PTEASIA
PASSENGER TERMINAL EXPO

SINGAPORE / SEPT 23-24, 2026

Passenger Terminal Expo Asia

EVENT INSIGHTS REPORT

Building for a World That Does Not Yet Exist.

Ninety-three sessions. One hundred fifty-plus speakers. A $2.4 trillion question the industry cannot postpone. This is the definitive record of Passenger Terminal Expo Asia.

SESSIONS
93 across two days

CAPITAL TRACKED
$50B+ announced

REGION OF FOCUS
Asia-Pacific

> **“Many of us are in a slightly unusual business of trying to build today for a world that does not yet exist.”**
>
> GLORY WEE · ACTING DEPUTY DIRECTOR-GENERAL, CIVIL AVIATION AUTHORITY OF SINGAPORE (CAAS)

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ABOUT THIS REPORT

An event insight record of Passenger Terminal Expo Asia, Singapore, September 23-24, 2026, drawn from ninety-three sessions across two days. Quotes are reproduced as stated in the source report, with the attributions given there.

THE STORY OF PTE ASIA

An industry writing checks against a track record it does not fully trust.

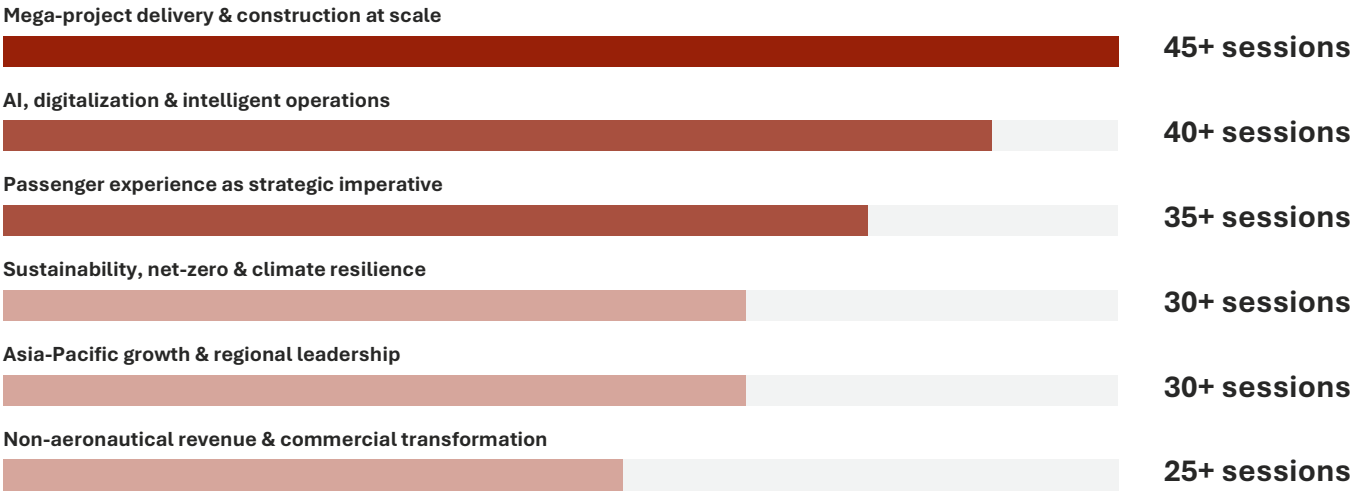
Across ninety-three sessions in Singapore, the world's airport builders, operators, financiers and regulators returned to the same paradox: the sector must invest $2.4 trillion by 2040, and roughly two-thirds of its megaprojects since 2000 have failed to deliver on their initial promises.

The conference did not resolve the paradox. Instead, it reframed it. Speakers from Changi, Uzbekistan Airports, San Francisco, Edmonton, Auckland, Jeddah and dozens of other operators argued that the industry has been asking the wrong question. Rather than "what will 2050 look like?" the question worth building around is "can we design something 2050 can still use?"

