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FORESIGHT AND INNOVATION IN THE GLOBAL HOTEL INDUSTRY

SPECIAL EDITION ON **TECHNOLOGY**

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蓝海战略转型

by ***Frank Wolfe***

如何让您的酒店脱颖而出?这是每一个致力于在当今复杂的商业环境中取得成功的酒店都会遇到的问题。大多时候建筑物正面的标志是我们区分建筑物的唯一标准。那当今的游客们选择酒店的时候又在寻找一些什么呢?

酒店品牌面临许多需要克服的障碍,包括激烈的同行竞争、科技的共享和大同小异的策略。想要在这样的环境下脱颖而出,现在就必须做一些完全不同的事情了。

最近,在美国德克萨斯州奥斯汀参加HFTP与Hospitality Upgrade联合举办的“2019供应商峰会(2019 Executive Vendor Summit)”我了解到了一个有趣的新策略。Michael Levie, CHTP, citizenM 酒店的首席运营官和HFTP 全球副总裁,详细介绍和解释了“蓝海战略转型”的概念。

什么是蓝海战略转型呢? 目前市场是一片“红海”,竞争激烈残酷,人满为患,大家的焦点都在于如何在这片血腥的红海中超越竞争对手。而所谓的“蓝海战略转型”,就是使你的公司脱离当前的市场竞争(红海),在一片全新的无人竞争的市场(蓝海)中进行开拓创造。当你不再专注于如何击败对手时,你会有时间去发掘新的战略和机会来 打造独一无二的产品,不再受限于市场激烈的竞争环境。

弗兰克·沃尔夫Frank Wolfe, CAE, 是全球非营利性协会“酒店业财务及科技专业人士协会HFTP”的作家、演讲家和首席执行官。Frank担任多个董事会的董事及酒店投资基金顾问,并赢得了诸多行业奖项,包括入选HFTP国际酒店科技名人堂。

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那么如何开始改变与观念转型呢?当我们开展业务的时候,大部分的我们都在关注于两件事:内容与流程。这些的确很重要,但是我们还应该把自己的创造力放在第三个方面,那就是环境背景。环境背景、内容和流程应该协同工作、互相影响从而达到一个平衡和谐的整体。

背景环境可能会完全改变流程及内容。在Michael的演讲中,他举例说明了环境背景是如何改变一切的。汽车、火车、船和飞机的共同点是什么?大部分人想到的第一个词是:交通工具。这是一个正确而没什么创意的答案。但是如果我们换一换思维,就可以找到另一个词"休闲"。这个词给了我们一个全新的环境背景。有了这样的正确的思维方式,我们可以彻底的改变酒店的营销方式。酒店不仅仅是一个住宿的地方,也是一个难忘的体验。

为了更精准的确定环境背景,我们需要先定位自己。如果是一家酒店,那么它属于哪个细分的市场?是高端、中端是还经济型?或者是其中两个或多个的混合体?Michael将citizenM定位为一个混合体,因为它集中端市场价格与效率和高端酒店风格为一体,创造了一个"消费得起的奢华"体验。

接下来我们需要确定理想客人。他们是谁?他们是什么样的?什么对他们最重要呢?这可以帮助我们做出最明智的决策来最大地影响并提升客户体验和增加价值。当我们开始创造的时候,我们介意设想一种从未考虑的客户类型,打开一个全新的目标市场。

最重要的是专注于产品最与众不同的元素。Michael认为当今频繁出行的旅客逐渐模糊了商务和休闲的界限,提供了一个美学和资源正确组合的方式。他鼓励酒店提供最重要的资源(舒适的特大号床、花洒淋浴和出色的Wi-Fi体验)。对于citizenM的酒店做出的战略决策,都是在不增加成本的前提下增加价值。例如他们减少了单个房间的大小,但同时保持了功能性和舒适性,从而利用腾出的空间创造更新鲜又价值的体验——这个空间利用了鲜明的色彩和有趣的艺术品给客人留下了深刻的印象。

跳出固有的思维模式,你会有很多的方式去创造最佳价值和不会让客人忘记的、独一无二的体验。如果你想更深入的了解关于"蓝海战略转型"的内容信息,可以阅读由Chan Kim教授和Renée Mauborgne撰写的《蓝海战略2——蓝海转型》,探索概念并按照其五个步骤完成 战略转型。

■

科技改变移动消费者的旅行体验

by ***Jing Zhu***

CHTA主席朱静女士表示为了探索未来移动消费者会有怎样的旅行体验，中国的阿里巴巴未来酒店FlyZoo是一个良好的开端。这种转型不仅仅是在中国，全球范围都在进行中。

关于中国移动消费者的一些重要事实：

1. 2018年，中国使用的移动设备总数超过15亿。
2. 2018年，中国通过移动设备进行的电子商务交易总额超过25万亿美元，几乎是美国交易量的100倍。
3. 在线移动设备访问率超过70%，而在线移动旅行者超过65%。

简而言之，中国正在引领世界进入一个真正的移动数字时代。就消费者的生活方式而言，包括购物、订购、服务和支付，只需点击一下即可实现一切。这对中国经济，特别是B2C商业模式产生了巨大影响，在产品、服务、顾客、人才、技能等方面均有改变。整体上来看，移动科技正在改变中国的一切。

以阿里巴巴的未来酒店FlyZoo为例，该酒店的推出也受到了各界的广泛关注。关注程度就像微软发布Surface系列和谷歌推出Pixel产品一样。全球互联网巨头阿里巴巴公司去年年底正式推出了“未来酒店”，一个旨在重新定义酒店未来的领先技术孵化器。

在这个未来酒店，使用智能手机并持有身份证的客人可以在他们到达之前扫描他们的面部进行登记；电梯会自动扫描客人的脸部以确认他们可以进入的楼层；通过面部识别再次打开酒店房门。在室内，阿里巴巴的语音技术能够控制室温，打开和关闭窗帘，调整照明，订购客房服务等等。同时，在餐厅，机器人提供食物，客人可以通过FlyZoo应用程序订购；在酒吧，一个大型机器人手臂知道如何混合超过20种不同类型的鸡尾酒。酒吧账单将自动添加到房间账单。当结账时，客人只需要点击应用程序上的一个按钮，之后房间会被锁好，帐单将通过支付宝自动收取费用。与此同时，客人的个人数据会立即从阿里巴巴的系统中删除。

正如Flyzoo酒店的首席执行官Andy Wang所说："当客人在这里体验一切时，他们会说'哇！'，这是一种完全不同的住宿体验。"尽管在中国和世界各地都取得了许多类似的科技进步，但只有阿里巴巴的未来酒店能够集成如此多的技术于一身，以便为客户提供一对一的无缝旅行体验。

科技为移动消费者的旅行带来了什么价值？

先不考虑人工智能、面部识别、移动房间钥匙、机器人、机器学习等技术，"高科技，低接触"是酒店业成功的关键吗？

为了支持无缝的移动访客服务体验，它不仅依赖于那些花哨的硬件，还依赖于酒店应用生态系统，机器人操作和过程自动化的集成和合并。这反过来意味着重组并利用移动消费者的技能。数字化是整个行业层面的挑战。

为了展示数字化旅行者的体验，FlyZoo只是一个开始，是领先的技术将如何改变未来酒店业的一个可能性。全球正在进行转型，"未来已经来临，只是尚未流行"。

■

朱静，CHTA创始人&主席，旅行者联盟（CHTA）立足中国，链接世界，是一家以颠覆式创新科技，引领未来旅行者的美好生活方式，积极驱动全球酒店及出行行业新物种的发展，并专注培养新一代创新领袖们的机构。朱静女士在酒店行业担任首席执行官已超过10年，获得了诸多奖项，如中国最具创新性的行业领导者，并且她还被HITEC / HFTP评为全球酒店技术领域最杰出的女性之一。朱静女士拥有电信工程硕士学位和EMBA认证。

揭开APIs的面纱

by ***Armand Rabinowitz***

API是支撑众多平台存在的基本元素，也是让科技生态系统蓬勃发展的最重要因素之一。但API暂时并不是完全公开共享的。 HTNG的Armand Rabinowitz就此提出了一项倡议来改变现在的这种不透明状态。正如他所说：这个提议是需要社会共同努力来完成的。

由于运营一家酒店需要用到多种技术解决方案作，因此酒店业需要一直处理不同的操作界面。即使在应用程序可以通过软件和硬件交互之前，与客人的接触也可以看作是一种界面。相比几十年前我们对所有复式记帐和单独过程的容忍程度，我们的行业已经走过了一段很漫长的路。今天，每个涉及到科技的行业或多或少都利用了API。自Salesforce于2000年推出其基于XML的Web API以来，它一直都是随处可见的存在着。既然如此，这个诞生了18年的技术为何如此特别，以至于我们今天再来探讨它？

API在今天已经有了一个公认的定义，是软件解决方案的一部分，不需要持久的、直接的物理接触，利用web连接使得应用程序之间可以传递数据。API是现代应用程序与其它软件沟通交互的媒介（并且可以在某些情况下可以利用API控制其它软件）。如果没有API，现在最尖端的技术就都不会存在，即使是现在的智能手机也只可能是普通的电话，个人数码助理（PDAs），计算器和照相机。智能手机的成功就主要归功于我们可以在API基础上添加多种新的解决方案。

我们的行业一直不缺乏技术解决方案，但成百上千的选择致使如何找到最合适的解决方案变得更加困难。出于某种原因，许多科技公司都对酒店业这块肥肉垂涎三尺。这种诱惑导致许多公司在没有深入了解我们的行业环境下，硬生生地闯进酒店业的圈子。科技公司过度利用“改变游戏规则的物联网”和“利用云计算的大数据分析”这些流行话题，而忽略了另一种脱颖而出的方法就是分析API。

API可以帮助我们很好地了解一个产品的功能。我曾经通过将不同的产品组合在一起，为一个知名的全球酒店品牌创建了新的解决方案。为了更有效率做到，我以 “解决方案架构师”的名义，要求供应商发送他们的API文档给我。没有什么比利用API的质量和完整性来衡量供应商的能力和产品功能更好的途径了。

我认为酒店行业绝大多数的解决方案应该公开它们的API。多年来，我们一直被“合作伙伴”API所限制，在这些API长期认证过程中，犹如是订婚的过程一般。也许这正是因为现在解决方案供应商足够地相信酒店业的神秘感和对竞争对手的吸引力。所以，巨头们必须限制软件整合的容易度，以便于在有其它强大的竞争者出现时，保障自己的行业地位。

我见证了许多优秀的解决方案因为无法成功打入行业环境而夭折。遗憾的是这些失败同时也造成了一些行业的损失，正因如此，我选择了加入HTNG完成其使命，并希望能够带领这支团队进一步简化我们行业中那些极其复杂和孤立的解决方案。

作为HTNG战略与工作组的高级总监，Armand Rabinowitz 致力于促进行业成员之间的紧密合作，提升当下全球行业运营中至关重要的技术。Armand擅长将人与产品元素结合在一起，设计创造新的技术解决方案。与此同时，他还负责HTNG工作组日常工作，丰富相关的教育内容、解决方案和行业标准。Armand拥有 Vanderbilt University工程学院的学士学位，在技术和酒店行业工作了十余年，在信息技术和新兴技术方面拥有较丰富的工作经验

年初的时候，HTNG召集了 一些 厌倦了整合过程的成员，试图推广开放API和公共API。他们提议为广泛使用的系统编写API并公开，即使原始解决方案供应商并没有公开。我们也知道，作为一个志愿者性质的协会，利用所有的资源为我们可能永远不会获得权限的解决方案编写代码，这会遇到很大的难题。

