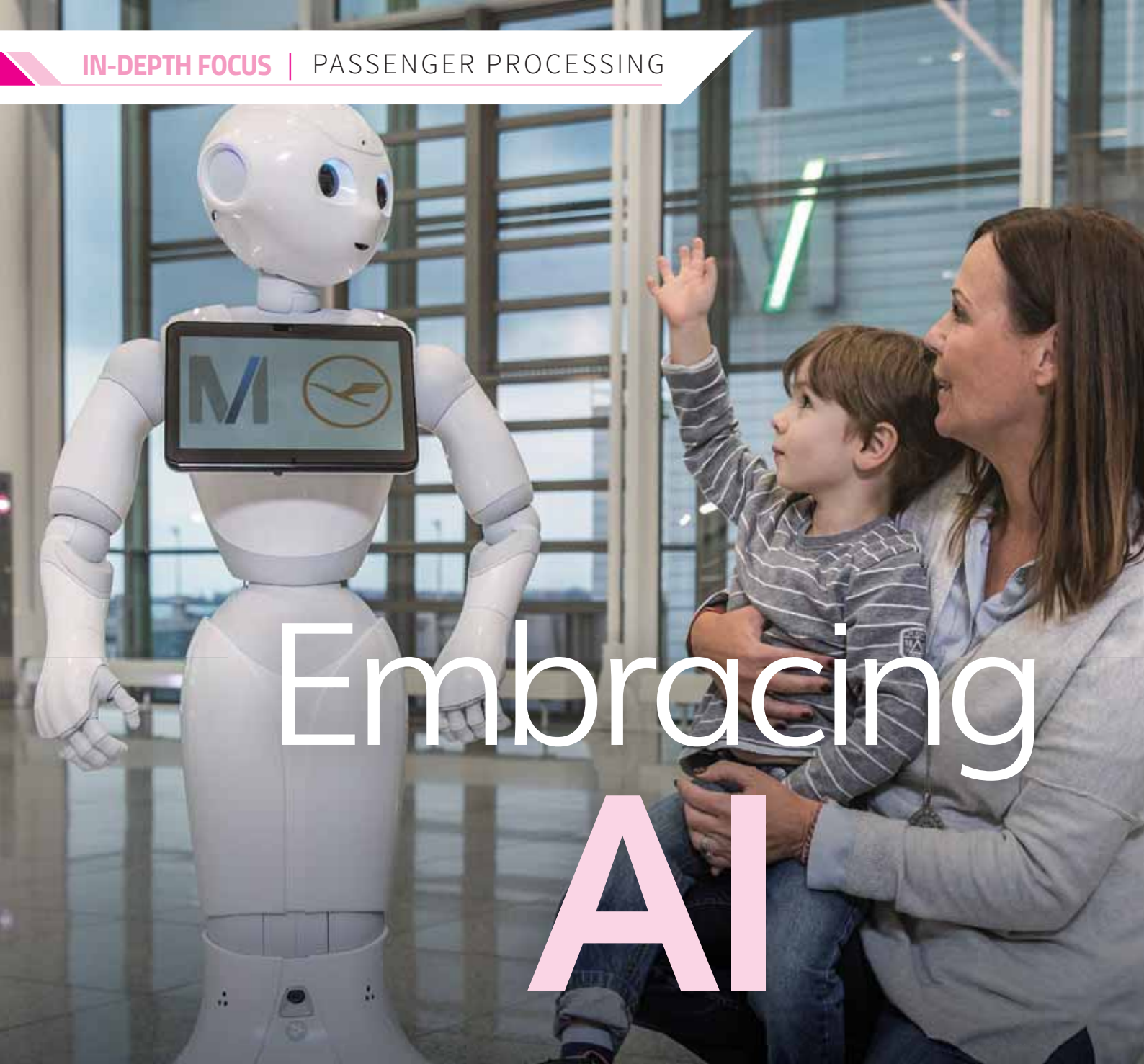


# PASSENGER PROCESSING

From the ever-increasing use of self-service, to the streamlining of security processes, to the deployment of innovative new technologies such as robotics and artificial intelligence, the way that airports process their passengers is changing. This In-Depth Focus profiles some of the innovative ways airports are embracing new technology to the benefit of the passenger.





