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WORLD AIR NEWS

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AAD 2026 Special Report

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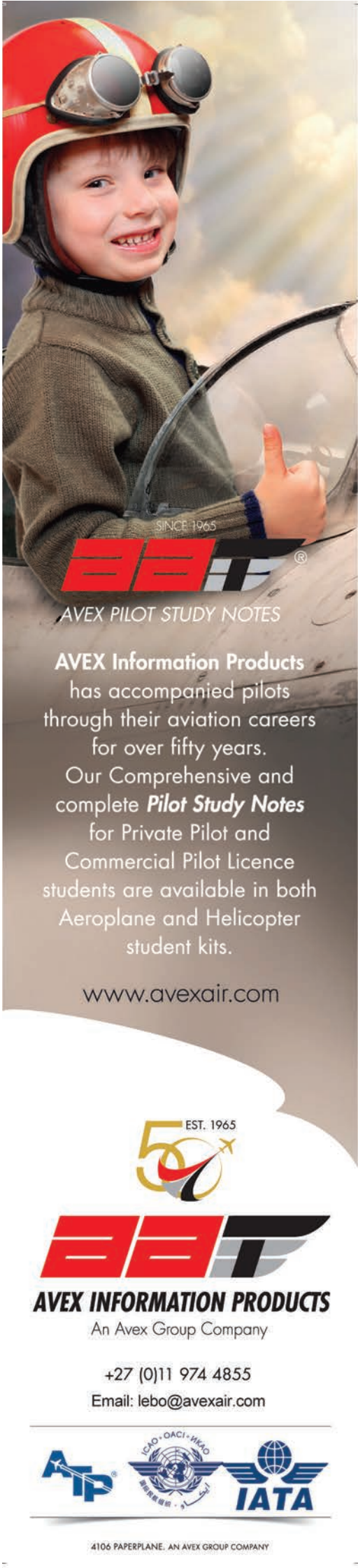
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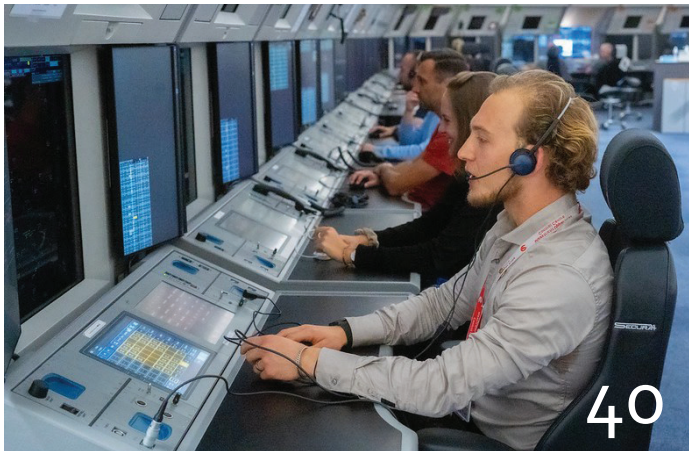
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WHERE DOES THE AIRPORT END?



Image Credit: Pexels. Qui Nguyen

For most of aviation's history, the answer seemed obvious: an airport had a perimeter fence, a runway, an apron and a terminal. Passengers arrived at the edge of that system, moved through it and departed by air. That definition is becoming much harder to sustain.

The October edition of World Airnews examines Airports as Ecosystems, Not Terminals. The essential parts of an airport increasingly extend beyond visible buildings and infrastructure into the relationships among airlines, handlers, air traffic services, border agencies, technology providers, energy systems, maintenance organisations and the transport networks that feed it. Some of those relationships now reach well beyond the fence.

A passenger can begin parts of the travel process before reaching the terminal. Digital identity, biometric processing and off-airport baggage services are moving check-in, border preparation and identity verification further upstream, creating what we describe in this edition as a new digital perimeter around the airport.

The same expansion is happening physically. Rail can form part of an airline itinerary. Logistics parks, manufacturing zones and commercial districts can grow around an airport until the gateway becomes the centre of a much larger economic geography. In South Africa, the aerotropolis models developing around OR Tambo and King Shaka demonstrate that the airport's influence can extend through entire regional transport and industrial systems.