Impulsify的首席技术官兼创始人Martin Zam和ALICE的联合创始人兼首席技术官Dmitry Koltunov已经开始带领HTNG成员开始了这个项目，他们立志于提高酒店行业API的质量和可用性。

Koltunov解释说："当API被详细解读后，公开访问并且保持更新时，将围绕特定产品形成一个联盟。这个联盟可以效仿其他行业开放资源而蓬勃发展的方法，共享代码并探索出最佳的实践方案。"通过联盟的共同努力完成这个任务会促进酒店业的发展变得更加稳定、更容易管理"。

许多公司已经基于他们的API和平台为小型产业提供支持，从而达到为供应商和客户提供更好的价值。包括社交媒体，交通和娱乐在内的其他行业率先垂范，以这样的方式向潜在的技术合作伙伴宣传现有产品，并以成熟的方法评估匹配度和整合的工作量。

HTNG发现酒店业并没有评估或衡量一个解决方案的参照标准，所以决定 自己 打造一个。

HTNG API Registry注册表目前由HTNG工作组成员设计，并与ALICE合作开发。在这个注册表上，任何公司都可以列出其产品，API和整合资料。然后运营商将确定哪些产品具有强大的兼容性和多样性。API注册表的目的是开放API，并证明它的广泛应用和成功整合结果。这将鼓励供应商参与Partner API项目，遵循趋势打造公共API。HTNG API 注册表将于2018年初公开发布，并将持续为业界提供服务，提高产品的透明度，相互发现学习，并创造新的解决方案，从而推进我们的行业发展。

事实是，正如Koltunov所说："API是支撑众多平台存在的基本元素，也是让科技生态系统蓬勃发展的最重要因素。"

■

不是您以为的“企业资源计划系统(ERP)”

by ***Nick Price***

“酒店公司长期以来都陷入上个世纪设计的信息系统架构的困境中。该信息系统架构围绕着酒店一切行为中心的物业管理系统(PMS)概念而建立”,NetSys Technology公司的CEO尼克·普莱斯(Nick Price)写道。基于去年在《酒店年鉴》上发表的原创文章,尼克通过再次访问另一个传统概念,进一步改进了其在2017年所描述的酒店操作系统(OS)架构概念:企业资源计划。

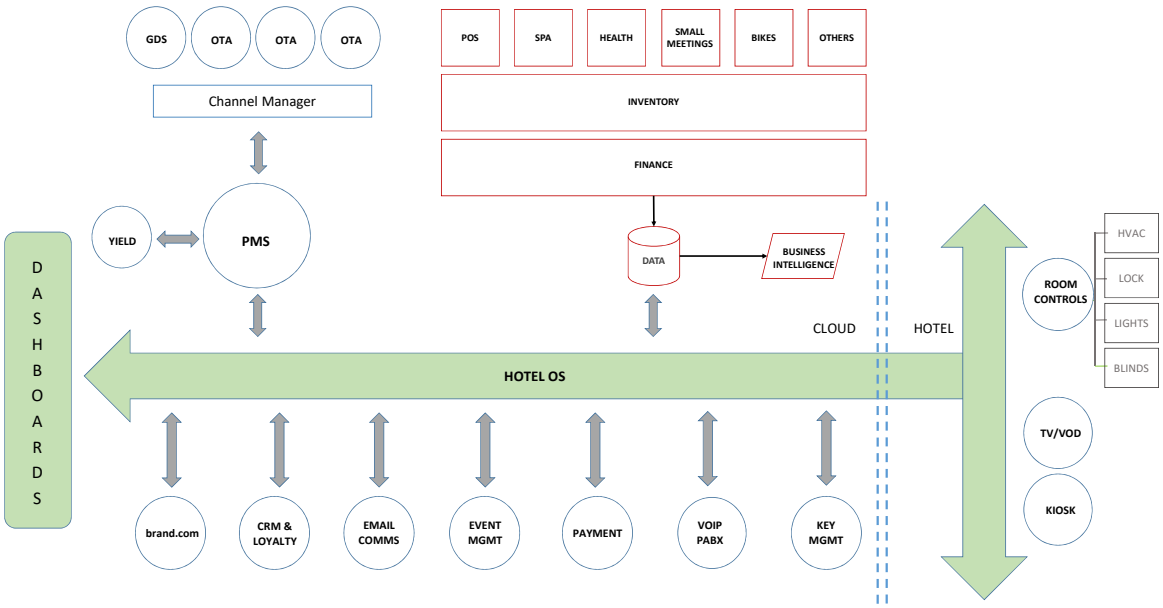
PMS的中心角色已经成为(或试图成为)酒店系统工具包的“瑞士军刀”。任何一个已经购买酒店系统的人——以及本文的大部分读者——将非常熟悉PMS公司广泛散布的“中心辐射”能力表。它将PMS置于中心地位,并通过以各种方式与PMS集成的卫星应用程序,声称具有近乎全面的解决方案功能。而作为PMS买家的我们,将一遍又一遍地询问未来的卫星系统供应商,“您的应用集成了PMS X吗?”

时过境迁

PMS中心化的概念已经过时了,现在是时候向前看了。

在去年的《酒店年鉴2017》上,我们看到了服务总线——一种在架构概念中集成应用的现代方式,我们称之为“酒店操作系统(OS)”。我们将酒店操作系统与先前普遍使用的PMS中心架构进行了对比,并找出了服务总线架构的一些优势,至少是降低了对PMS的依赖程度。酒店操作系统所支持的解耦单项优势系统架构还带来了其他好处:

- 酒店操作系统是一个单一分布式架构,可跨越云和预置程序,从而可利用相同的工具包看到和控制云和酒店内应用程序。
- 无限扩展:可扩展从最小到最大的应用程序,而且可根据需要增加或减少应用程序。
- 酒店操作系统可以是本地云,也可以是预置程序,能够以最佳方式替换系统组件,满足需求,而且还可以在不改变或破坏架构的同时,针对不同的酒店做出不同的替换选择。
- 酒店操作系统提取了任何一个系统的特性,因此多个相似系统可以跨企业使用。考虑多种支付、多个POS机,甚至多个PMS。
- 酒店操作系统为不同资源系统中基础信息的合并提供了基础——一种跨多个客户档案和忠诚度系统的统一客户记录,或者一种统一预定记录。
- 由于酒店操作系统建立在一种可以自我持续更新的现代公开云基础设施上,因此,它带来了现代报告和商务智能工具。该工具不仅仅是一些附加组件,而是核心技术栈的基础和对准部分。
- 最后,与酒店操作系统总线连接和通信的系统越多,所实现的派生价值就越高。当参与商务过程(考虑登记入住、



退房、网上预订等）的所有系统都连接到总线上时，我们可以将事件关联起来，实现可视化和实时映射过程，从而采取立即和可能自动化的关联行动——这是酒店经营人员的梦想。

去年发表的文章名为“不是您以为的服务总线”，事出有因——我们介绍了一个叫做“服务总线”的概念，如果某些概念出现在老式的大型IT商店中，并暴露在过去的企业服务总线系统（ESB）时，则会被视为遗留问题。当然，我们在去年和今天提到的服务总线，一点都没有过时。不，它是从以前的ESB概念中提取出来，并进行了大量改进和扩展的当代ESB。这种新的实现通过最新的公开云部署，将服务总线带入新的时代，与此同时，公共云能到达全球和近乎无限扩展。

在《酒店年鉴2018》中，我们将通过重访另一个传统概念来进一步改善酒店操作系统，而且出于相同的原因——日益增多的系统被托管在全球公共云中。这一次，我们将讨论企业资源计划（ERP）的概念，以及在我们追求提高商务敏捷性和摆脱对PMS依赖的目标过程中，ERP和服务总线是如何增加酒店操作系统的能力的。

ERP是什么？

“企业资源计划（ERP）是核心商务过程的集成管理，通常是实时的，而且由软件和技术实现”——或者至少维基百科是这样定义的。对我们来说，这是一个相当松散的标签，附有一套集成应用程序，用于管理和自动执行所有企业常见的后台功能。考虑财务、采购、库存管理、项目管理和人力资源。

这里的关键词是“后台”，通常是指我们行业中被遗忘的应用的所在之处。作为酒店系统专业人士，我们关注的是市场、价格、销售或吸引和了解客户的系统。有些独特的系统能够定义我们的酒店业务，而这些系统会吸引我们大部分的注意力——它们的确是这样。然而，他们往往以牺牲后台功能为代价。这些后台功能在大多数时候都同样重要，但却常常被遗忘。

这一点之所以重要，有两方面原因：第一，这些ERP系统高度集成的本质是相当令人满意的。它们提供非常实用的、预集成的现货应用程序。第二，可用的ERP系统日益真多，瞄准了大部分酒店企业所在的中间市场。

目前为止，部署的成本和复杂性阻碍了ERP在酒店中的普遍使用。除了规模最大的组织以外，这些大型、昂贵和几乎是预置的部署，使得这些应用对其他组织而言都不切实际，而且加之酒店组织结构的分布式本质，这意味着我们的行业不适合大规模部署先进的ERP。无论如何，由于作为服务应用的公共云和软件积极地进入了大部分公司所处的中间层，这一切都发生了改变。

对组织结构的影响

将云作为我们行业的技术解决方案还产生了另外一个结果——有机会重新思考酒店组织结构。随着酒店使用的云解决方案越来越多，开始考虑集中酒店专家资源的做法是很明智的。的确，如果您今天开一家酒店公司，您不可能考虑任何其他的组织模型。云解决方案是实现这种非常有益的变革的关键因素。

但作为一个带有实体酒店产品（如房间和餐厅）的客户服务行业，酒店作为客户旅程和客户体验中至关重要的一环，我们将很可能在酒店中安装技术和应用。单独的云应用程序无法完全满足我们的行业需求，必须与酒店中的其他系统集成在一起。这就是服务总线出现的原因。通过服务总线，我们可以将云和预置应用无缝地集成在一起，使我们将人力资源集中在财产智商，同时保留酒店运营的实时覆盖范围，提供基本的情景可视性和非常必要的远程指控。因此，服务总线可能成为我们行业中云的重要基本要素。

当我们转向由新云操作系统实现的财产组织结构时，新的中间市场SaaS ERP解决方案成为了许多酒店公司后台自动化的可行选择。几乎每个月该领域都会出现一种新的ERP产品，但由于这些公司普遍采用了其他解决方案，这里我只强调两种产品，即甲骨文公司的Netsuite产品和微软公司针对财务和运营新发布的Dynamics 365。这两样产品（和许多其他产品）都结合了POS、电子商务、库存与订单管理、商务智能、CRM、财务和某些HR功能。通过ISV渠道和特定行业应用（如零售和现在的酒店），ERP套件本身也得到了进一步增强。

目前，酒店也采用了ERP套件。这些ERP套件的可用性和可支付性不断提高，让酒店经营者有机会利用当代高性能ERP产品套件对后台进行现代化改造，从而提供一种预集成在盒子中的行业专用后台应用程序。想像一下，餐厅POS、零售POS、Spa、健身俱乐部、小型会议室、自行车租赁行和许多其他仓库，以及核心HR、时间与考勤系统，可作为现代金融系统之上的一个集成应用程序套件进行管理。

