system, which rapidly became the worldwide market leader. After building additional successful companies, including a venture capital fund, Keith returned to the hotel technology industry where he co-founded hetras, the first Cloud-based software for hotel chains, later acquired by Shiji, and then Apaleo, the foundation of an eco-system for hotel technology. Keith is a recipient of the HFTP Hospitality Technology Award of Merit.

need to server as the anchor or backbone of the eco-system. But that's only at the launch. Within a year, 50 more companies may start to build apps for this travel eco-system and sell them via the travel app store.

So will Cloud-based hotel software resurface as an eco-system?
No.

One cannot bolt-on an eco-system to existing software. One can not migrate from a proprietary Cloud system to an open eco-system. Just as one cannot simply move a legacy hotel system to the Cloud, though many have tried.

The foundation of such an eco-system is openness – from day one. The entire system must be developed in such a way that virtually all facets of the eco-system can be accessed and modified by any of the apps, as long as certain business rules are maintained. Therefore the integration with other systems is not an ability which one builds after the fact. It is something that is fundamental to the heart of the eco-system.

Techies call this a public API or Application Programming Interface. It's a fancy way of saying that integration is not an afterthought; it's the *only* thought.

It's unlikely that the travel industry app store will reach the 2.2 million apps in Apple's App Store or the 3 million in Google Play store, but one thing is certain: The founding consortium of the travel app store will only have a small percentage of all apps. Of the 2.2 million apps in the Apple App Store, only 47 come from Apple directly. So the unwanted dependence that a hotelier has today on, say, Oracle, will no longer be an issue. If the hotel wants a different housekeeping app, they can deactivate their current housekeeping app and try a different one. If they want to have, for example, youth hostel booking capabilities, they can search for one in the travel app store, check the ratings and try it out. If they need an elephant-trekking reservation app but none exist, they can commission the development to one of thousands of small development shops that are capable of building custom apps that link to public APIs. The extensibility is endless.

So where can one can buy a hotel software eco-system?
It's still a bit early for that. A few forward-thinking companies are putting together the pieces and building consortiums. However, the time it takes for an eco-system to reach a sufficiently mature stage is much shorter than one may realize. Whereas normal software grows incrementally, from release 1 to 2 to 3, an ecosystem can grow exponentially, as more and more vendors join the system. So rather than wait ten years for a new system to catch up to the legacy systems in terms of features, a hotel chain may only need to wait a year before replacing their legacy system with a modern and open eco-system.

■

Why payment strategy is so important in the hotel industry

by ***Diederik Van Gool***

As consumers become increasingly used to a slick purchasing experience for retail and digital goods, it has become an expectation for travel bookings, too. The hotel industry is lagging behind, however – and as Diederik van Gool explains, it all comes down to payments.

The hotel industry currently manages payments on a "property-by-property" basis, but to keep up with the modern traveler's expectations, it's crucial to move to a centralized payment model. This is the only way that guests can receive a booking confirmation in "one click" and automatically be checked in as they approach the property using stored payment details.

In this article, we will examine how changing the payment set-up of the hotel can improve the overall customer booking experience.

1. The booking experience becomes seamless
Seamless payments = increased conversions

Using a centrally managed payment set-up can enable guests to store their payment details against their user profile and re-use it every time they want to book or check-in at any one or your properties – anywhere in the world. Confirming a booking, checking in, or checking out would be no more than a swipe or finger print using their mobile phone. It's a completely seamless user experience – the need to pay at the reception desk could be completely eliminated.

Making the booking and payment process simple can be the driving force in a customer choosing to hit that "pay" button – with your brand.

2. Meet the needs of your target market
Payment convenience = satisfied (foreign) guests.

Travel is a global business – but often hotels think about local guests and forget the importance of appealing to the wider market – and offering the payment methods that your guests have access to.

For example, have you considered how your individual properties cater for the payment needs of guests from high growth travel markets such as China? The rise of e-commerce,

About Worldpay

Worldpay is a leading payments company with global reach. As a specialist in payments for the travel sector, Worldpay supports airlines, online travel agencies, travel marketplaces and service providers such as hotel chains, car rental companies, rail, coach, ferry and cruise operators. Worldpay manages the complex payments landscape for its customers, helping them to accept the widest range of payment types globally. Using their network and technology, Worldpay processes payments across 146 countries, in 126 currencies and helps its customers to accept more than 300 different payment types. Worldpay provides an end-to-end service including acquiring, treasury, gateway, alternative payments and risk management, all via a single integration to Worldpay, making global payments simple for many of the world's leading organizations.

www.worldpay.com

coupled with the continued growth of middle and upper-class Chinese travelers, supports a case to offer ”preferred payment methods” for tourists from these markets.

Not convinced? UnionPay is by now one of the largest payment schemes. Alipay currently accounts for 44% of global e-wallet spend, and younger Chinese shoppers’ preference for mobile commerce is likely to accelerate an adoption of mobile wallets and in-app/browser payments from Apple and Google. These consumers are very unlikely to have an international credit card.

A centrally managed payment facility can adjust much more quickly to the ever-evolving range of most popular payment methods. Offering it through your hotel app to your guest’s mobile phone removes the complex integration at property level.

3. Guests can buy more services from you
Holiday add-ons = increased revenue

Consumers using smartphones are now pilots of their own travel experiences, shaping where they want to be, and what they want to see, with just a swipe or a click.

Advising guests on local amenities is something hotels do best, and with the ”rise of mobile”, hotels can now expand customer relationships beyond the realms of their properties to actually take payments for other services. Selling ground transportation, tours, restaurant deals and museum tickets is something online travel agents do already well via mobile, and there’s no reason why hotels can’t do it too!

As the ”merchant of record”, you’ll have complete control of the entire payment journey, from enabling easy booking and check-in to check-out. You can up and cross-sell throughout the customer’s stay. As you manage the end-to-end payment process, reporting and servicing customer queries can also be centralized and unified.

To create a truly seamless travel experience, hotels need to focus on their court payment strategy. They should:

- Optimize their guests’ payment journey
- Take a ”mobile-first” approach
- Choose a payment provider that’s specialized in the travel sector
- Adjust to a centralized payment setup

…and become the ultimate travel companion to your customer and provide more additional services directly, without redirecting to third parties.

■

worldpay

Blockchain: The current reality

by ***Lyle Worthington***

Has any technology concept been as hyped as Blockchain? (Well, yes, but probably not this year.) What is Blockchain, how does it work, why will it be such a good thing – and can it possibly live up to all this hype? More to the point: How, and when, will we start seeing Blockchain in the hotel industry? Lyle Worthington shares his thoughts on this fascinating technological solution.

Blockchain is the new big buzzword – and it is buzzing its way into hospitality. Much like Cloud computing and Big Data from the previous decade, everyone is talking about how "Blockchain-this" is the killer solution to "problem-that". Search Google for Blockchain, and you'll find no shortage of articles about how Blockchain is "the future" and will solve every problem on earth, from tracing diamonds and food origins to stopping voter fraud and colonizing Mars. But, just like there was ambiguity in the actual definition of Cloud computing and Big Data, as well as a general lack of understanding of what and how to apply those concepts in the real world, people are focusing on the one example that Blockchain is really good at, and are unaware of the limitations that make it quite difficult to implement elsewhere in the real world. Let's start by talking about what Blockchain is, what it is actually good at, and what we *think* it is good at, but really isn't.

The buzz around Blockchain is that it is a decentralized ledger, with verified copies on many different computers hosted by many different people, and the amount of work required to alter a transaction in the ledger is so great that it is not economically feasible to do so. Thus, ostensibly, you have a truly transparent and immutable database, replicated and stored on many (potentially anonymous) nodes around the world, with no centralized system that can block data, tweak entries, or modify rules. And, as a bonus, members of the community pitch in on the costs of hosting and maintaining it, and they do not have to trust each other to trust the data they share. This is the strength and promise of Blockchain: distributed and decentralized trust, and an inability to change the data stored on the Blockchain. Bitcoin has proven that this is possible, and it is really the success of Bitcoin that has driven much of the hype around Blockchain.

To help explain how Blockchain works (and note that this is grossly over-simplified), imagine a shared online photo album. Everyone that cares about this photo album begins submitting images. After a set period of time, the photos collected so far are arranged on a page along with a screenshot of the previous page. Then, a very expensive screenshot is made of this new page (which now includes the screenshot of the previous page,) and it is added to the newly assembled page. This page is then distributed to everyone else that has the photo album, and once 51% of everyone agrees that the screenshots match, they all add the page, thus ensuring the book is identical for everyone. The important part of this process is the screenshot of the page and the previous page; that is what creates the chain. Each page in the book is tied to the one after it through those screenshots. Everyone with the photo album can see the screenshot, and verify that all the images are the same. To change an image requires first changing the page it is on, then creating a new screenshot of that page. You then must change the screenshot that was written into the following page, which then requires taking a new screenshot of that page, and so on. So, to edit a single image, you have to edit every single page in the book starting with the one containing that image. Before the next page gets completed. If you make the process of creating and adding the screenshot really time-consuming and expensive, then you get an idea of how unreasonable it is to change every single page before a new one gets written. This concept is called "Proof of Work" and is one of the reasons why Bitcoin is so secure: The cost to compromise the system is demonstrably higher than the amount you would steal – unless you can find a way to control 51% of the network power of Bitcoin (and people have gotten close before)… but that's another story.

It is the strength of the rules and incentives in Bitcoin that makes the Blockchain it is built on so successful and secure. The Bitcoin Blockchain isn't free – it requires a significant amount of computing power (and thus electricity) to generate each block. You could understandably consider Bitcoin a big waste of electricity – millions of devices doing pointless math equations constantly – because it is the cost of that electricity required to compute that "screenshot" from the simplified example above that provides the security. Copying this in a private environment, though, is problematic. It would be difficult to justify these same costs to properly distribute and secure a Blockchain with a Proof of Work security model like Bitcoin. Simply put: the Bitcoin implementation of Blockchain doesn't scale.

There is another option based on the concept of "Proof of Stake." If Proof of Work is "We trust you because you've spent a lot of money doing useless math equations to create this block," then Proof of Stake is "We trust you because you have so much money invested in this that being a bad actor would result in you losing money." There are variations of Proof of Stake out there already, such as Ethereum's Casper and MIT Professor Silvio Mikali's algorand, but these are not available (or proven commercially) yet. For a Proof of Stake implementation to work, it would first need to be proven as difficult to compromise as Bitcoin's Proof of Work.

So you may think that Blockchain is secure, but it does not provide security, nor does it protect from all kinds of fraud. What is actually stored on the Blockchain, validating that someone has the ownership of whatever asset or item is being written on the Blockchain, keeping sensitive data private or encrypted, and securing it from modification are done by logic and algorithms built on top of Blockchain, not Blockchain itself. Blockchain is really just a foundation – or an infrastructure – on which future applications can be built.

In conclusion, aside from a desire to take Bitcoin as payment, there isn't yet a commercially feasible, properly secure, and fully proven implementation of Blockchain that is available for hospitality, so don't start ripping out all your systems just yet. But it is definitely coming, it *is* the future, and we should all be prepared for it. Blockchain will have a place in hospitality, but it won't make sense for every problem. There are a lot of questions to answer, such as how to properly support a person's right to be forgotten in GDPR (see the article by Alvaro Hidalgo in this edition for more on GDPR) if data about them is stored on an unchangeable Blockchain. HFTP recognized this and has stepped up, assembling a task force of Blockchain experts to analyze the technology, study its applications in hospitality, and keep the industry educated. Keep an eye out for the output of that task force. And go buy some Bitcoin.

■

***Lyle Worthington** , CHTP is a hospitality technology executive, advisor, mentor, and world-renowned technology consultant with over 20 years of diverse technology experience ranging from software developer to CIO. He is currently the CIO of The Student Hotel based in Amsterdam and President of HFTP Global. Lyle has served on and chaired several boards, committees and councils specific to the hospitality industry, and has been an active voice for technology in hospitality for more than a decade. He regularly speaks at industry events and has written numerous articles for global hospitality technology publications.*

Is your property's technology ready for the guest service convergence?

by ***Joey Yanire***

Hotel guests want a personalized guest experience. When guests feel welcome, they value their stay, become loyal clients, and generate additional revenue. As dormakaba's Joey Yanire explains, most properties have the ability to provide a personalized experience if they simply unify the data at their fingertips and put it to work. "Guest service convergence" is the process of unifying data from emerging and existing technologies into actionable insights that enable hoteliers to provide guests with a memorable, highly personal property experience. How prepared is your property for tomorrow's guest service convergence?

Guests want a personalized hotel experience. After all, they access unlimited amounts of information in the palm of their hand. They know the technology is available to identify their location and their consumer preferences. They expect their hotel leverage this and identify them on premises.

Hotel operators are meeting this expectation with "service convergence". Service convergence is integrated communications and data sharing between independent hotel systems in one hotel or across a property chain. Information sharing via hardwired interfaces that post point of sale charges to a guest folio in the property management system are obsoleted. Today's service convergence is a blend of wireless property networks and global infrastructures that let hoteliers identify guests and create personalized service offerings anywhere in the world.

Systems that exchange data to enable the guest service convergence include reservation solutions, handheld payment devices, CRM databases, mobile check-in tablets, room service devices, electronic locking systems and business intelligence analytics platforms. Additionally, there is now a new breed of service offerings that employ third-party data to generate personalized marketing and communicate welcome messages. When used effectively, these systems seamlessly exchange guest and property data to enhance hotel business processes that support a more personalized guest experience.

Mobility and the personalized guest experience

Since Millennials spend more time on their smartphones than their computers, how can hoteliers leverage mobility to shape the guest experience? To answer this, we must assess the impact of many emerging technologies. These include geo-fencing, iBeacon, location-based services, mobile credentials,

dormakaba

About dormakaba

dormakaba is one of the top three companies in the global market for access and security solutions. With strong brands such as Dorma and Kaba in its portfolio, the company is a single source for products, solutions, and services related to doors and secure access to buildings and rooms. With around 16,000 employees and numerous cooperation partners, dormakaba, headquartered in Rümlang (Zurich/Switzerland), is active in over 130 countries, generating an annual turnover of over CHF 2 billion. .

www.dormakaba.com

facial and iris recognition, Cloud computing, and business intelligence.

Geo-fencing allows hoteliers to capture social content using geo-coordinates that enable it to identify property or chain-specific social media content and its possible economic impact. Geo-fencing technology aggregates and analyzes social content shared anywhere in the world in real-time. This gives operators insights into the content and people driving the social conversation around their brands at specific events and locations.

iBeacon works in concert with geo-fencing to target promotions to the right target audience. It uses Bluetooth Low Energy (BLE) information from property access points to detect a guest's movement between floors to accurately send promotions related to the guest's location. Targeted messages may include discounted dining offers, complimentary promotions, or incentives for guests to extend their stay. Personalized messaging may be strengthened with guest preference data communicated from the property or chain CRM. These targeted promotions may be based on a guest's historical personal preferences, habits and experiences.

Location-based services use a guest's physical location to provide actionable information to marketing and other systems. Location-based services make it possible to target guests with directed sales campaigns as he/she passes near a boutique, food & beverage outlet or other property area. Data analytics allow for more specific adverts and provide information about specific products based on the guest's consumer habits.

dormakaba is instrumental in the development of electronic locking solutions that generate secure mobile access credentials. These credentials allow guests to obtain their room keys on their cellular device using property Wi-Fi or a cellular data network. Bluetooth Low Energy technology integrated with electronic door locks create a win-win for properties and guests. It is more convenient for the guest, and hoteliers benefit from reduced lines at the front desk which improves operational efficiency. Mobile access may require that the guest belong to the property or chain's loyalty program and provide personal information to verify their identity. As part of the guest convergence trend, hotel companies may use this information to offer more personalized guest service. For complete flexibility, guests can use their mobile credential to print an RFID keycard at a property's conveniently located kiosks.

