Summary

OPPORTUNITY

The main reasons for adopting robotics in Park Avenue Rochester are as follows:
- To overcome the manpower crunch that Singapore's service sector faces-particularly in the housekeeping function for the hotel industry.
- To improve workplace safety and health standards, productivity and guest experience.

ACTION

- Design and Mapping
- Fabrication & Integration
- Work Process Redesign & Full Commissioning Test

RESULTS

- Time-Savings to transport heavy duty and bulky items such as clean & soiled linen, disposal of waste; and ad-hoc guest room requests throughout the day using robots
- Annual labour saving of 3 FTEs (Full Time Employee) work
- Improved staff morale and enhanced productivity as staff can utilise the time saved to focus on other value-add activities

OPPORTUNITY | **REDUCING PHYSICAL STRAIN ON HOUSEKEEPERS AND IMPROVE OPERATION PROCESSES**

Park Avenue Rochester has 311 hotel rooms and suites. Just like many other hotels, Park Avenue Rochester finds itself competing to attract and retain hospitality talents as a result of the severe manpower crunch in Singapore. Besides overcoming labour shortage, it is also in the Park Avenue's service culture to embrace cutting-edge technology and creativity so as to improve guest experience.

In July 2015, Park Avenue Rochester started work on adopting robotics to enhance certain areas of their hospitality operations. Prior to the deployment of these robots, one of the main challenges faced by housekeeping staffs was the frequent transportation of clean and soiled linen up and down floors throughout the day. This had resulted in bottlenecks in linen management backroom and cargo lift (especially during peak hours) which translated into slower turnover of rooms as well as significant strain on staff as each housekeeping trolley weighs as heavy as 50kg.

As such, Park Avenue is pleased to be the first hospitality group in Singapore to introduce robots into its operations to maximize productivity and reduce manpower reliance.

Supported by Singapore Tourism Board's (STB) Business Improvement Fund , Park Avenue Rochester redesigned the workflow of the clean and soiled linen pickup process which helped to enhance productivity for the back-of-house transportation tasks. The robot has also raised guest satisfaction and created new guest experiences as the robot is able to fulfil the task of delivering ad-hoc amenities request to guest rooms.

Key Steps

▪ **Design & Mapping**

Park Avenue Rochester worked with multiple external vendors on the redesign process and overhaul of old processes. The robots are also designed to be intuitive and easy to use. These autonomous intelligent vehicles are intended for material handling purposes and can avoid obstacles and determine the best path to complete a task given. The robots can be deployed in fleets and work safely alongside with people. Considerations such as robot width, height considerations, load carrying capacity had to also be adjusted to the needs of Park Avenue Rochester.

▪ **Fabrication & Integration**

In order to integrate the robot with our building map in Park Avenue Rochester successfully, there were multiple considerations that were looked into. Firstly, to ensure that robots are connected at all times, network connectivity through WiFi was implemented throughout the back-of-house. Secondly, integration and communication with cargo lift had to be established for the robots to travel within the premises. Doors were modified to automated systems with movement detectors to allow the robots to travel seamlessly. Lastly, trolleys were customized to suit the various operation needs.

▪ **Redesign the workflow process**

The existing workflow process was redesigned to achieve the best results for robot system. The major movement of bulky and heavy items has been shifted to late night hours to free up the lift congestion during the day time. Soiled linen and trash collection during the day shift has been rescheduled to maximise robot utilisation. The delivery schedules of various vendors were also revised to enhance and smoothen the efficiency of back-of-house operations to achieve higher productivity.

▪ **Full Commissioning Test**

After the integration, Park Avenue Rochester did a full principle testing with all interfaces of the robot. This allowed validation of the new system as well as to determine if using the robot caused any disadvantages over time. Staffs were also understanding and accepting towards the technology as helpers of productivity and not as a full job replacement.

Key Success Factors

- **Staffs acceptance of new technology** : In order for project to be a success, our participating staffs have to adapt to this new technology. The hotel provided a series of training to ensure that our staffs are receptive towards the robots. (E.g. equip them with knowledge of how to operate the robot through the tablet.)

- **Leveraging existing government grants:** To defray the implementation cost of the two robots, the hotel tapped on STB, which offers a grant to help companies in the implementation of productivity solutions.

Project period: July 2015 – September 2016

Estimated cost: Approximately $100,000 per robot with dispatch system.

RESULTS	UTILISE RESOURCE EFFECTIVELY

- **Reduced manpower needs by eliminating time previously wasted on travelling and waiting:** By removing time spent waiting at the lifts and going floor to floor, 3 manpower is saved by the robot. There was an increase in the productivity capability as 4.1 trips/ hour based on manual manpower has increased to 7.9 trips/ hour based on the robot capability.

- **Improved employee morale and reduced job injury:** The existence of the robot raises staff morale overtime. Room attendants are no longer taking long periods of time manually delivering linen and other supplies to wait for lifts with the heavy trolley. With the significant physical strain taken out of their jobs, not only has job injuries been reduced, room attendants now have more time to focus on quality control and interaction with guest. These robots will also be a well utilised resource which helps to manage daily operation needs. (For example, collecting bottled water, trash bags, bulky items and delivering item to guest when there is a request instructed.)

- **Upgrade skills of workforce:** The successful deployment of the robots meant that the room attendants acquired news skills to operate the robot from the tablet. By adapting to a new technology in their daily routine, this has set a foundation for subsequent productivity improvements.