为什么酒店ERP与酒店操作系统相关？

1. 由于所有非房间库存的财务销售和购买记录直接流入财务系统，除了客房销售或可能的大型会议和活动管理以外，不再需要将PMS作为一种收入确认系统，这就进一步弱化了PMS在酒店信息架构中的重要性，这是一个非常令人满意的结果。
2. 记录所有库存（包括购买和销售）能够提供全方位的商务情报。事实已经证明，采用负责销售分析的PMS历史模型和提供面向后期的月末盈亏报告的财务总帐，在酒店行业中很难实现这一点。
3. 酒店ERP作为我们整体解决方案的一部分，发挥了重要作用。这使得我们能够恰当地划分出重点和资源。利用一组适用于我们特殊需求的应用，我们可以敏捷地和负责任地改变我们的主要销售需求和客户服务功能，所有这些都通过服务总线互联。我们还可以利用预集成的ERP来诊断后台的有效性和稳定性。这种预集成ERP不但功能强大，而且还可已通过消除人为过程和excel界面，使后台具有高生产力。在我们摆脱过去的PMS集中性的过程中，这种具有令人满意的敏捷性（销售、房间、顾客）和满足需求的稳定性（后台）的系统，是我们在酒店操作系统发展过程中的下一个成功组合。

酒店操作系统之后是什么？

当开发酒店操作系统时，我们的目标是促进围绕现代信息架构的行业讨论，并且通过这种讨论，鼓励人们意识到我们行业长期依赖的传统方式是可以被替代的。

在我们发表的两篇文章中，我们讨论了采用服务总线模型的系统设计和集成概念。这种服务总线模型旨在通过集成独特的、单向优势的、面向客户的应用和面向特定客户商务模型的服务，提供商业敏捷性。然后，我们讨论了大多数公司利用新的云ERP组件是如何提高后台生产力的。我们将酒店操作系统作为讨论平台的目标并未终止，而且未来还有很多机会对其展开评论。CRM、支付和产品分布是三个可能的主题，当然还有更多。我们期待您的评论。

■

Nick Price 是 NetSys Technology 的创始人。NetSys Technology 是一家专注于酒店和旅游行业的技术咨询公司。Nick同时在citizenM（www.citizenM.com）担任首席信息官的职位，citizenM 是一家总部在荷兰阿姆斯特丹的国际酒店公司。Nick自2013年初开始与citizenM合作，负责技术相关服务，包括传统IT和数字化技术。在创办NetSys之前，Nick曾在全球豪华酒店品牌文华东方酒店担任首席信息官超过12年，他有幸参与了文华东方在香港基地的重大全球扩张项目。除了在citizenM担任首席信息官之外，Nick还在多家酒店和酒店技术公司担任战略IT和委员会顾问。他是HFTP（酒店业财务与科技专业人士协会）名人堂的入选者，也是HTNG（Hotel Technology Next Generation）的联合创始人和前任总裁。2016年底，Nick当选为HFTP董事会成员。

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未来会比过去更为艰辛

by ***Carson Booth***

我们人类总是面对着各种新技术，鉴于大部分新技术能够使我们的生活变得更容易、更美好、更长久、更健康、更快乐……因此，我们通常乐于接受它们。但是到了2017年，技术变革的惊人速度着实令人炫目——而且变革速度只可能更快，为我们生活的方方面面带来混乱和剧变。技术的进步可能会比以往任何时候都更能改变我们的经济结构和政治，甚至整个社会。那么它将何去何从？，Carson Booth分享了他对这个问题的看法。

2016年10月，我在领英（Linkedln）上撰写了一篇关于人工智能（AI）的兴起以及它赋予酒店客人和员工的权利的短文。随着最近宣布的人工智能在iPhone8/X和Pixel 2中扮演的重要角色，这篇文章似乎写的非常及时，但是，从之后的反思和最近其他围绕人工智能的发展来看，这篇文章似乎又相当过时和无知。

这篇文章之后，我又继续思考我人生中到目前为止发生的重大里程碑事件：辞职、年过半百和6岁的女儿开始上学。这些事件详细地记录在2017年夏天的一篇脸书（Facebook）帖子上，其中考虑到了未来的工作和如何为开始上学的女儿的将来做最好的准备。这些想法继续交汇和演变，平心而论，她的未来会比我的过去更加艰辛。

“开始了……..”2017年9月4日，特斯拉的首席执行官伊隆·马斯克在推特上直言不讳地说道。这是对《今日俄罗斯》在9月1日（又被称为“知识日”）发表的一篇文章的直接回复，文章引用了俄罗斯总统普京对理科学生们所说的一段话，“人工智能不仅是俄罗斯，也是全人类的未来……它带来了巨大的机会，但也带来了难以预测的威胁。谁成为这个领域的领导者，谁就将主导这个世界。”这段话反映了马斯克和其他人的担心不断升级的原因——毫无疑问，他们很紧张。我们都应该紧张起来。

这个世界见证了几次现代技术变革，从18世纪的农业开始，到工业时代的蒸汽和机械化变革，然后是电气化和大规模生产的工厂时代，最后是电子和信息技术的进步。Daniel Šmihula提出的技术创新浪潮的一个中心思想是：技术的进步缩短了技术创新浪潮的时间跨度。这种递归在过去15年间无处不在的移动计算的迅速发展中得以体现，它由近30年来从个人计算机（PC）到互联网的变革建立起来。与移动计算类似，下一波后信息技术进步正以各种形式迅速出现，包括生物医学、纳米技术、机器学习和人工智能。

这些技术使得数字、生物和物理领域的界限变得模糊，而且更让人担心的是，它们正在永久地改变财富和收入的不平等，重新定义工作的概念，并且用普京的话来说，实现信息和人工智能的武器化。

武器化的人工智能

对于人工智能，研究人员最担心的不是机器或计算机会带来灾祸，而是人工智能拥有超高效的实现目标的能力。因此，现在最重要的任务是确保人工智能的目标符合并持续反映我们人类的目标。这些未定义的参数（包括约束条例）正是马斯克、马克·库班、史蒂芬·霍金以及其他人对人工智能提

出告警的原因所在。人工智能正顺利地疯狂冲刺，政府和私人机构都有各种理由投入资金帮助其快速崛起。

2010年的“震网”蠕虫病毒被认为是第一个武器化的信息工具——高度复杂、非常隐蔽、政府支持，而且在破坏伊朗铀浓缩计划的离心机方面取得了巨大成功。但是，“震网”并未采用人工智能技术，如果它采用了会如何？

“致命的自动化武器威胁将演变为第三次大战。”2017年8月，马斯克和一群人工智能研究人员呼吁全球禁止机器人武器。在一封公开信中，研究人员担心军备竞赛和提出要“保护平民不被技术滥用和技术的不稳定所影响”。技术的滥用和不稳定将“让武力冲突的规模比以往任何时候都大，而且其发展速度将远远超过人类的理解。”这封简短的公开信以不详的预兆结尾，“我们没有很长的时间来应对。潘多拉的盒子一旦被打开，将很难关上。”

普京在知识日上的讲话是对由国家发起的人工智能和信息工具的武器化的公开披露——本质上宣布了一场人工智能的冷战已经开始。马斯克在最近连续几条推特上进一步表示担心，尤其说道“所有国家”竞相研究最好的人工智能，将可能使人工智能对一个国家或一种竞争技术先发制人，并最终触发第三次世界大战。因此，机器没有能力瞄准机器，而且缺乏与人类目标相一致的机器。（“要玩游戏吗？”有人参与吗？）

武器化的信息

历史上，消息（尤其是假消息）已成为一种有效的工具——从政府宣传到操纵证券交易价格。但是，随着最近的技术进步，现在很容易就能以武器化信息格式部署机器人和算法，从而利用共享的个人数据以前所未有的速度和效率来操纵和加强个人观点。

强烈断言，英国脱欧的布雷克斯（Brexit）投票结果是一个由SCL选举有限公司和一家亿万富翁拥有的剑桥分析公司利用大数据针对民众进行的有目的的虚假宣传的直接结果。类似的，世界持续监视美国和欧洲其他地区的正在发展的实践，以及黑客攻击选举和电子邮箱系统和操纵社交媒体是如何对社会和民主进程产生戏剧性的影响的。

像谷歌、脸书和推特这样的公司正处于为用户编程生成相关信息源、促成社区和实现全球“言论自由”的交叉点，而不是为了公司收入而受利润驱动赚取点击量。虽然我们享受着他们的免费产品、用“点赞”来定义自己以及放弃了我们的隐私，但我们所阅读的新闻、购买的衣服、行走的道路和邀请进入内部圈子的朋友，却是这些产品的算法向我们推荐的——所有这些都对我们的生活产生了巨大的影响。

最新研究表明，与过去的电视夜间新闻相比，社交媒体并没有减少我们接收到的新闻和消息来源的数量，但却降低了所收到的消息的质量。这是因为用户需要将新闻来源降低到可控的消费水平，以及需要围绕他们所支持的新闻持续发展一个强大而明确的社区。为了扩大假新闻的影响和进一步激化社会政治楔子问题的分化，当武器化的机器人和算法通过以地理位置和/或人口统计为目标的口号来操纵这些信息渠道时，就会出现重大危机。此外，无论所持立场为何，只要政府、私人机构或其员工通过宣传虚假新闻在民主机构中创造怀疑，或者削弱对科学界或主流媒体的信任，都会削弱国家。

作为回应，各公司正在响应和寻找解决“机器人癌症侵蚀其平台信任”的问题，该问题本身会加入到人工智能竞赛的猫捉老鼠的追逐中。最终，技术公司对其用户和社会负有社会责任，而且必须采取措施以阻止或消除虚假新闻和谣言的扩散。如果它们不自律，那么，政府有义务对这些营利性的活动和企业进行管理。同样地，当社会、政府和教育机构在教育公民要验证事实和学会批判性思考时，必须坚持更高标准。

在当今的后信息时代，这些社交媒体回音室加强了用户的确认偏见，对消息灵通的批判性思维具有腐蚀作用，而且还可能破坏社会结构——讽刺的是，这与互联网的本意完全相反。（您真的需要阅读英国《卫报》上的这篇文章。）

重新定义工作

2013年，牛津大学公布的一项研究称，在接下来的25年间，“全美47%的职业将处于计算机化的风险中。”很容易预见到无人汽车、送货卡车和无人机会对蓝领工作产生影响，但计算机化的风险同样会影响到白领职业。

比如，从20世纪中期以来，工程师们开始用人工智能和进化计算技术（一种基于进化生物学的算法，含有如选择、继承和随机等的输入）来设计“演变的”空间天线、汽车和建立人工智能本身。随着越来越多的产品进入市场，采用人工智能设计和工程工具将加快工程效率。谷歌的AutoML被认为是“人工智能的开端”和人工智能进入市场的一个实例。又比如，欧特克（Autodesk）公司的“捕梦者”（Dreamcatcher）能够让设计师们“输入具体的设计对象，包括功能要求、材料类型、制造方式、性能标准和成本限制，然后系统利用这些要求搜索程序化合成的设计空间，以评估大量符合要求的设计。”

类似地，医疗行业专家因人工智能面临着风险：人工智能可能提高外科机器人技术，提高用于诊断疾病的有效搜索大量新型和现有基因的、代谢的和临床信息，以及探索生物系统以便唯一地识别药物将如何影响病人的特定细胞或组织，或者创造新型药物。其他处于风险中的白领职业还有比如律师（合同审查平台Beagle.ai, jEugene Compass）、专业飞行员（增强的自动飞行和无人飞行）、记者（机器人写手）以及电影明星（无论是否已过世或在世）。

基本上各行各业都会受到人工智能/机器人的影响，因为人工智能/机器人的偿还成本随使用过程急剧下降，而相反，人力成本会因薪资的增长、医疗费用等类似原因呈增长趋势。此外，在不断增长的资本世界，管理层无法在经济上说服股东不要为提高效率、加快速度和优化边际成本而竞争。其结果是，未来问题的早期指标正在显现出来。

