SMART HOTEL TECHNOLOGY GUIDE 2018

**Using Technology to Navigate the Guest Experience Journey**

CONTENTS

About the Smart Hotel Guide

The tourism sector's prospects remain positive. Asia Pacific International Visitor Arrival (IVA) is projected to grow at 4.9% per year from 2010 to 2030 and Singapore's tourism industry is expected to grow positively. To ride this growth, the industry has to adapt and innovate in order to overcome challenges such as increased competition, shortage of manpower and changing guest expectations. To do so, it is important to leverage and be cognisant of how emerging technologies could augment existing solutions and processes to help optimise productivity and enhance service delivery.

The Hotel Innovation Committee (HIC) led by the Singapore Hotel Association (SHA) and supported by the Singapore Tourism Board (STB) serves this need by providing effective leadership to the hotel industry to navigate future trends and challenges.

The HIC has put together the Smart Hotel Guide to help hotels identify and explore next-generation system capabilities and technological solutions suited to each organisation's needs. It comprises two parts:

Smart Hotel Guide
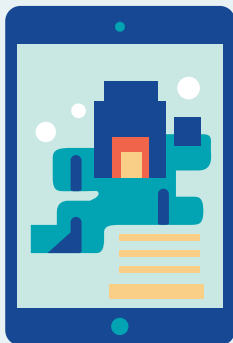
SMART HOTEL TECHNOLOGY GUIDE 2018

A write-up of next-generation technology systems and case studies for Smart Hotels. Focuses on guest-facing processes and solutions.[1]

HOTEL TECHNOLOGY DIRECTORY

A first-of-its kind public-private sector collaboration to make available an online resource of local and overseas vendors offering technology solutions for Singapore Hotel businesses. Includes information on vendors' technology solutions, track records and user reviews[2].

To access the directory, follow the link.

1 Another guide focusing on back-of-house solutions will be published in 2019.
2 Vendors listed in this directory are not endorsed by SHA or STB.

A Growing Tourism Industry

In 2017,

Singapore Tourism Board (STB) reported a **second consecutive year of record tourism performance**

Visitor Arrivals increased by **6.2%** to

17.4 million

STB 2017Q4 Tourism Sector Performance Report

Total hotel revenue increased by **3.9%** to **S$3.7 billion**

STB 2017Q4 Tourism Sector Performance Report
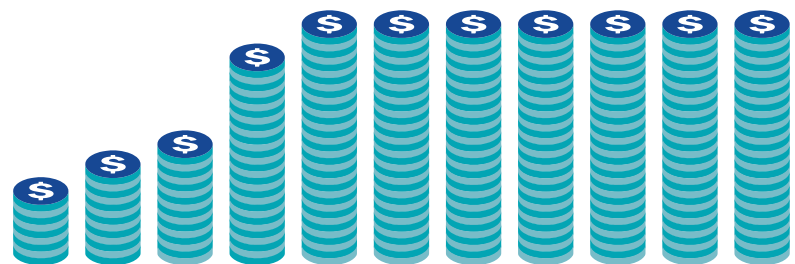
United Nations World Tourism Organisation (UNTWO) forecasts **yearly growth of 3.3% for global international visitor arrivals till 2030**

World Tourism Organisation, UNWTO Tourism Highlights, 2017 Edition

Higher rates of **4.9% yearly growth** for visitor arrivals expected in Asia and the Pacific

World Tourism Organisation, UNWTO Tourism Highlights, 2017 Edition

Trends Shaping the Industry

Growth of new business models disrupting accommodation options

Diminishing profit margins from
- reduced brand loyalty
- increasing operating costs due to innovations along value chain

Increased expectations from Tech-savvy and informed customers
- hotels are expected to understand and anticipate guests' unique needs at all touchpoints
- consistent services and information to be available instantly

Slow national workforce growth from
- an ageing population
- growing gig economy

02

Moving Ahead with Technology

Hotels can stay relevant by leveraging technology to offer differentiated value propositions – for both guests and employees.

For guests

Hotels are guest-centric businesses and revenue is driven by guests' experiences. Simply put, happy guests spend more, and they will return to stay again. This guide has identified nine critical guest journey segments where hotels can leverage technology to offer differentiated value propositions to engage guests and heighten experiences.

PRE-STAY

1 The Search

2 Purchase/ Booking

3 Pre-Arrival

HOTEL STAY

4 Arrival and Check-in

5 Stay Experience (In-room)

6 Stay Experience (In-Hotel)

7 Stay Experience (Outside Hotel)

8 Departure and Check-out

Returning Guest

POST-STAY

9 Post-Stay

For Employees

The hotel industry is traditionally reliant on labour, which means there are opportunities to drive operational efficiency with technology. This can help create more conducive work environments for employees, and redesign jobs to meet the career expectations of younger job seekers.

To begin your Smart Hotel Journey...

Consider these guiding principles

REVIEW

- **Organisation Capabilities**
  Develop capabilities in data-driven insights, digital marketing and next-generation technology

- **Organisation Structure**
  Hire, train and retain the right talent to manage digital trends and systems

- **Organisation Culture**
  Cultivate a collaborative, agile and risk-taking culture to promote innovation

- **Organisation Strategy**
  Define customer-centric digital strategies that are linked to overall business strategy

CONSIDER

- Complexities of potential solutions, e.g. workflow designs, scale of project, etc

- Limitation of legacy systems

- Available budget

- Measurement of Returns on Investment (ROI)

- Potential changes to operational processes and job responsibilities

- Management of guests' expectations and experiences

- Management of employees' commitment to use solution

Use this guide

This guide provides:

Description of suggested smart hotel experiences
A business case and corresponding smart experiences are identified for each guest experience segment

Information on smart hotel technologies
Capabilities, benefits and considerations to implement available technologies are shared

Relevant case studies
Includes solution details, project outcomes and implementation considerations

Note: Information in this guide serves to act as references. Uses of technology and examples are non-exhaustive.

Sources of Information

Extensive Literature and Desktop Research to gather information and case studies from within the hotel industry and other industries

Interviews and Focus Group discussions with **Hotel Stakeholders** representing over 40 hotels in Singapore of local and international brands

Technology professionals working for hotels
- To identify both technical and non-technical considerations when adopting technology solutions
- To understand requirements and challenges in adopting technology solutions

Hotels' key management and the Singapore Hotel Association
- To understand business imperatives and considerations in adopting technology
- To ascertain required guest experience in a smart hotel

Expert inputs from **Hospitality Technology Next Generation (HTNG)[3]** on accuracy of content regarding hotel technology

3 HTNG is a global non-profit organisation that fosters development of next-generation solutions through collaboration amongst professional and technology providers of hospitality.

The Guest Journey Experience

'The Search'

BUSINESS CASE

To build brand awareness and presences on multiple online channels in order to influence the decision making process as part of customer acquisition.

WHAT A GUEST DOES HERE

As a traveller does his research, his choice is affected by many contributing factors including past experiences, location, pricing, etc. Hotels compete to capture attention in order to be the hotel of choice. Sources where such information can be drawn are aplenty and hotels want to be represented across as many of these touchpoints as possible.

Brand Website

OTAs

Travel Guides

Blogs

Destination Websites

Enabling technologies to deliver a smart experience

Real-time Marketing, Distribution and Review Tracking Technologies

Artificial Intelligence (AI), Machine Learning and Predictive Analysis

Virtual Reality (VR)

The Smart Hotel Experience

THE COMMON EXPERIENCE TODAY	A SMART HOTEL EXPERIENCE
The traveller searches on ideal accommodation and destination information. The search engine recommends a list of websites to visit. He clicks on the first few links and is drawn to Hotel XYZ recommended by an Online Travel Agent (OTA) Website.	The traveller searches for inspiration for travel destinations, and is led to the hotel's brand webpage. He scrolls through guest reviews on the brand site that are culled from various review sites to seek the experiences of other guests.
He returns to the search engine and keys in *'Hotel XYZ'* to compare prices and read reviews of the hotel across several different sites. He notes that the hotel has not been very responsive to reviews made. He then decides to search places of interests via the search engine's recommendations. As he visits the attraction sites, ad-banners on Hotel XYZ appear on the same window. With heightened interest of Hotel XYZ, he revisits the brand website to check on available room packages and whether the pool opens past 8pm. He clicks through a couple of pages to no avail.	Hotel is extremely responsive to all reviews across different websites. A web chatbot on the brand website provides assistance and answers any queries immediately. Where the answer is not available, an automatic follow-up by the hotel is prompted. Guest does not need to go through the hassle of checking multiple sites for information.
He wants to have a sense of the room's layout. However, the 360-degree image provided by the management was not able to address that. He tried searching various websites for relevant photos but was not able to alleviate his concern.	By putting on a pair of Virtual Reality goggles and using content provided by the hotel, the traveller is able to virtually experience the room to prompt his decision making.

