ANNEXES

Annex A

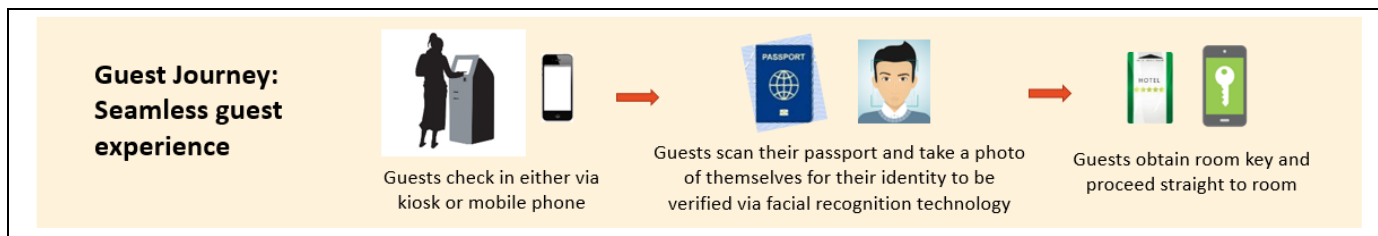**Summary of Hotel Industry Transformation Map**
The Hotel Industry Transformation Map (ITM) transforms the hotel industry for sustainable growth through four strategies:

- driving manpower-lean business models;
- developing new solutions through innovation;
- growing businesses through internationalisation; and
- building a strong pipeline of quality talent.

STB developed the Hotel ITM in partnership with the Singapore Hotel Association (SHA), Food Drinks and Workers Allied Union (FDAWU) and the Hotel Sectoral Tripartite Committee. It is one of 23 industry transformation maps under the Industry Transformation Programme as announced by Minister for Finance, Mr Heng Swee Keat during Budget 2016.

Annex B

Visitor check-in journey using the E-Visitor Authentication (EVA) System

Guest Journey: Seamless guest experience

Guests check in either via kiosk or mobile phone → Guests scan their passport and take a photo of themselves for their identity to be verified via facial recognition technology → Guests obtain room key and proceed straight to room

Annex C

Summary of solutions seeded via Hotel Innovation Challenge 2019

Data-Related solutions		
S/N	Participating Vendor	Project Summary
1	Samsotech Pte Ltd	This is an integrated Customer Relationship Management (CRM) solution to help aggregate disparate guest information across several silo systems, to provide hotels a holistic view and enable effective business decisions.
2	AGi Technosys Pte Ltd	An AI-enabled data repository software that analyses consumer preferences to offer a one-stop database to enable curation of personalised offerings based on guest profiles.
3	NEC Asia Pacific Pte Ltd	The solution offers the hotel real-time monitoring of guest feedback, allowing the hotel to deploy staff when needed. With RFID sensors placed along corridors of the rooms enabling real-time monitoring of hotel capacity, the hotel will be able to monitor the number of guests in the hotel room at any given moment and will be alerted to situations where unregistered guests are found overstaying. This would allow the hotel to recover any potential loss of revenue from not charging for these guests.
4	NEC Asia Pacific Pte Ltd	The solution enables live-count of the number of guests in a hotel's restaurant and facilities via use of Internet Of Things (IOT). This allows hotels to have a better understanding of timings where crowd management is required. The data collected will enable hotels to upsell to guests and deliver productivity savings.
5	joyTu.be Pte Ltd	The solution transforms existing videos into interactive ones that deliver insights derived from guests' interaction with the video. It has an in-built transactional feature that enables hotels to cross-sell suitable offerings based on guest data from the interactive videos.
6	BigTapp Pte Ltd	Bigtapp intends to consolidate guest data across different platforms, such as the Property Management Systems (PMS), Customer Relationship Management (CRM) system and reservations systems, and then match and mesh similar data points together. The outcome of this data meshing would be a consolidated view of their guest profiles, where the hotel can see via the dashboards. With these dashboards, the hotel can develop actionable, data-driven insights.

7	UIB Holdings Pte Ltd	A unified guest data engine solution that aggregates data from various touchpoints within the hotel. This includes secured one-on-one messaging between hotel and guests, provision of smart guest services, access to a digital concierge, and control of in-room connected devices and systems. All these can be done via the guest's preferred platform, i.e. Whatsapp, Wechat, etc. The solution is then able to generate insights for business decisions and enhance guest experiences.
8	Vouch SG Pte Ltd	An AI-powered digital concierge that allows hotels to instantly address guests' enquiries and requests e.g. ordering of in-room dining. It also provides insights and analysis on guests' behaviour. Obtained preferences help to drive revenue and guest satisfaction.
9	Zumata Labs Pte Ltd	A Hotel Guest Preference Management Platform integrated with e-housekeeping modules and other relevant systems to expand functionalities for guests. This helps to seed feedback and preferences to help hotels to cross-sell according to guests' preference.
10	Singapore Telecommunications Limited	The solution provides a holistic view of VIP guests' information in the form of a dashboard, with functionalities that streamline processes involved in delivering hospitality to guests. Coupled with facial recognition capabilities within the hotel premise, this solution enables easy identification of VIPs and ease of extending personalised offerings to guests, including room allocation and advertising offers.
11	Singapore Telecommunications Limited	A system with data generated from sensors that allows the detection of human presence in guestrooms and hotel public spaces. With this information, hotels can improve the efficiency of housekeeping operations, increase space utilisation and more effectively push marketing promotions to guests. The solution can help improve overall guest satisfaction and generate higher upselling revenue.

