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Headline: The Future Of Work Now: The Multi-Faceted Mall Security Guard At A Multi-Faceted Jewel

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One of the most frequently-used phrases at business events these days is “the future of work.” It’s increasingly clear that artificial intelligence and other new technologies will bring substantial changes in work tasks and business processes. But while these changes are predicted for the future, they’re already present in many organizations for many different jobs. The job and incumbents described below are an example of this phenomenon. Steve Miller of Singapore Management University and I co-authored the story.

The world’s most famous mall security guard is probably Paul Blart, who defended a mall (one near Tom in the Boston area) on his Segway from a gang of crooks in the 2009 movie Paul Blart: Mall Cop. As usual, however, the portrayal of the role in a fictional movie doesn’t mirror reality, and especially not the state-of-the-art reality for security guards at one of the most amazing malls on this planet.

The New Jewel of Changi Airport



Jewel Changi Airport (Jewel) is a shopping mall, indoor attraction, nature environment, hotel and airport check-in all in one, located on the premises of Singapore’s Changi Airport. It opened to the public in April 2019, and was built at the cost of U.S. \$1.25 billion.

Jewel has an iconic design inside and out. The entire facility is encased in a glass dome that resembles a multi-faceted gem. The indoor nature-themed environment includes the world’s tallest indoor waterfall (or “rain vortex”), 120 species of plants covering 2,000 trees and 100,000 shrubs, mazes, canopies in the form of walkways and bridges, and sky nets for walking and bouncing. This provides the ambiance for over 280 retail outlets and eateries, various visitor facilities and attractions, and airport facilities that supplement those in terminals.

Jewel so captivated the attention of international air travelers passing through Singapore’s Changi Airport, as well as the local Singapore population and local tourists, that it received over 50 million visitors in its first six months of operation.

Certis, Jewel’s Partner for Security and Related Services

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Certis is the private company responsible for ensuring the physical security, facility management and customer services for the new Jewel facility at Changi Airport. It provides the frontline workers—security guards, guest concierge and service officers, and facilities maintenance staff—who deliver these services.

In 1958, Certis was born as the Guard & Escort Unit in the Singapore Police Force. This unit became the Commercial and Industrial Security Organization (CISCO) in 1972, a statutory board under the Ministry of Home Affairs. In 2005, it was privatized to compete for commercial security and related facilities support contracts domestically and internationally. The company eventually changed its name to Certis, and is fully owned by Temasek Holdings, a commercial investment company owned by the Singapore government.

While the origins of Certis were from an industry that has traditionally been physical guarding, it has transformed itself into a technology intensive diversified Ops-Tech service provider that has grown organically from S\$200m annual revenue in 2005 to S\$1.5bn in revenue in the last financial year. Another aspect of their transformation has been their strong growth as an advanced integrated Ops-Tech service provider, including security services, in airports. Prior to 2006, Certis had no presence in providing services to airports. Now, Certis provides security and other visitor support services to airports in Singapore, Australia and the Middle East. Certis provides the security services to Singapore's Changi Airport, and in 2019, Changi Airport received the highest score among major worldwide airports (with 40 million or more passengers per year) in the Airports Council International (ACI)'s Airport Service Quality (ASQ) Security Worldwide Ranking.

A Digitally Transformed Approach to Delivering Security and Related Services

When Jewel opened to the public, Certis introduced an entirely new, technology-enabled approach to its service delivery called "Security+." The six key elements of this new approach included:

- 1) a technology intensive approach to the monitoring and surveillance of the entire Jewel facility, including over 5,000 sensors and CCTVs;
- 2) a centralized, on-site Smart Operations Centre (SOC) where all of the monitoring and surveillance data is consolidated, integrated, analyzed, visualized and assessed by operators;
- 3) a multi-service orchestration platform called MOZART that handles the consolidation and integration of all incoming information sources, and includes AI capabilities for analyzing video and other sensor inputs to identify situations requiring operator follow up;
- 4) a mobile phone application called Argus that is tightly integrated with the MOZART platform, enabling SOC staff to manage, monitor and communicate with security guards and other front-line staff;
- 5) the addition of service robots to the front-line patrolling workforce to handle specialized monitoring tasks, such as parked cars outside of Jewel; and
- 6) a new approach to job design where all the Certis front line security guards, guest service officers, and facilities staff are cross-trained to support one another.

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Certis had been piloting and deploying some of these Security+ elements in recent years— however, the launch of Jewel was the first time it had brought all six elements together into one integrated and unified service delivery approach. Now, other parts of Changi Airport, major shopping mall operators in Singapore, and JTC Corporation (Singapore’s government agency for the development of industrial facilities and high-tech business parks) are in the process of working with Certis to incorporate this Security+ approach.

The New World of Work for the Security Executive, Jun Yuong Pang

Jun Yuong Pang is 29 years old and has been with Certis for the past ten years. He spent the first nine years as a security officer and supervisor in the Changi Airport terminals. In May 2019, Certis moved Pang to Jewel to supervise and manage a team of 17 other security specialists and one robot named PETER (an acronym for Patrol and Traffic Enforcement Robot).

Everything about Pang’s work changed, even though he is still working as a security executive and supervising other security specialist. Now, Pang is responsible for security across a large, multi-purpose facility. He and his team members are always on the move, patrolling. Because of the SOC, MOZART and its embedded AI capabilities, the Argus mobile app, and the cross-functional approach to job roles, Pang and his security team are now an integral part of a well-coordinated network of people and intelligent support systems who are linked through digital means, supporting one another through two-way interactions. This has substantially changed the way they spend their time each day.