Six themes dominated the two days, spanning mega-project delivery, artificial intelligence, sustainability economics, passenger experience, non-aero revenue, and Asia-Pacific's decisive share of global growth. Each theme surfaced at least one honest admission from its practitioners, and each carries a hard financial number attached to it.

The dominant shift on stage was not a technology, but a philosophy. Glory Wee, opening the event, warned that automating yesterday's processes only speeds up an inefficient one. Andrew Davis called the baggage carousel a "200-meter racetrack" no traveller should still be walking. Suchit Bansal admitted that ground transport is treated like an "orphan" in terminal design. Speaker after speaker insisted that the next decade will not be won by digitising counters, but by asking whether those counters need to exist.

FIGURE 1.1 · THEMES RANKED BY SESSION FREQUENCY



Session counts as stated in the source report (out of 93 sessions).

THE EVENT IN THREE MARKERS

The defining number, the counterweight, and the reframe.

THE DEFINING NUMBER

$2.4T

GLOBAL AIRPORT CAPITAL NEEDS BY 2040

More than half of that investment, $1.3 trillion, will land in Asia-Pacific alone. It is the largest infrastructure bet in aviation history.

ROSEMARY ONG · ASIAN DEVELOPMENT BANK

THE COUNTERWEIGHT

2 in 3

AIRPORT MEGAPROJECTS POST-2000
THAT FAILED TO MEET INITIAL PROMISES

A sobering benchmark from Dr Woojin Choi's academic study of 50 major airport projects. Every headline capital plan carries this statistical shadow.

DR WOOJIN CHOI · WESTERN SYDNEY AIRPORT

THE REFRAME

"Our job is not to build the perfect airport for 2050. It is to build an airport that 2050 can work with."

GLORY WEE · CIVIL AVIATION AUTHORITY OF SINGAPORE (CAAS)

19bn

PASSENGERS BY 2045

PASSENGERS BY 2045

A near four-fold increase from today.

Global passenger traffic is projected to reach nineteen billion by 2045, up from roughly five billion today. Confirmed aircraft orders could double the global fleet from 22,000 to as many as 46,000 aircraft within twelve to sixteen years. The aircraft are on order. The ground infrastructure to serve them, in most markets, does not yet exist.

FIGURE 2.1 · PASSENGERS, TODAY VS. 2045

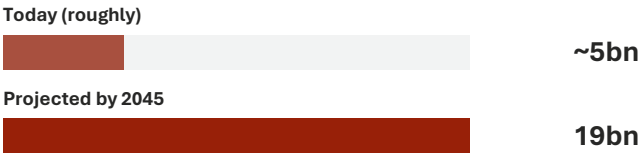
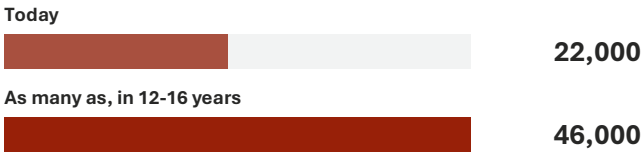


FIGURE 2.2 · GLOBAL FLEET, TODAY VS. 12-16 YEARS



$2.4T

Global airport capital needs by 2040, with $1.3T concentrated in Asia-Pacific alone.

ACI ASIA-PACIFIC

$11B

Airports of Thailand programme lifting capacity from 116M to 205M passengers over 10 years.

SIROTE DUANGRATANA, AOT

16%

Poland's annual passenger growth rate, roughly triple the European average of 4-5%.

KAROL HALICKI, BIALYSTOK

46,000

Confirmed fleet trajectory: from 22,000 aircraft today to as many as 46,000 in 12-16 years.

FUTURE AIRPORT ECOSYSTEM PANEL

What the numbers say together

The demand curve is no longer speculative. Thailand alone is committing $11 billion to expand from 116 to 205 million passengers, adding Suvarnabhumi's $7.5 billion South Terminal to serve a further 50 million. Poland is building an entirely new mega-hub, Port Polska, targeting 34 million passengers initially and 60 million at capacity, because Warsaw Chopin jumped from 18 million passengers in 2023 to 24 million in 2025 without any new airport being built.