Purchase or 'Booking'

BUSINESS CASE

To entice guests to book through the brand website, and to ensure a seamless, efficient and safe transactional experience in completing the booking. Hotels can also take the opportunity to upsell services and collect guests' data.

WHAT A GUEST DOES HERE

This segment secures the business, and any friction might result in a change of booking decision. Guests are required to furnish personal information as part of the administrative process of booking. They include:

- Personal details
- Choice of room
- Arrival details
- Credit card details

When a guest books a room for another stay, more convenience is expected since the relevant information has been provided before.

Enabling technologies to deliver a smart experience

Real-time Marketing, Distribution and Review Tracking Technologies
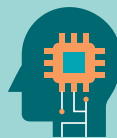
Artificial Intelligence (AI), Machine Learning and Predictive Analysis

Optical Character Recognition (OCR) and Robotic Process Automation (RPA)

The Smart Hotel Experience

THE COMMON EXPERIENCE TODAY	A SMART HOTEL EXPERIENCE
After searching, the guest is now ready to complete the booking. In view of the best-rate guarantee via direct booking, he books via the brand site. Being a first-time guest at Hotel XZY, he fills in the desired room type and other personal details.	The brand site provides guests an option to select room attributes like type of view, bed type and corner rooms, which are not offered on OTA sites. Guests also have the option to sign-up or log-in with a social networking account, where authorisation is provided for personal data to be collected and used by the hotel. The booking site picks up information from this personal account and automatically completes the form for viewing and confirmation. In the event that a mobile phone is used for booking, guests can choose to snap an image of the identity document, and the relevant information is recognised and used to auto-fill required fields.
On the next page, he is prompted with relevant F&B and attraction recommendations based on re-targeted marketing information collected during the search stage.	Based on insights gathered from the networking site on preferences of each guest, the booking site is able to make relevant personalised recommendations for upselling.
For payment, he keys in his credit card information manually.	Again, with just a snapshot of his credit card using a mobile device, the details are captured on the mobile booking page for verification.
A purchase summary is presented for confirmation of the booking and emailed for records.	A purchase summary is presented for confirmation of the booking and emailed for records.

Pre-arrival

BUSINESS CASE

To anticipate guests' needs by seeding preferences and assisting with logistical preparations prior to arrival. Hotels can also take the opportunity to upsell services and collect guests' data.

WHAT A GUEST DOES HERE

Before embarking on their trip, most guests would start logistical preparation which may include planning itineraries, arranging transport, or pre-purchasing tickets to shows. Where applicable, some may also reach out to the hotel for assistances such as arranging amenities in their room.

Enabling technologies to deliver a smart experience

Real-time Marketing, Distribution and Review Tracking Technologies
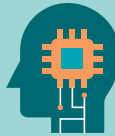
Artificial Intelligence (AI), Machine Learning and Predictive Analysis

Self-service Software

The Smart Hotel Experience

| THE COMMON EXPERIENCE TODAY	A SMART HOTEL EXPERIENCE
When the trip is a few days away, the hotel will send a reminder via email or the brand mobile app for the upcoming stay.	Today, with social media platforms on mobile devices, communication can be carried out in real-time by integrated virtual assistants to remind guests of upcoming stays.
Hotels will also try to seed some basic information on guest preferences on room location, and amenities required if this information has not been shared before. This allows basic anticipatory service delivery such as ensuring that the preferred pillows are in the room prior to arrival.	Guests' preferences are seeded from past data or real-time updates from guests' social media accounts (where prior authorisation is provided). The information is transferred and stored in the hotel's own CRM. The virtual assistant can help quiz for more information as well. Armed with these preferences, hotels are able to deliver consistent service delivery and anticipate guests' needs better, such as recommending itineraries that are unique and a close match to each guest's interests.
More importantly, hotels will take the opportunity to upsell services and products, based on guest's preferences e.g. limousine transfers or spa packages.	Targeted marketing can be carried out more effectively by pushing appropriate promotions and discounts to the right audience based on profiles. Customised recommendations to provide a more personalised experience becomes possible, and helps build an exceptional guest experience that can potentially drive higher upselling results.

Arrival and Check-in

BUSINESS CASE

To acquire necessary transactional information for guest registration and enable seamless access to rooms. Hotels can also take the opportunity to upsell services.

WHAT A GUEST DOES HERE

Current check-in processes are cumbersome, both for the hotel and the guest. They largely consist of transactional processes including:

- Authenticating identity of guests via passport verification
- Validating stay visa
- Collecting name, passport number and nationality of guests
- Confirming stay details
- Collection of pre-authorisation as guarantee for tax and incidentals
- Programming of key cards

Enabling technologies to deliver a smart experience
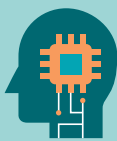
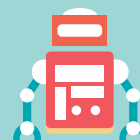**Artificial Intelligence (AI), Machine Learning and Predictive Analysis**

Optical Character Recognition (OCR) and Robotic Process Automation (RPA)

Self-service Software

Biometrics Recognition and Video Analytics

Robotics

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The Smart Hotel Experience

THE COMMON EXPERIENCE TODAY	A SMART HOTEL EXPERIENCE
Upon arrival at the hotel, a physical check-in is done over the counter. During peak hours, queues may be long.	**Via mobile app** Guests are able to self-help and carry out all required transactional processes by themselves. **Via check-in kiosks/stations** Guests are able to self-help and carry out all required transactional processes by themselves. Should a queue form at the check-in kiosk/station, video analytics will help determine the need for hotel employee intervention, and necessary staffing will be deployed.
Once at the head of the queue, several transactional processes are initiated. Identity and valid visas are verified, passports are scanned and the names, passport number and nationality of guests are recorded. A registration card is printed, explained to the guest, and signed. A credit card or cash is procured as a guarantee for incidentals. Guest preferences are noted, hotel amenities are introduced, and key cards are issued. Finally, the guests head to their room.	**Via mobile app** Using the mobile device, the guest is able to carry out most transactional processes prior to arrival. This includes providing personal and credit card details, submitting an image of his passport and providing stay preferences. Guest verification is done within premises of the hotel, where the guest takes an image of himself onsite (validated by GPS location) for verification against the submitted passport photo. A digital copy of the registration card is presented via his mobile device for acknowledgment with a digital signature. An electronic key is released in the mobile app after all transactional procedures are completed. **Via check-in kiosks/stations** The guest self-helps to carry out all transactional processes at the kiosk. This includes providing personal and credit card details, scanning his passport, providing stay preferences and carrying out guest verification via facial recognition. A digital copy of the registration card will be presented via the kiosk/station, for acknowledgment with a digital signature. Physical or e-Keys are then released by the kiosk after all transactional procedures are completed.
Guests' luggage is either delivered physically by porters or the guests would help themselves.	An autonomous robot carries guests' luggage directly to the room.

Stay Experience (In-room)

BUSINESS CASE

To provide a "home-away-from-home" experience where the guest feels the comfort, convenience and familiarity of home.

WHAT A GUEST DOES HERE

There are various guest touchpoints in a room:

- Door to entry and exit
- Lighting controls
- Curtain controls
- TV controls
- Air-conditioner controls
- Guestroom deliveries
- Other guest requests like Housekeeping, laundry pick up, etc

Enabling technologies to deliver a smart experience

Real-time Marketing, Distribution and Review Tracking Technologies

Artificial Intelligence (AI), Machine Learning and Predictive Analysis
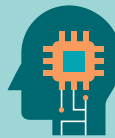
Self-service Software

Biometrics Recognition and Video Analytics

Internet of Things (IoT)

Robotics

The Smart Hotel Experience

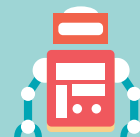| THE COMMON EXPERIENCE TODAY	A SMART HOTEL EXPERIENCE
Guests access the floors via the elevator and the guestroom by scanning the issued key at a sensor.	> Technology-based alternatives like an e-key within the guest's personal device, facial recognition or beacons to recognise locations, can allow direct access onto designated floors and into guests' rooms.
Once in the room, the key is inserted into the energy-saving device key slot to activate electricity so that guests can turn on the lights and air-conditioning to cool the room.	> When guests enter the room of a smart hotel, they that find the settings – from the curtains to the temperature of the room, have all been pre-adjusted according to personal preferences from the Customer Relationship Management system (CRM). Even the colours of the wall and the carpet design have been digitally personalised.
In the room, guests start to make adjustments for their comfort. Switches are used to control lights, and a wall thermostat controls the air conditioner. Curtains are adjusted, either manually or using a control panel.	> Using the hotel's mobile app, control of all electronics is literally at the fingertips of the guests. Alternatively, the voice-enabled virtual assistant in the room is able to assist via voice commands.
The TV has pay-on-demand options or cable TV for entertainment.	> The guest is also able to easily cast his own content onto the TV from his mobile device.
Guests' requests, which range from in-room dining service to housekeeping services, are done via employee-manned phone calls.	> Guests' requests are conveniently communicated via the mobile app or the voice-enabled virtual assistant.
Delivery to the room is by a hotel employee, and he announces his arrival by pressing the doorbell.	> Delivery to the room is by an autonomous robot that announces its arrival by automatically calling the phone in the room.
Guest informs the hotel of a special celebration and requests for assistance.	> Hotel knows in real-time that the guest is celebrating a special occasion from his social media feed, and offers a bottle of wine without being requested to. This heightens the experiential element.

