Hospitality going Digital

Chinmay Shukla
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Agenda

1. Digital in Hospitality – Why is it relevant?
2. Digital Trends
   2.1 Internet of Things (IoT)
   2.2 Artificial Intelligence (AI)
   2.3 Augmented Reality (AR) / Virtual Reality (VR)
3. How can PwC help?
1. Digital in Hospitality – Why is it relevant?
The digital age has arrived and is having a profound impact on every aspect of our life.

- Facebook has 5m users (2005)
- iPhone launch
- 400m connected devices (2010)
- App economy
- Massification of cloud
- 82 app downloads / person / year (2015)
- 500m WhatsApp users (2014)
- 1b WhatsApp users (2016)
- 30b+ connected devices (2020)
- 8b connected devices (2015)
- Facebook has ~2b users (2016)
- AI
- AR / VR
- Robotics
- IoT
By 2020, millennial travelers will reportedly make up more than 50% of all hotel guests worldwide.

2/3 of millennials plan their trips on mobile devices; 1 in 4 millennials use social media sites to find their holiday accommodation.

64% book a hotel room on a smartphone; 23% have checked in using a mobile device.

70% more likely to book a hotel with tech amenities (keyless entry, mobile payments, Smart TVs); > 90% of millennials connect to the hotel Wi-Fi.

97% post their trip photos on a social network; 60 million tweets on hotels; 500 million reviews on TripAdvisor.

80% want a service that sends holiday recommendations based on their preferences/ budget.

Source: Press Clippings, PwC Analysis
2  Digital Trends
The global economy is entering a new stage of accelerated growth...

- **Productivity**
- **Industry 1.0**
  - First mechanized manufacturing with help of steam
- **Industry 2.0**
  - Introduction of mass production with help of electrical power
- **Industry 3.0**
  - Use of electronics and computers to automate manufacturing worldwide
- **Industry 4.0**
  - "Cyber physical systems" – real objects and virtual are interlinked
  - IoT
  - AI
  - AR/VR
  - Autonomous robots
  - Blockchain

- **End of 18th century**
- **Start of 20th century**
- **Start of 1970**
- **Today**
And we believe AI, IOT & VR are going to have a significant impact on the hospitality industry.

**Customer journey at a hotel**

<table>
<thead>
<tr>
<th>Pre-stay</th>
<th>Hotel stay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search</td>
<td>Arrival and Check-in</td>
</tr>
<tr>
<td>Purchase/Booking</td>
<td>Stay experience</td>
</tr>
<tr>
<td>Pre-Arrival</td>
<td>Departure and check-out</td>
</tr>
</tbody>
</table>

**Digital Technologies**

- **VR**
- **AI**
- **IoT**
- **Robotics**

**Applications**

- **Web chatbot on hotel website; automatic follow ups**
- **Personalized recommendation (upselling) based on insights gathered form the networking site (during sign-up / sign-in)**
- **Real-time communication via virtual agents - give reminders of upcoming stay, more information etc.**
- **Self check-in at kiosks / video analytics**
- **IoT enabled rooms - Control lighting/temperature; TV content etc.**
- **In-room VA - FAQs, itinerary**
- **Digital keys on mobile / beacons for location**
- **Robot makes deliveries to the room**
- **Automatic check-out with facial recognition**
- **Bill payments via mobile app**

Source: Press Clippings, PwC Analysis
2.1 IoT
IOT represents the convergence of the digital and physical worlds, enabling any physical object to be connected to the cloud.

**IoT revenue evolution ($ Bn)**

- 210 (2017)
- 442 (2020 e)

**Cost of IoT Sensors ($/ Sensor)**

- 0.82 (2010)
- 0.70 (2012)
- 0.60 (2014)
- 0.51 (2016)
- 0.44 (2018)

**Key uses of IoT**

- Real time control
- Instant notification of failures
- Motion & humidity detection
- Surveillance & access control
- Smart refrigeration
- Lighting & HVAC

*Source: Berg Insights, Harbour Research, PwC Analysis*
IoT can be used in hospitality industry to deliver a better customer experience and provide a differentiated service.