Energy adds another dimension. As aircraft, ground equipment and airport systems become more dependent on electricity, the airport may have to operate as an energy system rather than simply a consumer at the end of a power line. Generation, storage and microgrids could become core infrastructure, sustaining airport operations and eventually supporting nearby communities and industries.

Even the airspace above the airport is becoming more distributed. Remote towers can place controllers far from the runway they are managing, while drones, digital traffic-management services and artificial intelligence are introducing new layers of information and coordination into the airspace around conventional aviation.

What ties these stories together is integration, rather than technology for its own sake. One of the most important pieces in this edition approaches safety in exactly those terms. Airports are full of competent organisations, each with its own procedures and responsibilities, yet the greatest risks often emerge where one organisation meets another. A turnaround, runway movement, dangerous-goods shipment or emergency response can involve several organisations sharing the same safety outcome.

The same principle applies commercially and operationally. A new airport system creates value only when it works with the organisations and systems around it. Investment without a clear operational purpose or interoperability can leave an airport with sophisticated components that still fail to function as a connected environment.

Business aviation belongs in this discussion for the same reason. A modern FBO may look simple from the passenger's perspective, but behind the lounge and waiting aircraft lies a complex network of handling, apron operations, flight planning, fuelling, crew support, maintenance, security and border interfaces. In many respects, the FBO has become an airport within the airport.

Advanced air mobility pushes the question further. EHang's pilotless eVTOL operations and the infrastructure developing around them show aviation moving away from the traditional geometry of runway, terminal and perimeter fence. The aircraft is only one part of a distributed aviation network embedded in cities and connected to wider transport systems.

October also provides an opportunity to revisit AAD 2026 from the same systems perspective. Our reporting from Waterkloof repeatedly moved beyond the aircraft and equipment on display. Embraer discussed the local support and technical capability needed to expand its African presence. Denel focused on rebuilding engineering capability and turning it into sustainable business. HENSOLDT's story centred on the electronic architecture surrounding modern airpower, while ExecuJet's African MRO strategy prioritises technical capability and customer reach over simply adding bases. The parallel with modern airports is clear.

Whether the subject is a modern airport or a defence platform, visible hardware tells only part of the story. Capability resides in the surrounding systems: the people, data, infrastructure, energy, maintenance, regulation and relationships that allow it to work. That is the thread running through this edition. The airport has not disappeared; it has become much larger than just a terminal.

THE CAPACITY WE CANNOT SEE

Runways, gates and terminal space no longer define airport capacity by themselves. Capacity increasingly depends on how effectively existing systems and infrastructure work together.

For much of aviation's history, airport capacity has been understood in physical terms. More passengers required larger terminals. More aircraft required additional gates and stands. Growing traffic eventually demanded more runways, more baggage facilities, more processing positions and more people.

That logic still applies, and airports will continue to expand where geography, economics and demand make it possible. Yet capacity also depends on how efficiently existing infrastructure is used.

Releasing a gate several minutes earlier allows the next aircraft to arrive sooner. Clearing a passenger before the physical border reduces processing on arrival. Locating a mishandled bag quickly speeds recovery. When controllers, dispatchers and airline operations teams share the same weather picture, they can respond to disruption earlier. These gains create



Image Credit: SITA



Image Credit: SITA

no new concrete, gates or runways; they release more capacity from the system already in place. Much of that capacity depends on information moving smoothly between organisations and systems.

From Airport To Ecosystem

An airport may appear to passengers as a single environment, but operationally it is a network of organisations. A journey can involve the airport operator, airline, ground handler, security provider, immigration authority and baggage systems, while the aircraft interacts with dispatchers, air traffic control, weather services and multiple operational platforms. These organisations may pursue the same outcome while relying on different systems, processes and data.

The challenge is therefore not simply to digitise each participant independently. It is to make the participants and their systems work together.