Stay Experience (In-Hotel)

BUSINESS CASE

To ensure a seamless and efficient experience throughout a stay and to increase guests' interest in products and services offered by the hotel, e.g. spa and dining, in order to entice spending and in turn, increase revenue.

WHAT A GUEST DOES HERE

Besides the room, other guest touchpoints within the hotel include use of facilities such as the pool, spa, gym, restaurant and meeting spaces. Guests engage in way-finding around the hotel to reach these facilities.

Enabling technologies to deliver a smart experience

Real-time Marketing, Distribution and Review Tracking Technologies

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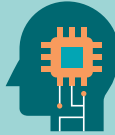
Self-service Software

Biometrics Recognition and Video Analytics

Internet of Things (IoT)

The Smart Hotel Experience

THE COMMON EXPERIENCE TODAY	A SMART HOTEL EXPERIENCE
To get around the hotel, guests rely on signage placed around the hotel, or hotel employees to provide navigation.	Beacons are linked to signboards to pick up guests' locations after they are logged into the hotel's Wi-Fi. Guests are then guided to their destination via the hotel's mobile app without getting lost or having to ask a hotel staff for directions. If personal interaction is preferred, a hologram-butler is available at specific locations.
Information on hotel facilities is limited to printed compendiums in the room, the concierge or the call-operator. At times, inconsistent answers are provided.	Immediate information is readily available 24/7 via the hotel's mobile app, the in-room voice-enabled assistant, or the web chatbot. Consistent answers are provided as information is drawn from the same database. Relevant recommendations of the hotel's promotions according to guests' interests are made to induce spending.
When visiting a restaurant, guests want to be seated and served immediately. However, especially at peak dining hours, a long line stretches at the entrance. Servers and chefs struggle to keep up with the number of guests. At buffet lines, food items are slow to be replenished.	Guests have real-time updates on how busy a restaurant is to decide whether to dine now or later. In a buffet, real-time updates allow the kitchen to keep track of the food supplied along the line, ensuring no lapse in service or food replenishment.
A guest's dining experience at one of the hotel restaurants was not ideal. Food was served cold, and he posted a review of his meal on social media.	Hotel is updated real-time by social media posts made, and reaches out while the guest is still staying with them to deliver service recovery.
As the guest leaves the restaurant, he looks forward to the comfort of his room, only to find the housekeeper mid-way through the cleaning. Whether or not it was because he had forgotten the privacy sign, he waits in dismay.	Accessing the hotel's mobile app, guests can easily remove their room's privacy sign and notify house-cleaning services to proceed with cleaning. Whether at the restaurant, the gym, or outside the hotel, guests can expect a made room upon their return.

Stay Experience (Outside-Hotel)

BUSINESS CASE

To enable consistency in information sharing and personalised itinerary recommendation for guests.

WHAT A GUEST DOES HERE

Increasingly, travellers are seeking inspiring and personalised experiences, and hotels are beginning to market themselves as an experience rather than a product. Curation of personalised experiences has become essential in meeting the demand of today's travellers, and the usual reliance on the concierge's personal knowledge and experience is no longer sufficient.

Enabling technologies to deliver a smart experience

Real-time Marketing, Distribution and Review Tracking Technologies
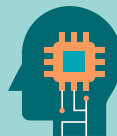
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Virtual Reality (VR)

Self-service Software

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The Smart Hotel Experience

THE COMMON EXPERIENCE TODAY		A SMART HOTEL EXPERIENCE
Hotel concierge provides recommendations and information based on guest queries.	>	Guest switches on the TV in their Smart hotel room and is greeted by a personalised list of recommendations and promotions offered by the hotel and its external partners.
Hotel concierge helps with the reservation of tickets and dining places.	>	If there are questions, an in-room virtual assistant is available for instantaneous answers. The assistant helps book tickets or make reservations as required.
Guests are unsure about the recommendation but decide to go ahead with the experience anyway.	>	However, if there is uncertainty about a recommendation, the hotel delivers a Virtual Reality headset to the guest's room for him to 'experience' a taster before deciding.
Hotel concierge provides some offers that their partners may offer alongside the recommendations made. Guests may or may not be in the same area to utilise the offer.	>	Outside the hotel, the hotel's mobile app prompts guests once they are within the vicinity of any hotel partners, and alerts them to the numerous promotional options available to them.

TIP!

Tap on the Tourism Information Hub (TIH) to deliver a smart hotel experience

Use it to provide updated and relevant recommendations to your guests.

The TIH by STB is an integrated destination platform that provides,

Real-time updates of information across its entire network of tourism members

Latest tourism content and services for use across multiple digital channels

Opportunities for businesses to establish new networks and partnerships, widening the exposure of hotels' offerings

🌐 To access the TIH , follow the link.

Departure and Check-Out

BUSINESS CASE
To ensure a seamless, efficient and safe transactional experience in completing the checkout procedures.

WHAT A GUEST DOES HERE
Current check-out processes largely involve these transactional procedures:

- Verifying the bill
- Making payment
- Releasing outstanding pre-authorisation amount on credit card

Enabling technologies to deliver a smart experience
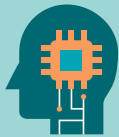
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The Smart Hotel Experience

THE COMMON EXPERIENCE TODAY	A SMART HOTEL EXPERIENCE
Express checkout The quickest experience is for guests to just do a key drop at the reception for the hotel to charge their credit card on file directly. An e-receipt is then received via email. Where there is any invoicing error or dispute, the guest would then contact the hotel after.	Queuing will be a thing of the past. As guests exit the hotel directly with their luggage, the video analytics and facial recognition system picks up this information and automatically sends a prompt to the guest via the mobile app to access the electronic bill to proceed with check-out.
Physical checkout Where required, guests proceed to the front desk to verify their bill and make payment. The room number is provided and the agent presents a physical bill for checking. Explanations are provided if and when required.	
In some cases, as part of the checkout procedure, a quick physical check on minibar consumption is required. Guests will be required to wait while the check is done.	Any minibar consumption or auxiliary expenses would have been automatically captured using IoT technology, and included in the electronic bill that was generated.
Payment is done either by cash or credit card, and the hotel proceeds to perform necessary postings on the Property Management System (PMS).	After checking the electronic bill, guests authorise the payment using the mobile app. Various cashless and mobile payment options via the guests' mobile devices are available. The privacy sign on the guestroom door then automatically changes for housekeepers to clean the room. This avails rooms quickly for the next check-in.

Post-Stay

BUSINESS CASE
To facilitate seamless assistance post-stay, continue brand advocacy for the acquisition of new customers, and retention of existing ones.

WHAT A GUEST DOES HERE
Guests engage in numerous post check-out activities, and most of these require assistance from the hotel. Examples of activities include:

- Request for invoice
- Bill Dispute
- Enquiry of Lost and Found items
- Stay Review

Enabling technologies to deliver a smart experience

Real-time Marketing, Distribution and Review Tracking Technologies
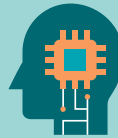
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The Smart Hotel Experience

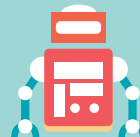| THE COMMON EXPERIENCE TODAY	A SMART HOTEL EXPERIENCE
Post-stay, the guest receives a reminder via email to share about his stay experience. He either does not share, or when he does, he posts a negative comment due to lapse in service, and does not hear back from the hotel till much later. The negative post would have been read by other review site users, who conclude that the hotel does not have enough emphasis on guest experience.	Upon check-out, the guest receives a prompt via the mobile app to share his stay experience with the hotel, with an option to share on review sites. A virtual assistant in the app helps convert verbal feedback into written copy which the guest is able to review via email before authenticating its submission to the hotel or social site. Upon submission, the guest receives a response from the hotel within 24hrs, and is rendered service recovery where applicable.
The guest reaches out for assistance on a copy of the invoice. He calls the hotel but was put in queue for the next available operator. He then sends an email instead, and only hears back after three days. Upon checking the bill, he notices an error and again contacts the hotel, only to receive another response three days later. It takes almost a week before the error is rectified.	Post-stay enquiries are attended to immediately by chatbots and virtual assistants via the mobile app or phone calls. The system automatically sends across a copy of the requested invoice. Simple billing errors are addressed immediately using Artificial Intelligence, while more complicated ones are escalated for staff intervention. Call queues are abated and guest-hotel interactions are more seamless.
The guest receives marketing promotions by the hotels to entice another stay or visit. However, most of the marketing content is not relevant to his interests.	Collation of data gathered from all touchpoints from past visits enables the hotel to customise marketing materials that are unique to guests' interests.