### IoT use cases in hospitality

<table>
<thead>
<tr>
<th>Service Type</th>
<th>Description</th>
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<tbody>
<tr>
<td>Beacons</td>
<td>Location based sensors to make check in, room service and in-room entertainment more interactive</td>
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<tr>
<td>Personal Interactive Mirrors</td>
<td>Guests can connect with hotel services and access information (local news, weather and traffic) with a simple touch</td>
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<tr>
<td>Connected Thermostats</td>
<td>Link thermostats with other sensors - A/C turns off automatically when a guest opens a window; automated curtains close during afternoon sunshine</td>
</tr>
<tr>
<td>Hyper Personalisation</td>
<td>An IoT platform could over time memorize a guest’s preferences and automatically setup the room (temperature, lighting, TV preferences etc.,)</td>
</tr>
<tr>
<td>Preventive Maintenance</td>
<td>Sensors can monitor HVAC systems and automatically notify maintenance when units are beginning to fail</td>
</tr>
</tbody>
</table>

Source: Press Clippings, PwC Analysis
Beacons are an IoT solution that can improve the customer experience at hotels across multiple touchpoints.

- **Check-in**: Customers can directly check-in their bookings without standing in a queue.
- **Room and Indoor Navigation**: Provide guests with virtual maps to their favorite destinations inside the premise of your hotel.
- **Room entry**: Digital key is sent to guest’s smartphone via app, allowing them to proceed directly to their room.
- **In-room control**: Enables a new set of services on guest mobile device to control lighting, temperature, TV and even direct access to room service to place orders.
- **Room service**: The beacon knows about the guest and the app facilitates guest choosing his preferences of order.
- **Check-out**: No need for the guest to stand in a queue or wait for a front desk assistant to complete checkout formalities making the whole process seamless and hassle-free.

Placing beacons in hotel helps to engage with customer real time using their mobile phone and an app.
IoT can now allow guests to directly control their rooms using their own smart devices

IoT enabled rooms – Grand Ambassador Seoul

- Control the lights, curtains, TV and room temperature from one menu
- Clicking on "Deep Sleep" or "Release Stress," to create a pre-arranged mood in the room
- Request amenities such as pillows, towels and shampoo via your smart device
- The entire lobby ambience can be changed by weather, season, time & occasion

*Source: Business Traveller.com, Company Website*
Hilton is in the process of a limited rollout with its “Connected Room Platform”

Connected Room – Delivering personalized experiences to guests

- Allows guests to choose their rooms via their phones
- Digital Key allows room access via your own Smartphone
- Using app (Connected Room) members can control lighting, HVAC and entertainment options
- Partnered with Netflix - allows guests to access personal Netflix account on TV via Hilton Honors App

With Connected Room's introduction, Hilton is delivering the industry’s first truly mobile-centric hotel room, building on the success of the award-winning Hilton Honors app

Source: Company website, Press Clippings, PwC Analysis
Marriott has created the IoT Guestroom Lab to elevate the guest experience.

Dubbed “Room of the Future” and developed in partnership with Samsung & Legrand

- **A Virtual Assistant (VA)** can arrange wake-up calls, request hotel services in the room through an app or voice command.
- **Personal preferences**, where guests can register preferences. e.g., temperature settings for showers, instruct the VA to turn on the water.
- **In-room tablets** (room remote controls) offer quick access to hotel services, room service menus or spa reservations.
- **Digital mirrors** display a yoga or stretching routine, news, headlines, local weather and other useful information.
- **Digital wall art** can change to meet traveler preferences.

Source: Company website, Press Clippings, PwC Analysis
AI in the hospitality sector has the potential to transform the business model ...
With huge applications in Revenue Management by allowing real time pricing

Revenue Optimizing System (ROS)

Skip manual spreadsheet entries and price recommendations for every single room

ROS integrates internal and external data and analyzes it in real time to forecast demand and suggest optimal rates

Internal Information

- Historical and current reservations
- Cancellation and occupancy
- Room type, and daily rates
- Reservation behavior and customer type (transient traveler or one of a large group attending a specific event)

External Information

- Climate and weather data
- Competitor pricing
- Booking patterns on other sources
- Presence of music or sports events in the property area

Rates that adjust to ever-changing conditions allow the hotel chain to eventually get the maximum profit out of its inventory and ensure proper staffing

Source: Company website, Press Clippings, PwC Analysis
Voice-activated smart rooms are allowing guests to control their experience with the sound of their voice.

**Voice-activated hotel rooms: “Project Jetson”**

**Aloft Santa Clara hotel, San Jose**

- Each voice activated room is equipped with an iPad running a custom Aloft App.
- At check-in each room iPad is synced with the guest voice.
- At checkout the user details are cleared for privacy purposes.
- Currently implemented in two hotels across the US.