India needs one hundred new airports. Indonesia needs thirty-nine, spread across 17,000 islands. Uzbekistan is investing $3 billion in a 35-year concession for Tashkent and has attracted 51 expressions of interest for its Bukhara PPP alone. The pressure is not evenly distributed, but it is unrelenting. Delegates left Singapore with no doubt that the scale is real, the timelines are short, and the failure rate is documented.

> "More than two-thirds of airport projects after 2000 could not meet what they promised at the beginning.
>
> DR WOOJIN CHOI · WESTERN SYDNEY AIRPORT · BUILDING AIRPORTS UNDER PRESSURE

01

DOMINANT THEME

Delivering mega-projects when concrete meets uncertainty.

Referenced in more than 45 of 93 sessions, the challenge of financing, sequencing and completing multi-billion-dollar airport programmes was the single most pervasive conversation of the event.

Every developed and developing region in the room was building at once. DFW Terminal F transported a record 2,860-metric-ton prefabricated module 1.2 kilometres in just 37 minutes, saving seven months on its $1.63 billion timeline. Auckland is delivering a $5.7 billion transformation while 50,000 travellers move through the terminal every day. Taoyuan is phasing a $4 billion, 580,000-square-metre programme with a 100,000-square-metre roof, opening its north concourse in 2025 and the main terminal in 2027. Jeddah is chasing a Saudi Vision 2030 target of 165 million passengers, and San Diego's Terminal 1 rebuild is running at $3.8 billion.

The delivery methods on show were increasingly industrial. Modular and prefabricated construction reduced airside disruption by up to fifteen percent in the projects that adopted it. Western Sydney and Noida devoted twelve months to design definition before breaking ground, treating ORAT as a discipline in its own right. Melbourne codified a Design Guardian model to protect intent across dozens of parallel work packages.

Yet Dr Woojin Choi's research anchored every panel: two-thirds of airport megaprojects launched since 2000 have failed to meet what they promised. Jonathan Massey of Corgan warned that the natural response, compress the schedule, is the wrong one.

2,860t

Prefabricated module transported 1.2 km in 37 minutes at DFW Terminal F, a world record for modular airport construction.

$5.7B

Auckland's transformation programme delivered alongside 50,000 daily travellers and 400 daily aircraft movements.

12 mo.

Design definition phase at Western Sydney Airport before construction began, credited with reducing downstream failure risk.

THE DELIVERY PLAYBOOK THAT REPEATEDLY WORKED SHARED FOUR TRAITS

Early design definition
to compress uncertainty

Phased just-in-time capacity
that matched capital to demonstrated demand

Prefabrication
to shield live airfields from disruption

An explicit governance function
protecting design intent through inevitable value-engineering pressure

> "It's natural when we get to a point of pressure to simply accelerate. That intensifies pressure and when you intensify pressure, you make poor decisions."
>
> JONATHAN MASSEY · MANAGING PRINCIPAL, CORGAN

THEME 02

AI has stopped being a question. It has become a design constraint.

Referenced in more than 40 of 93 sessions, artificial intelligence pervaded every track at PTE Asia. The centre of gravity has moved decisively from "should we adopt AI?" to "how do we redesign operations around what AI now makes possible?"

Glory Wee framed the shift in a single sentence: "A truly digital airport is not one with more screens and apps. It is an airport that can increasingly understand what is happening within it and anticipate what will happen next." Amr Aboul Nasr El Yafi extended it with a design principle for the era, "Invisible AI," where the best sign the technology is working is that passengers barely notice it.