SITA, the International Society of Aeronautical Telecommunications' 2025 Air Transport IT Insights report, found that the air transport industry invested a record US$50.8 billion in technology during 2025. At the same time, they identified data coordination between systems and partners as a continuing obstacle to extracting the full value of that investment.

That distinction matters. An airport can contain sophisticated technology and still suffer from poor information flow between the organisations using it. The next stage of airport digitalisation is to connect the systems that support the journey, rather than install each one in isolation.

Capacity Without More Concrete

The pressure to make those connections work is growing. In March 2026, the International Air Transport Association said global air passenger demand is expected to more than double by 2050 under all of its long-term scenarios. SITA's 2025 Impact Report describes the same challenge in passenger terms, projecting about 10 billion passengers a year by mid-century.

Physical infrastructure will remain essential. New terminals, stands and runways will still be required in many markets. Expansion, however, is expensive, slow and physically constrained in some locations. Digital systems provide another route by extracting more performance from existing infrastructure.

Common-use systems, automated passenger processing, digital border tools, integrated airport operations and shared data do not remove physical limits. What they can do is allow airports to use available space, gates, processing positions and operational time more efficiently.

SITA points to Toronto Pearson and Abu Dhabi airports, where AI-driven Total Airport Management tools are being used to recover minutes during aircraft turnarounds. The operational value emerges as small time gains accumulate across many movements during the day, releasing capacity rather than building it.

The Border Moves Upstream

Passenger processing offers another example of connectivity releasing capacity. Digital travel cre-

dentials, advance risk assessment and pre-clearance can move part of border processing earlier in the journey, distributing work that was once concentrated at the physical checkpoint before passengers reach the immigration desk.

The Value Of A Shared Picture

Connectivity is especially important during disruption. Weather affects several participants at once, yet pilots, controllers, dispatchers, airport operators and airlines do not necessarily receive the same information at the same time.

During a 2025 proof of concept at France's Reims Area Control Centre, air navigation service provider DSNA gave controllers access to the same live weather picture already used by pilots and dispatchers. SITA reported that, across 21 days with weather-related capacity impacts, delays were reduced by up to 65%, with an estimated 60,000 to 105,000 delay minutes saved. Those figures are SITA's reported results from a specific trial and should not be treated as evidence that the same outcome would automatically occur elsewhere.

The technology did not replace the controller, dispatcher or pilot. It narrowed the gap between what each participant could see, enabling decisions based on a more consistent operational picture. Because disruption crosses organisational boundaries, earlier access to relevant information gives teams more opportunity to reduce secondary delays and knock-on effects.

When The Bag Joins The Network

Baggage illustrates the same principle on a smaller but highly visible scale, with consumer tracking devices adding another source of information to recovery workflows.

SITA has integrated Apple's Share Item Location capability with WorldTracer. In December 2025, it reported that the number of truly lost bags decreased by 90% in participating cases where location sharing was enabled. The figure does not describe global baggage performance, but it shows how consumer data can feed directly into airline systems and recovery workflows instead of remaining a separate information source.



Image Credit: SITA

The System Behind The System

The more connected an airport becomes, the more dependent its participants become on one another.

That makes interoperability and data quality central to airport performance. A passenger-processing system may function perfectly on its own but deliver limited benefit if it cannot exchange the information required by the airline, border authority or airport systems around it. An operations platform may identify a developing problem, but its value depends on whether the organisations capable of responding can see and use that information.

Connectivity therefore creates both capacity and dependency. The same integration that helps an airport coordinate operations can also create new points of vulnerability when data is incomplete, a system is unavailable or organisations are unable to exchange information.

This is why resilience, contingency planning and clear operational ownership become more important as airport systems become more interconnected. A digital airport ecosystem is only useful if it can continue to support the operation when conditions are no longer normal.

People Move Up The Decision Chain

The shift is less about replacing airport workers with software than changing where they direct their attention. Routine processing can increasingly be automated or supported by digital tools, allowing people to focus on exceptions, competing priorities and situations requiring judgement. A system may identify a developing disruption, but people still decide how aircraft, gates, crews and other resources should be managed.