虽然这些变化不会在一夜之间发生，但今天就业所需的技能与不就得将来就业所需的技能之间存在巨大的差异——你无法在一夜之间将一名商场购物助手重新培训为一名人工智能程序员或数据科学家。此外，在分析千禧一代寻找工作和增加工资的挣扎时，可以发现这些趋势，这会影响他们偿还学生贷款、买房或结婚的能力。最新的美国人口普查数据显示，出于“经济安全”方面的原因，三分之一的美国千禧一代年龄超过三十还待在家里。

更低的出生率和更少的工作增长带来了养老金和社会保障计划不足的问题。在政府努力解决这些问题的过程中也出现了其他早期经济指标。这些早期经济指标源于教育的增长、与经济富裕有关的生活方式选择、女性就业以及受技术效率驱动的市场生产率的增加。增加退休年龄是政府解决这些社会计划的一种方式——这种方式延长了每个劳动者缴纳就业税的时间，而且降低了总收益估值。然而，这些政策并未解决人口老龄化和技术效率推动失业增长这两个根本性问题。

工业革命已经演变了好几十年，带来了重大的社会影响和动荡。人工智能和计算机化正极其快速地影响着几乎所有行业，并为各个经济层面带来了更为严重的全球经济压力。很明显，政府和经济界并没有做好迎接这些影响的准备，而且现在才开始讨论监管和政策立场，并且很少谈到谁应该为这些变革的社会成本负责的问题。作为“潜在的就业威胁技术的创造者和控制者”，谷歌公司至少投入5000万美元到“未来的工作”中。这至少标志着私营部门开始“承认其在改变人类适应未来工作场所的方式中的作用，并积极尝试理解和实施可行的解决方案。”

自动化的两种可能答案存在于全民基本收入概念和自动化税收之中。肯尼亚、芬兰、瑞士和荷兰正通过试点计划牵头开展UBI讨论，而自动化税收可以为UBI提供资金或者直接支持传统社会计划和就业再培训。

此外，在重新定义未来工作时，高等教育的价值正因为成本增加和收益递减而受到攻击。各个层级的教育机构需要重新评估当前的教育轨迹和就业再培训计划，并且开始调整课程和入学准则，才能符合未来的实际。与过去的学生相比，如今刚入学的学生将面完全不同的未来。

显而易见的是，不受控制的人工智能资本将进一步减少就业岗位，它将迫使我们重新定义“工作”的概念，而找寻解决方案的时间已经为数不多。或许从另一方面来看，我们是否可以永远地减少对人力劳动的需求，并且在不切实际的未来里将我们的时间花费在更高尚的追求上？

转移财富和收入不平等

2017年，世界经济论坛把收入和财富差距扩大列为影响全球发展的首要因素。另外，有趣的是，收入不平等排在气候变化（第2位）、技术对社会两极分化的影响（第3位）和网络依赖的增加（第4位）的前面。（人口老龄化位列第5名。）再者，在最重要的风险互联排名中，失业和就业不足可能导致社会不稳定排在第1位。

为什么收入不平等很重要?收入不平等可以成为个人机会水平和社会特定阶层持续处于劣势的有力指标。国际货币基金组织（IMF）认为，不平等现象的扩大会“把政治和决策权集中在少数人的手中，导致人力资源利用不充分，政治和经济会因投资减少而出现不稳定，以及出现危机。”此外，国际货币基金组织还认为，高水平的收入不平等意味着很高的社会成本，包括严重破坏个人的教育和职业选择，还可能导致个人努力维护对自己有利的待遇和保障，其结果会造成资源配置不当和出现腐败，最终对机构失去信心、削弱社会凝聚力和对未来失去信心。

2015年8月，美国证券交易管理委员会采用了首席执行官（CEO）薪酬比率规定，要求上市公司披露（1）首席执行官的薪酬福利；（2）中层员工的年度总薪酬福利；和（3）第（1）条和第（2）条的比率。这些规定大致符合欧洲现行披露规定，并试图提供一致的指标和推动员工、股东、政府和公众对高管薪酬福利政策的审查。之随意制定该规定，是因为在过去40年间，首席执行官的薪酬增长了997%，远远超出了普通员工10.9%的薪酬增长水平。（注意：首席执行官的薪酬使同一时期的股市业绩翻了一番。）

技术领导的财富在过去40年间同样急剧增长。数字利他主义的背后隐藏着明确的利润动机。无论是对散户投资者不公平的高频股票交易时间的缩短，还是通过像优步和爱彼迎这样的技术平台实现共享经济，或者是创建了如此方便的亚马逊网站，让你无需在实体店购物，都体现了上述观点。“技术布道者的终极目标通常是创造垄断这种最快的获利方式。免费的社交工具正将财富集中在少数程序员和投资者手中。搜索引擎界是谷歌公司（收入750亿美元）。社交媒体界是脸书公司（16.5亿用户，50亿美元的销售额）。在线零售界是亚马逊公司（上个季度的利润几乎达到9亿美元）。”

2017年，盖茨-巴菲特赞助的“捐赠誓言”（Giving Pledge）慈善组织（一个亿万富翁承诺将其大部分财富重新分配给慈善事业）中的170名签约人中，25%的签约人来自技术领域（银行/投资占比最大，达到26%）。2017年福布斯排行榜前15名中有6名技术人员，其中4名排在前10位（第1名：盖茨，第3名：贝佐斯，第5名：扎克伯格，第7名：埃里森），只有贝佐斯还没有将其预计的720美元财富捐赠给“捐赠誓言”慈善组织。

坚持不懈的创新步伐不会中断。就像将工作面缩小到更高的技术水平和将随之而来的财富集中起来一样，对这些组织和领导人的政治影响也将继续增加。从历史上，我们可以看到自由市场在自律方面的挣扎；因此，政府和行业需要密切合作并解决对促进技术盈利创新的担忧，同时管理收入不平等的影响和更广泛的社会福利。

她的未来将比我的过去更为艰辛

包括盖茨和扎克伯格在内的一些领导人，对人工智能和未来技术的好处持乐观态度，“控制问题”对他们而言并没有像对马斯克和其他人那样迫在眉睫。但是，他们小心行事，并没有忽略必须解决的难题。

另外，2017年5月，麦肯锡全球研究所发布了一项对未来工作的深入研究。研究指出，在某些工作被技术所替代的同时，正在产生一些未曾想像过的新工作，而且美国新产生的三分之一的工作在过去25年并不存在。该研究强调，数字化将为解决大公司、整个行业部门之间的“巨大差异”和国家之间的重大差异提供重要契机。

与前辈们相比，如今新入学的学生们将面临及其不同的经济、技术和工作现实。技术正以令人眩晕的速度打乱着稳定的职业生涯、可靠的信息来源和过去渐进式的变化。未来既令人非常担忧，又令人极其兴奋。新的职业将在旧职业的灰烬中诞生，创新将在过去科幻小说的启发下随之而来。

总之，我们作为父母、政策制定者和教育体系，有责任合作起来，帮助我们的孩子和他们的未来，在技术作为工具和带来的影响之间取得平衡。我们必须让他们不再用收到的“点赞”数来定义自己。我们必须培养和歌颂批判性思维，并通过不断问“为什么”来培养天生的好奇心。我们必须帮助我们的孩子变得足智多谋和反应敏捷。最重要的是，不但为了自己而且为了更大的社会利益，我们必须培养强烈的社会意识，社会和环境责任心，以及追求自我改变。

现在是成为一名一年级新生的艰难时期。

■

Carson Booth拥有超过25年的酒店业工作经验，经常担任酒店技术创业领域的专业顾问和导师。Carson的职业生涯始于拉斯维加斯，曾担任喜达屋酒店及度假村国际集团的喜达屋国际授权公司SàrL（SILC）的总经理和全球技术副总裁。他有着丰富的国际项目经验，包括知识产权管理和开发运营（SILC），建立全球技术专家团队，制定客户和品牌技术战略决策，信息安全和隐私管理，以及各种财产和企业技术运营项目等等。Carson 曾在多个行业委员会任职，担任过HFTP的2017年阿姆斯特丹HITEC会议顾问委员会主席，并于2018年再次入选该职位。他拥有拉斯维加斯内华达大学计算机科学学士学位，并且经常在行业活动中发表演讲。

关于“未来客房”的十五个问题

by ***Xavier Etcheberrigaray***

Xavier Etcheberrigaray认为，虽然科学技术是一个重要而不可避免的话题，但是它并不是关于未来话题讨论的唯一组成部分。这篇文章阐述了他和他的同事们在讨论未来酒店客房趋势时的15个观点。

认真地搞笑、顺其自然和酒店业创新，这三个词语有共同之处？

首先，我们可以用很多种方式来解释它们。对酒店业来说，它们是一个既和谐又矛盾的存在。一方面，酒店行业的创新远落后于全球水平。另一方面，这又是一个集合了一些可能是你所遇到过的最聪明和有创意的人的所在地。他们可以现场解决很多复杂问题，与不同文化、年龄层次、社会和经济阶层的人们进行交流并建立联系。

就其本质而言，酒店业可以概括主要经营着“以人为本”的业务。然而，尽管其员工具有创新精神，但这个行业却从不处于创新的前沿。还记得在我们的业务中最近一项创新是什么?对我来说，可能就是华尔道夫沙拉，客房服务，新加坡司令鸡尾酒，以及我们将卫生纸折叠成一个小三角形之类的事情，但这些想法已经可以追溯到第一次世界大战之前了。即使是饱受吹捧的“专利”酒店系统，实际上也是效仿其他行业所产生的，例如航空公司的收益管理系统和零售商的忠诚计划。

我依稀记得，我们拥有一张通行证，更重要的是一个机会。因为我们模仿主要商品，比如我们喝的水，我们灌的汽油，或者我们烘焙的咖啡。我们的商品是“房间”，具有时效性，但又是世界经济不可或缺的一部分。我们总要吃饭，喝水和睡觉的，这就是最初我为什么我选择酒店行业。但也许我推测正是因为这种最初的理念，导致了行业创新盲目自满的现状。

现在，众所周知，我们已经进入了一个新的数字化时代。我们的客人不仅要求我们拥有尖端的技术还要方便使用，我们的员工同样需要最新的系统来满足客人的需求。酒店管理、预订，客户关系管理和收益管理等系统必须通过平台无缝连接，保证各部门实时沟通。当然，酒店创新不止于此。

关于创新

我觉得这个概念很容易理解，但很难表达。在没有其他任何事情的情况下，这不是技术。在没有其他任何东西的情况下，这当然也不是持续改进（BPI），或者用奥兰·哈代迪的话来说，“电灯不是来自蜡烛的持续改进”。我们应该有一个目标，例如强化客户体验，增加收益，为员工带来价值，或者寻找独特的方式在市场中创造新的竞争优势。

创新的设计是服务于终端用户。在我的理念中（有时并非主流观念），它应该渗透入公司文化中，而不仅仅是公司中的一个部门。我们公司每年会举行一次峰会，让不同背景的管理人员分组讨论，汇报不同的想法。每年都会有不同的主题，去年是收益，今年是顾客。这是鼓励员工拥有创新思维、收集新想法的好方式，也是我们如何利用文化、以不同的方式审视酒店业务的例子。

最终，酒店创新、新形象、未来的客房都是以这些收集来的想法为原型，这是集体出谋划策的结果。设计师负责设计，收益经理确保总收入，营销人员找到独特的方式来吸引住客。作为行政人员，我们倾向于寻找更好的方式优化客户体验，梦想着有一天可以与团队合作，从根本上改变现在和未来的客户体验。

定义“未来”