Networked electronic door locks are an important part in the expansion of artificial intelligence (AI) in hotel operations. dormakaba, which develops, installs, and maintains electronic door locks, understands data gathering is an inherent part of its product offering. Networked door lock systems collect data from electronic door locks which may be used to optimize operations, protect guest safety, and ensure proactive service that supports a positive guest experience. Online locks capture and record a great deal of non-personal operating data which results in predictive maintenance and continuously monitors guest door status to enhance hotel security. Networked door lock systems also monitor frequency of door use to help properties balance room usage and enable hotels to schedule staff more efficiently.

The more intelligence that is built in a lock system, the more operators learn about their hotel, the guest experience, and the lock's performance. The usage profile of each lock provides data that supports better decision making. It can also help reduce operator maintenance costs and improve customer satisfaction.

Facial recognition is an emerging guest safety technology that hoteliers can use to enhance property security. Guest images can be stored in a property or chain Cloud server. Property security can monitor facial recognition notices to detect when an unwelcome visitor walks through the property. Additionally, if a known and friendly face is identified, the property could have the option of texting promotional offers or a welcome message. Iris recognition can be used to confirm the identity of a guest who is making a room reservation through a loyalty member app.

Cloud computing is increasingly used by hotel operators to reduce a property's IT footprint and eliminate many costs connected with property computerization. Cloud computing streamlines data analytics because hoteliers can leverage the computing power of remote servers for separate systems via the internet. Large chains use Cloud computing to support a highly personalized guest experience on property with CRM information stored and accessed from a centralized Cloud database. Guests benefit when property staff and corporate loyalty programs convert guest history data to on-property recognition. Cloud computing also benefits guest safety when property electronic access control is centrally monitored to strengthen property security.

All these guest service convergence technologies are based on the Internet of Everything (IoE) that forms a global web of data flowing between systems and properties in near real-time. This virtual holistic platform of system integration is at the forefront of hotelier's operational requirements today. Properties are already using multiple vendor systems to create operational efficiency and customer satisfaction. By combining IoE-based systems, operators will link people, process, and data to make network connected devices relevant to property operations and create a more personal guest experience through guest service convergence.

■

We make hospitality smart and secure.

Saflok and Ilco lodging systems offer performance, scalability and flexible deployment options for hotels of any size. Our latest access management software and electronic RFID locks ensure seamless integration. This total-enterprise solution combines the convenience of mobile access with end-to-end security to improve operational efficiency – making hospitality smart and secure.

dormakaba.us
infolodging@dormakaba.com
Ilco 1.877.468.3555
Saflok 1.800.999.6213

dormakaba

Fifteen questions to zero in on the "room of the future"

by ***Xavier Etcheberrigaray***

Technology is necessary and useful, says Xavier Etcheberrigaray, but it's not the only component to building the future. Here he describes fifteen perspectives he and his colleagues thought about when tasked with the job of imagining the room of the future.

What do the phrases *seriously funny*; *act naturally*; and *hospitality innovation* all have in common?

For one thing, they can be interpreted in several ways. And to some, they are a fitting contradiction in terms. On the one hand, the hospitality industry is notorious for lagging behind globally in innovation. On the other, it's a business that hires some of the most clever and innovative employees you'll ever meet. They're made to solve complex problems on the spot, interact and emotionally connect with people across different cultures, age groups, and social and economic classes.

So by its very nature, the hospitality industry epitomizes a "people-oriented" business. Yet despite the innovative spirit of its people, it's an industry that rarely finds itself at the forefront of innovation. What was the last innovation you can remember in our business? For me it's Waldorf salads, room service, the Singapore Sling, and that thing we do where we fold the toilet paper into a little triangle – ideas so old they predate World War I. Even the touted "proprietary" hotel systems are actually dupes from other industries; revenue management systems from airlines and loyalty programs from retailers.

I still get the impression we've been given a pass, and more importantly, an opportunity, because we mimic staple commodities, like the water we drink, the gas we pour, or the coffee we roast. Our commodity is "the room night". It's highly perishable, yet indispensable to the world economy. Eating, drinking, and sleeping will never go out of style; it's why I got into this business in the first place. But perhaps this belief has

led to led to the innovative complacency in our industry... I'm not so sure – and I can only speculate.

What I do know is we've been thrust into a new digital era, where our guests demand our technology to be user-friendly and cutting-edge, and our employees demand the latest systems to satisfy those same guests' needs. Property, Reservation, CRM, and Revenue Management systems must all connect seamlessly across integrated platforms, so hotel departments can talk to each in real time, at all times. Of course, hotel innovation doesn't stop there….

On innovation

I find the concept easy to grasp yet very hard to convey. It is not technology in the absence of everything else. It's certainly not continuous improvement (BPI) in the absence of everything else. Or in the words of Oran Hadedi, "The electric light did not come from the continuous improvement of the candle". It should have an objective in mind – enhancing the guest experience, driving revenue, delivering value to employees, or finding unique ways to create new competitive advantages in the market.

It should be molded and made to work for the end user. In my (at times) unpopular opinion, it should be a state of mind that permeates company culture, not just a department in an organization. In my organization, we hold a yearly summit where executives of different backgrounds are assigned groups and expected to submit different ideas, each year with a different objective in mind. Last year was about revenue, this year is all about the customer. It's a great way to put innovation into the hands of employees, and a good example of how we leverage our culture to think of the business differently.

Ultimately, hotel innovation, and the cool looking, futuristic rooms predicated on these ideas, should be collective efforts. Designers design, revenue managers protect our top-line, and marketers find unique ways to put more heads in beds. As operators, we tend to look for ways to better the guest experience. My dream, however, is to work with great teams to fundamentally revolutionize the guest experience, for the better, now, and in the future.

Defining the "future"

I included it in my title because it's become an overused industry buzzword, particularly in the context of technology. I must say, I find this to be fundamentally wrong. Again, it's my opinion, but I do think we'd be better served if we thought about innovation without automatically and systematically deferring to technology at every mention of the word. The "Future = Technology" formula is an idea I don't particularly subscribe to.

Yes, technology is necessary and useful, but it's not the only component to building the ideal room of the future. I admit it's a challenge, and often, I stop myself and those I work with from going down a comfortable path. It involves throwing money, resources, and energy at an idea, then pointing fingers when everything goes south. We must think of the future and the rooms we put our guests in every day, into the right context.

At Caesars, we've been tasked to do just that – to build a "Room of the Future" prototype that would serve as a template for projects in the pipeline. In other words, they would effectively become our future model showrooms. So as not to divulge trade secrets, I wanted to take this opportunity to raise questions that provide us food for thought as we embark on this mission to give guests the "room of the future" experience, as follows:

1. Viewing our rooms through other departments' lenses. For example, in the same way a kitchen chef preps his station or "mis en place", how can we prep rooms for greater a guest experience, ahead of arrival.

2. What different ways should we consider to accommodate guest requests: how can we ensure laundry is picked up and dropped off faster, for example? How can we deliver room service at warp speed?

3. Increasing efficiencies for our staff, so that making up / turning over a room for the next guest becomes less burdensome, mitigating wait times at front desk, and accommodating early guests where we can.

4. What measures can we put in place to maintain the human element in an age of increasing automation and integrated technology, without negatively impacting our bottom-line and the happiness of our guests?

5. The incorporation of digital products should facilitate human actions and interactions. How can we leverage existing technology to service the guest via IRD, Spa, Conference & Business Center, etc…

6. How are we building our rooms to meet new demand based on a paradigm shift in the way that a guest perceives value, today vs. tomorrow?

7. More importantly, how are we defining this value, and how will we bundle this into our service offering?

8. For each and every aspect of the room, we ask ourselves whether technology is truly the "solution". Is there a potential design element or innovation that could inspire guests to experience the room differently?

9. What strides are we making to look at design and layout differently? Do we bring in Feng Shui experts? Plane designers? Or boat craftsmen who have perfected the art of making small spaces feel large?

10. Have we considered in-room ergonomics? Is the work-desk multi-purposed? Is the safe at eye-level? Are plugs in easy-to-reach places? Does the room provide maximum utility and comfort for the end-user overall?

↓

11. Are we sweating the details – the lighting, the sleep experience, the shower experience, the feel of the carpet on bare feet, the thread count of the sheets, the fill of the pillow, or the quality of the air?

12. How are we approaching modern day sustainability initiatives that put less stress on the environment? What cool new technology allows less water consumption, better energy conservation or state of the art BMS's?

13. Following the tragic events at Mandalay Bay, what new features or technological tools can we bring on board to configure our rooms for continuity of absolute safety and security to our valued guests?

14. What can we do to provide our guests with a lasting memory of their room? Do we retail certain items? Do we revisit our amenities? What keepsakes can our guests take with them and share with friends and family?

15. Ultimately - how do we make each and every room a "timeless" piece that provides each and every guest with a lasting and memorable experience for life?

This is certainly not a comprehensive list, but it goes to show that looking at a room of the future is so much more than just the technology that goes into it. Part of that innovative process is anticipating what the "future", an elusive target, holds. You can identify an "ahead of the curve" digital product today. You can take it through the full development, testing, and implementation cycle, and by the time you go live, your product is already passé.

It's also important to understand where the room experience begins, and where it really ends. At Caesars and other forward-thinking companies, we're blurring these very lines. A good example is the virtual end-to-end check-in. At certain properties you can register online during your pre-stay e-mail, and check in virtually, utilizing your mobile device to enter your room, never once having to approach the front desk. And socializing, browsing for, selecting, and getting to the room is every bit as important as actually being in it – if not more important.

It's akin to a good holiday dinner. My grandmother used to cook what the French call *pintade*, a sort of wild African chicken that is very popular in the South of France, my heritage. In all honesty, it was good, but it was the ritual, the journey, the experience culminating up to that point that made it so delicious and memorable. Selecting the bird, depluming it, going to the market to smell and pick the ripest vegetables against the backdrop of the market's ambient noise and jovial holiday colors. Then there was the scent of the bird in the oven and the tasting of wines at the table together with friends and family that made it so great. The room is in principle the exact same thing to me: an A to Z experience that should not leave out one single touch point in the experience.

Childhood analogies aside, my overarching point is that building a room of the future is a multi-dimensional process. I believe in order to succeed it should bring the ideas around what a room should be, and our vision of the future, together to provide context to innovation, all the while giving new meaning to two words which when juxtaposed, provided an oxymoron.

Luckily, Las Vegas is fertile ground for such discussion, where ideas can easily flourish out of nothing, in the middle of nowhere, to become one of the premier leisure and convention destinations of the world. Here at Caesars we continue to make strides to bring our version of the "Room of the Future" to our key stakeholders, so that we can meet the demand of our beloved guests in years to come.

■

*In his most recent role, **Xavier Etcheberrigaray** was the Corporate Director of Hotel Operations at Caesars Entertainment, based in Las Vegas. In this role, he was responsible for the development, implementation, and execution of hospitality related initiatives for Caesars' Brands in the Americas, including Caesars Palace, Paris, Flamingo, and Harrah's properties. Prior to joining Caesars, Xavier spent the last decade working overseas, for both Rixos and Kempinski Hotels. As the Corporate Director of Strategy and Development at Rixos, he oversaw the company's strategic, long-term goal planning function and development pipeline for luxury resorts in emerging markets. At Kempinski, Xavier was the Regional Operations Manager for Europe, based in Geneva and later in Dubai. There, he worked with property leaders to maximize performance for iconic hotels and celebrated restaurants, including the Emirates Palace Abu Dhabi, Ciragan Palace Istanbul, and Adlon Berlin. He also spearheaded a special pre-opening taskforce team for Kempinski's most challenging destinations, namely Equatorial Guinea in Africa. Xavier embarked on his career as a Management Trainee with InterContinental Hotels, working as a Food & Beverage MT in Miami and subsequently a Sales & Marketing MT in Atlanta, before assuming roles of increasing responsibility outside the company. He later pursued an MBA in hospitality from Glion in Switzerland. Xavier is also a graduate of Ole Miss with a degree in Political Science. Due to his travels, Xavier is a polyglot and serious foodie, speaking French, Spanish, some Portuguese, and English, and enjoying the food from those countries in that exact same order.*

HSYNDICATE

ONE INDUSTRY - ONE NETWORK

www.hsyndicate.org

Attracting the frictionless consumer

by ***Michael Schubach***

For hoteliers, the rapid ascent of OTAs and sharing economy models threaten to dilute even the strongest brands. But the rapid technology evolution doesn't have to leave brand loyalty behind, writes Infor's Michael Schubach. One need only look at the immediacy and convenience of making an Amazon purchase to see why today's consumers are expecting that same personalized experience from all of their buying transactions. By embracing digital disruption, he says, hoteliers can lead the way, even in the age of Amazon.

Making purchases Amazon-style has ushered in the era of the "frictionless" consumer, the one who is always digitally connected and on the move. It should come as no surprise that Millennials, who will make up 75 percent of hotel guests by 2020, are often mentioned as creating the frictionless marketplace.

A recent Nielsen report shows that 65 percent of same-day hotel reservations are made from a smartphone. All this – plus the proliferation of online booking agencies and the growth entrepreneurial competition such as Airbnb – challenge the hospitality industry's tradition of attracting and retaining guest loyalty through one-to-one, personal relationships. The good news is that this same technology revolution also provides hoteliers an unprecedented opportunity to cater to the technology driven guest.

The power of the PMS

The Property Management System (PMS) is the nerve center of every property, and it can do a remarkable amount to enhance the guest experience. With a Cloud technology engine, the PMS can become a data powerhouse, connecting the entire guest experience to create unprecedented personalization. It can -- and should -- be integrated with reservations management, revenue management, customer relationship management (CRM), point-of-sale (POS) and other property amenity systems.

The frictionless experience starts before the reservation. By the time a guest reserves rooms and services, the hotel can – and should – already have a comprehensive guest profile to predict dining and experience requests. Once on property, the frictionless experience has done away with the need to call the front desk, and instead provides the means for a one-to-one connection with on-site services such as housekeeping and activity reservations.

By ensuring that all guest-facing employees have 360-degree visibility into the same information, guest interactions are consistent. We are augmenting the face-to-face experience with a modern-day, digital arsenal. Along the way, we have more information on individual guests than ever before, allowing us to continue to interact with customers on an intimate level.

Data democratization

The fully integrated PMS also gathers unprecedented amounts of consumer data. With strategic data management capabilities, hoteliers can see the complete guest experience and create targeted, digital loyalty programs based on past behaviors.

By "democratizing" data – expanding business information and the tools to analyze it to a much broader audience – hoteliers can experience significant benefits. If the property's representatives can easily run reports and drill down into account details, they can more easily confirm that customers' needs are being met. If guest service agents are provided with a single 'snapshot' of the guest when interacting face-to-face or over the phone, they are better equipped to assist with requests and create the feeling of a personalized relationship. That makes the customer feel recognized and important.

About Infor

Infor is fundamentally changing the way information is published and consumed in the enterprise, helping 70,000 customers in more than 200 countries and territories improve operations, drive growth, and quickly adapt to changes in business demands. Infor offers deep industry-specific applications and suites, engineered for speed, and with an innovative user experience design that is simple, transparent, and elegant. Infor provides flexible deployment options that give customers a choice to run their businesses in the cloud, on-premises, or both. .

www.infor.com

Making the move

With 23 percent of hoteliers saying they are going to upgrade their PMS over the next year, what "must have" criteria should purchasers consider before making the investment?