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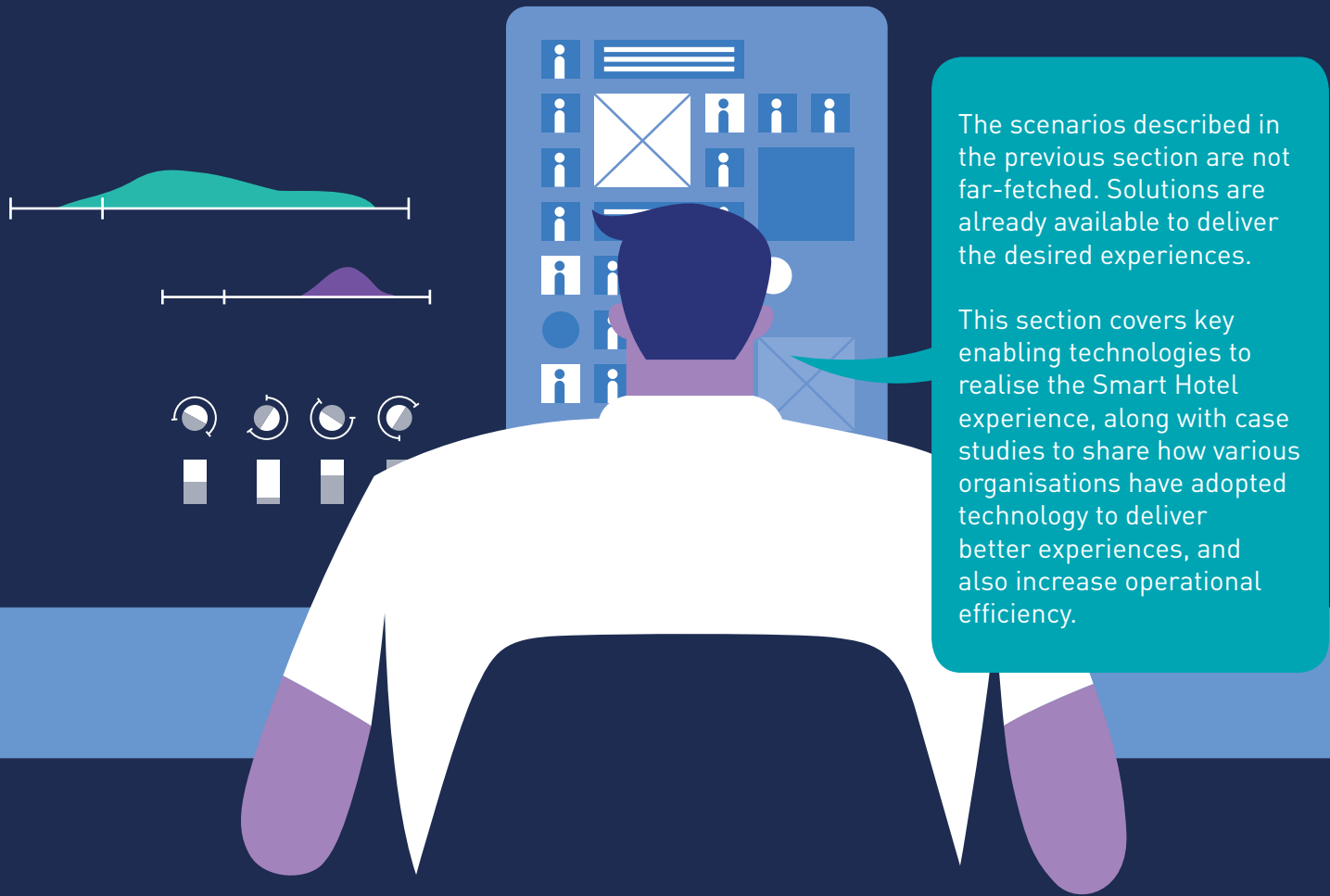
The scenarios described in the previous section are not far-fetched. Solutions are already available to deliver the desired experiences.

This section covers key enabling technologies to realise the Smart Hotel experience, along with case studies to share how various organisations have adopted technology to deliver better experiences, and also increase operational efficiency.

Enabling Technologies

Real-time Marketing, Distribution and Review Tracking Technologies

What this Technology is

Marketing technology solutions are highly data driven.

Data Management Platforms (DMP), Customer Relationship Management (CRM) systems, and social listening tools are some examples of solutions that help extract and/or collate real-time information across various channels. They then present the data in a systematic manner for easy viewing, management, decision making and follow up actions. This allows organisations to learn about their customers, competition and relevant growth opportunities in various spaces.

On the other hand, content management systems, dynamic prospecting and retargeting technologies use collated information to share and distribute personalised content via various targeted channels.

01 Acquire data
CRM systems help record guest preferences at every touchpoint during stay

02 Present data for analytics
Large scale data analysed to gain insights on areas of challenges and success

03 Devise actionable strategies
- Tailor personalised guest experiences
- Continue successful strategies
- Build strategies around areas of concern
- Apply intelligent targeted marketing
- Respond to reviews

04 Increase conversion rates/ Improve staff efficiency

Applicable Guest Journey Segments

| Stage 1: 'The Search' | Stage 2: Purchase/ Booking | Stage 3: Pre-Arrival | Stage 4: Arrival and Check-in | Stage 5: Stay Experience (In-room) | Stage 6: Stay Experience (In-Hotel) | Stage 7: Stay Experience (Outside Hotel) | Stage 8: Departure and Check-out | Stage 9: Post-Stay |

How this technology can be used and its benefits

SEGMENT	EXAMPLES OF USES	BENEFITS
Pre-Stay	• Real-time updates of dynamic pricing to maximise revenue • Push real-time relevant marketing content i.e. ad banners based on known data signals of customers via various channels, e.g. social sites, and broader internet • Dynamic prospecting and retargeting on social media sites • Collection of guest preferences via robust CRM systems	• Promotes top of mind recall to initiate purchase • More personalised content shared • Increases revenue through better conversion rates • Increases engagement with guests across social media sites • Streamlines work processes to increase efficiency
Hotel Stay	• Intelligent and personalised marketing based on location-markers within and outside hotel premises, e.g. push notifications on dining promotions when guests pass by a hotel restaurant or retail partner outside hotel premises • Cull social media sharing by guests about special occasions for opportunities to wow them during stay/ acknowledge negative experiences to render service recovery, or expressive gratitude for praises • Collection of guest preferences via robust CRM systems	
Post-Stay	• Cull social media reviews by guests to acknowledge negative experiences and render recovery service, or expressive gratitude for praises • Collection of guest preferences via robust CRM systems	

Considerations for adoption

- To build a robust CRM,
  - keep records of guests' preferences at every possible touchpoint in one CRM system
  - consolidate information where multiple CRM platforms exist (integrate systems using available standards by non-profit associations such as HTNG)
- Risks of user privacy violations; be aware of applicable privacy regulations, e.g. Singapore's Personal Data Protection Act (PDPA).
- For social tools, consider types of social sites that the tool can be integrated with.

Case Study: Reputation Management System

The scene: Amara Hotels & Resorts

THE SITUATION...

To go through 2 major review sites, each hotel property spends an average of 2.4 hours daily. The hotels find it difficult to provide timely responses to guest reviews given an overwhelming number of review sites to prowl and guest reviews to respond to.

THE SOLUTION...

The Reputation Management system deployed allows the hotels to:
- manage guest feedback across multiple review and social media platforms
- publish updated user reviews on main website
- conduct effective search, respond and analysis for pro-active service recovery, which
  - raises guest satisfaction
  - reduces negative online reviews
  - encourages more booking through those sites
- generate performance reports and case creation with relevant team members for effective communication on follow ups
- create timely engagements for arriving, in-house and departed guests

RESULTS...

- Reduced average response time to negative reviews from average of 13.7 days to 5.6 days.
- Increased response rate to reviews from 39.8% to 75.3%.
- 50% reduction in daily time spent for review-related activities.
- 5% increase in guest recommendations to book Amara hotels on booking.bom, Rakuten and Holidaycheck.

CONSIDERATIONS...

- Ensure omni-channel compatibility to increase convenience of user access to tool, e.g. accessibility via all mobile devices.

Artificial Intelligence (AI), Machine Learning and Predictive Analysis

What this technology is

AI is an area of computer science that allows machines to sense, comprehend and learn; to work and react like humans do. It can be applied with machine learning to recognise patterns and relationships in data sets. When deployed with Predictive Analysis programmes, it is capable of real-time recommendations and suggestions.

