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THE TIMES OF INDIA

Airport of the future, manned by non-humans

Bloomberg | Sep 18, 2018, 09:01 AM IST



Imagine landing at a major airport and the only human official you meet on your way through the terminal is a customs officer. Singapore's Changi Airport, voted the world's best for the past six years by Skytrax, is pursuing that goal of extensive automation with such vigour that it built an entire terminal to help test the airport bots of the future.

Here's an idea of what Asia's second-busiest international airport is implementing.

As a plane joins the long line to land, it's detected, identified and monitored by an array of cameras and technology that bypass the traditional control tower. Once at the gate, a laser-guided aerobridge positions itself to let passengers disembark, while automated vehicles

below unload baggage, dodging others that are delivering robot-packed meals or processing cargo. The passengers head to automated immigration turnstiles that face-scan and thumb-print them, then head to collect their luggage, which baggage bots have already delivered to the carousel. Under the gaze of an actual human — the steely-eyed customs official — they head out to queue for a driverless taxi.

Changi opened its Terminal 4 last October partly with the idea of using its smallest and newest facility to test and develop automation. The goal is to have it all working for its gigantic Terminal 5, a monster building that would be able to handle 50 million passengers a year when it opens at the end of the next decade.

“Airports are getting bigger and bigger and need to process higher and higher volumes of passengers,” said Jeffrey Lowe, managing director at Asian Sky Group in Hong Kong. “Given the need to provide quick and efficient — seamless — service to passengers, automation is the only way to do this on a large scale.”

Singapore has plenty of reasons to embrace airport bots. The city-state has a limited domestic talent pool that is aging and increasingly unwilling to do manual jobs like baggage handling or packing food trays. It also needs to keep improving Changi to stay ahead of competition from neighbours that are upgrading and extending their own airports.

Including services such as maintenance, cargo and other related services, Changi and related aviation businesses and services employ some 21,000 people, contributing about 3% of GDP. So the Civil Aviation Authority of Singapore and government-controlled companies are banding together to automate.