- The right system provides big-picture, comprehensive technology and data integration capabilities, not only encompassing the PMS, but the diverse reservation sources and systems, and comprehensive CRM interoperability.
- The PMS system should also provide "little picture" capabilities, connecting to basic services such as housekeeping and amenities access.
- Mobile-first design is at the heart of what the frictionless consumer wants and needs. That means it must be intuitive and simple to use – for both consumers and staff.
- Look for advanced group reservation capabilities, as the demand for function space is growing 4 times the rate of supply.
- Don't let a smaller property size or an independent affiliation limit the depth and breadth of the PMS solution. Deployment in the Cloud is the great equalizer, providing a wide array of service options along with always-on capabilities that require only a minimal IT resource investment.

In the 2017 *Hospitality Technology* Lodging Study, more than 52 percent of operators said that they are allocating increased IT investment dollars to support frictionless experiences for consumers. While our current industry revenues look good, the hospitality industry is in an era of great change and disruption. Aside from rapidly changing consumer preferences and evolving hospitality market models, there are rising costs and unpredictable global security and economic issues.

In the end, however, it's about the loyal guest. For the frictionless consumer, it's all about technology, and having what they need at their fingertips. For hoteliers, it's all about using the right technology to make the lodging purchase as easy, personalized, and convenient as any purchase from Amazon. Hospitality is the art of understanding, our guests' needs and desires, and providing timely, comfortable and surprisingly extraordinary fulfillment. The right technology makes great artists of us all.

■

Personal data, privacy and identity

by ***Alvaro Hidalgo***

The collection of personal data is inherent to the hotel industry; it is what allows us to tailor guest experiences, market our hotels effectively, and foster long-term loyalty. The EU's General Data Protection Regulation (GDPR) will come into force soon, and it has the potential of turning all of this, and more, on its head. Alvaro Hidalgo walks us through the enormous challenges, and even posits a solution.

Most industries are benefiting from the geometric growth of the use of data, which allows to provide better, more specific services and also makes available new solutions that were not possible not so long ago.
Still, individuals and governments are progressively aware of the implications of the registration of personal activities in multiple public or privately owned databases. These implications may affect not only the personal life of individuals, but also refer to the ownership and economic rights of those data.

Though the statements above apply to all industries, hospitality is particularly sensitive to them since by nature it requires personal data to provide services that clients expect. Therefore, the collection of personal data is inherent to the industry, and its management will determine the revenue.

The approach to personal data may be considered under the following three facets:

- The progressive need to use a reliable system to establish identity that is valid in real life and online, therefore beyond passwords and access cards.
- The need of individuals to decide which personal data they share with a specific organization, without undergoing a painstaking review of terms & conditions at every stage.
- The implications of the new General Data Protection Regulation (GDPR) that will be in force in the EU from May 28, 2018

GDPR

To start with the latter, the new GDPR has introduced significant changes to pre-existing regulations. First and foremost, it establishes that personal data are a fundamental right of persons who, in consequence, own and may decide at any time what to do with those data.

This approach clashes with the business model that has been applied so far, by which any data – including personal data – belonged to the company that had allocated the means and the investment to obtain them.

Since personal data belong to individuals, they have the right to request that their data are modified or deleted. This right of deletion jeopardizes the ROI of any investment in data mining and use.

Indeed, data management which was so far perceived as the necessary evil to obtain additional revenue through added value services becomes now a "cost center" closely tied to compliance.

Adapting to the new GDPR means a major overhaul in any hospitality company. All processes have to be assessed to ascertain and record which personal data are gathered, the purpose of such collection, how long they will be retained, how to store them securely, and how to be able to access specific data and modify and correct them.

Putting these processes in place has major technical implications within the organization. How will you manage the “Bring Your Own Device” (BYOD) trend? What will you do with the organization’s shadow IT, and how do you verify that no personal data are collected or retained aside from those established in the company´s procedures? If a client requests to erase his data, what happens to backups?

But then, it also affects the IT structure externally. How are data management responsibilities established with service providers? What is the real role of service providers according to the categories established by law: Are they “controllers” or “processors”? Since the law assigns different responsibilities to each of these, every process has to be re-examined and every contract revised.

Furthermore, the application of the law is not confined to the EU. Since its purpose is to protect the rights of EU citizens, the law is to be applied to any entity managing personal data of European citizens, regardless of its location or domicile. A US-based hotel will have to comply with the law if i) they offer services to EU citizens – for instance, a website with prices in Euros; or if ii) they monitor European citizen’s behavior.

What about transit of data in the use of Software as a Service (SaaS)? What if the SaaS is outside Europe? The law is very specific and requires that if data are to be exported to any third country, such country must have data protection laws equivalent to those in the GDPR.

But then, it is not only about IT… It also affects processes, marketing and revenue. What happens with loyalty programs? If a global chain has its loyalty program based outside the EU, then do you need the client´s consent to export the data to that country?

And then, there is consent…. According to the law, such consent must be freely given, unbundled, explicit, specific, unambiguous, and informed. How are these conditions going to be achieved? Are we going to require every client to read 500 words every time they check in?

But then, to whom is consent given? Is it given to the operator of the hotel, to the management company, to the franchisor, the franchisee, or to the owner of the facility? And therefore, how do we establish responsibility? And once it is given, are we sure that this responsibility is covered in our management or franchise contract? Furthermore, what happens with multi-brand companies or multi-operation companies?

HFTP helping to overcome GDPR compliance challenge
In order to help the industry face this challenge, HFTP has created a specific GDPR taskforce, which I have the privilege to chair. It is meant to provide guidelines and assist the industry to identify problems and propose solutions. The taskforce is composed of 25 specialists in different fields from the hospitality industry, bringing together large global operators, regional chains, and individual hotels, and covering marketing, distribution, vendors, academia, legal consultants etc.

We are directing our efforts in three paths:

The task force is creating specific solutions for some of the described problems, such as:
- the design of a registration card
- diagrams of personal data flow for different types of organizations
- examples of data flows
- examples of hospitality project management
- a standard template for (PMS) vendors to request progress details towards GDPR compliance
- a privacy policy that is GDPR compliant.

Also, HFTP is providing guidance on what the Hospitality Data Privacy Officer (HDPO) should be, by creating a specific HDPO job description and executive summary review, and a list of HDPO conflicts of interest.

Finally, taking into consideration the vast need of HDPOs that the industry will require, HFTP is creating a certification program that will provide the training to those willing to take on the HDPO position.

Self-management of personal data
The other side of the coin is how to deal with our personal data. Does each of us want to have a passive approach to its management – as we have been doing so far? Indeed, most of us (all of us?) manage our data passively. We allow many different companies to slowly – but relentlessly – gather our personal data, and we recurrently give consent to many organizations to trace us, to know what we do, what we think, which ads we click on, which pages we visit, etc.

The question is, is there a way out? Well, GDPR does provide a simple way out.

Since consent must be "freely given, unbundled, explicit, specific, unambiguous, and informed", why don't we reverse the process? Could we not create a set of profiles containing the information that *we* want to give a company, already pre-bundled for easy management?

Instead of undergoing a painstaking specific consent process every time, we will ourselves decide a certain data set to be delivered for which consent is given (limited to those data).

This approach will not only allow each of us to know what we are providing to whom, but also a clear and specific way to request data deletion to the companies to whom we have given data.

Establishing online and off-line identity
While we have covered above the need to protect our personal data and solutions for its active and agile management, the puzzle is incomplete without a simple, reliable, unique method capable of establishing our identity online and offline.

Physical keys, passwords and access-cards enable online or offline access, but not both. None of them establish identity. Likewise, passports, identity cards, driving licenses, and so on establish or verify identity, but none of them can be used as access devices, whether online or offline.

Biometrics is – apparently – the big buzz.

In theory, biometric devices establish identity and can be used online and offline solving both problems. Still, its adoption is slower than expected, since so far, there are many caveats.

Indeed, if identity is established by features – eyes, fingerprints, face recognition, blood vessel map, etc. – then to make such features available to use, an image of these must be stored somewhere. Thus, a database must be created, and the data captured by the biometric device must be compared to those stored in the database. If there is a match, identity is established.

The problem is that such a database can be hacked, and many users (indeed most of us) would be scared if we thought that someone could be using our biometric data to impersonate us. Furthermore, these databases would need to be huge and heavy, and if they are to be used intensively to establish the identity of many potential users, the processing times would be not acceptable – who would want to wait more that 5 seconds to access something?

We at Biocryptology have solved all the above problems. Firstly, we have created a complete eco-system to establish identity online and offline.

You can use our systems to access your house, your car or your office. But also, your hotel room and a reservation system, your bank account through the bank´s website, and in all those situations, Biocryptology validates you; not a user or your keys or passwords, but your identity.

You do the above by using your biometric data – finger prints – but we do not keep an image of your biometric features. What we keep is a template of those features transformed by an algorithm which is exclusive for each individual, and then we encrypt it. So the image of your features is not stored.

Finally, we do not keep any other data than your identity. Our eco-system confirms to the other party – a door, a bank´s

website, etc. – that you are you, so they can grant you access, but once you are in, the exchange of information happens between you and the bank. We are not part of that information exchange.

Furthermore, we do not have the capability of tracing you. This is to say, if – as in the previous example – you have accessed a bank´s website, with the access information contained at the bank, we can confirm that we gave you access, but from our side, there is no way to trace your behavior because accesses are not indexed with identity.

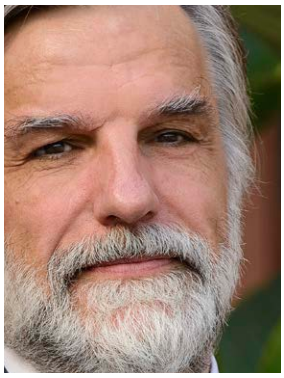
Hence, we at Biocryptology have created a simple solution to confirm your identity to third parties without putting at risk your biometric features and without tracing you, to confirm your identity.

And of course, if you so decide, you can opt to let us store your personal information, and as explained above, create bundles to deliver to third parties providing consent simultaneously. And we can manage the withdrawal of consent and deletion process, too.

So, in a nutshell, we provide a solution that allows you an agile access through real life and online gates, securing your identity without exposing any data that you don't want to share.

■

With 30 years of global business experience and public & private sector expertise in corporate finance & privatization with Credit Lyonnais and World Bank/UNOPS, ***Alvaro Hidalgo*** *moved towards the hospitality industry, leading large resort & transformation projects in Morocco and Brazil. As Managing Partner of FIRST LOGIC Consulting, his firm provides strategic and financial advisory to the hospitality industry in market entry and greenfield projects, as well as restructuring & turnarounds. His expertise in the implementation of traceability processes led him to identification and identity projects and thus to the application of the new EU General Data Protection Regulation (GDPR). Alvaro is now CFO & member of the Advisory Board of Biocryptology, a start-up deploying a Universal Identity platform. He also contributes to HFTP and, as Chair of its task force on the GDPR and the Hospitality DPO, he leads the HFTP´s project to guide the industry through its adaptation to the new legal framework. Alvaro also collaborates with Les Roches International School of Hotel Management, teaching in its Postgraduate and Executive Programs.*



Seeing around the corner in 2018

by ***Lee Pillsbury***

What lies ahead for the hotel industry? No one knows. We cannot see where economic indicators will go, where the next financial or political crisis will come from, or how consumer tastes will evolve in the future. As Lee Pillsbury argues, what we do know is that the pace of change is not only continuing but accelerating, across industries – and that the most critical skillset any hotel manager, owner or brand executive can have, is the ability to see around the corner.

Where hotels and innovation disconnected

The hotel value chain has always been infused with innovation.

It began with the advent of the roadside motel and hotel (Holiday Inn) to serve a growing middle class. It continued with product segmentation and financial engineering in the 1980s, and around that time, with the development of new technologies to serve a burgeoning industry: property management systems, revenue management systems, the GDS.

But something changed in the 1990s, highlighted by the rise of the Internet and online commerce: Hoteliers left the field of online innovation to others, facilitating the rise of the OTAs, meta-search engines and now, Airbnb.

The PMS, created as a "cash register" for hotels, remains largely that. And Revenue Managers have struggled to develop new technologies to help them understand demand and optimize revenue. Legacy technologies, still in use in running most if not all hotels, create huge barriers to technological advancement, operating efficiencies and accelerated profitability.

Digital marketing is an area of increasing complexity, as online travel booking and the massive marketing campaigns of OTAs have left hotels of all shapes and sizes searching for effective counter-strategies.

Multi-screen consumers are using email accounts, device IDs, cookie IDs, IP addresses and social networks – making it even more difficult to deploy sensible multi-channel efforts to market and sell hotel rooms.

Labor costs continue to rise, as does the cost of acquiring customers; but as research from my colleague Cindy Estis Green has shown, the rise in hotel profitability is only half as fast as the cost of acquiring customers.

While occupancies have continued to rise, RevPAR has not kept up, raising troubling questions about future growth prospects.

Airbnb and alternative lodging solutions are opening big challenges on other flanks, as consumers, and owners, begin to question what it really means to be a "hotel."

So we find ourselves in a time of financial and operational challenge – and given the uncertainties of continued economic growth and political stability around the world, the challenges facing the industry could eventually turn out to be challenges of existential proportions.

Where do we go from here?

Moving forward

To start, we can recognize our strengths: As of this writing, revenues remain robust for most hotels in most markets around the world. Hotel companies are flush with cash, and balance sheets are strong. The trendlines for travel spending point unequivocally upward, as more travelers come online internationally (more than 500 million additional international travelers will be added by China alone in the next decade).

Maybe most important, people still "love hotels." Guests may be young or old, looking for social spaces to congregate with laptops or for fluffy hangers in a traditional Ritz-Carlton. There are hotel products to satisfy them all – with more new product coming online each year.

But that only heightens the need to stay ahead of the curve, delivering products, services, and experiences, that appeal to fast-changing consumer tastes – and technologies that permit knowing our guests better, anticipating their needs more consistently, and delivering experiences that consistently surprise and delight.

With today's technology and data, it should be possible for hotel staff to identify a guest immediately upon arrival; offer her services targeted directly at her wants and needs based on an understanding of her guest history and data; and connect with her seamlessly at any time, before, during and after the guest stay.

We are far from making that vision a reality.

On the business side, we desperately need to break out of the cycle of legacy-induced inertia that has hampered our ability to implement solutions to generate greater cash flows, more direct booking capability and more effective personalization and cross-selling.

There are hundreds of hotel technology start-up companies in the marketplace.

Which of them holds the key to unlocking future growth and the next stage in innovation for the hotel industry? And will their innovations get a fair hearing?

Through my venture capital firm Thayer Ventures (www.thayerventures.com),

we are trying to help the industry start answering those questions.

The only way we can address them as a community of industry leaders, is to develop the skill of seeing around corners, to anticipate future change – prepare for it, and stay ahead of it.

At Ferrari's racing schools, they teach drivers to drive their cars quickly. It's all about speed. But it's also about accuracy, judgment, and prudent decision-making – at every juncture of the course, and at all junctures.

Optimum performance demands that drivers look far down the track – anticipating the next curve, learning how to position the car on the track, how to shift gears, how fast to be going, and using acceleration and braking to get weight properly positioned before every turn, evenly balanced during turns, and wheels pointed straight to apply the most power coming out of a turn.

Hotel professionals should think of themselves the same way.

We need to think not just about what's in front of us – but about what's coming down the road.

Our hotel schools need to teach coding and social intelligence alongside real estate investment and F&B management.