# Embracing AI

*Julia Schmidt*, Manager of Innovation and Digitisation at Munich Airport, reveals the airport's innovative use of robotics equipped with artificial intelligence to benefit the passenger experience, with the creation of Josie Pepper.

“ *The possibilities and limitations of artificial intelligence are currently the subject of intense debate* ”

**W**ITH THE START of a testing programme in mid-February 2018, Munich Airport became the first airport in Germany to try out a humanoid robot equipped with artificial intelligence. Innovation and the continuous improvement of services are top priorities at Europe's Best Airport, as voted by the 2018 Skytrax World Airport Awards.

To remain competitive in the long term, it is essential for airports to explore new technologies –

both within their own industry and in cooperation with partners from other segments – and to integrate these technologies into existing processes and operational procedures. Along with ideas such as augmented and virtual reality (AR/VR), the new concepts now keeping entire departments of corporations busy include the Internet of Things and blockchain.

Key areas in these initiatives include robotics and artificial intelligence (AI). As with many industries, it's essential for airports to stay on top of these



developments too. The possibilities and limitations of AI are currently the subject of intense debate in the media. These discussions address such issues as how many processes can be automated, how they can be simplified, and what role robots might play in that regard – not to mention the important question of what it all means for an airport operating company.

These were the motivating factors behind the decision by Munich Airport's Terminal 2 innovation team to start exploring the related issues and developments. They began with the question of whether airport-specific processes could be improved through AI applications. Such solutions could retrieve information from various sources and network them for optimal decision-making processes. This raises the question of the right starting point when exploring a technology this powerful.

The choice of an information robot to approach the issue of AI enabled the team to kill two birds with one stone, as they were able to simultaneously explore the potential of another technology in interactions with passengers – namely robotics.

The little robot, built by Softbank Robotics, is just 120cm tall, weighs 28kg, and answers to the name of Josie Pepper. She soon won over the hearts of airport staff and passengers alike. Equipped with IBM Watson technology, she provides passengers with information on departing flights, the weather at their destination, and airport facilities.

Josie is linked via WLAN to the IBM Cloud, where speech is processed, interpreted and combined with the airport's data resources. What makes this robot special? She is capable of learning. Rather than delivering programmed, pre-formulated texts, Josie

answers each question individually. At present, Josie only speaks English, but the option of teaching her other languages is definitely part of the concept.

The originally planned four-week testing phase that began in mid-February 2018 was extended to the end of April 2018. Josie's mission in Terminal 2 has been a resounding success. The overall feedback shows that she is a big hit with passengers and airport employees alike. Interestingly, the most common question she hears is "may I take a selfie with you?" and this has quickly turned Josie into the most frequently tagged photo subject at Munich Airport.

After the initial test phase, the project team also noted that passengers were hesitant to ask a robot specific questions about their flights or the airport. For these interactions, they still prefer human contact. That may be comparable to the prevailing attitude to smart phones 10 years ago. Back then, nobody imagined that a phone would become such an important asset, without which every day life would be almost unimaginable. Robots have yet to reach that point, however. For an airport, employees and personal contact with passengers remains indispensable at the moment.

However, the flexibility of robots and the relative ease with which they can be trained to take on board the required knowledge opens up a wealth of opportunities, especially at an international hub like Munich. From events to entertainment, there is a wealth of potential follow-up uses for Josie.

Munich Airport's innovation experts are currently assessing where AI might be integrated into other processes. In any case, the optimisation of IT systems will certainly be a key aspect of the airport's future developments. ✉



**ABOVE:** Josie Pepper is capable of learning, rather than delivering programmed, pre-formulated texts



**JULIA SCHMIDT** is Manager of Innovation and Digitisation at Munich Airport. After a university degree in business administration Julia began her career in a business consultancy. In 2012 she joined Munich Airport as Head of Project Management Office (Quality Management Division) and, in 2016, moved to the innovation and digitisation management of Munich Airport's Terminal 2 Gesellschaft mbH & Co oHG, which is jointly operated by Lufthansa and the Munich Airport Authority. Julia's current position has the mission to optimise processes with special focus on the passenger's seamless travel chain.