Applicable Guest Journey Segments

Stage 1: 'The Search'	**Stage 2:** Purchase/ Booking	**Stage 3:** Pre-Arrival	**Stage 4:** Arrival and Check-in	**Stage 5:** Stay Experience (In-room)	**Stage 6:** Stay Experience (In-Hotel)	**Stage 7:** Stay Experience (Outside Hotel)	**Stage 8:** Departure and Check-out	**Stage 9:** Post-Stay

How can this technology be used and its benefits

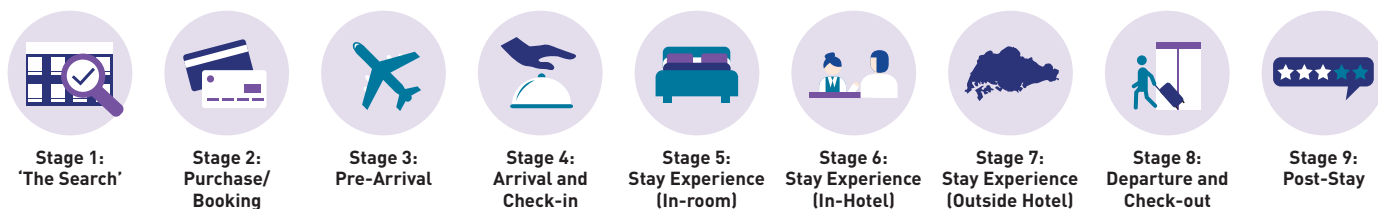| SEGMENT	EXAMPLES OF USES	BENEFITS
Pre-Stay	• Auto-fill fields • Answer FAQs and queries 24/7 • Make customised recommendations and upsell • Perform targeted digital marketing with customised information	• Abates queues • Added convenience for guests • Better guest experience • More personalised guest experiences • Increases revenue with targeted marketing
Hotel Stay	• Answer FAQs and queries 24/7 • Assist with guests' requests and reroute to relevant departments for follow ups • Make customised itinerary recommendations • Perform targeted digital marketing with customised information	
Post-Stay	• Answer post-stay queries 24/7 • Assist with guests' requests and reroute to relevant department for follow up when necessary • Assist with feedback • Assist with responses for online reviews	

Considerations for adoption

- Types of presentation format in which to deploy AI, e.g. chatbot or voice-automated virtual assistant.
- Constant innovative marketing strategies shaped around AI platforms is required as a result of routine re-evaluation of consumer habits.
- Higher costs of guest acquisition from recommendations by AI over competing products, almost akin to bidding or paying extra to come up first in Google searches.
- AI is only useful with large amounts of data to draw from. Therefore, it is important to entice guests to use the hotels' platforms as much as possible.
- Risks of user privacy violations; be aware of applicable privacy regulations, e.g. Singapore's Personal Data Protection Act (PDPA).
- AI may not address all queries and works best alongside an employee, at least until AI assistants can be trained to answer new questions through machine learning.

Case Study: 24/7 Hotel Chatbot

The scene: Andaz Singapore

THE SITUATION...

During the hotel's opening, it experienced difficulty in hiring for certain job positions like Guest Services and Front Office agents.

Any staff that was hired had to deal with the time-consuming and labour-intensive process of answering repeated questions about hotel facilities and itinerary recommendations; up to 5 hours a day could be spent on this alone.

THE SOLUTION...

ANDY, an AI-concierge chatbot is able to:
- answer routine FAQ questions
- provide lead generation for sales opportunities
- be a real-time feedback channel; allow immediate service recovery where applicable
- understand user preferences through Q&A, user profiles and historical preferences from past interactions
- make customised recommendations and personalised itineraries
- Track total users, user retention rate, user demographics and top queries with its in-built dashboard

RESULTS...

- An average of 40% reduction in enquiries at the Front Office.
- An average of 60% man-hour savings daily on query related activities.
- 24/7 guest access for queries.
- Increased guest satisfaction from:
  - more meaningful engagements
  - increased convenience
  - reduced wait time for answers
- Only 10% of questions are outside of bot's capability and need assistance from employees.

CONSIDERATIONS...

- Strong inter-departmental support is required for a good curation of questions and answers to power the bot. Otherwise, a high number of enquiries will be directed to an employee instead.
- The bot should be tested with internal and external parties before launch to fine-tune its content.
- Determine the personality of the bot at the start to save time from having to recraft its tonality downstream.
- To encourage high user-rate, integrate bot into Wi-Fi landing page and hotel collaterals to raise awareness.
- Integrate with existing operating systems to deliver seamless experience, e.g. e-housekeeping solution.

Virtual Reality (VR)

What this Technology is

Imagine being 'in' a hotel room miles away even before you decide whether or not to book it. VR is able to help you do that. By simulating images, sounds and sensations, VR immerses users in an imaginary 3D environment via the use of a VR headset. Users can "experience" the artificial world, move around in it and even interact with virtual features and items.

Applicable Guest Journey Segments

| Stage 1: 'The Search' | Stage 2: Purchase/ Booking | Stage 3: Pre-Arrival | Stage 4: Arrival and Check-in | Stage 5: Stay Experience (In-room) | Stage 6: Stay Experience (In-Hotel) | Stage 7: Stay Experience (Outside Hotel) | Stage 8: Departure and Check-out | Stage 9: Post-Stay |

How can this technology be used and its benefits

SEGMENT	EXAMPLES OF USES	BENEFITS
Pre-Stay	• To inform, sell, entertain and market hotel rooms and facilities	• Takes experiential marketing to the next level • Increases buyer confidence and triggers quicker purchases • Saves time and effort of sales team to conduct lengthy site inspections • Easier cross-selling opportunities to overseas clients
Hotel Stay	• Value-add for guests; offering opportunity to immerse in: - experiences of destination from room - story-telling by hotel using content unique to the property e.g. heritage tour of building, etc.	

Considerations for adoption

• Nascent technology with limited customer distribution i.e. not every home has a VR headset.
• Immersive headsets offering best VR experiences can be expensive.
• Compelling content from a consumer perspective is required to entice consumption.

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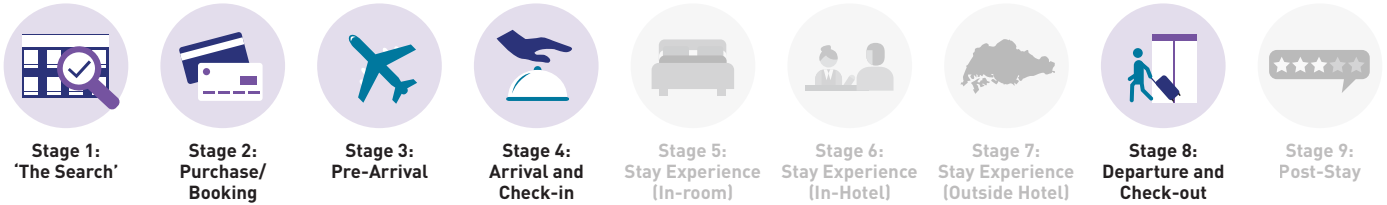# Optical Character Recognition (OCR) and Robotic Process Automation (RPA)

What this technology is

OCR is software technology that transforms characters like numbers and letters into electronic form that is more easily recognised and read by computers and software programs. It is complementary to Robotic Process Automation (RPA) which replaces human processes and inputs with artificially intelligent "robot" employees.

Applicable Guest Journey Segments

Stage 1:
'The Search'

Stage 2:
Purchase/
Booking

Stage 3:
Pre-Arrival

Stage 4:
Arrival and
Check-in

Stage 5:
Stay Experience
(In-room)

Stage 6:
Stay Experience
(In-Hotel)

Stage 7:
Stay Experience
(Outside Hotel)

Stage 8:
Departure and
Check-out

Stage 9:
Post-Stay

How can this technology be used and its benefits

SEGMENT	EXAMPLES OF USES	BENEFITS
Pre-Stay **Hotel Stay**	• Take images of identity documents and credit cards to autofill registration fields prior to arrival • Check visa stamps i.e. validity of visa entry at point of checking in • Capture information for back end processes to ensure seamless stays, e.g. guest requests and preferences are captured and transferred to required databases automatically • Transfer of guest data between different CRMs to ensure consistency in a guest's experience	• Speeds up or eliminates physical check-in processes at the front desk • Reduces human error • Higher volumes can be processed in a shorter period with accuracy • Helps overcome legacy data systems without changes or API integrations • Streamlines work processes to increase efficiency

Considerations for adoption

- Clarity of captured data is essential for successful uses of OCR. However, through Machine Learning, computers can learn to read under different conditions.
- RPA is best deployed in areas which are rule-based, repeatable and involve human actions in high volume, e.g. data entry. It is complemented with human judgement for decision making.
- Consolidate processes when setting rules for RPA to follow to maximise benefits and reduce adoption resistance by employees.
- Risks of user privacy violations; be aware of applicable privacy regulations, e.g. Singapore's Personal Data Protection Act (PDPA).