我将“未来”这个词写入了标题，因为它已成为行业过度使用的流行语，特别是在科学技术方面。我必须说，我认为这根本是错误的。当然，这是我自己的看法，但我认为，如果我们考虑创新的时候，应该破除固定思维，不去参杂一些条条框框的技术要求，这样我们都会得到更好的服务。所以，我不是特别赞同“未来=科技”这个公式。

不可否认，科学技术在未来酒店中是必要和有用的，但它不是构建未来理想客房的唯一考虑因素。我承认这是一个挑战，这通常会让我自己和那些与我合作的人远离一条习惯的、舒适的路。它涉及投入资金、资源和精力，然后在迷雾中指出一条方向。我们必须考虑在未来的每一天里，我们将如何提供给客人一个合适的环境和房间。

在凯萨（Caesars），我们的任务就是做到这一点，建立一个“未来客房”的原型作为项目模板。换句话说，它们之后将成为我们未来房间的示范展厅。在这里我想分享一些我们开始做 “未来客房”项目时的经验，为了不泄露商业秘密，都是一些值得思考和借鉴的问题，具体如下：

1. 通过其他部门的视角，审视我们的房间。例如，餐厅厨师在烹饪之前是如何完成所有的准备工作，同样，我们在客人抵达前，如何准备客房以完善客户的住宿体验。
2. 不同的方式，来满足客人的需求。例如，我们如何确保洗衣服务更快地完成?我们如何高效地提供客房服务?
3. 如何提高员工的工作效率，快速的打扫整理房间，迎来下一位住客，减少在前台的等待时间，并尽可能地招待早到的客人。
4. 我们可以采取哪些措施来保持与客人的接触和沟通，避免由于产品自动化或综合技术增长带来的负面影响，从而不会降低我们的收入、客户的体验感和幸福感?
5. 信息产品的整合应该有利于人与人之间的沟通和互动。我们如何联合现有技术，通过例如税务局、水疗中心、会议和商务中心等部门，为客人提供更便捷的服务。
6. 我们，现在或者未来，如何根据客户对价值的认知转变来满足他们新的需求?
7. 更重要的是，我们如何定义这个价值，我们将如何将这个价值捆绑到我们的服务产品中?
8. 对于房间的各个方面，我们都要问自己，所选的产品或者技术是否真的是一个好的“解决方案”。是否有潜在的元素或创新方式可以设计出更好的客户体验?
9. 我们在设计和布局方面有什么与众不同?我们是否咨询过风水专家?平面设计师?或者拥有可以完善小空间让其无形中变大的技艺的工匠?
10. 我们是否考虑过室内人体工程学?办公桌是多功能的吗?保险箱在视线内吗?插座在方便的位置吗?房间是否为住户提供了最大的实用性和舒适性?
11. 我们是否研究了所有的细节，照明系统，睡眠舒适度，淋浴体验，地毯的触感，床单的线程数，枕头的填充物或者空气的质量?
12. 我们如何实现可持续发展从而减少对环境压力的?什么样的新技术可以减少用水量，更好的节能省电或是最先进的建筑管理系统（BMS）?
13. 在曼德勒湾的悲惨事件发生后，我们可以在房间加入哪些新的功能或者技术产品，以便持续为我们尊贵的客人提供绝对安全?
14. 我们可以做些什么来给我们的客人留下属他们的独特而持久的记忆?是否有某些零售物品?是否重新审视了我们的设施?我们的客人可以带走什么样的纪念品与朋友和家人分享?
15. 最终，我们如何让每个房间成为一个“永恒”的作品，给每一位客人留下持久而难忘的生活体验?

↓

虽然这不是一个完整的列表，但它足以表明，“未来客房”的讨论不应该仅仅停留于其中的技术层面。这个过程中的创新部分是预测未来，一个难以捉摸的目标。您现在也许可以识别出“超尖端”的技术产品，但是通过完整的开发、测试和落地周期，直到上线，您的产品可能已经过时了。

了解掌握房间体验的起始点和结束点也很重要。在凯撒和其他有远见的公司中，我们正在模糊这些界限。一个很好的例子就是虚拟入住。在某些酒店，您可以通过预留电子邮件办理在线入住手续，并使用移动设备进入到房间，全程无需前往前台即可完成虚拟入住。交流、浏览、选择和入住与现实房间体验变得一样重要（如果不是更重要的话）。

整个过程如同一个愉快的假期晚餐。我的祖母过去常常做法式烤珍珠鸡，这是一种在法国南部非常受欢迎的野生非洲鸡。诚实地说，整个过程这很棒，富有仪式感，所有的体验使它变得更加美味和令人难忘。伴随着环境周围的声音和节日的色彩下，选择一只鸡，清理羽毛，再去市场精心挑选最成熟新鲜的蔬菜。然后，烤箱里传出烤鸡的香味，端上桌子，加上葡萄酒与朋友和家人一起品尝，让一切变得如此幸福美味。其实。这跟房间对我来说是完全一样的：一次从A到Z的体验，不可以省略其中任何一个步骤和体验。

抛开这个童年的体验的类比，我的主要观点就是建立一个“未来客房”是一个多维度的过程。为了最后的成功，我们应该探讨关于房间的方方面面，以及我们对未来的展望，如何创新，就如同将两个有矛盾的单词放在一起，提供一个新的和谐的含义。

幸运的是，拉斯维加斯是一个适合这样讨论的地方。在这个讨论中，创意可以轻松地从无到有，无处不在，成为世界首屈一指的休闲和会议目的地之一。我们凯萨将继续大踏步地将我们的“未来客房”理念带给我们的股东们，以便能够在未来几年内满足客人的需求。

■

Xavier Etcheberrigaray 是拉斯维加斯的凯撒娱乐（Caesars Entertainment）的酒店运营公司总监，主要负责凯撒品牌在美洲区的酒店相关计划的开发、实施和执行，其中包括Caesars Palace，Paris，Flamingo和Harrah等多个酒店品牌的运营管理。在加入凯撒娱乐之前，Xavier在过去的十年里一直在海外工作，为Rixos和凯宾斯基酒店（Kempinski Hotels）工作。作为Rixos的战略与发展总监，他负责监督公司在新兴市场的豪华度假村的战略性长期目标规划和开发渠道管理。在凯宾斯基，Xavier是欧洲区域运营经理，起初是在日内瓦，后来在迪拜工作。他与当地的房地产商领导者建立合作，最大限度地提升了标志性酒店和餐厅的业绩，包括Emirates Palace Abu Dhabi, Ciragan Palace Istanbul, and Adlon Berlin。他还率先为凯宾斯基酒店选择了一个最具挑战性的目的地 - 非洲的赤道几内亚，并筹建了一个特别的开业前专题小组。Xavier最初接触酒店行业时，是在洲际酒店担任管理培训生，在迈阿密担任食品和饮料业务的管培生，随后在亚特兰大担任销售和营销管培生，之后担任公司对外事务负责人。后来，他在瑞士的格里昂（Glion）获得了酒店管理硕士学位。Xavier拥有Ole Miss的政治学学位，是一个掌握多国语言的美食家，他会讲法语、西班牙语、一些葡萄牙语和英语。

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By Thomas Mielke - *Managing Director, AETHOS Consulting Group London*

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HT-NEXT, New Orleans - GlobalReach **Technology** has added new guest Wi-Fi features to its Hotspot 2.0 solution, giving hospitality brands the benefit of communicating through, and monetizing their Wi ... monetization. The new capability is included in the GlobalReach **Technology** Hotspot 2.0 OSU today. Talk to Chris Bruce, managing director, at HT-Next, New Orleans to see more. Today's innovation follows

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今天的“区块链”

by ***Lyle Worthington***

最近，有没有其它的技术概念像区块链一样被炒得那么火？（嗯，或许有，但可能不是今年。）什么是区块链?它是如何运作的?它又为什么会得到如此大的关注呢?更重要的是：区块链会在什么时候、以什么方式酒店业出现呢？Lyle Worthington分享了他对区块链技术解决方案的一些想法。

区块链是当下新兴的的热门话题，它也正在逐渐渗透到酒店行业。就像几十年前的云计算和大数据一样，每个人都在谈论“区块链”是解决“某个问题”的杀手锏。在谷歌搜索“区块链”时，你也会发现不少关于区块链如何成为“未来趋势”和解决具体问题的文章，从追踪钻石到食物来源，从防止选民欺诈到殖民火星等等。但是，就像云计算和大数据一样，它们的实际定义并不明确，我们并不清楚在现实世界中如何应用这些理念，人们只关注了区块链的优势但并不了解在实际操作中的难度和限制。所以，让我们首先来看看区块链到底是什么，它的实际优势是什么，什么又是我们认为的区块链的优势但实际上并非如此。

区块链中最重要的部分就是分布式帐本技术，就是一个可以在不同电脑上、由不同的人员登入浏览的真实的帐本副本，但账本中的任何改变都需要巨大的工作量，如果考虑经济成本的话其实是不大可行的。因此从表面上来说，您就拥有一个真正的、透明的且不可变的数据库，复制并存储在世界各个地方节点，也没有可以屏蔽数据、扭曲记录或篡改规则的集中系统。而且，作为福利，使用者只需要承担托管和维护的成本，他们不需要互相信任，只需要信任他们共享的数据就可以了。这是区块链的优势和期望：分散式和分散信任，和无法被更改的存储数据。比特币已经证明了这一切是可能的，它的成功也打响了区域链的第一炮。

为了更好地解释区块链是如何运作的（注意这里会有一些过度简化），我们可以想像一下共享的在线相册。想用这个相册的每个人都可以上传图片。经过一段时间后，收集的照片会与上一页的屏幕截图一起排列在页面上。然后，一个非常珍贵的屏幕截图由这个新页面组成（现在包括前一页的屏幕截图），并将其添加到新组合的页面。然后将该页面发送给拥有该相册的所有人，并且一旦有51%的人接受截图的匹配，他们都会添加该页面，并确保每个人拥有的都是相同的。这个过程的最重要部分就是这个屏幕截图和前一页的截图，这样就创造了一个链条，每一页都通过屏幕截图和下一页连接到一起。每个拥有相册的人都可以看到屏幕截图，并确认所有图像都是相同的。要更改图像，首先需要更改它所在的页面，然后创建一个该页面的新截图。然后，您必须修改下一个页面的屏幕截图，然后截取该页面的新屏幕截图，依此类推。因此，要编辑一个图像，必须从包含该图像的页面开始，修改书中之后的每一页。如果创建和添加屏幕截图的过程非常耗时且昂贵，那么你就会明白在更改每一页之后才能开始新的一页是多么的不合理。这个过程的概念被称为“工作量证明机制”，这也是为什么比特币如此安全的原因之一。处理系统的成本明显高于将要盗取的数额，除非你能找到一种方法来控制51%的网络比特币，之前有人已经有接近的数量了，但这是另一回事。

正是因为比特币严格的规则和激励措施，使得区块链建立在如此成功和安全的基础上。比特币区块链并不是免费的，它需要大量的计算机功率（从而产生电力）来产生每个比特币。您可以认为比特币是电力的浪费，数百万设备不断地做无意义的数学方程式，因为从上面提到的简单的例子可以知道，制作屏幕截图并达到所述的安全性需要大量的电力成本。但是，在私人的环境中运作 它是有问题的。要确定正确分配和保证区块链像比特币一样安全运作的成本是很难的。简而言之：比特币的工作量证明机制缺乏扩展性。