People working with sophisticated systems must recognise when information is incomplete, inappropriate or wrong, and retain the competence to operate when digital systems are degraded or unavailable. Technology can process more information and connect more participants, but human judgement remains essential when the system encounters ambiguity, competing priorities or failure. Better information flow cannot remove the need for physical expansion; it can, however, help an airport use existing infrastructure more intelligently and push its limits further.

When Software Becomes Infrastructure

The airport of the future will still be recognised by its runways, terminals, aprons and control towers. Physical expansion will remain necessary, but better information flow can help existing infrastructure work harder. Less visible infrastructure will sit in the connections between systems managing passengers, aircraft, baggage, borders, weather and operations. As those connections become integral to daily operations, software becomes part of the infrastructure through which the airport functions.


Image Credit: SITA

The measure of that infrastructure is how effectively it allows airports, airlines, handlers, authorities and other participants to operate as one connected environment. Future capacity may depend as much on making existing assets work together as on building more.



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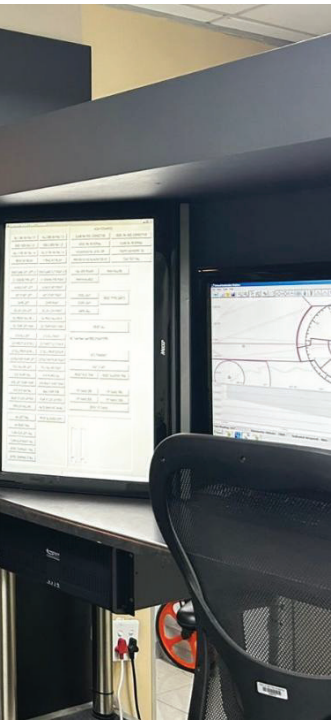
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WHEN AIRPORT TECHNOLOGY DOESN'T DELIVER

Why Luis Felipe Oliveira says better procurement begins with defining the outcome

Airports are investing heavily in artificial intelligence, biometrics, digital identity, automation and increasingly connected operational systems. But sophisticated technology does not automatically produce a better airport.

The more basic question comes first: what problem is the investment supposed to solve?

For Luis Felipe Oliveira, former Director General of Airports Council International World and now Executive Director and CEO of Exactly Consulting and Services Sarl, that question should be answered before an airport approaches suppliers.

"In the end, you get what you ask for," he says.

A poorly defined requirement can produce exactly that: a technically capable system that delivers only marginal improvement to the passenger, the operation or the airport's commercial performance.

The Technology Has To Fit The Airport

Oliveira's argument is not that airports should resist technology. It is that investment has to begin with the airport's own operating environment, passenger profile and commercial objectives.

A system that makes sense at a major international hub may be unnecessary, unaffordable or poorly suited to a smaller regional airport. Passenger volumes, processing constraints, existing infrastructure, available skills and the airport's role in its market all affect whether an investment is likely to deliver value.

That makes technology selection less a question of what is newest and more a question of fit. The airport has to understand where friction exists, what improvement it wants to achieve and how success will be measured before deciding what technology belongs in the solution.

An Airport Is Not One System

Technology is also being introduced into an environment in which no single organisation controls the entire passenger journey. Airlines, ground handlers, border authorities, security agencies, concessionaires and airport operators may all use different platforms and hold different pieces of information.

A new airport system therefore has to work within an existing operational landscape. Interoperability is not simply a technical benefit to be discovered after installation; it is a procurement requirement that should be considered from the outset.

For the airport, the question is not only whether a product performs its own function well, but whether it can exchange the information required by the organisations and systems around it without creating another isolated layer of technology.

The RFP Sets The Direction

This is where the request for proposal becomes important. If the requirement is vague, suppliers can only respond to what has been asked of them. If it is too narrowly specified, the airport may also limit the range of solutions capable of addressing the underlying problem.

The useful sequence is therefore to define the problem, the desired outcome, the measurable improvement, the operational constraints and the integration requirements before specifying the solution.