We need to study the latest in consumer research to understand where the next Amazon or Apple is coming from, and how they may impact the hotel industry.

And we need to gather, harness and organize the massive amounts of data that hotels can already access, to better understand who our customers are, what they want, and how to realize greater profitability from them.

We need to train our people better, equip them with tools to succeed in the Digital Age – and where that is not possible, and automation or AI is a better solution for our businesses, own up to it and find better positions with more opportunity for growth, for workers displaced by machines.

These are huge challenges, but they are not an impossible tasks – many of the pieces are already in place for forward motion.

Seeing around the corner will require industry leaders to take a hard look at where we are, which among our competitors pose the greatest threats, where the opportunities for innovations lie – and how we re-claim our customers, and our businesses, for the future.

The time to start is now. ■

Leland (Lee) Pillsbury *has served as co-founder and co-chairman of Thayer Lodging Group, a Brookfield Company; founder of the Pillsbury Institute for Hospitality Entrepreneurship at the Cornell School of Hospitality Administration; Chairman of the Board of Interstate Hotels, and founder of numerous other companies. He joined Thayer Ventures recently in the role of managing director, and is a pioneer in supporting industry education and innovation at all levels. Among other businesses, in his time at Thayer Lodging Group, Lee spent more than 20 years overseeing strategic expansion and a successful sale to Brookfield Asset Management. He is now a senior advisor to Brookfield Global Lodging. He began his career with a 19-year tenure with Marriott Hotels, where he rose to the position of EVP, revamping the group's pricing strategies, creating the industry's first revenue and yield management systems and more. Pillsbury has launched and directed close to 20 companies since that time. He has won numerous accolades and awards, including "Entrepreneur of the Year" from the Cornell School of Hospitality Administration, and "Hospitality Industry Executive of the Year" from the Penn State Hotel & Restaurant Society.*

BlendBow

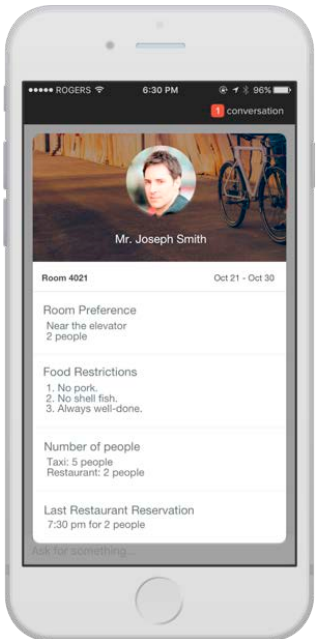
A quality cocktail in just a few seconds

BlendBow makes perfect cocktails in seconds with little to no effort for bartenders and restaurant owners. After 3 years of R&D, BlendBow have designed the only cocktail machine capable of making up to 300 cocktails in a matter of seconds at the push of a button. The Barmate, a beautiful cocktail machine, makes it easy for restaurants and bars to make quality cocktails with little training and maintenance, and increase overall profits through beverage sales.

www.blendbow.com

METRO ACCELERATOR powered by techstars

Concierge



Introducing your new hotel assistant

Concierge (You There Inc. - https://youthere.ai) is an information technology company from Canada. We are focused on extracting complex and actionable preferences data from frequent travelers using a chatbot, and building an economy around its exchange and circulation.

www.youthere.ai

METRO ACCELERATOR powered by techstars

cuddlup

Restaurant owners: Personalize, retain, cash!

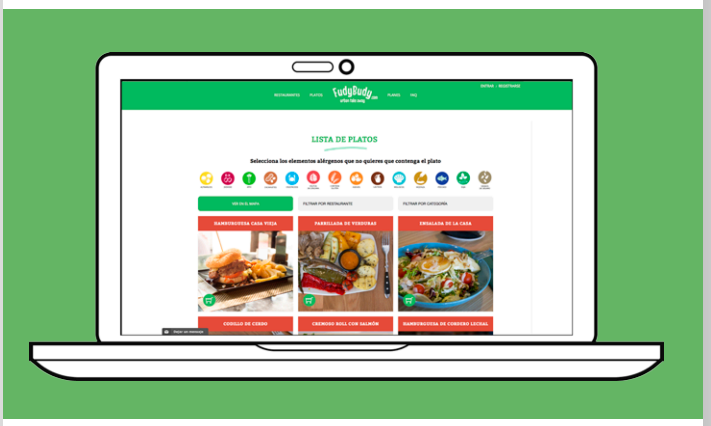
Cuddl'Up helps restaurant owners execute consistent excellence in customer service. Every day. The innovative, adaptive ordering solution increases the average cheque size by 28%. A real opportunity for forward thinking restaurant owners to develop customer experiences and boost turnover.

www.cuddlup.fr

METRO ACCELERATOR powered by techstars

FudyBudy.com urban take away

Find your lunch



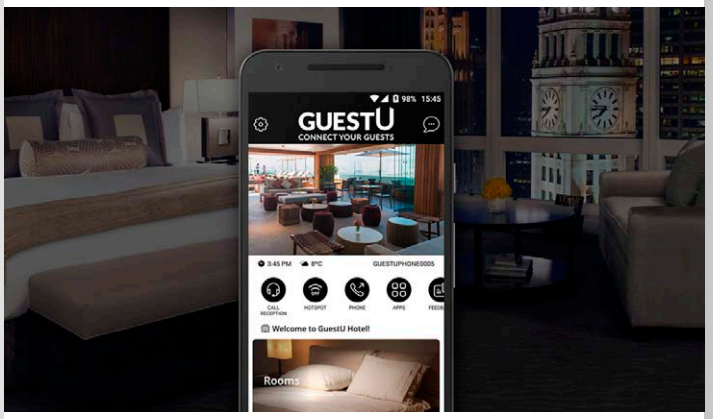
FudyBudy allows office workers to always have time for their favourite lunch meal. The platform allows users to take away meals from over 100 options that are less than 5 minutes walking from their office. These meals are healthy, balanced choices at a fraction of the restaurant sit-in price, promoting a healthy lifestyle and decreasing the number of sick days office workers take.

www.fudybudy.com

METRO ACCELERATOR powered by techstars

GUESTU
CONNECT YOUR GUESTS

GuestU Phone is every traveller's dream amenity



The GuestU Phone is every traveller's dream amenity. The mobile phone for each room with branded hotel content, free internet and voice calls creates a personalized experience for each guest. Hotels can also feature amenities and services as an extra revenue stream, while increasing the online rating of hotels.

www.guestu.com

METRO ACCELERATOR powered by techstars

impala

Instantly connect your app to a PMS

Impala helps software providers instantly connect apps to PMS systems. Developers can securely read and write guest data using a powerful, well-documented, JSON API, making integration painless.

www.getimpala.com

METRO ACCELERATOR powered by techstars

KITRO

Simplifying food waste management for the Food & Beverage industry

KITRO provides an effortless food waste management solution for professional kitchens. Combining both hardware and software components, KITRO is able to automatically identify and categorize organic waste material thrown away in KITRO enabled waste containers. Management are then able to see average waste levels over time, and take action to make their kitchens greener and more sustainable environments.

www.kitro.ch

METRO ACCELERATOR powered by techstars

nabl

Collect clients' reviews directly in shops

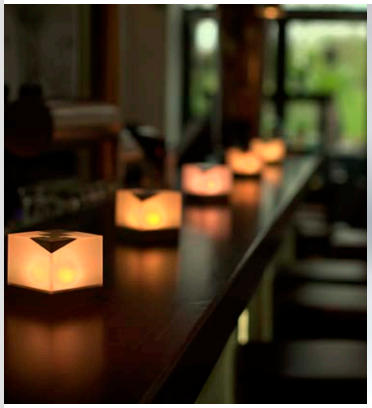
NABL improves the online rating of restaurants in three months. With NABL, restaurants can expect 10x more positive reviews on Google and TripAdvisor, as they provide a voice to the silent majority of happy customers through a quick and easy in-house review platform.

www.nabl.co/

METRO ACCELERATOR powered by techstars

ORDERCUBE

Simplify ordering



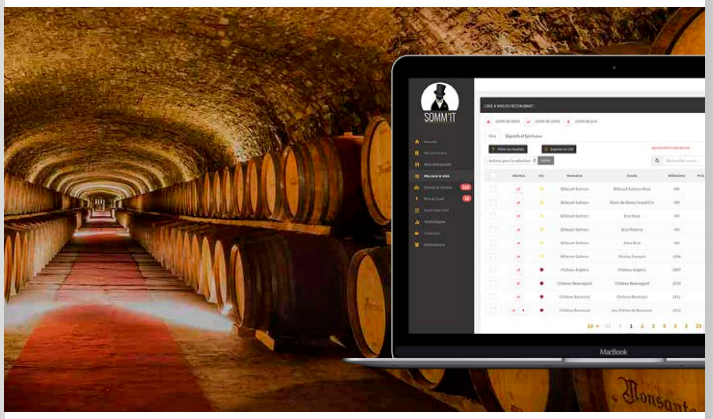
Ordercube helps restaurants increase sales by 17%. The fashionable, table-top light visually signals to waiters when a table would like to order or pay and decreases overall wait time for service by 80%. This allows waiters the headspace to focus on customer satisfaction and quality of service at peak times.

www.ordercube.de

METRO ACCELERATOR powered by techstars

SOMM'IT

Manage your wine list and beverages online



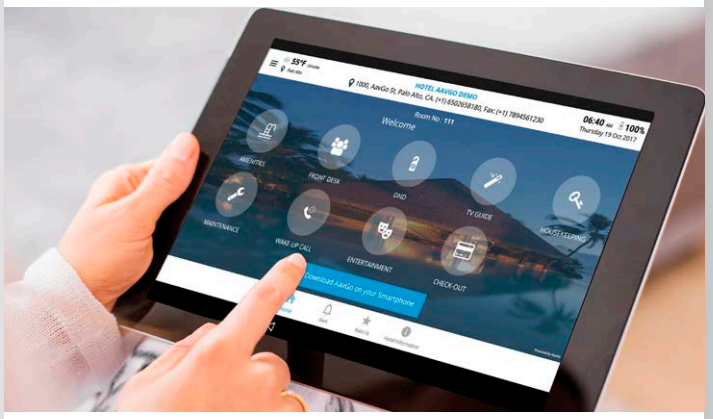
Somm'It allows restaurants to create personalized wine lists in 30 seconds and sell the wines at the right mark-up price. The beverage management platform also allows restaurants to save up to 3 days of labour by digitally managing beverage inventory and ordering. The wine list becomes an easy to understand tool for customers and easy to recommend and to sell list for staff.

pro.somm-it.com

METRO ACCELERATOR powered by techstars

AAVGO

Create awesome guest experience and make employees' lives easier



AavGo is revolutionizing the hotel technology by bringing one touch services at the hands of the guest and on another side increasing efficiency for the hotels. Our solution includes in-room tablets, guest mobile application and staff mobile application. Our communication platform solution helps guests to seamlessly interact with hotel staff across departments and as well as internally among the hotel staff.

- AavGo helps guests to communicate with the hotel prior to check-in, during their stay, and post check-out and cast favorite music and movies to TV right from our in-room tablet.
- Digital ordering ability for room service, housekeeping, and other profit centers.
- Ticket management system to track and report maintenance related issues and housekeeping items.
- Gather instant reviews and ratings
- 360-degree analytics and reporting and much more.

www.aavgo.com

arrivedo
Hotels with Neighborhood Guides

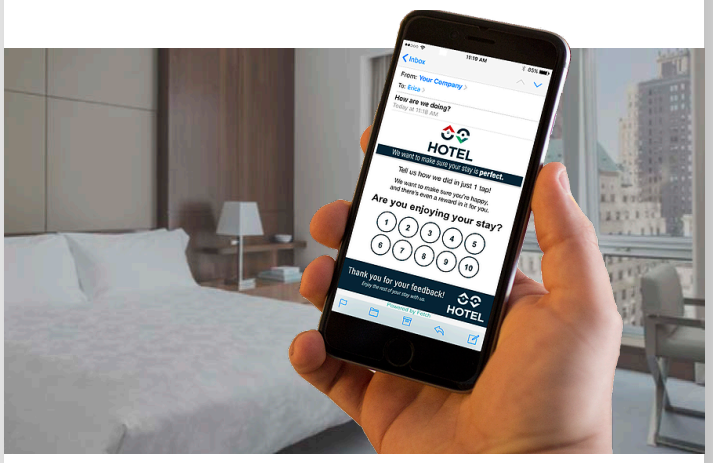
A neighborhood guide for every hotel in the world

Arrivedo is the first online platform that gives a voice to hoteliers. Together with our community of freelance travel writers, hotels can organize their own Neighborhood Guide to compete with Airbnb, while also attracting new travelers in the search of local experiences and delighting existing guests after check-in. There are currently 500+ hotels in 90 cities happily using our platform. Start organizing your Neighborhood Guide with us, claim your hotel's profile on Arrivedo.com today!

www.arrivedo.com

fetch.

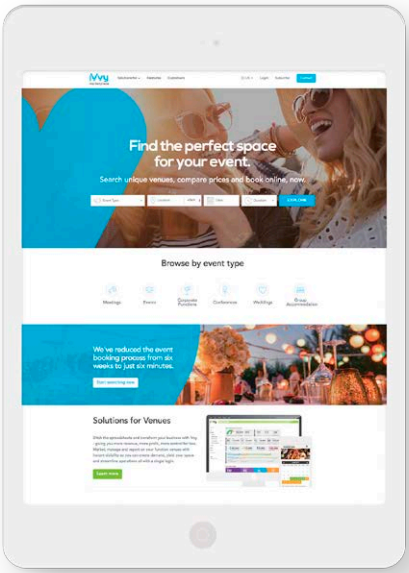
Happier guests.
Better reviews.
More bookings.



Fetch helps hotels identify and solve guest problems, before it's too late. Using our proprietary 1-tap surveys, we get 20x stronger guest engagement. We automatically survey your guests proactively at key points of their journey (like mid-stay), and alert your staff in real time of any high-priority responses. Recognize, recover, and retain guests like never before, only with Fetch.

www.getfetch.ca

iVvy venues



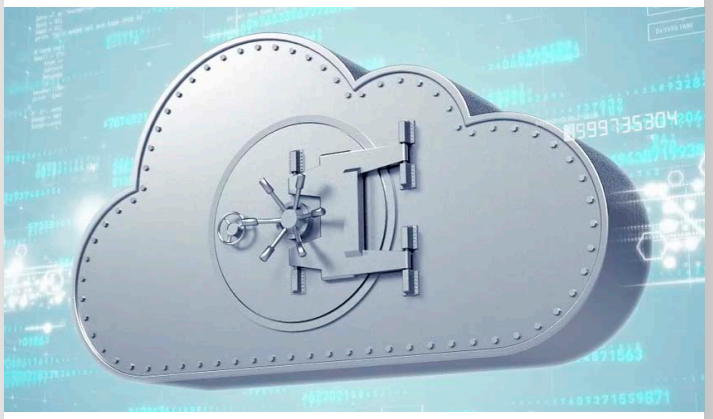
Find the perfect space for your event

iVvy is the world's first global distribution platform for the meetings and events industry. iVvy provides conference centers, hotels, restaurants and cruise lines with an integrated revenue management and distribution platform to post availability, rates and inventory; manage inquiries and bookings on any device, anywhere; drive inbound revenue; and enhance reporting and visibility.

www.ivvy.com

receptio

Digitalize your front desk!



Receptio is a solution which enable hotels to increase their profitability & enhance guests' experience.