还有一种方式是基于“权益证明机制”的概念。如果工作量证明机制是“我们相信你，因为你花了大量的钱做了很多无用的数学方程来创造这个区块”，那么权益证明机制就是“我们相信你，因为你投入了大量的资金，做一个糟糕的演员会让你赔钱。”从权益证明中还演变出了一些其它协议，例如以太坊(Ethereum)的Casper和MIT的教授Silvio Mikali的Algorand，但这些都还不成熟（或没有在商业中验证）。使用权益证明机制所需要的工作，与比特币的工作量证明机制一样繁琐困难。

所以你可能认为Blockchain是安全的，但它不提供安全性，也不能防止各种欺诈行为。实际存储在区块链上的内容，验证某人拥有区块链上的任何资产或项目的所有权，保护敏感数据的私密性或加密性，并保证其不受修改的措施，这些都由依靠区块链的逻辑和算法完成的，并不是区块链本身。区块链实际上只是一个基础，或者说是基础架构，用来构建未来的应用程序。

总而言之，除了将比特币作为支付方式的趋势之外，区块链暂时还没有商业上的可行性，也没有酒店业相关的区块链实施方案，因此请您现在不要抛弃现有的系统去迎合区块链趋势。但它肯定会来临，这是未来，我们都应该为此做好准备。区块链将在酒店业中占有一席之地，但不是对任何问题都有意义。关于区块链，其实还有很多问题需要解答。例如，如果有关数据存储在不可更改的区块链中，如何正确维护人们在GDPR中的权利。HFTP正是认识到了这一点，才召集了区块链专家，一起分析技术，研究其在酒店中的应用，并与行业分享。现在您可以考虑做的就是：密切关注我们工作组的工作成果，然后去买一些比特币吧。

■

Lyle Worthington，CHTP，是一位酒店技术主管，顾问，导师和世界知名的科技顾问，拥有超过20年的从软件开发人员到CIO的技术经验。他目前是阿姆斯特丹 The Student Hotel 的首席信息官和 HFTP Global 的理事会总。Lyle曾担任并领导了多个酒店业的董事会，委员会和理事会，十多年来一直是酒店业技术的积极发言人。他经常在行业活动中发表演讲，并为全球酒店技术出版物撰写了大量文章。

机器学习：深入浅出

by ***Jai Govindani***

酒店拥有大量的数据信息，但是否所有的信息都可以用来准确的预测和行为分析，更重要的是它们实际上有用吗？Jai Govindani通过一个例子来帮助我们理解。

首先，我很遗憾地通知您被我的标题误导了。这篇文章不会特别深入到机器学习的核心，“机器学习：深入浅出”这个题目总比“机器学习：浅尝辄止”听起来更有意思些。但是，相比我们每天收到的大部分浅显枯燥的关于酒店业机器学习的资讯来说，我们会讨论的更加深入一些。

那么现在我们来谈谈机器学习，不是关于它能做什么（我们之后会讨论的），而是关于它的实际是什么。“机器学习”到底是什么？有没有像黑客帝国电影中那样的屏幕？谷歌总部的某处是否正在筹备天网计划？

在我们走进兔子洞之前，有必要就机器学习的高级定义达成共识。在考虑人类对科技的看法时，机器学习的演变在人类学上很有趣。我们是创造者，一开始，我们明确地告诉（并且大部分还是）计算机要做什么：如果这是真的，那么做。如果要移动，请打开灯。这就是世界上大部分代码的运作的方式，并且已经为我们提供了很好的服务。但是有一个与生俱来的缺陷，这一切仅限于人类可以描述和解释的事情。

所以，传统的代码会受到人类智慧的限制。当我们无法描述自己的大脑处理信息的过程时，我们如何告诉计算机去识别一只猫？我们可以去聆听、阅读、认知的能力也是一样，与生俱来的能力，但在尝试用描述性算法表达时，科学在某

Jai Govindani 目前担任Red Planet Hotels的首席技术官，负责公司对内和对外的整个技术领域。作为2015年Red Planet Hotels 品牌重塑的一部分，Jai负责架构和实施到客户体验，并持续推动该领域的创新。Jai 于2006年在创业孵化器开始他的职业生涯，开创了将线上和线下媒体融入社交娱乐体验的商业概念。2007年，他负责指导当时泰国最大的移动业务公司Siam2you恢复盈利。之后，他创立了Monster Media，这是泰国第一家数字互动媒体公司。在进入酒店业之前，Jai成立并经营了Zodio，这是一家专注于亚洲的，总部在曼谷的科技创业公司。

种程度上就断层了。当然，很多人普遍认为这些问题可能无法通过传统的编程来解决。但是，样本空间（可能性的数量）是巨大的，变量的数量是无限的。

作为一个实验，我们试着通过数据预测哪些预订最终会取消。在做这个实验时，我们假设数据库中存在着这样的信息组合，可以加以利用使我们能够预测预订是否最终会被取消。这个家假设不是一直成立的，在收集数据的一天结束时，您将很难判断模型是否因无关的数据干扰或者错误算法而缺乏预测能力。

机器学习的主要步骤：

1. .选择一个模型（或多个模型）
2. 特征工程
3. .建立/运行/测试模型
4. 重新开始（或成功了，可以喝啤酒）

所有的机器学习都是从模型开始的。模型是一个数学公式或框架，它接收一些数据（我们的信息，如提前多久的预定）并输出结果，在此次试验中，我们想获得的输出结果是预测最终预定是否会被取消。正确的选择一个模型是以很好地理解消化数据、确定输出、了解模型的数学原理为基础的。对于这次的试验，我们将使用名为朴素贝叶斯（NaïveBayes）分类器的模型，帮助我们“分类”预订是否最终会被取消。（关于NaïveBayes详情可以维基百科This Wikipedia page）。

模型已经选了，现在就是“特征工程”的过程。特征、输入、信号，这些都是同义词。特征工程就是将这些输入数据转化为模型要求的格式。例如数据，客人的国籍“美国人”，数学模型是识别处理不了的。解决这个问题的一个方法是将每个国家转换为数字，例如联合国M49代码（其中“840”是美国的代码）。关于可以分类为真假的数据（例如是否预付房费）可以很容易地用0或1来代表。特征工程没有固定同一的方法，它是建立在如何理解数据之后用模型可以处理的方式表示的基础上，同时还要保证不丢失数据中包含的信息。举例说明，原始数据可能如下：

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

可以转变为：

	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

留意到区别了吗?相同的数据，不同的格式而已。

↓

我们已经选择了一个模型，整理了数据，设计了输出，现在是时候建立模型并验证它了。我们将数据分成训练集(training set)和测试集(testing set)。我们将三分之二的数据划分到训练集，剩余的三分之一用来测试。换句话说，我们使用2/3的数据来训练模型，其余的则用来验证测试。在Python中训练模型如下：

```
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)
```

测试的结果一样很乐观：

```
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)
```

最后的结果：

```
('Gaussian accuracy: ', 0.8595020462617412)
('Bernoulli accuracy: ', 0.8617376097499414)
('Gaussian predictions on new data (all bookings): ', array([0, 0, 0, ..., 0, 0, 0]), ' with Accuracy: ', 0.8379629629629291)
('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)
```

在上面的结果输出中，我们构建了2个版本的朴素贝叶斯分类器，高斯模型和伯努利模型。它们分别表现出0.859（86%）和0.862（86%）的预测能力。这意味着我们有理由相信这两种模型在预测取消时的准确率为86%。听起来的结果还不错，对吧?其实没有那么高的准确率。当加入更多数据进行测试时，两种模型表现都不理想。如果您注意到表示“取消预订”的那行，会发现两种模式的预测能力均低于5%，这使得它们在现实世界变得毫无价值。

现在，你应该明白机器学习是什么，大概什么样子（包括了一个失败的结果）。我希望这篇文章能够将机器学习的概念具体化，帮助大家理解，而不只是在高谈阔论。

■

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预防和处理网络安全漏洞

by ***Tanya Venegas***

2017年11月，HFTP研究中心发布了一份研究报告《网络安全：今天的地位》。对于酒店年鉴的读者，Tanya Venegas总结了其主要内容。

有关黑客攻击系统的报道几乎每天都在发生，而酒店和旅游业也因为每天要通过系统处理大量的信息而称为黑客的主要目标。据美国旅游协会统计，2016年美国的商务和休闲旅行出行数为22亿次，预计国际到旅客为7560万人次，其中包括来自海外市场的3760万人次。据世界旅游组织（WTO）报告，全球范围内，2016年有12.35亿国际到达游客。根据世界贸易组织预测，到2030年，将有约18亿国际到达游客。如此惊人的数据量，使酒店和旅游在收集和处理数据的过程中，必须做好保护措施。

2017年11月，HFTP研究中心发布了一份报告“网络安全：今天的地位”。这份报告提供了网络安全方面的相关知识和具体措施。读者将从中了解当下有效地的安全措施，和如何不断改进其安全流程。科学技术正在快速地发展变化，无论是现在还是未来，大大小小的业务都必须为网络安全威胁做好准备。以下是“网络安全：今天的地位”报告的信息摘要。

美国国家网络安全联盟（NCSA）概述了企业可以采取的相关措施，帮助防止和处理其运营中的网络安全漏洞。这些步骤包括：识别，预防，检测，应对和恢复。

第1步 - 识别

保护企业免受网络安全漏洞的第一步是确定需要保护的数据类型。这些信息将包括对企业核心业务至关重要的信息，和将为网络犯罪分子带来高额利益的信息。绝大多数情况下，在酒店和餐饮服务部门，96% 的数据是包括支付信息的，正如Verizon数据泄漏调查报告（2017年）中所提到的，付款信息往往是最受关注的。

即使分析过所有系统并找到有价值的信息，这项工作也不算完整。数据需要详细列表并且必须定期更新。列表应该包括所有的数据和技术资产，并应注意数据和技术的存储位置以及谁可以访问这些资料。

第2步 – 预防

攻击，入侵，损伤和防御，当你看到这些词语时会想到什么?这些都是描述战斗的词语，也有可能是一个更宏大的计划，一场战争！在这一过程中，企业通过给自己的资产设防和训练部队来为战争作准备。

第3步 - 检测

及时地发现网络安全漏洞是减少影响的关键。在很多情况下，企业在系统遭到破坏后的几天，几周甚至几个月内都毫无察觉。那么如何在安全漏洞的影响达到最高值之前检测到并阻止系统中的信息流失?