That reverses a temptation familiar across technology procurement: becoming interested in what a product can do and only afterwards deciding where it might fit.

A clear RFP does not need to prescribe every technical answer. It does, however, need to tell prospective suppliers what the airport is trying to achieve. The distinction matters because a technically compliant installation can still fail to produce a meaningful operational or passenger benefit.

Technology And The Human Journey

The same discipline applies to the passenger experience. Automation can remove queues and repetitive transactions, but passengers do not all arrive with the same digital confidence, mobility, language ability or need for assistance.

Human support therefore cannot be treated simply as a fallback after a process has been automated. If an airport is redesigning check-in, identity verification, wayfinding or passenger processing, the way people obtain help is part of the service requirement itself.

For Oliveira, technology should support the journey rather than become its purpose. The best result may be a process in which routine transactions disappear into the background while airport staff are freed to deal with the situations that genuinely require human judgement or assistance.

The Airport Has To Know What It Wants To Be

There is a broader strategic question behind the procurement decision. Airports differ not only in size but in function, geography, passenger mix and relationship with the communities around them.

Oliveira describes this as understanding the airport's own vocation. A large international hub may have reason to invest heavily in retail, entertainment, biometric processing and complex transfer systems. A smaller airport may create more value by concentrating on efficient regional access, straightforward passenger processing or services closely connected to its local economy.

The implication is that technology strategy should not be built by copying another airport. The airport first has to decide what role it intends to perform and where technology can materially improve that role.

Start With The Outcome

The measure of a technologically advanced airport is not the number of automated systems it has installed. It is whether those systems solve identifiable problems.

A biometric process that does not materially improve passenger flow, an AI platform that does not improve operational decisions, or an automated system that creates another isolated technology layer may be sophisticated without being particularly useful.

Oliveira's argument therefore begins well before procurement. Define the airport's needs. Understand the passenger journey. Identify where information must move between systems. Decide what improvement should be measurable. Then ask suppliers how technology can deliver it.

In an industry with no shortage of new technology, the more important discipline may be knowing when, where and why to use it.


Image Credit: AI

THE DIGITAL PERIMETER

Biometrics, digital identity, remote check-in and off-airport baggage processing are pushing parts of the passenger journey beyond the terminal. The result could be a faster, more distributed aviation ecosystem, but it also raises harder questions about privacy, demographic bias, redress and the security of the digital infrastructure on which the new airport increasingly depends.

The Airport Now Begins Before Arrival

For most of aviation history, the airport perimeter was easy to understand. A fence separated public space from the airfield, the terminal concentrated passenger processing, and identity was repeatedly proved by presenting a passport and boarding pass at different points in the journey.

That model is beginning to change. The passenger can now enter parts of the aviation system before seeing a terminal. Identity may be established on a phone, travel authorisation assessed remotely and baggage accepted at an off-airport location. At the airport itself, facial recognition can replace repeated document presentation at selected touchpoints.

This is more significant than another layer of automation. The physical perimeter remains essential for safety and security, but around it is forming a second perimeter made of credentials, cloud services, mobile devices, APIs, biometric cameras and data exchanges between airlines, airports, border agencies and technology providers.

The airport is becoming a distributed digital ecosystem.

South Africa Enters The Digital Perimeter

For South African aviation, this is no longer a distant international trend. On 12 August 2026, South Africa formally launched its Electronic Travel Authorisation system at OR Tambo International Airport following an earlier pilot.

The process begins before the traveller arrives at the border. An applicant creates a profile, scans a passport and submits a facial image. The system compares the images, checks the travel document and performs automated risk analysis. An approved ETA can be stored on a smartphone. On arrival, facial verification is used again to confirm the traveller's identity.

The system was initially made available for travellers arriving at OR Tambo International, Cape Town International, King Shaka International and Lanseria International. Government says the ETA will be rolled out progressively, while biometrically enabled

movement control will expand to land and sea ports.

A second digital shift is happening alongside it. Since 1 July 2026, SARS has required travellers entering or leaving South Africa to submit an online traveller declaration before travelling. Assistance and limited alternative channels remain available at ports where necessary.