China demonstrated what national scale looks like: 270 certified airports, 1.4 billion passengers, FOD detection at 98% accuracy, robotic baggage at 357 bags per hour. Istanbul demonstrated what one airport at scale looks like: 706,000 passengers served by its digital assistant with 5.74 million queries. Kansai showed what commercial impact looks like: throughput from 4,500 to 6,000 passengers per hour and 30% more duty-free spending within three months.

> **If we automate yesterday's processes, we may simply make an inefficient process run a lot faster.**
>
> GLORY WEE · SHAPING THE FUTURE OF AVIATION

The counterweight arrived from AJ Eserjose, whose analysis of the Collins Aerospace outage that hit Heathrow, Brussels and Berlin simultaneously reframed cybersecurity as a passenger experience problem, not an IT one.

THE CYBERSECURITY SHADOW

600%

Rise in aviation cyberattacks between 2024 and 2025, alongside a 700% surge in data theft. Airports simultaneously operate 70 to 150 fragmented IT systems each.

KHUSLEN MUNKHBAYAR · NEW ULAANBAATAR INTERNATIONAL AIRPORT

CHINA'S SCALE, ONE NUMBER

1.4B

Passengers · 270 airports · 98% FOD detection accuracy

ISTANBUL'S PROOF POINT

706K

Passengers served by the digital assistant, call centre cut from 19 to 10 agents.

357	5.74M	6,000
Robotic baggage, bags per hour in China	Queries handled by Istanbul's digital assistant	Kansai throughput, passengers per hour, up from 4,500

PRODUCTIVE DISAGREEMENTS

Six unresolved tensions that will define the next decade.

Across ninety-three sessions, delegates named the trade-offs the industry has not yet resolved. These are the productive disagreements shaping capital allocation, master planning, and policy through 2050.

01 AUTOMATION VS. THE HUMAN TOUCH

Every CEO said the human touch is irreplaceable.

Every operations director said they cannot find enough humans. The industry is automating its way to efficiency while promising it will never lose its soul.

02 SUSTAINABILITY VS. ECONOMIC REALITY

The industry set a 2050 deadline it does not know how to meet.

SAF covers 10% of demand. Hydrogen is decades away. Scope 3 is everyone's problem and nobody's budget line.

03 PREDICTED FUTURE VS. FLEXIBILITY

Two-thirds of projects fail to deliver on their initial promises.

Yet the industry keeps building on single-point forecasts. Once concrete is poured, the answers become far more expensive.

04 PPP VS. PUBLIC INTEREST

Samarkand tripled its passengers after privatization.

But who flies to the Pacific islands where no profit exists? Private capital delivers growth but cannot guarantee connectivity.

05 SECURITY THOROUGHNESS VS. SPEED

Criminals move at the speed of technology.

Regulators move at the speed of legislation. And 0.1% of five billion passengers pose a risk that shapes how every one of them is screened.

06 MEGA-HUBS VS. REGIONAL AIRPORTS

One mega-hub terminal now costs more than every airport in the Pacific.

Yet those small airports are the only link to healthcare, disaster response and connection for entire communities.

THEME 03 · SUSTAINABILITY, NET-ZERO & CLIMATE RESILIENCE

Ambition outpaced execution. Now execution has to catch up.

Vincent Low's warning framed the sustainability track: "Ambition outpaced execution. Aviation organizations rapidly adopted 2050 net-zero targets even though the necessary technologies were not yet established." First-generation sustainable aviation fuel feedstocks cover only about 10% of projected demand. Hydrogen requires cryogenic storage and distribution airports cannot yet manage. The World Economic Forum estimates $500 billion in climate-related aviation disruptions by 2050.

The bright spot came from finance, not fuel. Marvi Bilal of Pakistan Airports Authority reframed sustainability as a revenue engine, mapping five facets from energy sales to concessionaires through carbon monetization to green financing. In Pakistan, 78% of collected waste could feed sustainable aviation fuel production. And San Diego Terminal 1 proved sustainability and cost can align: a single structural engineering decision cut steel by 4,000 tons, embodied carbon by 30%, and saved $53 million.