从战略上，公司可以通过多种方式和计划检测其业务中的漏洞。首先，要了解适其业务相关的威胁有哪些。有哪些网络安全产品或服务可以帮助监控公司的网络。另一种长期监测的方法是安排一名技术专员实时监控，一旦发现不寻常的信息可以随时报告。最后，可以提醒客户不要使用一些品牌相关钓鱼信息网站。

第4步 – 应对

不幸的是，即使采用最好的风险控制措施，也不可能防止所有的信息安全事件（如数据泄露）的不会发生。所以，制定有效的应对计划方案变得更有意义。当事故发生时，毫无准备的公司是无最容易被击垮的。

首先，应该建立一个专门的团队来处理事件和有效地回应。该团队不仅应该包括技术支持的专业人员，还需要能够做出财务和战略决策的人员，比如CEO或CFO。其次，在事件发生之前，应该设计一个风险管理预案，包括根据事件类型的不同和紧迫性而制定出的不同应对解决方案。一旦出现网络安全事故，安全应对小组成员应该集合并展开调查。最后，确保事件造成的威胁得到根除，详细记录并恢复业务运作。

第5步 - 恢复

当一家公司进入恢复阶段时，处理网络安全事件不再是第一要务，而是需要集中精力，全面恢复正常的系统操作。在此阶段，持续的努力将减小网络事件的影响，重点也转到了未来和不断地改进。

通过这五个步骤，企业面对网络犯罪分子将更有准备。我们的行业需要通过各种数据以各种方式和客人建立联系，例如酒店业客户数据、水疗健康数据、私人会员数据和餐厅客人数据。收集数据的关键是仅收集对您的业务至关重要的信息并清除其它无用信息。之后，保护好业务核心数据，确保网络犯罪分子无法访问从而并失去客人的信心。

如需详细了解这些步骤或者阅读完整报告，请浏览PineappleSearch一家酒店业专用搜索引擎。

■

Tanya Venegas, MBA, MHM, CHIA, 是HFTP调研中心的负责人和HFTP研究员。该调研中心位于休斯敦大学康拉德N.希尔顿学院。她根据HFTP会员的需求，定制各类研究计划，包括特别研究项目、白皮书和HFTP专题报告等等，分析酒店财务和技术的最新行业趋势。除了网络安全活动报告外，她还参与了最近发布的白皮书“旅游分销行业标准”的撰写。

酒店技术采购清单

by ***Larry Mogelonsky***

如今，酒店经营者被各种技术所淹没，优化和选择变得不单单是一项艰巨任务；研究和采购实际上是一个职务头衔。除非您的头脑中对公司计划和预算有具体的目标，否则您很容易被大量的选项吓到。考虑到这一点，拉里·莫格洛斯基根据4个清单目录定义了酒店技术，从而简化了整个过程——因此，您可以关注大局。

您看到的四组技术相互之间以多种方式关联起来，尤其是，客人服务和酒店日常收费可以让您免遭投诉。尽管如此，将这些技术进行分类有助于在财务上权衡重要性，并确保在一段时间内不会忽略任何一个区域。

第一类：物质基础设施

第一类基础支柱是最容易理解的，以及升级起来是最成熟和最昂贵的。基础设施系统包括运营酒店的物理结构，如灯、暖通空调（HVAC）、电话、室内传感器、室内桌子、洗衣机、净水器、厨房用品、智能钥匙、移动钱包、安保设施、电视、电缆盒、娱乐设备、WiFi路由器、销售点终端机、客房部调度和工程设备等等。

每个系统都会有多家供应商提供解决方案，这些方案主要是为了从劳动力和能源管理角度节约成本，以便您每年节省数千元的电费。但是，很少有人会在该领域找到一种革命性的、能改变游戏规则的新设备，通常这种硬件一开始就非常昂贵——无论是预付费用，还是由于技术未达到稳定状态而产生的升级维护费用。另外，这些令人难以置信的优势一般不会促使酒店行业成为他们进入市场的主要入口。虽然我们在采用方面往往处于落后地步，但这绝不会阻止您打破与其余系统设置的组成结构，以及冒险采用那些从长远来看会带来巨大利益但目前尚未证实的技术基础设施。

如果您打算修建一栋新的大楼，而且您负担着较少的改造要求和旧合同，那么，您在决定采用哪家供应商时将相对容易。对于现有建筑物而言，基础设施的改进可能简单明了，也可能是一场噩梦。举个例子，一些设备在安装时，要求穿墙进行硬连线和CAT6布线，这可能产生过高的实施成本。那么，您不得不考虑这些独立系统之间要如何相互交流，才能实现自动化。

最后要讨论的是负责您的数字存储、网络安全和信息分配要求的室内服务器。鉴于我们对电子数据的依赖程度，三重冗余是当前最基本的前提之一。许多酒店现在选择基于云的解决方案，以减少对传统家庭服务器的需求，但要完全消除在这方面的需求还为时较早，所以，请尽早开展尽职调查和进行相应的升级。

第二类：管理系统

这里最重要的是您的物业管理系统（PMS）。就像酒店的中枢神经系统一样，它将各种物理基础设施连接起来并让它们之间自由通信，同时处理任何信用卡数据。此外，这里您有权管理房间分配路线，并且连接任何辅助收入源，以使包装变得简单。

如果这些辅助管理系统无法连接到这个中央处理库，那么我强烈建议您考虑将其替换掉，因为您的物业管理系统也是您的客户资料数据所在的地方。客户资料通常被称为客户关系管理（CRM），它对我们的运营变得越来越神圣，因为通过合并这些丰富的数据，我们可以更好的分析我们的表现如何，什么吸引着我们的顾客，以及每个客人喜欢什么。

因此，一个高效的客户关系管理（CRM）不但会在个人层面上通过记住每个人的具体喜好来提高客户满意度，还会在宏观层面上展现增长机会。实现高效客户关系管理的两个关键之处在于：首先，确保尽可能多地对客户和酒店之间的接触点进行量化记录；其次，把所有数据编入一个独立的库，从而让每个客户资料都尽可能丰富起来。

各种客户关系管理（CRM）工具都可以将数据转化为新的和改进的顾客营销计划。一套完整的“工具集”所包含的接触点除了所有现场接触点和销售点以外，还包括比如语音预定活动、从网站收集的数据、登记确认、后检验调查和通讯。

至于如何在这方面做出改进，首先要明白物业管理系统（PMS）是一个成熟的软件，这意味着每一个系统都具有丰富的功能，而这些功能您可能从未使用过。首先联系您的供应商了解这些功能，因为许多功能旨在通过各种方式计算数据来增加您的盈利，从而为您如何运营提供新的见解。大部分物业管理系统（PMS）公司会定期举办网络研讨会和区域聚会，所以要安排并不难。毕竟，您使用他们的软件越多，您从中获得的越多，作为客户的您就会越快乐！

第三类：数字营销渠道

我把数字营销从上述内部管理系统单独划分出来，因为数字营销是存在于您的酒店范围以外的外部努力。客户关系管理（CRM）技术主要关注数据库，而通信活动将所有努力集中瞄准广大消费者，并将他们转移到销售漏斗中，直至他们输入其信用卡数据。

尽管物业管理系统（PMS）包含每个以往顾客的具体安全信息，但数字营销更广泛、定义更不明确。这些渠道包括您的网站、与网站升级一起进行的搜索引擎优化（SEO）活动、搜索引擎营销（SEM）（如谷歌广告关键词、电子邮件通讯、博客、社交媒体、移动app、无线下载（OTA））以及审查第三方网站的方式。还有许多其他渠道，但这些无疑会帮助您描绘出这里涉及的内容。

虽然由于同时包括销售和关系渠道，与客户关系管理（CRM）有许多重叠之处，但该支柱的分化因子在于每个方面都是朝外的。就像钓鱼一样，您大概知道要抓住的什么——具体的年龄群、消费心态学、在某个地理半径内居住的消费者等等——但您无法绝对肯定地说出来。一些渠道（比如无线下载（OTA））广撒网，而另一些渠道可以被细化到第n个——比如，脸书的推广贴和它们如何瞄准明确定义的兴趣。

这个领域的技术创新主要涉及自动化和商业智能。也就是说，软件将有助于降低劳动力成本，或者将在某个受众群体或市场中提供新的成长机会。以社交媒体为例，有专门的工具帮助您的团队向各个社交媒体推送帖子，并及时回复，这全都来自一个中央屏幕。同样地，有几种技术可以对社交媒体和第三方审查渠道上的顾客反馈拍摄同步快照，从而让您对顾客服务采取补救措施，或者通过端到端的问责解决产品缺陷问题。

第四类：您的员工

是的，酒店行业最老的技术仍然是最重要的技术。虽然一些公司正在建造机器人，表面上是为了让机器人在非基本任务中日益取代人类，但是，要想用机器人完全替代您的团队成员来建立顾客体验，这期间还有很长的路要走。

说到给您的团队提供技术升级，基本上是在讨论培训问题，这是许多酒店经营者在员工入职以后会忽略的问题。但是培训现在是一个持续的过程，而且对激励您的员工做出最好的业绩至关重要。随着移动app和基于云的黑板课程软件为酒店行业的电子学习带来便利，您可以明智地调查您的选择，以了解如何在这方面加强您的团队培训。

各大学和几个私营服务供应商都提供在线课程，可以降低入职成本和提高面对顾客的“软”技能。虽然电子学习可涵盖像语言技能、SOP、运营、顾客服务和礼宾知识这类的基础技能，但还有更多先进系统已经上市。比如，可以部署运动捕捉站来增强管家团队的肌肉记忆，使他们以适当形式重复运动，从而减少他们发生慢性伤害的机会。其次，使用人工智能，培训单位可以衡量一名员工是如何对愤怒的客人或强烈投诉的客人做出回应的，然后提出改善这个员工的举止和语气的建议。

采购清单小节

很少有酒店经营者（如果有）能够负担得起每次技术进步。只有IT员工可以同时处理除预算以外的很多其他事项。在您爱上一项新技术之前，请与您的团队核对并询问以下问题，以确定每次采购的可行性和必要性。

1. 这项新技术能节约运营成本吗？

a. 如果能，投资的支出或盈亏平衡点是什么？
b. 计算支出时应进行哪些假设，如裁员、利率、软件安装或服务器升级？
c. 计算中是否考虑了培训和实施的成本？

2. 这项新技术能改进顾客服务吗？

a. 这项技术能够填补哪个服务缺口？
b. 这项技术有多简单或直观地让顾客理解和使用？
c. 员工是否会花费大量时间向顾客解释这项技术？

3. 这项技术能改善您的团队的生活吗？

a. 您的员工如何从这项技术中获益？
b. 您的团队采用或学习使用这项技术有多困难？
c. 您将如何监控团队的合规性和使用情况？

4. 这项新技术能带来收入吗？

a. 会提高正在实施的项目的效率吗？
b. 您会因此更加了解您的顾客，从长远来看会取得成功吗？
c. 它会帮助您进入新市场或为您带来商业机会吗？

5. 您的团队中有哪些人拥护这项技术？

a. 会出现服务中断的情况吗？如果会，您将如何管理？
b. 团队学起这项技术来有多困难？
c. 该技术的到位时间和学习曲线有多长？

6. 这项技术会与您现在的PMS集成吗？

a. 如果不会，则有必要集成吗？
b. 如果会，您需要安装任何其他（或许是昂贵的）插件吗？
c. 团队中哪些人会负责该集成？

很明显，这些问题的答案将指导您的决策，并帮助您制定一个优先事项清单。虽然收入和节约成本总是很重要，但不要忘记利用改进的客户服务来实现长期资产价值和提高酒店的整体认知度。

总之，已故的史蒂夫·乔布斯曾说过："技术什么也不是。重要的是您要对人有信心，相信他们基本上是善良和智慧的，而且如果您为他们提供工具，他们将做出美好的东西来。"记住，您的酒店中所使用的技术不是为了取代个人服务，而是为了改善您已经向顾客提供的服务。

■

作为世界上最受欢迎的酒店作家之一，Larry Mogelonsky 是 Hotel Mogel Consulting Limited的拥有者，也是LMA Communications Inc.的创始人。LMA Communications Inc. 是一家位于多伦多的获奖市场营销机构。他的工作经验涵盖了世界各地的酒店物业，无论是连锁还是独立品牌，从豪华、精品到精选服务。Larry还担任过多个酒店技术公司的董事会成员。他所撰写的四本书最为出名："Are You an Ostrich or a Llama?" (2012), "Llamas Rule" (2013), "Hotel Llama" (2015) and "The Llama is Inn" (2017)。

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Get into the blue ocean

by ***Frank Wolfe***

What makes your hotel stand out? The secret to success in today's complex hospitality industry lies in the answer to that question, writes HFTP CEO Frank Wolfe. Many times it seems that the only thing that distinguishes one property from another is the sign on the front of the building. What will make today's traveler chose yours when they are looking for a place to stay?