# Why wait?

## Efficiencies in passenger processing

With the demand for air travel set to double over the next two decades, airports must embrace innovation – as both a solution to increasing efficiencies and to improve passenger satisfaction. *Chris Gilliland*, Director of Innovative Travel Solutions at Vancouver Airport Authority, reveals the airport's pioneering BORDERXPRESS and CHECKITXPRESS deployments.

“ A priority when developing passenger-processing technology is to enhance the overall traveller experience and airport performance without compromising safety or security ”

ACCORDING to *TIME*<sup>1</sup> magazine, the average American will spend two to five years of their life waiting in line. At airports, waiting is a bona fide source of frustration for travellers. If there's a way to cut down on wait times, travellers want to know – whether it's checking in on a mobile device or priority boarding – satisfaction increases the shorter time we wait. But, there's also an important benefit to airports themselves. When passengers are held at security, this can mean less time for them to browse and spend in the airport's retail areas, which is an important source of non-aeronautical revenue.

Finding ways for an airport to cut down on wait times makes not only financial sense, but also helps improve the overall customer experience,

a priority for Vancouver International Airport (YVR). However, for many airports, staffing up or expanding to accommodate an increase in volume is not an option. It's also not a practical way to accommodate what might be only temporary spikes in traffic, for example around major holidays and events.

Fortunately, there are other solutions for improving the speed and ease of people and bags through an airport. YVR – recently named Best Airport in North America<sup>2</sup> for the ninth consecutive year – created a dedicated business unit, Innovative Travel Solutions (ITS), with a vision to finding technological solutions to these challenges. As a member of the ITS team, I'm proud to say we've since delivered two time-saving technologies, BORDERXPRESS and CHECKITXPRESS.



### Improving speed and ease of border clearance

Nearly a decade ago, faced with increasing wait times as passenger traffic increased, YVR partnered with the Canada Border Services Agency and later United States Customs and Border Protection to implement self-service kiosks to automate the border-clearance process. BORDERXPRESS is the world's first self-service border control solution that accepts all passports and doesn't require pre-registration or fees. The technology reduces passenger wait times by more than 50 per cent. Since 2009, we've installed more than 1,600 kiosks at 39 airport and seaport locations globally, helping more than 160 million passengers worldwide clear the border securely – more than any other automated passport control provider.

In an industry where revenue hinges on mere minutes, every second counts. Kiosks have been proven to help airports process travellers, on average, up to four times faster than more traditional methods (162 per hour versus 41).

### Improving speed and ease of bag drop systems

At ITS, we continue to develop travel solutions that improve the overall passenger experience and airport efficiency. Recently, we turned our attention to YVR's check-in and bag drop areas, which can see long wait times, congestion and frustration from passengers during peak periods. While there are other self-service bag drop products on the market, none are universally accessible while also being highly efficient – both of which are imperative to airport operations. YVR partnered with New Zealand-based Glidepath, a world leader in airport baggage handling systems, to collaborate on designing an efficient, secure and accessible bag drop: CHECKITXPRESS. The combination of

Glidepath's unparalleled expertise in innovative baggage handling systems and YVR's strong track record in customer-centric design have helped create a truly unique product.