Neither initiative is a decentralised identity system in the strict technical sense. Together, however, they demonstrate the structural change: border and customs processes that once began at a counter are moving upstream into systems that assess information before the traveller reaches the airport.

Identity Moves Into The Wallet

initiative is built around the idea that a passenger should be able to establish identity and admissibility earlier in the journey, hold trusted digital credentials and disclose only the information required by an airline, airport or authority. Biometric recognition then becomes one way of linking the traveller physically to those credentials.

That distinction matters. Facial recognition and decentralised identity are related, but they are not the same. A conventional biometric system can still depend on a central database holding facial templates. A decentralised model aims to give the traveller greater control over verified credentials, often through a digital wallet, while trusted issuers and interoperable standards allow different organisations to verify them without building separate identity silos.



Image Credit: IATA

IATA has demonstrated elements of this model in live travel. In October 2024, a proof-of-concept involving Hong Kong and Tokyo Narita used different digital wallets and multiple verifiable credentials. IATA currently reports that more than 50 airlines, more than 40 airports and more than 25 government entities are involved in One ID proofs-of-concept, pilots or implementations.

ICAO's work on Digital Travel Credentials points in the same direction. The objective is not simply to photograph a passport on a phone, but to create a secure digital representation of travel identity that remains cryptographically linked to the issuing authority and interoperable across borders.

The Bag Leaves The Terminal Too

Identity is only one part of the distributed airport. Baggage processing is also moving beyond the terminal.

Hong Kong International Airport allows passengers on participating airlines to use in-town check-in and baggage-drop services at Airport Express stations, extending parts of the departure process into the city.

Dubai offers another model. Eligible Emirates passengers can check in and hand over baggage at the airline's City Check-in and Travel Store in Dubai International Financial Centre, while cruise passengers can use check-in facilities at Port Rashid or Dubai Harbour before their bags are transferred to the airport.

The operational implication is important. A passenger's bag can enter the aviation chain of custody kilometres from the terminal, expanding the number of places where identity, baggage security, data integrity and handover procedures must work correctly.

The Face Becomes The Credential

Biometrics are central to many of these systems because they can link a person to an already verified identity without requiring the same documents at every touchpoint.

SITA's Smart Path architecture is one example. Its mobile component allows biometric enrolment during mobile check-in using document capture, facial capture and liveness detection. At participating airport touchpoints, the face can then be used as the identifier for a contactless journey.

If identity and travel authority have already been established, repeated stop-and-show transactions


Image Credit: © wan

can potentially give way to a move-through process. That matters in an industry facing passenger growth and limited appetite for continually expanding terminal footprints.

But when the face becomes an operational credential, biometric error has operational consequences. A failed match can affect queue time, manual intervention and, depending on the system design, the passenger's interaction with security or border authorities.

The System Does Not See Every Face Equally

Facial recognition systems do not all perform identically across demographic groups. NIST evaluations have documented demographic differentials in many algorithms while stressing that performance varies substantially between algorithms and use cases. It is too simplistic to say every facial-recognition system is racially biased, but equally unsafe to assume a high headline accuracy figure guarantees equal performance for every passenger population.

Image capture matters too. Lighting, camera angle, exposure and image quality can influence false non-match rates, with some effects falling unevenly across skin tones or demographic groups.

For an African airport, the deployment question is therefore critical. Technology tested predominantly on one population cannot simply be assumed to perform identically in Johannesburg, Nairobi, Lagos, Addis Ababa or Accra. The question is not only, 'How accurate is the system?' but, 'How accurate is it for the population that will use it under the conditions in which it will be deployed?'

There is also a distinction between algorithmic bias and racial profiling. Algorithmic bias describes unequal system performance. Racial profiling involves race, ethnicity or a proxy influencing who is subjected to additional scrutiny. One can contribute to the other if a demographic group experiences more biometric failures and those failures routinely lead to secondary screening.