$53M

saved and 30% less embodied carbon from a single structural change at San Diego Terminal 1.

ANDY HUANG, SAN T1

> **Sustainability has been considered as a cost center. The strategic shift is to consider it as something that can create commercial value for airport operators.**
>
> MARVI BILAL · PAKISTAN AIRPORTS AUTHORITY

THEME 05 · NON-AERONAUTICAL REVENUE & COMMERCIAL TRANSFORMATION

The dwell-time paradox: airports get faster, and the revenue model gets thinner.

Non-aeronautical revenue accounts for 37% of global airport income and 43.5% in Asia-Pacific and the Middle East. Yet the share of that revenue per passenger has slipped from 8.61% in 2017 to 7.57% in 2024, and average dwell time has fallen from 125 minutes to 104 minutes. Efficiency and revenue are on collision course.

Hifsa Aftab of Pakistan Airports Authority named the culprit: terminals designed supply-first, with commercial strategy bolted on at the end. Her prescription was blunt: "Study the market first, study the patrons first, and then you decide on a commercial strategy." Changi's Jewel offered the clearest counter-model, with 83 million visitors and 60% of them local, positioning the airport itself as the destination. Kansai showed the mechanism at operational scale: seventeen CT lanes cut queue time, and duty-free and F&B spending rose 30% within three months.

FIGURE 6.1 · NON-AERO REVENUE SHARE



FIGURE 6.2 · AVERAGE DWELL TIME



Source: Aprizal, InJourney Airports

ASIA'S MOMENT

$1.3T

of the $2.4 trillion global capital need sits in Asia-Pacific alone.

Singapore was a deliberate choice of venue. Asia-Pacific carries 40% of international passenger traffic and more than half of the world's airport capital plans. Speakers from Changi, Uzbekistan, Adani, China, Poland and the Pacific Islands each described a region navigating its own inflection point.

> **The region that will generate the largest share of aviation's growth should not simply adopt solutions developed elsewhere.**
>
> GLORY WEE · CIVIL AVIATION AUTHORITY OF SINGAPORE (CAAS)

CHINA

The scale that redefines the category.

270 certified airports carrying 1.4 billion passengers annually. AI-powered FOD detection at 98% accuracy. Leading global deployment of autonomous eVTOLs and centralised boarding-bridge control.

$70B
LOW-ALTITUDE ECONOMY, PROJECTED $275B BY 2030

UZBEKISTAN

A closed country reopens its skies.

Samarkand's passenger flow tripled from 500,000 to 1.5 million in four years post-PPP. Tashkent is now underwritten by a $3 billion, 35-year concession. Bukhara alone attracted 51 expressions of interest at RFQ stage.

3×
SAMARKAND PASSENGERS IN FOUR YEARS

THAILAND

The largest single-country expansion at PTE Asia.

Airports of Thailand is deploying $11 billion over a decade to lift capacity from 116 million to 205 million passengers, anchored by Suvarnabhumi's $7.5 billion South Terminal adding 50 million.

205M
TARGET ANNUAL CAPACITY

INDONESIA & INDIA

The demand for greenfield capacity is unprecedented.

Indonesia needs 39 airports across 17,000 islands. India needs 100. Bali generates $139 million annually with 41% from non-aero, on a footprint one-third the size of Jakarta's.

139
AIRPORTS REQUIRED ACROSS TWO ECONOMIES

POLAND (AS COUNTER-EXAMPLE)

The market outpacing its infrastructure.

Poland is growing at 16% annually against Europe's 4-5%. Warsaw Chopin ran from 18 million passengers in 2023 to 24 million in 2025, forcing construction of Port Polska.

60M
PORT POLSKA ULTIMATE CAPACITY

PACIFIC ISLANDS

The counterpoint that reframes the numbers.

Twenty-two Pacific nations combined represent 0.25% of the global aviation market, yet their airports are the sole connection to healthcare, disaster response and family. Floor Verhoeven asked what happens when the lift mechanic sits two islands away.