Case Study: Robotic Process Automation Assistants

The scene: United Overseas Bank (UOB)

THE SITUATION...

To generate a single client report, an employee may have to gather information from up to 5 applications. Given the high volume of daily transaction requests, employees spent a lot of time doing these mundane and repetitive tasks.
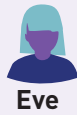
THE SOLUTION...

UOB introduced 3 virtual employees powered by Robotic Process Automation (RPA).

Amy
- Processes requests for letters of credit for the Trade Finance Operations department
- Extracts a wide range of data and enters it into the Finance of International Trade Automation System

Eve
- Reviews credit card applications as part of the Unsecured Loan Processing Function
- Extracts relevant data from customers' CPF statement to compute annual income
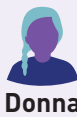
Donna
- Processes credit card applications for existing customers who have verbally agreed to apply for additional cards
- Runs through a series of checks to confirm customers' eligibility

Information extracted via above processes is then presented to human employees for decision making where required.

RESULTS...

- Amy saves 80% of time required to complete an accuracy cross-checking process. (Reduced from 240 seconds and 12 screens, to 40 seconds and 1 screen)
- Eve processes 3.5 times more applications (1,300 more applications) daily than a physical staff.
- Donna helps speed up responses to transactional requests by 70% (from average of 9-10 days to 2-3 days)

CONSIDERATIONS...

- 10-20% of transactional requests may be too complex and still require employee intervention.
- RPA is best for automating simple and mundane tasks.
- Change management needs to be in place to help employees understand that such systems are to complement their jobs and not replace them.

Self-service Software

What this Technology is

Self-service software delivers electronic support without need for interaction with a service representative. Such software is designed with intuitive capabilities to put users in control of their own service experience. It offers endless possibilities from its uses to the format it is presented in, e.g. via kiosks or mobile phones.

Applicable Guest Journey Segments

Stage 1: 'The Search'	Stage 2: Purchase/ Booking	Stage 3: Pre-Arrival	Stage 4: Arrival and Check-in	Stage 5: Stay Experience (In-room)	Stage 6: Stay Experience (In-Hotel)	Stage 7: Stay Experience (Outside Hotel)	Stage 8: Departure and Check-out	Stage 9: Post-Stay

How can this technology be used and its benefits

SEGMENT	EXAMPLES OF USES	BENEFITS
Pre-Stay	• Collect personal details and stay preferences e.g. passport information • Collect credit card details • Push personalised marketing content/promotion	• Abates queues • Added convenience for guests • Better guest experience • More personalised experiences • Increases revenue by encouraging spending
Hotel Stay	• Automated identity and visa authentication using Optical Character Recognition (OCR) and biometric recognition • Enabling electronic key card on guest's mobile device or automatic dispensing of key cards via kiosks • Control in-room functions e.g. air-con, lights and TV • Direct communication for requests, e.g. for amenities, F&B orders, housekeeping • Direct communication for enquiries, e.g. way-finding and reservations • Provide real-time information on hotel facilities or destination, e.g. queue times at breakfast venue • Push personalised marketing content/promotion • Enable check-out and payment	
Post-Stay	• Lost and Found, loyalty, billing enquiries and communication • Push personalised marketing content/promotion • Reminder to share review on social sites	

Considerations for adoption

- Mobile apps have limited download rates, especially by non-regular guests. Overcome this limitation by considering the implementation of applications that are web-based, or built onto existing social media platforms such as Facebook or WeChat.
- Risks of user privacy violations; be aware of applicable privacy regulations, e.g. Singapore's Personal Data Protection Act (PDPA).
- User-experience interfaces need to be designed appropriately to encourage use.
- Physical staff may complement use of self-service applications, e.g. a lobby ambassador to provide assistance to guests using check-in kiosks.

Case Study: Smart Hotel Project

The scene: Grand Park City Hall

THE SITUATION...

The expectations of travellers are changing; more are reliant on mobile devices and the convenience of digital platforms. But it is not just travellers' expectations that are changing – so too are those of job seekers in the backdrop of a shrinking workforce.

This meant that Grand Park City Hall (GPCH) had to change with the times to attract both guests and job talents.

THE SOLUTION...

The Smart Hotel integrated solution integrates existing hotel systems like the Property Management System (PMS), Internet Booking Engine, Job Dispatch system, IoT Room Controls and RFID locks.

Through a mobile app, guests can do it all: provide personal details and select rooms pre-arrival, enter their room with an electronically issued key, and control in-room electronics like the air con, and even communicate directly with the hotel through instant messaging.

For staff, communication is streamlined – employees are alerted of any malfunction through predictive maintenance systems for locks, light bulbs and other electronics, reducing inconvenience to guests.

RESULTS...

- Average of 3-5 mins less spent by guests for checking in and out. Front desk staffs increase value-added engagement with guests, rather than focusing on handling transactional processes.
- 50% less calls to the call centre, since relevant departments are automatically alerted of issues and requests.
- Total of 18 Full-time equivalent (FTE) Employees saved in Front Office, Housekeeping, Engineering, Call Centre, and F&B.

CONSIDERATIONS...

- Not all guests will be tech-savvy, which means traditional options (for example, light switches on the wall) need to be catered for.
- Identification and visa verifications to be worked into the solution as part of regulatory requirements.
- Clear system requirements drawn up at the beginning will help streamline system development process.
- Employees need to be trained to follow standard operating procedures closely to reap maximum benefits from the system.

Case Study: Food and Beverage Point-Of-Sale (POS) Automation and Analytics

The scene: Millennium & Copthorne Hotels

THE SITUATION...

30 outlets across 6 hotels and a non-integrated POS system means challenges...

Inefficiencies in breakfast consumption tracking
- Guests wait in line while breakfast entitlements are manually verified
- Employees manually tally closing figures at the end of each shift

Inefficiencies in voucher redemption
- Loyalty programme dining vouchers are manually tracked, verified and reconciled
- Process highly prone to human error

Inefficiencies in table reservations and order-taking
- Diners have to wait for an available employee to attend to them
- Orders are taken wrongly at times

Inefficiencies in data generation
- Limited agility and efficiency in drawing better understanding of business performance to implement timely strategies for business

THE SOLUTION...

An integrated F&B POS Automation and Analytics system comprising of various key solutions...

Breakfast Tracking System
- Guests tap key cards on a card reader to verify breakfast entitlements and are allowed entry immediately
- System automatically tallies closing figures at the end of each shift
- Guests' personal data is more secure since no hard copy of room listings is kept at reception

F&B CRM e-Voucher System
- E-vouchers replace hard copy vouchers
- Seamless and accurate redemption via membership card or e-vouchers with mobile app
- Verification and reconciliation done by the system

Self-service Menus
- Instantaneous ordering by guests, and direct communications with the kitchen

Table Management system
- Integration with the POS system allows immediate table assignment
- Real-time knowledge of available inventory, allowing easy cross-selling even across properties

Analytics
- Real-time data from above key solutions used to generate reports for timely analysis and business decisions

RESULTS...

- Shorter queues at peak periods like breakfast.
- Increased guest satisfaction.
- Accurate food orders from self-service menus.
- Average daily savings of 6.2 FTE per hotel's F&B department.

CONSIDERATIONS...

- Implementation took longer than expected due to complexity of integrating multiple systems.
- All vendors' cooperation is vital in overcoming implementation challenges e.g. integration.
- Compatibility of systems need to be thought through well.

Biometrics Recognition and Video Analytics

What this technology is

Facial recognition technology measures and matches unique characteristics against stored templates in a database for the purpose of identification or authentication. It is complementary to Video Analytics, which digitally analyses large volumes of video input, transforming them into data for making decisions. It is used typically to differentiate objects and identify behaviours or actions in real-time.

Applicable Guest Journey Segments

Stage 1: 'The Search'	Stage 2: Purchase/ Booking	Stage 3: Pre-Arrival	**Stage 4: Arrival and Check-in**	Stage 5: Stay Experience (In-room)	**Stage 6: Stay Experience (In-Hotel)**	**Stage 7: Stay Experience (Outside Hotel)**	**Stage 8: Departure and Check-out**	Stage 9: Post-Stay

How can this technology be used and its benefits

SEGMENT	EXAMPLES OF USES	BENEFITS
Hotel Stay	• Guest verification for self-check-in or access to guestroom floors and rooms • Study guest expressions for opportunities of upselling • Detect moods and profile of guests to prompt conversational topics • Tracks movement to notify of guests' arrival • Tracks movement to provide information for added convenience, e.g. guests are informed of queue duration at restaurants • Tracks movement for business decision, e.g. potential retail locations • Tracks movement for added security • Tracks buffet lines to ensure timely replenishment of food • Tracks movement to ease routine processes, e.g. when guests leave the hotel with luggage, housekeeping is notified to clean room after check-out	• Abates queues • Added convenience for guests • Better guest experience • More personalised guest experiences • Increases revenue • Streamlines work processes to increase efficiency

Considerations for adoption

• Risks of user privacy violations; be aware of applicable privacy regulations, e.g. Singapore's Personal Data Protection Act (PDPA).
• Possible requirement for heavy hardware investments e.g. cameras.