Receptio consists of several modules. These secure guest data, reduce fraud and no-shows, automate transactions, generates additional revenue through upgrades and save time for you and your guests.

www.receptio.ch

VDroom

The world's first booking experience in virtual reality

VDroom is a platform that enables you to create virtual reality websites for hotels, rental apartments and holiday resorts, for the viewing pleasure of all VR glasses users. The websites, and the properties presented on them, are search engine friendly, which increases the potential traffic to the website.

The unique VR experience will improve the way that the properties are viewed and their overall user experience, and in turn, increases the conversion rate.

www.vdroom-travel.com

Winter is coming: Preparing for the next season of channel management

by ***Mike Chuma***

Data is the core of an intelligent business strategy, writes Mike Chuma, and it drives the decision-making process. Hotel organizations need to prioritize data that provides meaningful insights and action. The ability to understand, organize and track this data is essential, he says.

Technology challenges the operation of nearly every type of business. The travel industry—which runs the gamut from airlines and hotels to ride-sharing programs—is often cited for its continuous disruption and swift adaptation to high-tech growth. Its technology analyzes bigger stacks of data, delivers clearer insights and offers more profitable opportunities than ever before. As an effect of an expanding tech ecosystem, strategic channel management has become a primary focus for hotel organizations. Today's hotel guests use a diverse selection of booking options that allow them to search, compare and book their accommodations online. Thousands of travel sites exist, ranging from OTAs, metasearch sites and direct websites to traditional voice and GDS channels.

The popularity of online shopping, m-commerce and e-commerce is on a continued trajectory of growth in the coming years. The Pew Research Center reports 80% of Americans are currently online shoppers, with digital tools and platforms significantly influencing their purchasing decisions. However, according to Allied Market Research (AMR), direct travel suppliers, such as airlines, car rental firms and hotels, that offer customers the ability to book on their websites comprised 57% of the overall online travel market revenue in 2015. Yet AMR expects a gradual reduction in the direct booking market share as OTAs expand their offerings and customer reach.

Hotels have thus entered an era of agility where channel management strategies need to be tempered with insightful

business intelligence. And looking at the next season of channel management, there are three areas organizations should focus on to prepare for the inevitable changes ahead.

Decisions live and die with data

Data is the core of an intelligent business strategy—and it drives the decision-making process. Hotel organizations need to prioritize data that provides meaningful insights and action. Leveraging forward-looking demand intelligence with historical and external data sources will help generate an analytical engine for profitable hotel strategies.

Understanding, organizing and tracking data is essential. Effective best practices and standards should be structured around business coding and data collection. This produces accurate data for uncovering new channel performance opportunities. Identifying the true cost of each reservation is an additional layer of this, and it requires hotels to consider variable commissions, labor costs, sales spend, loyalty program charges and other applicable expenses.

Technology needs to drive profits

Advanced revenue technology can help close revenue gaps for better channel performance. For example, insightful channel reports and dashboards allow organizations to understand their costs by channel, source or even rate code and analyze those acquisition costs at deeper and more customized levels.

As hotel organizations track their channel costs more closely, they can monitor future production and nimbly adjust their strategy based on profitability considerations. This shift makes visibility into profit-focused key performance metrics, such as net RevPAR and net ADR, all the more relevant for increasing bottom-line profits.

One of the biggest opportunities for strategic channel management is technology that integrates travel intent data. Travel intent data uses search and booking data across thousands of online booking sites to help quantify the demand hotels can expect for future dates. It gives hotels human-focused insights to infuse into marketing initiatives for ad placements, guest experience packages and personalized offers.

Many hotels have access to technologies that track basic shopper activity on their website, but they remain fairly limited to high-level booking data and lost business data for "denials" only on their brand website when forecasting demand.

Revenue technology using comprehensive data insight such as travel intent data offers a distinct competitive advantage, "futurecasting", for pricing hotel rooms, personalizing marketing efforts and aligning the consumer experience across all booking channels. Futurecasting marries traditional data with demand intelligence to give hotels a better understanding of the factors behind guest booking behaviors. This ultimately produces comprehensive business strategies that can be executed through the ideal channels at the ideal time to the ideal guests.

Strategies should connect hotels to guests

By better understanding guest behaviors, hotels can transform their revenue strategy into a guest-centric strategy that fuels revenue productivity and ultimately profitability. Opportunities exist at every stage of the guest journey – from their search for the ideal accommodation to their on-site experience to the post-stay touchpoints. Each stage offers a chance to learn more about your customer and further monetize the guest experience.

To achieve this level of revenue strategy, practices must extend across multiple departments. Revenue management serves as the mobilizer and communicates their strategy effectively. Marketing must be able to convert those insights into action to better reach potential guests. Distribution must be aligned so the right product is available. Sales does their part by driving significant business through groups and meetings & events, which can be further optimized. And operations will continue to lead both guest satisfaction and guest accessibility by collecting the critical information at multiple connection points with guests.

Technology continues to change faster than the seasons and hotels cannot afford to fall far behind the innovation wave. When it comes to enhancing the guest experience, any one of the new entrants into the hospitality space is just waiting to pounce – and potentially take that guest away for the long term. Revenue management is also in the midst of its own evolution, changing in tandem with other technological advances. When your revenue strategy drives profit through channel management, both your technology stack and revenue management systems need to work together as part of the same ecosystem.

■

IDeaS™ A sas COMPANY | DRIVING BETTER REVENUE

About IDeaS

With more than 1.5 million rooms priced daily on its advanced systems, IDeaS Revenue Solutions leads the industry with the latest revenue management software solutions and advisory services. Powered by SAS® and with nearly three decades of experience, IDeaS proudly supports more than 9,500 clients in 111 countries and is relentless about providing hoteliers with insightful ways to manage the data behind hotel pricing. IDeaS empowers clients to build and maintain revenue management cultures–from single entities to world-renowned estates–by focusing on a simple promise: Driving Better Revenue. IDeaS has the knowledge, expertise and maturity to build upon proven revenue management principles with next-generation analytics for more user-friendly, insightful and profitable revenue opportunities–not just for rooms, but across the entire hotel enterprise.

www.ideas.com

Machine learning: A deep dive

by ***Jai Govindani***

Hotels sit on a lot of data. Can all this information be used to make accurate – and more importantly, useful – predictions of guest behavior? Jai Govindani walks us through an example.

I regret to inform that you were misled. This will *not* be a deep dive into machine learning. However, "Machine Learning: A Deep Dive" sounded cooler than "Machine Learning: A Shallow Wade." We will definitely go deeper than the multitude of mind-numbing, lip-service, shallow puff-pieces that trigger my Google Alerts day after day about machine learning in the hospitality industry.

So let's talk about machine learning. Not about what it promises (we'll get into that, I suppose), but about what it actually is. What does "machine learning" look like? Is there a screen that reads out like The Matrix? Is there a Skynet brewing somewhere in Google's headquarters?

Before we go down the rabbit hole, it is useful to build a common understanding of what machine learning means at a high level. The evolution of machine learning is interesting anthropologically when considering humanity's view of technology. We are the creators. In the beginning, we told (and for the most part still do) computers what to do explicitly: If this is true, do that. If there is movement, turn on the light. That's what most of the code in the world looks like, and generally has served us well. Save for the one inherent flaw: We're limited to things we, as humans, can describe and explain.

So yes, classical programming is limited by human intelligence. How do we tell a computer to recognize a cat when we can't describe how the process happens in our own brains? The

*Currently Chief Technology Officer at Red Planet Hotels, **Jai Govindani** oversees the entire technology stack, both internal and guest-facing. Jai was responsible for architecting and implementing the end-to-end guest experience as part of Red Planet's rebranding in 2015 and continues to drive innovation in that area. Jai began his career at an entrepreneurial incubator in 2006 where he pioneered business concepts combining online and offline media into social entertainment experiences. In 2007 he was responsible for steering Siam2you, Thailand's largest mobile content business at the time, back into profitability. Following that he founded Monster Media, one of Thailand's first digital interactive media firms. Prior to entering the hospitality industry, Jai most recently founded and ran Zodio, a Bangkok-based regional tech startup focused on Asia.*

same goes for listening and reading, recognizing people – we do all these things innately, but upon attempting a descriptive algorithm, at some point, the science breaks down. It's also generally agreed that these problems probably cannot be solved by traditional explicit programming. The sample-space (number of possibilities) is immense, number of variables infinite.

As an experiment, let's try and predict which bookings will end up canceling (and which won't). In attempting this experiment, we assume that there exist in our data combinations of signals that will allow us to predict whether a booking will ultimately be canceled or not. This is not always guaranteed, and at the end of the day you'll have a tough time telling if your model lacks predictive power because of unrelated data or incorrect math.

Main steps in a machine learning exercise:
1. Selecting a model (or models)
2. Feature engineering
3. Build/run/test the model
4. Start over (or drink beer)

All machine learning starts with a model. A model is a mathematical formula/framework that takes in some data (our signals, such as booking lead time) and outputs a result - in our case, ideally a prediction of whether a booking will end up being canceled. Correctly selecting a model requires that you understand your data and your required output as well as the mathematics that underlies the model. For our case we're going to use a model called a Naïve Bayes Classifier – to help us 'classify' whether the booking will end up being canceled. This Wikipedia page is a good start for further reading.

Once the model is selected, it's time for a process known as "feature engineering". Features, inputs, signals – these are all synonyms. Feature engineering is the process of taking this input data and turning it into a format that's palatable for the model. Data such as a guest's nationality – "American" – isn't easily digested by mathematical models. One way to deal with this is to convert each country into its numerical United Nations M49 code (where "840" is the code for the United States). Data that can be classified as true/false, such as whether a booking is prepaid or not, can be easily represented as a 0 or 1. There's no one-size-fits-all approach to feature engineering – it's about understanding your data and representing it in a way that the model can understand, while maintaining the information contained in your data. You're turning data that looks like this:

created_at	check_in_date	check_out_date	country_code	payment_method	deleted_at
2015-04-30 01:48:26	2015-06-27	2015-06-28	TH	credit_card	2015-04-30 07:13:51
2015-04-30 03:54:38	2015-08-02	2015-08-03	UN	credit_card	NULL
2015-04-30 04:42:26	2015-05-04	2015-05-05	UN	credit_card	NULL
2015-04-30 07:45:47	2015-04-30	2015-05-01	TH	credit_card	NULL
2015-04-30 07:50:17	2015-05-01	2015-05-02	TH	credit_card	NULL
2015-04-30 07:52:52	2015-05-01	2015-05-02	TH	credit_card	NULL
2015-04-30 07:54:42	2015-05-02	2015-05-03	TH	credit_card	NULL
2015-04-30 08:09:10	2015-05-28	2015-05-29	UN	credit_card	2015-05-18 05:46:22
2015-04-30 12:47:23	2015-05-01	2015-05-02	ID	credit_card	NULL

Into this:

	A	B	C	D	E	F	G	H
1	booking_lead_time	hour_booked	day_of_week_booked	length_of_stay	booking_country_numeric_code	hotel_country_numeric_code	payment_status	cancelled
2	1	0	7	1	608	608	0	0
3	0	0	7	1	608	608	0	0
4	0	0	7	1	608	608	1	0
5	0	0	7	1	764	764	0	0
6	0	1	7	1	608	608	1	0
7	0	1	7	1	608	608	1	0
8	6	1	7	1	380	608	1	0
9	0	1	7	1	360	360	0	1

Notice the difference? Same data, different format.

↓

We've selected a model, engineered our features, now it's time to train the model and then test it. We split the data into a training set and a testing set. Let's say 2/3 for training and 1/3 for testing. In other words, we use 2/3 of the data to train the model, and the rest to test it. Training a model looks something like this in Python:

```
gaussian_model = GaussianNB()
gaussian_model.fit(features_train, target_train)
gaussian_predictions = gaussian_model.predict(features_test)

bernoulli_model = BernoulliNB()
bernoulli_model.fit(features_train, target_train)
bernoulli_predictions = bernoulli_model.predict(features_test)
```

Testing it looks just as exciting:

```
gauss_predict_all = gaussian_model.predict(all_bookings_features)
gauss_predict_canceled = gaussian_model.predict(canceled_bookings_features)
gauss_predict_uncanceled = gaussian_model.predict(uncanceled_bookings_features)

bernoulli_predict_all = bernoulli_model.predict(all_bookings_features)
bernoulli_predict_canceled = bernoulli_model.predict(canceled_bookings_features)
bernoulli_predict_uncanceled = bernoulli_model.predict(uncanceled_bookings_features)
```

Finally, the output:

```
('Gaussian accuracy: ', 0.8595020462617412)
('Bernoulli accuracy: ', 0.8617376097499414)
('Gaussian predictions on new data (all bookings): ', array([0, 0, 0, ..., 0, 0, 0]), ' with Accuracy: ', 0.83796296296296291)
('Gaussian predictions on new data (canceled bookings): ', array([0, 0, 0, ..., 0, 0, 0]), ' with Accuracy: ', 0.038022813688212927)
('Gaussian predictions on new data (uncanceled bookings): ', array([0, 0, 0, ..., 0, 0, 0]), ' with Accuracy: ', 0.97712920293565453)
('Bernoulli predictions on new data (all bookings): ', array([0, 0, 0, ..., 0, 0, 0]), ' with Accuracy: ', 0.84794560185185186)
('Bernoulli predictions on new data (canceled bookings): ', array([0, 0, 0, ..., 0, 0, 0]), ' with Accuracy: ', 0.00095057034220532319)
('Bernoulli predictions on new data (uncanceled bookings): ', array([0, 0, 0, ..., 0, 0, 0]), ' with Accuracy: ', 0.99573306024918928)
```

In the output above, we built 2 versions of a Naïve Bayes Classifier – a Gaussian model and a Bernoulli model. They demonstrate a predictive power of 0.859 (86%) and 0.862 (86% as well) respectively. That means it would have you believe that both models are 86% accurate at predicting cancellations. Sounds good, right? Not so much – when tested on more/additional data, both models fall over. If you'll notice the lines that say "canceled bookings", both models are below 5% predictive power. This makes them next to useless for real-world usage.

There you have it – what machine learning actually looks like (including a failed outcome). I hope I've been able to concretize a concept that most only talk about at a high level.

■

www.hospitalitynet.org

The open truth about APIs

by ***Armand Rabinowitz***

The API is the unit that allows platforms to exist, and the single most important ingredient to allow a technical ecosystem to thrive. Yet they are not transparent. HTNG's Armand Rabinowitz describes an initiative to change this. As he puts it: It's all about the power of a community working together to get something done.

The hotel industry has been dealing with interfaces ever since there was more than one technology solution required to run a hotel. Even before applications could talk to each other through software and hardware, humans were the interface. If you think about all of the double entries and siloed processes we tolerated decades ago, you can agree our industry has come a long way. Today, every industry that touches technology leverages some sort of an API. The API has been around since the turn of the millennium and marked a milestone when Salesforce launched its XML-based Web API in 2000. So, what is so special about an 18-year-old technology that it is given its own life in this article?

A well accepted definition of an API today refers to a part of a software solution leveraging web connectivity to pass data between applications without requiring a persistent, direct or physical connection. APIs are how modern applications communicate (and in some cases control) other software solutions. The most compelling technologies today would not exist without an API; even mobile devices would just be telephones, PDAs, calculators and cameras. The success of mobile is mainly due to the number of innovative solutions that can be built on top of APIs.

Our industry has no shortage of technology solutions, but this only makes finding the right one that much more difficult. For one reason or another, many technology companies crave a piece of the hospitality industry. This desire leads our industry to see many companies trying to break into hospitality without much understanding of the ecosystem. Tech companies squeeze the buzz words into claims of "game changing IoT features" and "big data analytics leveraging the cloud," but one way to cut through the noise is to analyze the API.