Previously, Pang needed to go through the time-consuming tasks of working out patrol routes for the security officers, preparing worksheets for each of them, and briefing them on their daily schedules at the start of every day. Now MOZART generates the daily patrol schedules for each guard, including randomization to make patrol routes less predictable. Pang uses Argus to review daily patrol schedules, and makes patrol route adjustments based on information he is aware of that goes beyond MOZART’s information. Via Argus, he automatically distributes the patrol route to each team member and to the SOC. The team no longer needs to show up early before the official start of their patrol work just to get route assignments. They also no longer need to patrol outside in the Singapore heat for parking violations, since PETER the robot takes over that task.

In addition, Argus helps the security specialists file reports on every incident they encounter during patrol. This has been a tedious task for the security industry for decades. Officers would sometimes skip filing reports on smaller incidents due to the tedious effort required. Supervisors often had to re-interview the guards to clarify incident details and rewrite, and sometimes even write the reports. The deployment of Argus and its integration with MOZART completely transformed the process of submitting an incident report, as well as all post-submission processes related to archiving, accessing, and using the information. Incident report submission templates in Argus enable the security specialist to click a few buttons to choose appropriate categories, add pictures as documentation, input descriptive comments, and press send. The report is time-stamped and immediately flows to the SOC and into MOZART. Pang and his team now do a more thorough job on security-related incident reporting and can even support incident reporting for facilities management and guest services.

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Likewise, the guest services officers (called “Experience Concierge & Ranger” staff) and the facilities staff use Argus for incident reporting, and the jobs all overlap. Zell Chow, Pang’s counterpart who manages the guest services staff at Jewel, explains, “They’re not just concierge people sitting behind a service counter. They also rove around the facility as part of their customer service work...They provide more eyes on the ground, and this helps us with security. It also helps us with facilities support, as they spot things that need landscape maintenance or facilities follow up. We could not perform in this multi-functional way without our supporting technology.”

The Smart Operations Centre (SOC) as Mission Control

The technology systems deployed by Certis at Jewel are constantly monitoring the entire facility to support visitor, workplace, and traffic safety, as well as security and surveillance. MOZART uses its embedded AI capabilities to constantly monitor and analyze this stream of incoming information. By assessing the alerts automatically generated by MOZART, and the incident reports and other incoming communications submitted by ground staff via ARGUS, the SOC manager and operators can determine when to mobilize frontline staff to follow up on incidents.

They also always know where all the security specialists, guest service officers and facilities staff are physically located, using a combination of location tracking through Argus and the other sensor information. Through Argus, Pang has visibility to this information, as does his counterpart Zell Chow. The two of them coordinate closely with the SOC and with each other to plan deployment of personnel on the ground to respond to a particular incident.

Challenges for Security Specialist and Guest Service Ground Staff

Transitioning to this new work environment at Jewel—with the new support technology, and with the new multi-functional approach of having staff in one function backing up those in the other functions—has not been without its challenges. Pang’s manager, Aaron Soo, noted that those CERTIS security staff with prior airport security officer experience had a lot to learn in terms of maintaining high levels of visitor engagement.

Pang also reflected on the challenges of getting his security specialist team members, especially those 60 and older, to be comfortable using the new technology. “This has been a very challenging but good experience. It has taken time for them to learn and adjust. Fortunately, they have all managed to do so.” Zell Chow added that efforts were made to help frontline employees in customer service and in security come on board with the new technology, especially for older workers. “We have redesigned our training materials to incorporate more pictures and videos, and to reduce the use of long sentences. We have made training content and sessions more fun.” Both Zell and Pang pointed out that the technology enables workers to remain as active, contributing employees.

Pang, as well as Aaron and Zell, highlighted that the Certis digital transformation effort at Jewel created a significant need for continuous learning and training. At the same time, because of the efficiency and productivity, they were able to reinvest their substantial saved time into training and working with their teams to make adjustments. Zell reflected, “We never could have progressed in this way prior to our digital transformation efforts.”

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The Future for AI and Humans at Certis

As Duty Manager of the SOC at Jewel, and direct supervisor of Pang and Zell, Aaron shared his thoughts on how the work setting at Jewel and Certis will evolve. "As the capabilities of our systems continue to improve, I anticipate that we will be able to automate more of our operations tasks in our SOC as well as on the ground. We will steadily realize even higher levels of productivity and be able to further reduce certain types of manpower."

At the same time, Aaron is convinced that humans will continue to play essential and irreplaceable roles in the SOC and the ground staff teams. He explains, "There are just too many novel or non-standard situations that we encounter in the SOC when we monitor and assess alerts automatically generated by MOZART and incident reports from the ground staff. My SOC team and I, as well as our ground staff team executives, do very complex 'man-in-the-middle' coordination and communication across multiple stakeholders such as the ground staff at Jewel, our senior management at Certis and Jewel, and also with other external parties including the ambulance teams, medical facilities, and the government authorities. Our technology, as advanced as it is for this type of commercial application, just does not have the capability to do all of this type of coordination and communication, especially for unusual situations. Not yet at least, and not for any foreseeable future."

It appears that humans and the human-machine partnership are here to stay in the mall security setting, even as AI capabilities and applications continue their rapid and remarkable advance. Alas, however, no Segways appear to be in the offing for Jewel's security specialist, as their manufacturer has just stopped making them.