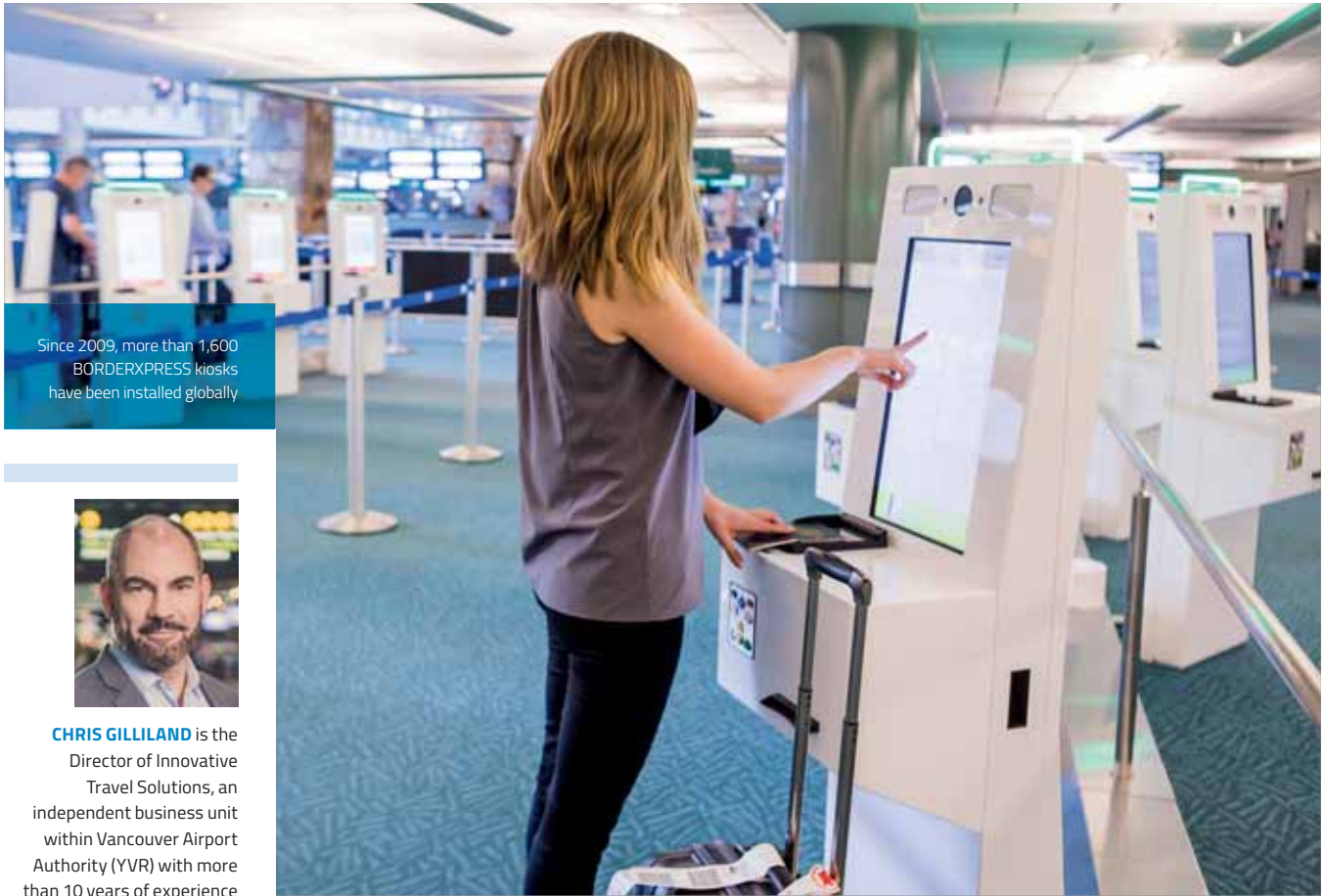
The first CHECKITXPRESS self-service bag drop unit was installed at YVR in May 2018. It is the world's most accessible, efficient and intuitive bag drop; improving ease of use for travellers regardless of their age, digital fluency, language or mobility. The system was ergonomically designed by lowering the profile of the conveyor to four inches (10cm) off the floor and having durable ramps to wheel bags on to the conveyor. The bag drop unit is accessible from multiple sides, offering a user-friendly experience for all travellers. This industry-first creates a more seamless and enjoyable travel experience for everyone.

A priority when developing passenger-processing technology is to enhance the overall traveller experience and airport performance without compromising safety or security. Through its innovative camera technology and superior first-time read-rates on baggage, CHECKITXPRESS has achieved some of the quickest customer processing times in the industry, with first-time read-rates of greater than 90 per cent. ▶

↓ **BELOW:** The first CHECKITXPRESS self-service bag drop unit was installed at Vancouver Airport in May 2018







Since 2009, more than 1,600 BORDERXPRESS kiosks have been installed globally



**CHRIS GILLILAND** is the Director of Innovative Travel Solutions, an independent business unit within Vancouver Airport Authority (YVR) with more than 10 years of experience in kiosk design, kiosk user experience, kiosk layout and flow analysis and continuous improvement for automating border control systems at airports across North America and around the world. Innovative Travel Solutions specialises in developing and delivering innovative industry-leading travel technology to enhance the overall traveller experience and airport performance.