HR productivity-related solutions		
S/N	**Participating Vendor**	**Project Summary**
12	SIMTech, A*Star Research Entities	The solution automates staff rostering process based on demand and staff's skillsets. The solution can integrate with the existing HR systems in the hotel. In the event of dynamic demand changes, the solution can activate hotel staff based on their schedules and availability.

13	Drop Positioning Systems Pte Ltd	The solution uses a Bluetooth Tag attached to staff passes, and base stations installed within work areas to facilitate tracking in workspaces. Coupled with a mobile device, the solution enables supervisors to identify labour hot spots for reassignment to areas requiring help. This equips hotels with the ability to practise real-time dynamic human resource allocation.
14	Drop Positioning Systems Pte Ltd	The solution uses a Bluetooth Tag attached to staff passes, and base stations installed within work areas to facilitate tracking of cleaning movement patterns of housekeepers. Using an accompanying data analytics platform, it allows hotels to identify and rectify efficiency issues.
15	Loxley Pte Ltd	Hotels will be able to optimise labour allocation with only one duty manager needed on site, while other front office staff can be reallocated to other departments. Different hotel properties can then dynamically schedule their workforce and bring about productivity savings through a reduction in the man-hours needed. Guests will also be able to enjoy a shorter check-in process of under three minutes.

Housekeeping solutions		
S/N	**Participating Vendor**	**Project Summary**
16	Assimilated Technologies Pte Ltd	An autonomous vacuum cleaner with commercial-grade rated input power for its vacuum function, and designed to effectively clean corners and wall edges. The vacuum cleaner will be controlled via a fleet management software for centralised monitoring and control.
17	Lionsbot International Pte Ltd	A compact autonomous vacuum cleaner designed to avoid common obstacles without the need for mapping before deployment. These machines will be equipped with swappable batteries for prolonged seamless operations, and bag-less cyclone filtration system enabling the easy disposal of waste.
18	Champs Industrial Pte Ltd	An anti-microbial formulation which is applied to surfaces and then peeled off to clean surfaces. The solution significantly reduces overall cleaning time and water consumption.

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Annex D

Hotel Industry Digital Plan (IDP)

Launched at SHA-STB Hotel Industry Conference 2019, the Hotel Industry Digital Plan (IDP) was developed by Infocomm Media Development Authority (IMDA) in partnership with Singapore Tourism Board (STB), and SkillsFuture Singapore (SSG), to guide enterprises, including SMEs, in the hotel industry as they embark on digital transformation efforts. The Hotel IDP is part of the SMEs Go Digital programme that is designed to make going digital simple for hotels.

Aligned to the Hotel Industry Transformation Map (ITM), the IDP provides Hotels with an easy-to-use, step-by-step guide on the digital solutions to adopt at each stage of their growth. The IDP will be updated progressively as newer technologies are introduced and are adopted by the industry.

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Annex E

Quotes from Hotels

Grand Park City Hall	"At Grand Park City Hall, we are committed to deliver exceptional hospitality from the heart and empower our guests with conveniences and control of their hotel experiences. The multi-purpose mobile application that we developed with support from Singapore Tourism Board has improved our workflow processes where the team spends more time engaging with guests and less on the mundane tasks. The duration to check-in to the hotel using facial recognition has also reduced significantly from five minutes to approximately one minute, as a result of this new system. Guests now enjoy more convenience with shortened waiting time and have the ability to manage functions such as their in-room lighting and climate temperature with the mobile application, " said John Kockan, General Manager, Grand Park City Hall.
Mandarin Oriental	"Mandarin Oriental, Singapore is delighted to be the pilot hotel to adopt DROP's luggage and inventory management solution. With this digital solution in place, we have increased the level of efficiency in handling and locating of guest luggage. The data produced also allows us to monitor operational needs to further enhance the guest experience. Likewise, we aim to achieve a similar effect when the Housekeeping team adopts the auto-inventory management system. Apart from enabling us to reduce the number of man hours and providing real time updates on stock levels, this system will streamline internal work processes and increase the overall productivity of our colleagues, " said Jess Lam, Hotel Manager, Mandarin Oriental, Singapore.
Pan Pacific Hotel Group	"Pan Pacific Hotels Group consistently looks out for opportunities to support and collaborate with Singapore's top innovators. During the Hotel Innovation Challenge in 2017, we partnered local start-up Evercomm Uni-tech Singapore to

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assist us with digital transformation and piloted a centralised predictive maintenance solution at one of our properties, PARKROYAL on Beach Road.

It has since improved the efficiency of our engineers and maximised the energy usage of our chiller plant operations. We are adopting the solution in other Pan Pacific and PARKROYAL properties in Singapore, and look forward to the further benefits it can bring, including the ability to share knowledge and best practices among properties," said Wee Wei Ling, Executive Director (Asset, Lifestyle & Corporate Social Responsibility), Pan Pacific Hotels Group.