**Features in room that can be controlled with Siri:**

- Room temperature
- Room lighting
- Ambience
- Music played in the room
- Recommendations and Virtual Concierge

Source: Company website, Press Clippings, PwC Analysis
Robot Concierge is reducing routine tasks for employees and costs for hotel owners and operators

AI powered bots can lighten the load on hotel staff whilst at the same time provide a more private and personalized service for guests

- **Botlr – Robotic Butler**
- **Connie – Robotic Concierge**
- **Henn-na Hotel, Nagasaki**

- Guests can request food, toiletries, towels etc., on demand
- Robot can self navigate through the hotel and connects itself to charge stations when required

- Concierge service that provides recommendations to guests
- Front office robots that use arm gestures and vocalization to help guests

- Multi-lingual robots at check-in
- Robots at the cloakroom to store luggage
- Concierge robots who provide directions and order taxis

Source: Company website, press clippings, PwC analysis
2.3

AR/ VR
Many hotels are adopting VR technologies and are witnessing tangible benefits

At least 8 of the largest hotel chains have launched VR experiences as part of their marketing efforts over the past 12 months.

81% of travel consumers are found to expect greater digital customer service from travel brands in 2018.

Hotels offering a virtual tour are seeing online revenue increases of 135% over hotels without one.
Teleporters developed by Marriott allow you to experience a 4D experience of your destination before making the booking.

Teleporters incorporate not only Oculus Rift, but other sensory experiences like artificial sun and wind to create a 4D experience.

The Teleporter has garnered over 1 billion media and social media impressions.

Target market is the millennials who are not necessarily ingrained in a brand yet.

Source: Company website, press clippings, PwC analysis.
Marriott showcases AR views of properties on iPhone App to provide a unique way to experience their properties

- Downloaded >2500 times since launch in 2018
- Expects to add 50 more properties to the “Portal to Paradise” system in next 12-18 months

Each resort offers six different scenes to explore including the pools, restaurants, beaches, rooms and spas.

After downloading the app, users aim their phones at a flat surface; are provided a list of the available resorts to choose from, which they can change at any time.

An entry point will appear that allows consumers to open a door to a new destination, to be instantly “transported” onto the sands of Mexico or the Caribbean.

Source: Company website, press clippings, PwC analysis
Best Western Hotel rolled out VR staff training program in 2016; transforming communications between hotel staff and travelers and improving guest experience

“I Care Every Guest Every Time initiative” - First hotel to leverage VR technology for staff training

- VR technology and avatars to design and deliver simulations
- Mimics real-life customer interactions
- Hotel staff practice communication skills in realistic scenarios

1. **Manager Training** to build trust with staff and hotel guests
2. **On-the-Job Training** on innovative cleaning methods. Housekeeping staff learned to use UV sterilization to clean common areas and guest rooms
3. **Problem-Solving and Leadership Skills** to empower hotel staff to be proactive and address commonly reported problems

- 71% reduction in guest complaints
- 19% increase in customer service ratings
- Reduced time spent onboarding / training new hires
- Certified service champions at every Best Western hotel
- NPS at a record high of 61.7

Source: Company website, press clippings, PwC analysis
Jumeirah Group introduced the industry’s fully immersive discovery and booking platform.

Industry’s first fully immersive VR platform launched in 2015

- 7-star Burj Al Arab (Royal Suite, Talise Spa..) and 20 other Jumeirah properties
- Clickable “hotspots” to play with interactive features like fountains & waterfalls; showcase imagery of the flourishes
- Video, 360-degree images, 3D sound
- Available on desktop, tablet and mobile (50% of visitor eyeballs)
- Download Jumeirah Inside app and place it inside Google Carboard device to experience Jumeirah Inside in VR

Impact (4 months from launch)
- Guests 2.5 times more likely to book a stay
- 10 million views on Jumeirah YouTube
- 95% Ad recall

Source: Company website, press clippings, PwC analysis
3

How can PwC help?
We have capabilities in the key digital technologies relevant to real estate & hospitality..

Technology capabilities

- Augmented Reality
- Internet of Things
- Drones
- Cloud
- New user interfaces
- Artificial intelligence
- 3D printing
- Virtual Reality
- Robotics
- Blockchain
... And regularly work with the top Proptech Startups globally across the entire value chain
Thank you