By expediting the bag-drop process, this results in a cost-effective solution to reducing passenger wait times, while taking pressure off essential airport personnel. Instead of waiting in long lines for agent assistance, passengers can check their bags in an intuitive two-step process, where the average processing time is eight seconds with no agent intervention or assistance required.

Plans are now underway to expand the customisable bag drop system throughout YVR and to other airports around the world.

**Opportunity through evolution**

The International Air Transport Association expects the demand for air travel to double over the next two decades. To best take advantage of the opportunities this presents, airports around the world must embrace innovation – as both a solution to increasing efficiencies and to improving passenger satisfaction. By implementing automation and technology, airports open the door for better passenger experiences. Technology that can handle the routine, yet necessary aspects of the passenger experience allows airport staff to focus on the human elements of passenger processing.

Technology is changing human behaviour and shortening our patience for waiting. In some cases, airport technology isn't advancing as rapidly

as people may expect, but safety must always trump efficiency. At YVR, we take a disciplined approach to using technology. We ensure that any innovation implemented is done to improve our customers' experience and aligns with our strategic priorities.

With more than 10 years' experience in kiosk design, user experience, layout and flow analysis, ITS has grown and we are setting our sights on the next innovation in the evolution of the passenger experience at airports and seaports. We seek to unite security, efficiency and innovation to keep pace with passenger growth in the travel industry. We are always looking around and looking ahead, anticipating issues before they happen.

We're exploring predictive analytics and other technologies that can help us better understand how we move people, planes and bags as efficiently as possible. We're also thinking about how the use of biometrics can improve the overall customer journey from check-in all the way to the gate.

It takes a lot of coordination and effort between government authorities, airports and private agencies to speed the flow of bags and people through terminals. But freeing space and personnel in an airport, increasing security, and making passengers happy is worth it. ✕

**REFERENCES**


1. <http://content.time.com/time/magazine/article/0,9171,1657807,00.html>
2. <https://www.skiesmag.com/press-releases/yvr-awarded-best-airport-north-america-9th-consecutive-year/>

# Integrated **smart** security



Melbourne Airport is Australia's busiest 24/7 airport, welcoming more than 35 million travellers annually. Chief of Aviation, *Simon Gandy*, explains the fundamental role security will play in enabling the airport's continued growth and vision for the future, not least through the expansion of the airport's international security screening facility. ▶



**ABOVE:** An artist's impression of the new security lanes 

INTERNATIONAL tourism is booming, so much so that Melbourne Airport has experienced a 46 per cent rise in international passenger traffic since 2012. Melbourne is known as the 'World's Most Liveable City', and due to its popularity as a destination, matched with many airlines enabling non-stop routes, Melbourne is well and truly on track to service almost 70 million travellers a year by 2038.

With such a busy operation, getting security right is. The airport needs to meet the needs of both airlines and its obligations in a security context. Importantly, we need to do it in a way that not only preserves the traveller experience but enhances it.

To understand the integral role security will play in Melbourne Airport's growth, we first need to understand the challenge we're solving.

While most passenger movements through Melbourne Airport today are domestic, the real driver of growth in passenger numbers comes from the international market. In March 2018 the airport celebrated nine years of consecutive month-on-month growth in international passenger numbers, showing the trend has been clear for a while. Forecasts predict the airport will welcome more than 16 million annual international

travellers by 2038 – a 60 per cent increase on today's throughput.


So, our security solution must be adaptable to the demands of today, and the needs of tomorrow. We're tackling those challenges with the expansion of Melbourne's international security screening facility, which is set to be unveiled in November 2018. The T2 Security Screening Expansion is based on the globally-renowned Smart Security initiative, established by the Airports Council International (ACI) and the International Air Transport Association (IATA). It will consist of installing additional screening lanes, advanced technology, an integrated airport security check point solution, parallel divestment stations, an automated tray return system, plus improved passenger pathways and design enhancements.