0.25%
OF GLOBAL MARKET, 100% OF LOCAL LIFELINE

40%
ASIA-PACIFIC'S SHARE
of international passenger traffic. And of the ambition. And of the risk.

ADVANCED AIR MOBILITY & THE LOW-ALTITUDE ECONOMY

The market is here. The infrastructure is not.

Seven dedicated sessions at PTE Asia traced the transition of advanced air mobility from concept to commercial operation. Dubai has certified its first vertiport. EHang is flying passengers in 23 countries. A Joby test flight between JFK and downtown Manhattan took 7 minutes against a 60-90 minute drive. Yet Suchit Bansal of Adani Airports was blunt: "There are no confirmed plans" for eVTOL infrastructure at most of the region's major hubs.

$1.4T

AAM MARKET BY 2040. BCG projection, roughly one-third in China, one-third in the United States, one-third in the rest of the world.

$275B

CHINA LOW-ALTITUDE ECONOMY BY 2030. Up from $70 billion in 2023, backed by national policy and demonstrated commercial deployment.

150K

EVTOLS PROJECTED IN URBAN AIRSPACE. Below 500 metres, according to EHang. The airspace management challenge sits alongside the physical infrastructure gap.

7 min — Joby test flight, JFK to downtown Manhattan

60-90 min — Drive for the same journey

UNANSWERED QUESTIONS THAT CLOSED THE EVENT

01	**"Why do I even have to touch my bag? Why do we still have a check-in process?"**	MYRON KEEHN, EDMONTON INTERNATIONAL AIRPORT
02	**"If somebody's robot wanders off in the terminal, is that a lost item, a lost passenger, or an IT incident?"**	GLORY WEE, CIVIL AVIATION AUTHORITY OF SINGAPORE (CAAS)
03	**"Do we need a jet fuel facility if all-electric aircraft are introduced?"**	DR WOOJIN CHOI, BECHTEL - WESTERN SYDNEY AIRPORT
04	**"What happens in the first 30 minutes of a system outage? Who makes the call? Who tells the front line?"**	AJ ESERJOSE, OT-ISAC
05	**"If your lift mechanic sits two islands away and it takes 48 hours to repair, what happens to your accessibility?"**	FLOOR VERHOEVEN, AIRBIZ
06	**"Can sustainability actually make an airport money?"**	MARVI BILAL, PAKISTAN AIRPORTS AUTHORITY

NINE LESSONS OPERATORS ARE TAKING HOME

If you build one thing from PTE Asia, build this.

Drawn from 93 sessions and cross-referenced across dominant themes.

01 Design for both high-tech and high-touch journeys.

Passengers do not want one experience. Efficiency-seekers need self-service pathways; anxious or first-time travellers need visible human help. Terminal layouts must serve both without forcing anyone into the wrong lane.

Evidence: Mike Nakornkhet on information booths; Nadiah Tan Abdullah on Butterfly Effect programme, Malaysia Airports.

02 Sustainability must generate revenue, not just compliance.

The most durable initiatives create economic value alongside environmental value. Heathrow's SAF fund and Pakistan's waste-to-SAF potential show how ambition survives budget cycles when it earns its keep.

Evidence: Marvi Bilal, Sustainability That Pays; Vincent Low, Beyond Targets.

03 Terminal design must be demand-led, not supply-led.

Write the commercial strategy before the architectural scheme. Terminals designed backwards from passenger data and revenue potential outperform those where commercial teams are asked to fill fixed floorplates.

Evidence: Hifsa Aftab, Designing Revenue-Smart Terminals.

04 Build a real-time data foundation before scaling AI.

AI is only as good as the operational data it receives. Fragmented systems, stale feeds and stakeholder silos will cap the return on any machine-learning investment. Airports are best placed to broker selective, secure data sharing.