Hospitality brands are inundated with obstacles to overcome that include intense competition, shared opportunities for technological growth, and using similar strategies that do not do enough to make one property stand out from all of the others. It is time to do something completely different.

Recently I learned about an interesting new strategy for standing out at the 2019 Executive Vendor Summit in Austin, Texas USA, produced by Hospitality Upgrade in partnership with HFTP. Michael Levie, CHTP, the COO of citizenM Hotels and HFTP Global vice president, explained the concept of "Blue Ocean Shift."

So what does that mean? The current market is posited to be a "red ocean," an overcrowded and cutthroat market, where the main focus is to try to outdo the competition. The "Blue Ocean Shift" moves your company from the mindset of market competing (in the red ocean) to that of market creating (a blue ocean of new, uncontested market space).

When you stop focusing on just how to beat the competition, you allow yourself to discover new strategies and opportunities to differentiate your product and make the competition irrelevant.

***Frank Wolfe**, CAE, is a writer, speaker, and CEO of Hospitality Financial Technology Professionals, a global nonprofit association. Wolfe serves as a director on several boards, is an advisor to a hospitality investment fund and has won numerous industry awards including being inducted into the HFTP International Hospitality Technology Hall of Fame.*

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How can you begin to shift your thinking? When we do business, most of us focus on two things: content and process. These are very important. But we should also focus our creative thinking on a third component — which is context. Context, content and processes should all work together and influence each other in a cohesive balance.

The context can completely change your content and processes. During his presentation, Levie gave an example of how context can change everything. It involved looking at the following four words: car, train, boat and plane. What is the commonality between all of these things? The first word that comes to mind is "transportation." This doesn't really inspire much.

But shift your thinking a bit and another word that could describe them all is "leisure." This creates a whole new context of experience. Having the right context in mind can completely change the way you market your hotel — as not just a place to stay but as an unforgettable experience.

In order to properly envision your context, you need to define who you are. If you are a hotel, to which market segment do you belong? Are you luxury, mid-market or budget — or are you a blend of two or more segments? Levie gave citizenM hotels as an example of the hybrid segment because they combine mid-market pricing and efficiency with luxury hotel touches, creating an experience of "affordable luxe."

Next, you should define your ideal guest. Who are they, what are they like and what is most important to them? This will help you make informed decisions on how to increase value in ways that will make the most impact on your guest experience. And when you come from a place of creating, you can start to envision a new kind of guest you had not considered before, opening you up to a whole new target market.

The most important thing is to focus on what will truly differentiate your product. For Levie, it was offering the right mix of aesthetics and assets to today's frequent traveler who blurs the lines between business and leisure.

He encourages properties to make sure they offer the assets that matter most (a comfortable king-sized bed, a rain shower, and excellent WiFi are all very high on his list). For citizenM hotels, they made strategic decisions to create a balance that increased value without raising costs. In one example, they reduced individual room sizes while maintaining functionality and comfortability, in order to make room for exciting shared spaces — where they used vibrant colors and interesting art to leave a lasting impression on their guests.

There are many ways you can think outside of the box to bring the best value and create a personalized customer experience that they will not soon forget. You can explore the "Blue Ocean Shift" concept in depth and follow its five-step process by reading Blue Ocean Shift written by professors Chan Kim and Renée Mauborgne.

Technologies are changing the experience of the mobile generation's travelers

by ***Jing Zhu***

As a demonstration of what digital travelers' experiences could be like in the very near future, the Chinese hotel FlyZoo, an AliBaba venture, is a good start, says CHTA's Jing Zhu. This transformation is underway not only in China, but globally.

Some key facts about China's mobile generation:

1. In 2018, the total number of mobile devices in use in China was more than 1.5 billion.

2. That same year, the total transaction volume of Chinese e-commerce conducted via mobile devices was more than US$ 25 trillion – nearly 100 times the transaction volume in the U.S.

3. Online mobile penetration is more than 70% while online mobile travelers is more than 65%.

In a snapshot, China is leading the world into a truly mobile digital era, in terms of consumers' lifestyle, ranging from shopping, ordering, service delivery and payment – and everything in just one click. Moreover, this has had a huge impact on China's economy, in particular B2C business models, affecting products, services, people, talents, skillsets, etc. In short, this technology is transforming everything here in China.

As a typical example, take Alibaba's future hotel called "FlyZoo", which has been gaining a lot of attention. Much like when Microsoft released its Surface series and Google launched Pixel products, the global Internet giant Alibaba late last year officially launched its "Hotel of the Future" – a leading technology incubator aiming to redefine the future of hospitality.

Using their smartphones, guests with an ID can scan their faces to check in before they even arrive; elevators automatically scan guests' faces to verify which floor they can access; and hotel

room doors are opened once again by facial recognition. Inside rooms, Alibaba's voice technology is able to control the room temperature, open and close curtains, adjust the lighting, order from room service, and so on.

Meanwhile, in the restaurants, robots deliver food that guests can order via the FlyZoo app, and at the bar a large robotic arm knows how to mix more than 20 different types of cocktails. Bar bills will be added automatically to the room bill.

To check out, all a guest needs to do is click one button on the app, after which the room is blocked and the bill is automatically charged through Alipay. At the same time, the guests' personal data is immediately erased from Alibaba's systems.

As Andy Wang, CEO of Flyzoo hotel, puts it: "When guests experience everything here, they say 'Wow!' It's such a different kind of hospitality."

Although there are many similar advances being made, both here in China and around the world, only Alibaba's Hotel of the Future has been able to integrate so many technologies to allow the mobile generation of guests an end-to-end, seamless travel experience.

What value could technologies bring to the mobile generation of travelers?

Despite AI, facial recognition, mobile room keys, robotics, machine learning, etc., is "high tech, low touch" the key to hospitality?

To support a seamless mobile guest service experience, it not only depends on all that fancy hardware but also on the integration and merger of the hospitality application ecosystem, robotic operations and process automation. This in turn means restructuring organizations and exploiting the skillset of the mobile generation. Digital capability is a challenge at the level of the entire organization.

As a demonstration of what digital travelers' experiences could be like, FlyZoo is just a start – an indication of how leading technologies could change hospitality in the future. The transformation is underway globally. "The future is already here; it is just not evenly distributed."

■

Jing Zhu *is the Founder and Chairperson of CHTA, which aims to build the industry standard and future platform by all talents in China and worldwide, yet to connect echo systems together with leading edge technologies in making travel and hospitality a much better space. Jing has been a CEO in the hospitality business for more than 10 years, receiving numerous awards such as Most Innovative industry Leader in China, and she was also recognized by HITEC/HFTP as one of most outstanding females in global hospitality technology. Jing has a telecom engineering master degree and EMBA certificate.*

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."

■

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.

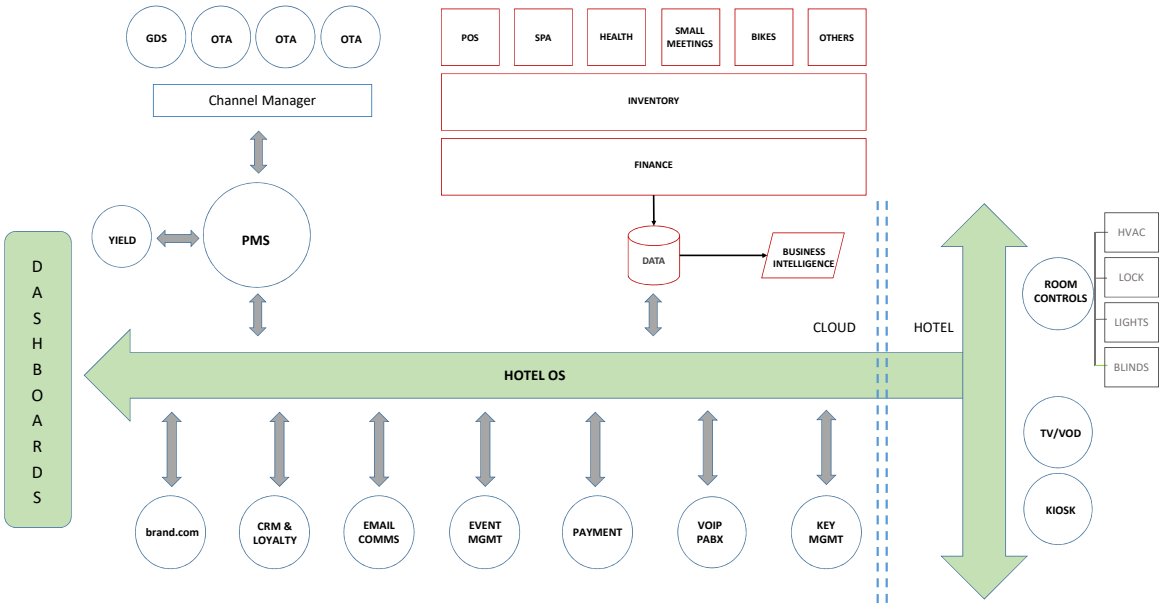
This central role for PMS has seen it become, or attempt to become, the Swiss Army knife of the hospitality systems toolkit. Anyone who has purchased hotel systems – and that's most of the people reading this article – will be very familiar with the ubiquitous "hub and spoke" capabilities diagrams from 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?

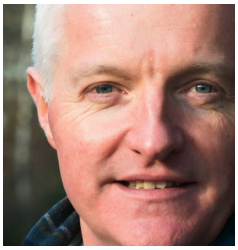
Our objective when developing concepts around Hotel OS is to provoke industry discussion around the need for modern information architectures suitable for our industry, and through this discussion, to encourage awareness that alternatives exist to our industry's long-held traditional beliefs.

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).*



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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

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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.*

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?

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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.

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*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.*

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Directing The Spotlight On 'Big Data', Technology And Sustainability

By Thomas Mielke - *Managing Director, AETHOS Consulting Group London*

. Yet, considering the global impact of the travel and tourism sector, should delegates not raise the topic of sustainability and how technology and big data can help drive change? Is that not the topic ... ways to better leverage technology to drive success. Yet, it seems that there already is a healthy and ongoing discussion around these topics. In fact, savvy executives will find, and have

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HT-NEXT, New Orleans - GlobalReach **Technology** has added new guest Wi-Fi features to its Hotspot 2.0 solution, giving hospitality brands the benefit of communicating through, and monetizing their Wi ... monetization. The new capability is included in the GlobalReach **Technology** Hotspot 2.0 OSU today. Talk to Chris Bruce, managing director, at HT-Next, New Orleans to see more. Today's innovation follows

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HFTP Announces Datavision Technologies as Exclusive Entrepreneur 20X Sponsor at HITEC Europe

Hospitality Financial and **Technology** Professionals (HFTP®) has announced that Datavision **Technologies**, which provides business intelligence for hospitality and a long-time exhibitor with HFTP ... , will become the exclusive sponsor for the upcoming European Entrepreneur 20X (E20X). The successful E20X pitch competition, featuring eight hospitality **technology** startups, will take place as a HITEC Europe

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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.

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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

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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.

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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.

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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.

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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

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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.

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*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).*

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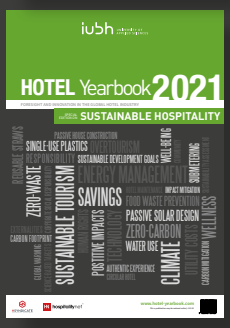
Within the pages of this specially focused publication, CEOs and other senior executives from companies both within the hotel industry and serving the hotel industry will share their expectations for the tech trends shaping our future, changing our operations and improving our bottom lines. More information on this special edition will be made available very soon.
• *This edition will be available in April 2020*



HYB Special Edition – Sustainable Hospitality 2021
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 in March 2020*