Once complete, the T2 Security Screening Expansion will not only provide improved safety outcomes, through the use of smart technology, but also an improved traveller experience by providing an easier and efficient process for overseas jetsetters.

### Technology

Technological advancements and digitalisation is shaping the way we travel. Passengers want more

**Security screening technology sits at the heart of today's airport security approach** 

**BELOW:** Melbourne's 'farewell wall' 







control of their journeys and this can be achieved through automation. This trend is impacting most areas of travel, including security.

Security screening technology sits at the heart of today's airport security approach. Whether that technology is an archway metal detector, a current-generation x-ray scanner or a next-generation computed tomography (CT) scanner, the screening technology informs other parameters such as human resources, the training required by operators, and the throughput rates for passengers moving through the process.

As part of Melbourne Airport's security upgrade, two additional body scanning units will be installed with all units upgraded to next generation technology that is in line with the plan that we will develop over the coming months following the Federal Government's recent aviation security announcements.

Melbourne's T2 Security Screening Expansion will also include cutting-edge CT x-ray systems that contain advanced algorithms, which will deliver improved threat detection capabilities. The CT technology, common in hospitals, will also give the airport's security staff a major upgrade over the x-ray scanners they use now. Staff will be able to virtually unpack bags and spin objects around in 3D; potentially eliminating the need to unpack certain items.

### New security entry

Transitioning through security can be one of the most stressful touchpoints in a traveller's journey, which is why creating a calming environment from the outset is key. Melbourne's T2 security entry point will be completely transformed using natural wood panelling and additional lighting to provide clear lines of sight and reduce stress. The refreshed entrance will catch the eye of travellers, naturally guiding people to the area.

It's at this point that international travellers will encounter automated entry gates used for boarding pass verification, streamlining the process and reducing queues.

### Security lanes and improvements

Once inside the revamped security zone, travellers will experience the benefits of using the re-designed parallel divestment stations and the automated tray return system. These parallel divestment stations will allow multiple passengers to simultaneously prepare and push their trays into the screening queue before moving on to the next stage of the process, which is body screening. Essentially, this will allow travellers to progress through the security point at their own pace and style removing the need to wait behind passengers who may have more luggage. Travellers have different needs and this function really appeals to all traveller types.

As part of this upgrade, Melbourne Airport's capability will increase from seven to 10 new passenger screening lanes, plus a dedicated staff and goods screening point will be operational separating the airport workforce – including airline staff – from travellers. These changes will go towards increasing capacity that is much needed to cater to our fastest growing market.

When the project is completed later in 2018, Melbourne will be the first Australian airport with this type of integrated security technology and we're proud of that fact, plus it will be ready just in time for our busy Christmas peak.

At Melbourne, we pride ourselves on pioneering our understanding and application of security technology. This was recognised by Prime Minister, Malcolm Turnbull, who visited the airport earlier in 2018 to see first-hand how effective the new technology is. Accompanying the Prime Minister was Minister for Home Affairs and Immigration and Minister for Border Protection, Peter Dutton, and Minister for Law Enforcement and Cybersecurity, Angus Taylor.

It's certainly an exciting time to be part of the aviation industry with so many technological advances, especially in the fast-moving world of security. ✉



**SIMON GANDY** is currently Chief of Aviation for Melbourne Airport and sits on the Board of Destination Melbourne, the Advisory Board of the Tourism & Transport Forum, and the Swinburne University Aviation Advisory Committee. His aviation career spans 28 years including 10 years with Melbourne Airport where he has held several executive roles leading operations, engineering and construction, business development and airport strategy. More recently, Simon led Australian Pacific Airports Corporation as Acting CEO during their transition between CEOs. Simon's career began in the UK with BAA plc. During his 17 years with the organisation he held a number of senior leadership positions. Simon graduated from Birmingham University with a degree in Mechanical Engineering, later becoming a Chartered Engineer, and is a graduate of the Australian Institute of Company Directors.