Case Study: Self Check-in and Check-out Stations

The scene: Swissôtel The Stamford

THE SITUATION...

With more than 1200 rooms, queues often form at the reception counters, especially during peak hours for checking in and out. With limited counters at the Front Office and challenges with hiring for Front Office positions, the hotel needed a solution.

THE SOLUTION...

The hotel reinvented the guest journey by introducing self-check-in and check-out stations. Equipped with several technology capabilities such as facial recognition, Optical Character Recognition and more, the self-help stations are capable of:

- retrieving bookings via a booking reference number
- auto-filling information for registration fields via scanning of passport
- authenticating guests' identity against passport presented
- pre-authorisation of credit card
- issuing key cards

RESULTS...

- Achieved 5 FTE savings in Front Office.
- Reduced check-in and out duration by 3-5 minutes.
- Higher value-added engagement with guests as front desk staffs do not need to handle transactional processes.

CONSIDERATIONS...

- Not all guests will be tech-savvy and may still require assistance from hotel staff.
- System integrations critical for success:
  - Integration with all booking platforms to pull bookings e.g. OTAs, brand website, etc
  - Integration with PMS to allow efficient allocation of rooms
  - Integration with payment gateways to enable pre-authorisation payment and refunds
- Identification and visa verifications to be worked into the solution as part of regulatory requirements.
- Adequate lighting is essential for photo taking to facilitate accurate face matching.
- Images and videos captured to contain date, time and location information, and should be supported by commercially available viewer.
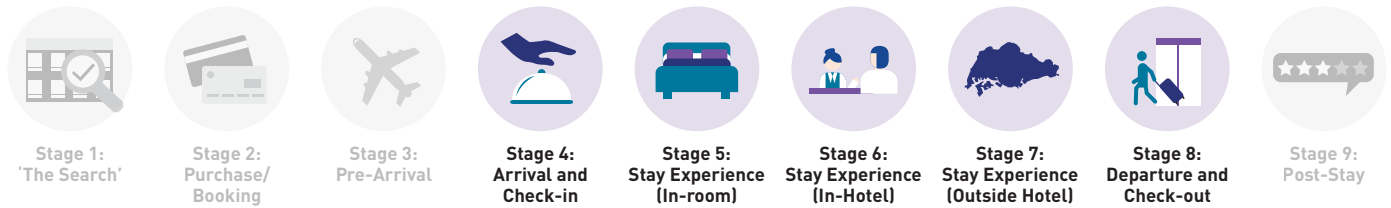
Internet of Things (IoT)

What this Technology is

The Internet of Things (IoT) is a giant network of inter-connected objects, from smartphones and corridor signs to room thermostats. This connectivity enables the exchange and analysis of data. Hotels can then collect this data to uncover new business insights and actionable opportunities.

Applicable Guest Journey Segments

Stage 1: 'The Search'	Stage 2: Purchase/ Booking	Stage 3: Pre-Arrival	Stage 4: Arrival and Check-in	Stage 5: Stay Experience (In-room)	Stage 6: Stay Experience (In-Hotel)	Stage 7: Stay Experience (Outside Hotel)	Stage 8: Departure and Check-out	Stage 9: Post-Stay

How can this technology be used and its benefits

SEGMENT	EXAMPLES OF USES	BENEFITS
Hotel Stay	• Prompts guest greetings at lobby. Via hotel app in the guest's device, beacons pick up the guest's arrival and notifies front desk of name(s) for greeting • Personalise way-finding via sensing of mobile app presence • Activation of lift access via sensing of mobile app presence • Guest's mobile device as electronic key card • Activation of night lights to guide path to toilet • Communicate targeted personalised marketing promotions when within range of amenities like restaurants or spa • Real-time reporting of faulty assets in guestroom for rectification	• Added convenience for guests • Better guest experience • More personalised guest experiences • Increases revenue with target marketing • Overcomes language barrier • Streamlines work processes to increase efficiency • Reduces inconveniences caused by faulty assets in guestrooms

Considerations for adoption

- Interoperability of devices to allow communication.
- An all-integrated solution will require large volumes of sensors installed throughout hotel.
- Determine power sources of IoT devices; maintenance frequency is to be considered where batteries are used for power.
- Building legacy may result in Wi-Fi blind spots, affecting communication among devices.
- Risks of user privacy violations; be aware of applicable privacy regulations, e.g. Singapore's Personal Data Protection Act (PDPA).
- Embedded security for devices is as equally important as software security.
- Draw out well-defined workflows to integrate data holistically.

Case Study: Integrated In-room Technology and Service Solutions

The scene: 30 Bencoolen Hotel

THE SITUATION...

Hotel was reliant on physical manpower to conduct day-to-day checks and maintain various assets. These included:

- Physical routine checks of lights, safe, locks and air con as part of maintenance
- Reliance on housekeeping staff to report malfunction or failure of facilities
- Prior to room cleaning, time was wasted on physical checks for guest presence in the rooms

THE SOLUTION...

An integrated system comprising room control technology, e-housekeeping and lock systems, and the hotel's Property Management System (PMS) to enable:

- Management of facilities such as lights, safes, locks and air con via a single dashboard
  - Instead of physical routine checks, malfunctions or failures are communicated by the system to relevant Engineering staff.
  - Allows automatic adjustment of room settings e.g. lighting, according to guests' preferences upon check-in.
- Real time updates and priority room cleaning notification to housekeepers via housekeeping and privacy buttons in rooms. Motion sensors in the rooms also detect guests' presence to facilitate housekeeping.
  - Replaces need for physical routine checks and reduces chances of being turned away by guests.
- Remote updating of key cards and lock interrogation.
  - Guests no longer have to head to the front desk to reprogram or obtain new key cards.
  - Security does not need to physically interrogate locks onsite in the event of room incidents.

RESULTS...

Average daily man-hour savings of:

- 5.19 hours by Engineering from automated detection of lighting and door lock faults instead of routine checks
- 1.5 hours by Housekeeping from the automated 'Make Up Room' request
- 1.6 hours by Housekeeping from the Privacy sign live update
- 45.4 hours by Front Office and Security from the use of online locksets

Other results included:

- Increased guest satisfaction with prompt repairs and reduced occurrence of check-ins into defective rooms
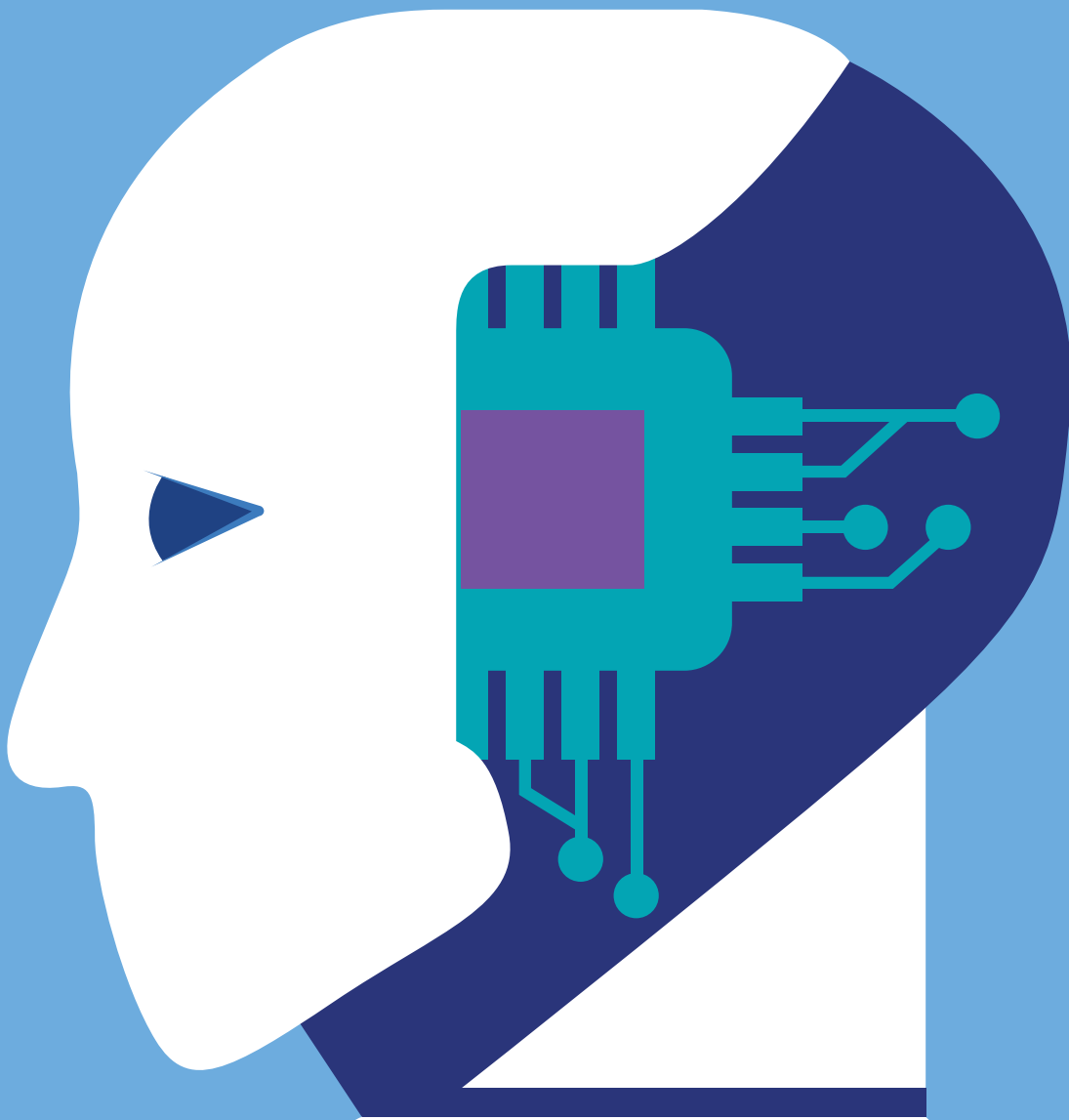- Hotel gains insights into top recurring requests from guests and defects