APIs provide great visibility into the capabilities of a product. I used to build innovative solutions for a well-known global hotel brand by bringing different products together. To do this effectively, I would put on my "Solution Architect Hat" and ask the vendor to send me their API documentation. Nothing was more telling about a vendor's capabilities and a solution's features than the quality and thoroughness of their API Specification.

I believe the vast majority of solutions in our industry should make their APIs publicly available. For too many years we have been stifled by "Partner" APIs wrapped up in long certification processes that seem to be marital engagements. Maybe it is the incumbent solution providers that believe in the mystique of hospitality and the attraction that drives the abundance of competitors. So, the titans must limit the ease of integration to protect their position from those willing to stick it out through years before gaining traction – if ever.

I have seen many great solutions die because they could never successfully join the ecosystem. Frustrated by the potential lost in these failures, I joined HTNG because I saw the importance of their mission and had the desire to lead this force to further simplify the vastly complex and siloed solutions in our industry.

*As Senior Director of Strategy and Workgroups at HTNG, **Armand Rabinowitz** leads strategy with a mission to foster collaboration among industry members working to improve technology that is critical to business operations in the globally connected era. Armand excels at bringing people and products together to create new technology solutions. He also focuses on enabling the HTNG workgroups to continue the tradition of creating educational content, solutions and standards. With a bachelor's degree from Vanderbilt University's School of Engineering, Armand has an extensive background in information technology and emerging technology, working for over a decade in the technology and hospitality industries.*

Earlier this year, HTNG brought together a few of its many members tired of the integration challenges who sought to promote Open and Public APIs. They proposed HTNG start writing APIs for widely used systems to make them public even if the original solution vendors would not. I recognized the difficulty we would have as a volunteer-led association trying to recruit all the resources and support to write code for solutions we may never be given access to.

Martin Zam, CTO and Founder of Impulsify and Dmitry Koltunov, CTO and Co-Founder of ALICE stepped up to lead a group of HTNG members determined to improve the quality and availability of APIs in our industry.

Koltunov explains, "When an API is properly specified, publicly accessible and the documentation remains up-to-date, a community will form around a given product. That community can share code and establish best practices leveraging the open source approaches that have made so many industries thrive." The power of a community working together to get something done causes the ecosystem to become less volatile and easier to manage.

Many companies have enabled cottage industries based on their API and platform, increasing value for both the vendor and the customer. Other industries including social media, transportation and entertainment, are leading by example with well-defined ways to advertise available products to potential technology partners and mature methods to evaluate fit and integration effort.

HTNG members recognized there was no source of truth for the evaluation of solutions in the hospitality industry – so we decided to build one.

The HTNG API Registry, currently being designed by HTNG workgroup members and developed in partnership with ALICE, will enable ***any*** company to list their products, APIs and integrations. Operators will then be able to identify which products have robust integration history and diversity. The API Registry will highlight open APIs and provide supporting evidence of their wide adoption and successful integration. This should encourage companies with products married to Partner API models to follow the trend towared Public APIs. The HTNG API Registry will be publically available in early 2018 and will remain a service to the industry to help products discover each other and create new solutions that improve our industry.

The fact is, as Koltunov notes, "The API is the unit that allows platforms to exist, and the single most important ingredient to allow a technical ecosystem to thrive."

■

Saving the environment, one "thing" at a time: The Internet of Things and sustainable hospitality

by ***Florian Kriechbaumer***

The majority of energy related activities in hospitality fall under the remit of engineering and facility management teams, whose approach is no longer limited to mechanical and physical activities, but needs to be driven by technology, connectivity and data. As INTEREL's Florian Kriechbaumer explains, this presents numerous opportunities for the Internet of Things to come into play.

Why does it matter?

It's well known that hospitality is a resource-intensive industry and therefore, we should be doing everything in our power to reduce its impact on our natural resources.

Moral obligations alone should be sufficient reasoning for hoteliers to put sustainability on their agenda, but in most cases there's also a commercial return. Energy and water are the second highest cost components in hotel operations, and intelligent technologies can help hotels monitor energy consumption and enable optimization across the organization.

The most prominent intelligent technology trend today is arguably the Internet of Things (IoT). While there is no universally agreed definition, the term is best explained as a digital network of sensors and actuators that communicate with each other, and with other systems. In other words, objects which traditionally have had no ability to exchange information with each other or humans – or relied on manual mechanisms to do so – are empowered to "talk" to each other. This allows "things" to make smarter decisions and provide useful data to the people interacting with them.

In the consumer world, we now see this trend in the advent of smart watches, intelligent light bulbs and fitness trackers communicating with smart phones. However, the lion's share of IoT investment is expected to take place in the enterprise space, where the two main benefits are predicted to be operational efficiency and improved customer service.

Energy management is already one of the top-use cases for IoT investment, and several possible applications have been identified across a variety of industries. There's little doubt that hospitality can be one of the beneficiaries.

More intelligent energy management

The largest single consumer of resources in a hotel is typically the guest room, with a roughly equal split between heating and cooling, electricity, and water consumption.

It's therefore not surprising that this is where most energy management initiatives are focused. On the other hand, efforts have been conservative, as this is also the area where negative guest impact may possibly be most significant.

About INTEREL

INTEREL is a leading provider of IoT solutions for the hospitality industry. The company powers the modern hotel through its Hotel of Things™ ecosystem by connecting people, devices, and data. With its award-winning Guest Room Management System, the world's first online Water Management System, and connectBsmart™ IoT infrastructure, it revolutionizes guest experience, increases operational efficiency, and drives sustainability in the hospitality industry. INTEREL is backed by European technology investor, Jolt Capital SAS. With offices across four continents, INTEREL's solutions are deployed in over 30 countries and have been used by over 20 million guests.

www.interelme.com

In North America, it's estimated that half of guest rooms have some form of energy management solution in place, with the majority focused on providing HVAC savings. When these systems are functioning properly, they provide measured savings – however, the level of savings and whether they do actually function as expected years after installation is often unknown.

Such solutions usually utilize only motion sensing to determine guest presence, acting conservatively to avoid causing discomfort by reducing heating or cooling when the guest has not actually left the room. In other regions, key card holders are utilized for energy management systems to understand guest presence – but these often come with shortcomings, such as their likelihood to work with any type of credit or business card, allowing guests to bypass the savings functions. Additionally, the emerging trend of enabling guest smartphones to act as a room key instead of using a physical key card makes this kind of energy saving in the room obsolete.

More intelligent solutions embracing the trend for connected objects are emerging, which include advanced connectivity between devices and systems to counter these challenges. For instance, bringing the thermostat into the network allows it to receive check-in and check-out information from the PMS, triggering immediate savings for rooms that are not occupied. Adding inputs aside from motion detection in order to determine guest presence also greatly helps to improve accuracy, such as enabling the thermostat to communicate to the door lock wirelessly and receive detailed information on entry and exit events. For example, if the room is empty and staff enters, there is no need to return to a guest set point which requires additional heating or cooling effort.

Future enhancements to energy management will incorporate more data points and sensor-driven information to enable more accurate and predictive data to balance guest comfort and energy savings.

Water: the untouched frontier

While there has been advancement in the areas of electricity and HVAC consumption, a major utility in the guest room hasn't seen the attention it deserves. I am talking about our only non-renewable resource: water.

Overnight guests staying in an upscale hotel consume between 200 and almost 1000 liters of water a day, significantly more than the typical local population in the same area, with the main share of this consumption happening in the guest room.

Recent developments in water management have focused on laundry and other central operations, but shower and basin water consumption in guest bathrooms remains largely unaddressed. Flow restrictions and mechanical functions can provide limited solutions, yet they come at the expense of guest experience. The future of water management is in combining water conservation with IoT solutions to measure, optimize, and quantify the benefits. Exchanging traditional components with digitally addressable intelligent devices is the key to achieving this.

IP based digital water management transforms a typically mechanical system into an intelligent solution that collects data, allows dynamic adjustments and interacts with other systems and devices.

Operators can measure data pertinent to water consumption in the room in terms of volume, timing and temperature, and specify the maximum temperature and flow for hotel guest use dynamically. Additional intelligence is enabled through the interaction with other devices such as door locks. For instance, the system can determine when housekeeping staff enters the room and allow the use of water at a higher temperature and pressure for cleaning purposes, becoming context-sensitive through information exchange between objects.

Hotels benefit from significant water and energy OPEX savings, access to online real time water consumption data, and could save up to 30% of water and related energy costs annually, while maintaining guests' comfort and experience.

What does this mean for me?

The majority of energy related activities in hospitality fall under the remit of engineering and facility management teams, whose approach is no longer limited to mechanical and physical activities, but needs to be driven by technology, connectivity and data.

This requires a shift in mindset and willingness to adapt, but comes with significant opportunities. Given that the advent of IoT is expected to have an impact across all three dimensions of the proverbial "Triple Bottom Line" – Societal, Economic, and Environmental aspects – stakeholders who are able to satisfy more than one of these dimensions will be able to drive their campaign for IoT adoption up the priority list.

The sustainability agenda is well positioned in this new world, as investments in sustainability often come with a tangible ROI attached, which frees up resources and budgets for other solutions, as well as improving operational efficiencies and guest experience.

If sustainability falls under your sphere of responsibility in the hotel, it's therefore vital to start considering the impact of IoT on this domain today in order to play an influential role in shaping the future of hotel operations through technology; as opposed to being an afterthought in somebody else's agenda.

The challenge is bridging the gap between vendor-driven technology solutions, theoretical models paired with practical evidence and, more significantly, our capacity and capability as hoteliers. Only once we are able to converge these harmoniously can IoT help to make our industry more sustainable – one thing at a time.

■

The first online Water Management System for Hotels

-30%

Digital temperature controls reduce water and energy consumption

ECO

Reduced water consumption trough efficient flow controls

Labor efficient installations reduce man-hours

-50%

Intelligent system architecture generates capex-savings

Pre-sets, guest room, property settings & management

Save on mixers and plumbing accessories

INTEREL

www.interelme.com

Creating the paperless hotel

by ***Terence Ronson***

Have you ever thought about how much paper is still in use – mostly needlessly – in your hotel? Terence Ronson has. For The Hotel Yearbook, he makes the rounds and tallies up all the forms, reports, work orders, requests, lists, folios, CVs, POs, menus, forecasts…. The results are not pretty – and certainly not sustainable.

Since computers began to be used in the hospitality industry in the early 80s, we've had the wildest dream to operate paperless hotels. But what the hey, that's only 35+ years ago, and in an industry marked by apathy to change, this is but a momentary blip in our existence. So why the sudden rush?

Well, for one, we now have the tools. Secondly, we (finally) are starting to get more computer literate people into the business. Thirdly, and perhaps more importantly, this begs the question: how many more tons of paper does a hotel need to continue consuming and wasting in a year? Imagine the number of trees being felled and wasted to meet this requirement?

Maybe this is utopian, or an overly simplistic point of view, but really – why not?

Let's start the process by looking at the guest journey

- Guest's invariably **book** online via an OTA which is electronically interfaced to the PMS. And if for some reason your hotel has not implemented this function, it's high time to get with the program!

- Upon **arrival**, the guest will flash a QR code confirmation on their phone and that auto links to the registration card on a tablet, which they sign with a finger (or in my case, I much prefer the elegance of a stylus). The passport is scanned, and the mandatory credit card swiped on a terminal. Reception then issues a mobile key onto the guest phone, and hey presto! as if by some magic, the guest is on the way to the room in under two minutes. Some hotels already perform this task by using lobby kiosks.

- **Inside the room**, there is almost no paper. A welcome letter is on the TV, the in-room compendium and room service menu, along with breakfast order form, are to be found on an app, the TV or a bedside tablet. One exception to my paperless theory could be the laundry list – but one day, I'm confident we'll overcome that hurdle. I don't consider Bibles or other religious books in this quest, since they are not classified as short-term usage of paper.

- In the **restaurant**, the menu and wine list are on a tablet. The order is taken at the tableside using a mobile device, or by some DIY method, and is then auto-dispatched to the kitchen and displayed on a screen. After dining, the restaurant check is shown to the guest on a tablet, and either signed to the room or settled by an eWallet using the POS generated QR code on the check.

- Upon **checkout** (providing there is no kiosk), the folio is displayed on a tablet, signed, paid for by eWallet and a copy e-mailed. Confirmation of the transaction is transmitted by the payment provider also via e-mail or text message. If applicable, a post-stay experience questionnaire is then e-mailed. And should a guest require a paper receipt, then just print one on a POS like printer as being practiced by all Aryaduta Hotels across Indonesia.

And there endeth the guest cycle.

Back of house

Now that the guest journey has ended comes the biggest challenge of all, BOHB – back-of-house bureaucracy.

I don't know why it is, but we just love paper BOH. Walk into almost any office and you will see it everywhere; piled high in boxes, on shelves, under mugs of coffee, even being used to prop open doors. OMG! I know there is an obscure thought that a cluttered desk makes you look intelligent and busy – but come on now… wake up and smell that lovely coffee you profess to sell!

Let's examine these departments, their humongous paper trails, and see how we can help finally transform them from paper to paperless.

Front desk is one of the largest paper culprits – walk up to almost any front desk (if it still exists – and I question the need for these also) and take a look at the work space of the team. Invariably it's chock-full of registration cards, correspondence relating to the bookings, arrival lists, VIP list, departure list, in-house guest list with balance, 7-day forecast, room status, night reports, PACE report, forex exchange, cashier reports, and A/R balance. These will, of course, vary by time of day, with some being produced a few times in the business day and then dispatched hotel-wide. Oh, and they may also have a shift log book for handover notes.

Housekeeping is also a lover of paper. They will have room status reports to include those out-of-order rooms, room assignments, work orders, log books, lost and found, etc.

Sales departments will produce activity reports to demonstrate how busy they are pounding the pavement for business, and when unsuccessful, all manner of excuses proffered. So, they will show call reports, booking reports, new accounts signed up, lost and new business, and the proverbial comp set analysis.

Purchasing is at the center of the universe when it comes to the ordering and dissemination of goods – whether F&B, housekeeping supplies, engineering supplies, office supplies, etc. They not only receive purchase requests, they solicit vendor bids, create purchase orders, sometimes oversee delivery notes and of course, store requisitions.

HR is not just a lover of people, they too love bureaucracy – with forms stretching across the entire employee lifecycle from recruitment to exit. They range from application form, evaluations, vacation leave requests, salary advance requests, insurance forms, car request forms (only some), internal transfer, uniform requests, IT system access requests, payroll and bank forms, termination/leaving forms, and finally, the exit Interview. Can you imagine how much paper is generated for a multi-year employee?

Accounting is a paper bandit! I've personally witnessed some Accounting Departments in hotels requiring rooms just to archive every single piece of paper consumed in a hotel. And not just the original, but duplicates, either created by carbon paper or NCR type forms. For a department that is supposed to control costs, they must be the largest cost center for paper, whether it be A4 or the perforated type used in dot matrix printers.

Monthly P&L, flash reports, budgets, food cost, beverage cost, stocktaking sheets, journal vouchers, and bank statements just scratch the surface of the paper iceberg found in Accounting.

Banqueting departments rely heavily on paper - and the BEO (banquet event order) seems to be the Holy Grail for them. You will often find them in filing cabinets for future events, and the coming 7 days attached to at-a-glance clip boards lining the banquet office walls. Let's also not forget the requisition forms they will complete for casual staff which then gets passed to HR for fulfilment.