Evidence: Phil Scanlon, The Airport That is Connected; Nick Batchelor, Automation at Scale.

05 Automation must respect human expertise and trust.

Ground handlers frequently outperform automation in exception cases. Involve frontline teams early in trials, position technology as freeing staff for higher-value work, and celebrate the moments when human judgment wins.

Evidence: Tatsuya Izumi, Narita, Automation at Scale.

06 Plan the airport as a platform, not as a technology.

Twenty-three years ago the smartphone did not exist. Predicting specific 2050 technologies is a fool's errand. Design permanent bones with changeable processes so tomorrow's tools can plug in without ripping up concrete.

Evidence: Myron Keehn, Executive Panel: The Airport of 2050; Glory Wee, Shaping the Future of Aviation.

07 Cybersecurity requires decisions, not budgets.

Munkhbayar's five practical steps, from ranking systems by passenger impact to running tabletop exercises, cost little. The barrier to resilience is leadership priority, not capital expenditure.

Evidence: Khuslen Munkhbayar, New Ulaanbaatar; AJ Eserjose, OT-ISAC.

08 Design for the bad day, not just the good one.

Recovery is not system recovery, it is operational recovery and passenger confidence. Test fallback procedures with cross-functional teams before a Collins Aerospace-scale outage tests them for you.

Evidence: AJ Eserjose, The Art of Invisible Operations.

09 Rehearse day one long before opening day.

Operational readiness is a people programme, not a commissioning checklist. Run ORAT trials in phases while construction is still under way, engage airlines from the design stage, and rehearse a complete live aircraft turnaround so opening night is not the first time the whole airport runs as one system.

Evidence: Kiran Jain, Noida International Airport, From Infrastructure to Operations: Preparing a New Airport for Day One Success.

THE PARADOX, RESTATED

The question is not "what will the airport of 2050 look like?" It is "can we build something 2050 can still use?"

Three questions surfaced repeatedly at PTE Asia and remained unanswered when the doors closed. Each one will shape capital allocation for the next decade. Each one deserves a working group before it deserves a budget line.

Q1

Who pays for infrastructure flexibility?

Flexibility costs money upfront, and CFOs demand justification for every dollar. But two-thirds of megaprojects since 2000 failed their initial promises, and COVID destroyed every demand forecast overnight. No one at PTE Asia offered a clean financial model that reconciles the up-front premium of adaptable design against the multi-decade optionality it buys. Until that model exists, most airports will keep building for the forecast they were given.

Q2

Can sustainability actually become self-financing?

San Diego proved a single structural decision can save $53 million and cut 30% of embodied carbon simultaneously. Marvi Bilal proved 78% of Pakistan's collected waste could feed SAF production. But Vincent Low was equally clear: first-generation feedstocks cover only 10% of demand and hydrogen infrastructure is decades away. The revenue thesis is real, and its scale remains unproven at the level the 2050 target requires.

Q3

What actually disappears when AI redesigns the process, not the interface?

Glory Wee's provocation, that technology should make us question whether a counter needs to exist at all, went further than any panel followed it. If check-in disappears, what happens to the queue-management floorplate designed around it? If bags travel independently of passengers, what happens to reclaim halls? The invisible AI thesis reframes the terminal, not just its interfaces.

THE ORGANISING PRINCIPLE

"The region that will generate the largest share of aviation's growth should not simply adopt solutions developed elsewhere."

GLORY WEE · CIVIL AVIATION AUTHORITY OF SINGAPORE

PTE ASIA
PASSENGER TERMINAL EXPO

The airports that succeed will be the ones designed for worlds their builders cannot yet imagine.

Passenger Terminal Expo Asia gathered ninety-three sessions in Singapore around one shared conclusion: the industry must invest at unprecedented scale, using better design, better partnerships and better resilience than the last decade delivered.

EVENT
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GLORY WEE · ACTING DEPUTY DIRECTOR-GENERAL, CIVIL AVIATION AUTHORITY OF SINGAPORE