CONSIDERATIONS...

- Factor time to configure LED light thresholds which vary for each guest room due to differing lengths of wiring.

Robotics

What this Technology is

Fictional scenarios in futuristic sci-fi shows are slowly becoming a reality. Being an interdisciplinary of engineering and computer science, robots today are capable of autonomous movement, completing menial and repetitive tasks as replication of human actions, and providing data-driven insights acquired from these tasks.

Applicable Guest Journey Segments

| Stage 1: 'The Search' | Stage 2: Purchase/ Booking | Stage 3: Pre-Arrival | Stage 4: Arrival and Check-in | Stage 5: Stay Experience (In-room) | Stage 6: Stay Experience (In-Hotel) | Stage 7: Stay Experience (Outside Hotel) | Stage 8: Departure and Check-out | Stage 9: Post-Stay |

How can this technology be used and its benefits

SEGMENT	EXAMPLES OF USES	BENEFITS
Hotel Stay	• Robot ambassadors to distribute welcome drinks at reception • Robot porters to deliver luggage to and collect luggage from guest rooms • Robot luggage managers to store and retrieve luggage within luggage room • Robot runners to deliver guest amenities/in-room dining orders to guestrooms • Robot cooks to fry eggs and cook pancakes along breakfast buffet line	• Novelty factor for guests • Promotes awareness of hotel branding through novelty marketing • Overcomes language barrier • Female guests may feel more at ease when deliveries to the room are by robots instead of a male hotel staff • Streamlines work processes to increase efficiency

Considerations for adoption

• Consider leasing robots instead of purchasing to drive investment costs of hardware down.
• Building infrastructure legacy may pose mobility challenges for adoption of robotics, e.g. uneven flooring, tight corridors.

Case Study: Autonomous Front of House Delivery Robots

The Scene: Hotel Jen Tanglin

THE SITUATION...

When amenities or other deliveries are requested, they are manually completed by a housekeeping employee. This was time-consuming, and prone to delays or failures. The problem exacerbates when employees have to handle multiple requests at the same time. Guest satisfaction was adversely affected.

THE SOLUTION...

Front of House delivery robots "Jeno" and "Jena" deliver amenities and mid-night food orders. An employee loads the requested items, keys in the room number and the robot travels to the designated room without assistance. Just before entering the room, the robot makes an automated call into the room to announce its arrival, and returns after for other deliveries or to its docking station to charge its batteries.

RESULTS...

- Reduced reliance on physical labour on menial tasks like deliveries.
- 17% of delivery workload during peak hours is handled by delivery robots.
- Achieved 1 FTE savings daily for In-room dining as Jena delivers room service items in takeaway boxes.
- Guests are happier with the consistency, and the added novelty of having a robot deliver their items.
- Staff is able to perform higher value jobs and focus on guest engagement.

CONSIDERATIONS...

- Prior to implementation, travelling routes must be vetted to ensure that there are no obstructions such as tight corners, steps, or uneven floorings that might hinder the robot's movement.

Case Study: Back-of-House Delivery Robots

The scene: Changi General Hospital

THE SITUATION...

The average age of hospital porters was 54 years old. Occupational health risks were increased since their job scope included transferring heavy items such as surgical instruments and patient case files around the hospital campus.

THE SOLUTION...

Autonomous transporters were utilised to take over manual, repetitive work that could otherwise cause aches and pains to the older employees. The robots can ride the elevators and move around floors independently.

RESULTS...

- 8 FTE are saved yearly.
- Reduction in occupational health hazards.

CONSIDERATIONS...

- Testing the robots in a 'live' situation is important, but can be troublesome due to the on-going daily hustle and bustle of the hospital.

Your Transformation Journey Awaits You!

A Smart Hotel experience is possible today – most of the technology solutions presented in previous sections are already adopted by hotels and organisations in Singapore and overseas. Others appear nascent for the hotel industry but have been developed and proven in other industries. Harness the power of digital technology to help your hotel navigate existing challenges and prepare for future trends. Embark on a holistic digital roadmap for your hotel today.

Available Government Funding Support

A range of support from the Singapore government is available to help hotels stay competitive in this new digital era.

Click for more info

Business Improvement Fund (BIF)
Singapore Tourism Board

This fund aims to encourage technology innovation and adoption in the tourism sector to enhance productivity and competitiveness. Proposed projects should fall under one of the categories below.

Up to **70%** funding on qualifying costs for Small Medium Enterprise (SME) applicants, and up to **50%** funding on qualifying costs for non-SME applicants.

SERVICE EXCELLENCE
Review and/or design service strategies and standards, and technological solutions to enhance customer service.

ENHANCE BUSINESS PROCESSES FOR PRODUCTIVITY
Optimise productivity or resource allocation through automation, customised solutions or productivity diagnosis.

FINANCIAL MANAGEMENT
Develop financial management framework and strategy to improve financial processes.

HUMAN CAPITAL DEVELOPMENT
Strengthen HR capabilities to attract, develop and retain talent.

PRODUCT DEVELOPMENT
Leverage technology to develop innovative products and services for commercialisation.

BRANDING & MARKETING
Review, research and develop brand and/or marketing strategies.

Click for more info

Training Industry Professionals in Tourism (TIP-iT)
Singapore Tourism Board

This fund supports Singaporean employees, talents and leaders in upgrading or acquiring new skillsets, which can include upskilling to deal with the use of technology in the course of their work.

Up to **50%** funding on qualifying costs which includes course fees, COLA, Absentee payroll, etc.

Click for more info

Inclusive Growth Programme (IGP) and Workpro Job Redesign Grant (WJR)
e2i

This fund helps companies to kick-start productivity projects, redesign jobs and processes. In return, companies share productivity gains with their workers through higher wages.

Up to **80%** funding on project costs.

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Andaz Singapore

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Courtyard Singapore Novena

Crowne Plaza Changi Airport

Fairmont Singapore

Grand Copthorne Waterfront Singapore

Grand Park City Hall

Grand Park Orchard

Hilton Singapore

Holiday Inn Singapore Atrium

Holiday Inn Express Singapore Clarke Quay

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Hotel Indigo Singapore Katong

Hotel Jen Tanglin Singapore

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Le Méridien Singapore, Sentosa

M Hotel Singapore

M Social Singapore

Marina Bay Sands

Singapore Marriott Tang Plaza Hotel

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Orchard Hotel Singapore

Pan Pacific Singapore

Park Hotel Alexandra

Park Hotel Clarke Quay

Park Hotel on Farrer Park

PARKROYAL on Beach Road

PARKROYAL on Kitchener Road

PARKROYAL on Pickering

Raffles Hotel Singapore

Royal Plaza on Scotts

Sheraton Towers Singapore

Studio M Hotel Singapore

Swissôtel The Stamford

The Ritz-Carlton, Millenia Singapore

The St. Regis Singapore

The Westin Singapore

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