Engineering has its own domain where they will create work orders for the various trades to complete a task - handyman, plumber and electrician. Let's not also forget the planned maintenance element. And don't get me started on requests for spare parts, or the hordes of paper catalogues which could fill multiple filing cabinets, and may never even be looked at.

Then there is **meeting attendance** (morning briefing, department meetings, EXCOM, Finance etc.,) where invariably people walk in with folders full of paper that they may just need, or Moleskine notebooks to use with some kind of signature designer pen. Why?? You all have phones and computers and many now have tablets, all with Wi-Fi access – so why not just use those to take notes and refer to any information you may need. People chairing meetings and banning these kinds of devices because they imagine you are multi-tasking on your social media and not focusing on their egos, should find the nearest door and close it behind them as they exit the building.

A great gadget I've recently come across is the Samsung Note 8, which when coupled with their D/EX dock converts it to a PC like device, and could be an ideal tool for hoteliers replacing desktops, allowing a hot desk concept, and empowering mobility with increased efficiency.

I'm not so naive to realize that some paper is needed for audit purposes or government filing. But honestly, these should be kept to the bare minimum and electronic filing encouraged to the nth degree. It's high time to examine every piece of paper generated in your business and ask the simple question "WHY?"

PS. The author has no commercial connection with Samsung.

Terence Ronson *is the Managing Director of Pertlink Limited. Now residing in Manila after almost two decades in Hong Kong, Terence launched his diversified hospitality career as a chef, later holding various general management positions with well-known hotels in the UK and Asia. In the mid-80s he developed his penchant for technology, and in 2000 started Pertlink Ltd., (Hong Kong) a hospitality technology consultancy, becoming as well the Technology Editor for HOTELS Asia Pacific and authoring since then numerous industry-related articles. In 2001, CNN's eBizasia program featured him for his innovative work at Rosedale on the Park Hong Kong, the first cyber boutique Hotel. It was at that point he originated the first hotel app – HOTELINMYHAND. Terence also helped Langham Place Hong Kong win many accolades for its technology deployment as well as various other well-known hotels across Southeast Asia. In China, Terence was heavily involved in establishing and delivering the IT strategy for Jumeirah Himalayas (Shanghai), Puli (Shanghai), Sofitel Wanda (Beijing), and Guoman (Shanghai). He also participated in the development of the technology vision for Disney Shanghai and Tangula Luxury Train. Terence often chairs and speaks at global industry events and sits on various advisory boards, in addition to holding a Visiting Lecturer position at Hong Kong Polytechnic. He is a CHTP (Certified Hospitality Technology Professional) and runs an active hotel technology blog.*

Upcoming Technology Events

2017

NOVEMBER

NOV 14 **HITEC Dubai**
14-15 November, 2017 Dubai, United Arab Emirates

NOV 22 **EyeforTravel Smart Travel Data Summit 2017**
29-30 November, 2017 Amsterdam, The Netherlands

2018

JANUARY

JAN 9 **International Consumer Electronics Show (CES)**
9-12 January, 2018 Las Vegas, NV, United States

JAN 23 **ENTER2018 eTourism Conference Jonkoping**
23-26 January, 2018 Jonkoping, Sweden

JAN 23 **HTNG 2018 Middle East Conference**
23-24 January, 2018 Dubai, United Arab Emirates

JAN 29 **HEDNA 2018 North American Conference**
29-31 January, 2018 Austin, TX, United States

FEBRUARY

FEB 27 **Smart Travel Data Summit North America 2018**
27-28 February, 2018 Miami, FL, United States

2018

MARCH

MAR 7 **ITB Berlin 2018**
7-11 March, 2018 Berlin, Germany

MAR 12 **HT-NEXT & HTNG 2018 North American Conference**
12-14 March, 2018 San Diego, CA, United States

APRIL

APR 11 **HITEC AMSTERDAM**
11-13 April, 2018 Amsterdam, The Netherlands

APR 17 **EyeforTravel San Francisco Summit 2018**
17-18 April, 2018 San Francisco, CA, United States

MAY

MAY 9 **EyeforTravel Europe 2018**
9-10 May, 2018 London, United Kingdom

MAY 15 **Phocuswright Europe**
15-17 May, 2018 Amsterdam, The Netherlands

JUNE

JUN 18 **HITEC Houston**
18-21 June, 2018 Houston, TX, United States

Events are brought to you by *www.hospitalitynet.org*

hospitalitynet

A hotel technology acquisition checklist

by ***Larry Mogelonsky***

Nowadays, hoteliers are so inundated with technology that the tasks of prioritization and selection have become far more than just daunting; research and procurement are practically a job title unto themselves. Unless you have specific objectives with a firm plan and budget in mind, you'll easily be intimidated by the sheer volume of options for consideration. With this in mind, Larry Mogelonsky simplifies the journey through this process by defining hospitality technology according to four checklist categories – so you can keep an eye on the bigger picture.

The four groupings you see here interconnect with each other in various ways – notably, guest service delivery as well as the nightly rates that you can get away with charging. Nevertheless, breaking them down into these silos will help you weigh the matters financially as well as ensure that no single area goes overlooked for too long a stretch of time.

First category: physical infrastructure

This first pillar is the most readily understood as well as the most established and expensive to upgrade. Infrastructure systems include those that run the physical structure of your property such as lighting, HVAC, telephones, in-room sensors, in-room tablets, laundry units, water treatment, kitchen appliances, smartphone door keys, mobile wallet receives, security instruments, televisions, cable boxes, entertainment devices, WiFi routers, point-of-sale terminals, housekeeping dispatch, and engineering equipment – to name but a few.

For each of these systems, there are multiple vendors offering solutions designed foremost to reduce costs from a labor as well as from an energy management standpoint, for which there are opportunities to save thousands on your yearly utility bill. It's rare, though, to find a revolutionary, game-changing new device in this arena, as typically such hardware is quite expensive at the outset – both in upfront charges along with all the increment maintenance fees accrued due to the technology's yet-to-be-fully-stable nature. Moreover, such incredible advances don't usually push for the hospitality industry to be their primary entrance to the market. While we are often laggards in adoption, this would never stop you from breaking formation with the rest of your comp set and taking a risk on an unproven piece of technological infrastructure that might have tremendous benefits in the long term.

If you are working on a new build, your task of deciding which vendors to court is somewhat simpler, as you are less burdened by retrofit requirements and legacy contracts. For existing structures, infrastructure improvements can be straightforward or they can be a nightmare. As one example, some installations will require hardwiring and CAT6 cabling through walls, which might make their implementation cost prohibitive. Then you have to worry about how all these disparate systems will talk to one other in order to produce some semblance of automation.

Last is the discussion of your in-house servers responsible for your digital storage, cyber-security and information distribution requirements. Triple redundancy is one of the most fundamental prerequisites these days, given how reliant we are on electronic data. Many properties are now opting for Cloud-based solutions that eliminate the need for the traditional home-based server, but a complete removal of the on-property requirements in this regard is a long way off so do your due diligence and upgrade accordingly until that time.

Second category: management systems

Paramount here is your property management system (PMS). This is like the central nervous system for your property, connecting all the various pieces of physical infrastructure as well as automating the communication between them and

processing any credit card data. Moreover, it's here where you take the reins to yield manage your room distribution channels and connect in any ancillary revenue streams to make packaging a cinch.

If these ancillary management systems can't connect to this central processing bank, I strongly recommend that you consider replacing them, as your PMS is also where your guest profile data is housed. Commonly referred to as customer relationship management (CRM), guest profiles are becoming ever more sacrosanct to our operations, as it is through the amalgamation of this rich data that we can better analyze how we are performing, what entices our visitors to spend, and what each individual guest prefers.

Thus, an effective CRM will both help you improve guest satisfaction on an individual level by remembering each person's specific preferences, as well as reveal opportunities for growth on the macro level. The two keys to make this happen are to, first, ensure that as many points of contact between the guest and your property as possible are set up for quantified recording, and next, that all data is being compiled into a singular bank so each guest profile is as rich as it can be.

Various CRM tools are available to lever this data towards building a new and improved guest marketing program. A complete "tool set" would include such touch points as voice reservation activities, data gleaned from the website, check-in confirmations, post-checkout surveys and newsletters in addition to all the onsite touch points and points of sale.

In terms of how to improve in this regard, first know that the PMS is a mature piece of software, meaning that every single one has a plenitude of features that you have probably never used before. Start by reaching out to your provider for a refresher, as many of these features are designed to enhance your profitability by computing the data in various ways to offer new insights into how your operations are performing. Most PMS companies offer webinars and regional meet-ups on a regular basis, so this shouldn't be hard to arrange. After all, the more you use their software, the more output you get from it and the happier you are as one of their customers!

Third category: digital marketing channels

I've separated digital marketing from the aforementioned internal management systems because these are external efforts that largely exist beyond your property's borders. CRM technology is primarily concerned with database, while communications activities encompass all your efforts to target the consumer at large and move them down the sales funnel, right up until they input their credit card data.

Whereas a PMS contains specific, and hopefully secure, information about each past guest, digital marketing is broader and more ambiguous. These channels include your website, search engine optimization (SEO) activities undertaken in tandem with your website updates, search engine marketing (SEM) such as Google Adwords, email newsletters, blogs, social media, mobile apps, what OTAs you push inventory to, and your approach to third-party review websites. There are still many others, but these should definitely help you paint a good picture of what's involved here.

While there is a lot of overlap with your CRM, as these include both sales and relationship channels, the differentiating factor for this pillar is that every aspect is outbound. Like fishing, you know roughly what you are going to catch – specific age groups, psychographics, consumers living in a certain geographic radius and so on – but you cannot say with absolute certainty. Some channels cast a wide net, such as the OTAs, while others can be refined to the nth – for instance, Facebook's promoted posts and how they can target well-defined interests.

The technological advents in this arena pertain mostly to automation and business intelligence. That is, software that will help reduce labor costs or those that will unveil new growth opportunities in certain audience groups or markets. As an example in the social media camp, there are tools designed to assist your team in disseminating posts to various social media and responding in a timely fashion, all from a central screen. As well, several technologies are available that provide you with an instantaneous snapshot of your guest feedback on social media and third-party review channels, thereby allowing you to take remedial actions to your guest service delivery or to address product deficits with end-to-end accountability.

Fourth category: your staff

That's right; the oldest piece of technology in the hospitality industry is still the most vital. While some companies are

↓

working on building robots, ostensibly to replace humans in increasingly non-rudimentary tasks, we are still several generations from android substitutes capable of fully usurping all that your team members do to build the guest experience.

In terms of giving your team a technological upgrade, essentially what we are discussing is training, something that many hoteliers put on the backburner once an employee has been fully onboarded. But training is now an ongoing process and crucial for motivating your staff to perform at their best. With mobile apps and Cloud-based blackboard curriculum software paving the way for the e-learning revolution to come to the hospitality industry, you would be wise to investigate your options to see how you can enhance your team training in this regard.

Both universities as well as several private service providers offer online courses that can reduce the costs of onboarding as well as improve your guest-facing "soft" skills. While e-learning can cover the basics like language skills, SOPs, operations, guest service delivery procedures, and concierge knowledge enhancements, there are also more advanced systems that have already hit the market. For example, there are motion capture stations that can be deployed to enhance your housekeeping team's muscle memory so they perform repetitive movements with proper form to thereby reduce their chances of incurring a chronic injury. Next, using artificial intelligence, there are training units that can measure how well a staff member responds to an irritated guest or a heated complaint, then offer suggestions to improve this individual's demeanor and tone of voice.

Summarizing the acquisition checklist

Few hoteliers, if any, can afford to access every technological advance available. There are only so many initiatives that your IT folks can handle simultaneously, let alone the budget. Before you fall head over heels in love with a new piece of technology, check with your team and ask the following questions to ascertain both the feasibility and necessity of each acquisition.

1 Will this new technology reduce operating costs?

a If so, what is the payout or breakeven point on the investment?
b What assumptions have been taken in calculating the payout such as staff reduction, interest rates, software installations or server upgrades?
c Have the costs of training and implementation been factored into these calculations?

2 Will this new technology improve guest service?

a What service gap will this technology fill?
b How easy or intuitive is this technology for the guest to both understand and utilize?
c Will significant staff time be taken explaining this technology to the guest?

3 Will this technology improve the lives of your team?

a How will your staff benefit from this technology?
b How difficult will it be for them to adapt or learn its use?
c How will you be able to monitor the team's compliance and utilization?

4 Will this new technology build revenue?

a Will you gain efficiencies in how you execute your existing programs?
b Will you learn more about your guests, thereby leading to improved long-term success?
c Will it give you access to new markets or business opportunities?

5 Who on your team will champion the technology?

a Will there be a service interruption and, if so, how will you manage this?
b How complex will the technology be for the team to learn?
c How long will the installation and learning curve take?

6. Will this technology integrate with your current PMS?

a If no, is this integration necessary?
b If yes, will you need to install any additional, and possibly expensive, plugins?
c Who on the team will manage this integration?

Clearly the outcome of these questions will guide your decision and help to develop a list of priorities. While revenue and cost savings are always important, don't forget the long-term asset value enhancement through improved guest service delivery as well as how this can work in your favor to heighten the overall perception of your hotel.

To conclude, the late Steve Jobs once said, "Technology is nothing. What's important is that you have a faith in people, that they're basically good and smart, and if you give them tools, they'll do wonderful things with them." Remember that the technology you incorporate into your property is designed not to take the place of personal service but to enhance that which you already deliver to your guests.

■

*One of the world's most published writers in hospitality, **Larry Mogelonsky** is the owner of Hotel Mogel Consulting Limited and the founder of LMA Communications Inc., an award-winning marketing agency based in Toronto. His experience encompasses hotel properties around the world, both branded and independent, and ranging from luxury and boutique to select-service. Larry also sits on several boards for companies focused on hotel technology. His work includes four books, "Are You an Ostrich or a Llama?" (2012), "Llamas Rule" (2013), "Hotel Llama" (2015) and "The Llama is Inn" (2017).*

The global hospitality education search engine!

Hotelschools.com

Her future will be tougher than my past

by ***Carson Booth***

We humans have always dealt with new technologies, and for the most part, we have welcomed them because they have made our lives easier, better, longer, healthier, more enjoyable…. But 17 years into 21st century, the sheer *pace* of technological change is absolutely dizzying – and only likely to accelerate even more, causing disruptions and upheavals in every part of our lives. Perhaps more than ever before, tech driven advances are changing our economic structures, politics, and even society as a whole. Where is it all going? To bring this year's edition of The Hotel Yearbook to a fitting close, Carson Booth shares his thoughts on this fascinating – if not a little intimidating – question.

In October 2016, I wrote a short LinkedIn article about the rise of Artificial Intelligence (AI) and the empowerment it will bring to hospitality guests and associates. With the recent announcements of AI taking center stage in both the iPhone 8/X and Pixel 2, the article seems to have been quite timely, however, in hindsight and with other recent developments around AI, the article now seems rather quaint and innocent.

Following this article, I have continued to reflect on current major milestones in my life: leaving my corporate job, turning 50, and having my 6-year old daughter start school. This culminated in a short Facebook post in the summer of 2017, which contemplated the future of work and how to best prepare my daughter for what lies ahead as she starts school. These thoughts continue to intersect and evolve, and frankly, her future will be tougher than my past.

"It begins…" so tweeted Elon Musk, Tesla's outspoken CEO on 4 September 2017. This was in direct response to an article published by Russia Today on 1 September, also known as "Knowledge Day", which quoted Russian President Vladimir Putin saying to science students, "Artificial intelligence is the future, not only for Russia, but for all humankind…It comes with colossal opportunities, but also threats that are difficult to predict. Whoever becomes the leader in this sphere will become the ruler of the world." This quote reflects the reason for concern that Musk and others have continuously raised – and no wonder they are nervous. We should all be.

The world has witnessed a handful of modern-era technology revolutions, starting with agriculture in the 18th century, paving the way for steam and mechanization of the industrial age, followed by electrification and mass production factories, and finally, electronics and information technology processing. One central tenet in Daniel Šmihula's theory of waves of technological innovation is that the time-spans of technology innovation waves are shortening due to technological progress. This recursion is exemplified in the rapid evolution of ubiquitous mobile computing over the last fifteen years, having been built upon the PC-to-internet revolution from the previous thirty. Like mobile computing, many forms of the next wave of post-information technological advancements are rapidly emerging, including biomedicine, nanotechnology, machine learning and artificial intelligence.

These advancements are blurring the lines between digital, biological, and physical realms, and more concerning, they are permanently shifting wealth and income inequality, redefining work itself, and, referring to Putin's quote, weaponizing information and AI.

Weaponizing AI

The top AI concerns expressed by researchers are not that machines or computers will turn evil, becoming malevolent, but rather the level of competence of AI's super-efficient ability to reach its goals. Therefore, the most important task at hand is to ensure AI goals adopt and constantly reflect our own goals as humans. These undefined parameters, including binding regulation, are exactly why Musk, Mark Cuban, Stephen Hawking and others have raised the AI alarm. The frenzied dash to AI is well underway and both government and private organizations have a multitude of reasons for rapid investment to help its rise.

2010's Stuxnet malware worm is credited as the first weaponized information tool – highly sophisticated, very stealth, government-backed and very successful at disrupting the centrifuges in Iran's uranium enrichment program. Stuxnet however was not AI driven, but what if it were?

"Lethal autonomous weapons threaten to become the third revolution in warfare." So wrote Musk and a group of AI researchers in their August 2017 call for a global ban on robotic weapons. In the open letter, the researchers expressed a concern to prevent an arms race and "protect civilians from their misuse and the destabilizing effects of these technologies" which will "permit armed conflict to be fought at a scale greater than ever and at timescales faster than humans can comprehend." The short letter concluded with the ominous warning, "We do not have long to act. Once this Pandora's box is opened, it will be hard to close."

Putin's comments on Knowledge Day is a public disclosure of the state-sponsored escalation of weaponized AI and information tools – essentially announcing that a cold war AI race has begun. Musk furthers his concerns though recent successive tweets specifically stating "all countries" competing for the best AI will lead to the potential for AI to launch a preemptive strike, either against a nation or a competing technology, and ultimately could trigger World War III. Thusly machines targeting machines without competence and lacking alignment with humanity's goals. ("*Shall we play a game?*" anyone?)

Weaponizing information

Information, and specifically disinformation, has been an effective tool throughout history – from government propaganda through manipulating stock prices. However, with relatively recent advances in technology, it is now very easy to deploy bots and algorithms in a weaponized information format, leveraging shared personal data to manipulate and reinforce a person's point of view at a speed and efficiency never before seen.

It is strongly alleged that the outcome of the UK Brexit vote was a direct result of leveraging big-data in targeted disinformation campaigns against citizens by formerly-named SCL Elections Limited and billionaire-owned Cambridge Analytica. Similarly, the world continues to watch the unfolding events in the United States, additional areas in Europe, and beyond, on how hacking election and e-mail systems and manipulating social media can have dramatic impacts on societies and democratic processes.

Companies like Google, Facebook, and Twitter are caught in the intersection of programmatically generating relevant wall feeds for their users, fostering social communities, and enabling global "free speech", versus their profit-motivation of clicks for revenue. While we enjoy their free products, define ourselves though "Likes", and abandon our privacy, it is their algorithms that suggest the news we read, the clothes we buy, the paths we walk, the friends we invite into our inner circles – all of which have a dramatic effect on lives.

Recent studies have shown that social media have not necessarily reduced the quantity of news and information sources we receive, versus the television nightly news of past generations, but rather, have shown a reduction in the quality of information received. This is a result of a user's need to reduce news sources to manageable consumption levels and the subsequent development of a strong and well-defined community around the news they support. Significant danger arises when weaponized bots and algorithms manipulate these information channels through geographically and/or demographically targeted campaigns in order to maximize the effect of fake news and further inflame division on social-political wedge issues. Furthermore, governments, private institutions, or their staff, propagating fake news conspiracies to create doubt in democratic institutions or to erode the trust in scientific communities or mainstream media, weakens the state, no matter what position one holds.

In response, companies are responding and seeking ways to address the "bot cancer eroding trust on their platforms" which in itself will add to the AI race in a cat-and-mouse chase. Ultimately, technology companies have a social responsibility to their users and society, and must be held accountable to take steps to help prevent or eliminate the spread of fake news and disinformation. If they will not self-regulate, then it is incumbent upon government to regulate these for-profit activities and enterprises. Likewise, society, governments, and educational institutions must be held to an increasingly higher standard when it comes to educating their citizens on fact checking and learning how to think critically.

Cornerstone to today's post-information age, these social media echo chambers reinforce a user's confirmation bias, which has a corrosive effect on informed critical thinking, and has the potential to shred the social fabric of society – ironically, the exact opposite of the original intent of the Internet. (You really need to read this article from UK's The Guardian.)

Redefining work

In 2013, Oxford University published a study stating, "47% of total US employment is at risk of computerization" in the next 25 years. It is easy to foresee impacts to blue-collar jobs with driverless taxis, delivery trucks, and drones, but computerization risks will affect white-collar professions as well.

For example, since the mid-2000s, engineers have turned to AI and evolutionary computation (algorithms based on evolutionary biology with inputs such as selection, inheritance and randomness) to generate designs for 'evolved' space antenna, cars, and

↓

to build AI itself. The adoption of AI design and engineering tools will continue to accelerate as more products come to market to support engineering efficiencies. Google's AutoML has been labeled as "AI's Inception" and is one example of AI coming to the market. Another example, Autodesk's Dreamcatcher, allows designers to "input specific design objectives, including functional requirements, material type, manufacturing method, performance criteria, and cost restrictions, and then using these requirements, the system searches a procedurally synthesized design space to evaluate a vast number of generated designs for satisfying the design requirements."

Similarly, medical industry professions are at risk with AI's potential to enhance surgical-robotics and current ability to efficiently search vast amounts of new and existing genetic, metabolic and clinical information for diagnosing disease, and probing biological systems to uniquely identify how a drug will impact a patient's particular cells or tissues, or creating new drugs altogether. Other examples of at-risk white-collar professions are lawyers (contract review platforms Beagle.ai, jEugene Compass), professional pilots due to enhanced auto-pilot and pilot-less flights, journalists (bot-writers), and even movie stars (regardless if dead or alive).

Nearly every industry will be impacted by AI/robotic implementation due to its pay-back cost dramatically declining over the course of it use, contrary to that of human labor with its tendency to increase over time due to salary increases, medical costs and similar. Furthermore, in an increasingly capitalistic world, management has very few economic arguments to convince shareholders not to compete in the drive toward greater efficiency, speed and optimizing marginal costs. As a result, early indicators of future problems are materializing.

Although these changes will not happen overnight, a great disparity exists in the skills required for jobs of today versus jobs of the near future – you cannot retrain a mall shopping assistant into an AI coder or data scientist overnight. Furthermore, evidence of these trend lines are found in analyzing the struggles of millennials to find work and grow wages, which impacts their ability to repay student debt, buy a home or get married. Recent US census data reveals that one third of US Millennials are remaining at home into their early 30s for "economic security".

Additional early economic indicators are found in governments struggling to address shortfalls in pension and social security programs due to lowered birth-rates and reduced job growth, which respectively are the results of increased education, lifestyle choices associated with economic affluence and women in the workforce, and of increased market productivity driven by technology efficiency. One way governments are seeking to prop up these social programs is by increasing the retirement age – which provides longer employment tax revenue per worker and a decrease in total benefit valuations. However, these policies do not address the underlying problems of an aging population and technology efficiency driving jobless growth.

The industrial revolution evolved over many decades and caused significant social impacts and unrest. The current impacts of AI and computerization are happening much faster, across nearly all industries and economic levels in a more tightly wound global economy. It is very evident that governments and economies are not prepared for these impacts to come and only now are starting to discuss regulation and policy positions with little dialog on who should bear the social cost of these changes. Google's woefully underfunded $50M "Future of Work" investment as "creator and controller of potentially job-threatening technology" is at least a start in the private sector of "acknowledging its role in changing the way humans fit into future workplaces and actively trying to understand and implement viable solutions."

Two potential answers to automation lie in the concept of Universal Basic Income and an automation tax. Kenya, Finland, Switzerland, and The Netherlands are leading UBI discussions through pilot programs, and an automation tax could either fund UBI or directly support traditional social programs and job re-training.

Furthermore, the value of higher education has come under fire against the backdrop of increasing costs and diminishing returns against a redefinition of the future of work. Education institutions at all levels need to re-evaluate current education tracks and job re-training programs and begin to adjust their curriculums and entrance acceptance criteria to meet the coming reality. New students starting today will face a dramatically different future from generations past.

What is clear is that unrestrained AI-empowered capitalism is going to further exacerbate the reduction of jobs and force the redefinition of work as we know it today, and time is running out to find a solution. On the other hand, perhaps, could we be at the cusp of a permanent reduction in the need for human labor and the utopian future of spending our time on more noble pursuits?

Shifting Wealth and Income Inequality

In 2017 the World Economic Forum has listed rising income and wealth disparity as the top trend affecting global developments. Additionally, it is interesting to note income inequality ranks ahead of climate change (#2), but also the related technology impacts of polarization of society (#3) and rising cyber-dependency (#4). (Ageing population ranks #5 in the list.) Furthermore, when listing the most important risk interconnections, unemployment and underemployment's potential to cause profound social instability ranks #1.

Why does income inequality matter? Income inequality can be a strong indicator of the level of individual opportunity and persistent disadvantages of particular segments of society. According to the IMF, widening inequality can "concentrate political and decision making power in the hands of a few, lead to a suboptimal use of human resources, cause investment-reducing political and economic instability, and raise crisis risk." Furthermore, according to the IMF, high levels of income

inequality can entail large social costs including significant undermining of an individuals' educational and occupational choices, and potentially leading to the diversion of their efforts toward securing favored treatment and protection, resulting in resource misallocation and corruption, and ultimately, losing confidence in institutions, eroding social cohesion and confidence in the future.

In August 2015, the US Securities and Exchange Commission adopted the CEO Pay Ratio rule that requires public companies to disclose (i) CEO compensation; (ii) median employee total annual compensation; and (iii) the ratio of (i) to (ii). These rules are broadly in line with existing European disclosure rules and attempt to provide a consistent metric and drive scrutiny of executive compensation policies by employees, shareholders, government, and the public. This is the result of a concerning trend of CEO pay increasing by 997% which has significantly outpaced regular worker compensation of 10.9% growth over the last 40 years. (Note: CEO compensation has doubled the performance of the stock market in the same period).

The wealth of technology leaders has also risen dramatically during the same 40-year period. Behind the facade of digital altruism lies a very clear profit motivation. Whether it is decreasing the transaction time of high-frequency stock trading which creates an unfair advantage over retail investors, exploiting sharing-economy labor through technology platforms like Uber and AirBnB, or making Amazon.com so darn convenient, you do not shop at the malls anymore. "The ultimate aim of the tech evangelists is often to create monopolies which are the quickest ways to profit. Free social tools are concentrating wealth in the hands of a few programmers and investors. In search, that's Google (revenues $75bn). In social media, that's Facebook (1.65 billion users, sales $5bn). In online retail, it's Amazon (last quarter profits of almost $900m)."

Of the 170 signatories on 2017's Gates-Buffet sponsored Giving Pledge (a billionaire's pledge to redistribute a majority of their wealth to philanthropic causes), 25% come from the technology sector (banking/investment is largest at 26%). Forbes' 2017 rank of the top 15 wealthiest people include six technologists, four of whom are in the top 10 (#1 Gates, #3 Bezos, #5 Zuckerberg, #7 Ellison), and only Bezos has yet to commit any of his estimated $72 billion to the Giving Pledge.

The relentless pace of innovation will not subside. Like the narrowing of jobs towards higher-skill levels and the concentration of wealth that comes with it, the political influence of these organizations and leaders will continue to increase. History shows the struggles of free-market self-regulation; therefore, governments and industry need to work closely together to correlate and address the concerns of facilitating technology-for-profit innovation while managing the impacts of income inequality and the broader wellbeing of society.

Her future will be tougher than my past

There are some leaders, including Gates and Zuckerberg, who have a brighter view of the benefits of AI and technology to come, and that the "control problem" is not as imminent as Musk and others warn. However, they are careful to not ignore the hard questions that must be addressed.

Furthermore, in May 2017, McKinsey Global Institute released an in-depth study on the future of work, which states that while technology is replacing some jobs, new jobs are being created in ways never imagined, and that one-third of new jobs created in the United States did not exist 25 years ago. The study highlights that through digitization, significant opportunities will arise to address the "large disparities" among big companies, entire industry sectors and the significant variances among countries themselves.

New students of today will inherit a vastly different economic, technological and job reality than generations prior. The steady career, trusted information sources and incremental changes of the past are being disrupted by technology at a dizzying pace. The future is very concerning and exciting just the same. New careers will be born among the ashes of others, and innovations will dawn as science fiction inspired the past.

In conclusion, it is incumbent upon us all – as parents, policy makers and education systems – to work together to balance the tools and effects of technology on our children and their future. We must diminish the importance of defining oneself by the number of "Likes" received. We must cultivate and celebrate critical thinking and foster a natural curiosity by continually questioning "Why?" We must help our children to be resourceful and agile. Most importantly, we must nurture a strong sense of society, social and environmental responsibility and a pursuit of making a difference, not only to themselves but for the greater benefit of society.

This is a tough time to become a first grader. ■

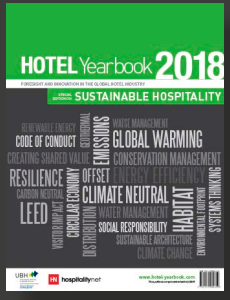
Carson Booth *has over 25 years' experience in the hospitality industry and is a consultant and mentor in the vibrant hospitality technology startup sphere. Carson began his career in Las Vegas and has previously served as General Manager, Starwood International Licensing Company SàrL (SILC) and Global Vice President Property Technology, both for Starwood Hotels & Resorts Worldwide Inc. His extensive international experience includes the managing of intellectual property and development operations (SILC), a global team of technology professionals, guest- and brand-technology strategy, information security and privacy, and a diverse set of property and corporate technology operations. Carson serves on several industry boards and most recently served as chairman of HFTP's Advisory Council for the inaugural HITEC Amsterdam 2017 conference and will rejoin this role for 2018. He holds a Bachelor's degree in Computer Science from the University of Nevada at Las Vegas, and is a frequent speaker at industry events.*

Next special edition on TECHNOLOGY

HYB Special Edition - TECHNOLOGY 2019
This edition will be available in November 2018

WWW.HOTEL-YEARBOOK.COM

Upcoming edition in the Hotel Yearbook family



HYB Special Edition – Sustainable Hospitality 2018
Looking in depth at the many challenges facing the hotel industry as it strives to improve its environmental footprint, this special edition will be published in partnership with IUBH School of Business and Management in Bad Honnef, Germany. Its authors will explore ideas, solutions and strategies for developing future hotels – and managing them operationally – in a sustainable way.
• *This edition will be available end of November 2017*