That creates a potential cascade: poor capture, failed match, manual intervention, secondary processing and delay. If the first link affects one population disproportionately and later outcomes are not measured, a technical problem can become an unequal passenger experience.

Mitigation Has To Be Designed In

Current NIST digital identity guidance calls for biometric technologies to be independently tested across demographic groups and under conditions resembling the real operating environment and user base. It also sets performance requirements across demographic categories and calls for fixed comparison thresholds rather than different acceptance thresholds for different groups.

In aviation, a failed biometric verification should trigger an alternative identity-checking route, not

automatically become evidence that a passenger is suspicious. Human review should be capable of correcting the automated result rather than merely confirming it.

Airports and border agencies also need to measure outcomes, not just machine accuracy. Who experiences repeated capture failures? Who is diverted to manual or secondary processing, and for how long? Without that operational data, an airport can understand laboratory performance while remaining blind to how the system affects real passengers.

The alternative channel matters too. A passenger who cannot or does not wish to use biometrics should not face a punitive process. If the biometric lane takes seconds while the manual route takes significantly longer, the system may be technically optional while becoming compulsory in practice.

Privacy By Architecture

Privacy is not a legal footnote to the digital airport.

The European Data Protection Board warned that airport facial recognition can create risks including false negatives, bias, discrimination, identity fraud and impersonation. Its 2024 opinion favoured architectures that give individuals greater control over biometric data and minimise centralised retention.

That aligns with the broader decentralised-identity philosophy: prove what is necessary, disclose as little as possible and avoid creating a permanent central repository simply because technology makes one possible.

South Africa has its own legal dimension. POPIA treats biometric information as special personal information and places limits on its processing, while also regulating automated decision-making and cross-border flows of personal information. As biometric border systems expand, retention, purpose, access, correction and accountability will become increasingly important.

The fundamental issue is not whether biometrics can make a journey faster. It is who holds the biometric, how long it is retained, what it can later be used for and what recourse exists when the system is wrong.

Cybersecurity Is The New Perimeter Fence

Moving passenger processing into phones, cloud platforms, remote baggage points and interoperable identity networks expands the digital attack surface as dependence on physical counters falls.



THE ALGORITHM AND THE DUNE

Dubai's US$35 billion Al Maktoum International Airport will be the largest ever built. Its architects promise a terminal computed by software and shaped by the desert. The first claim is more convincing than the second, and the gap between them says a great deal about what an airport has become.

Every age builds the airport it believes in. In 1962, Eero Saarinen gave TWA a concrete bird at Idlewild, a terminal that tried to look like flight itself. Dubai's next airport belongs to a different faith. It rests on the idea that a building can be calculated and optimised in infinitely minute detail.

The sheer value of the project in monetary terms, as well as its capacity metrics, justifies a scrutinising look. The Government of Dubai Media Office, announcing approval of the designs in April 2024, put the cost at AED 128 billion (about US$35 billion) and the site at 70 square kilometres, with capacity for 260 million passengers a year across five parallel runways and 430 aircraft stands, plus 12 million tonnes of cargo. A first phase of 150 million passengers is due within ten years, after which operations at Dubai International are to move south. That existing airport handled a record 95.2 million passengers in 2025, according to Dubai Airports, and the city has enveloped it, preventing its further expansion. Sheikh Mohammed bin Rashid Al Maktoum de-



scribed the new airport as five times the size of the old one, and the surrounding Dubai South district is expected to need housing for a million people. This year has also shown just how fragile the model is in a region that is far less stable than it once was. Dubai Airports reported first-quarter traffic down 20.6 per cent after regional disruption constrained airspace from late February, while the government says the Al Maktoum programme continues to progress.

The terminal design, selected in 2024, is by the Viennese practice Coop Himmelb(l)au working with Dar Al-Handasah. Its defining element is a single undulating roof. The practice describes a "dynamic structure that enables wide spans and majestic spaces", and says its geometry was optimised through "algorithmic processes and parametric design" against daylight, sun, wind, structural grid and curvature.



Image Credit: © Coop Himmelb(l)au

The result, in the firm's own words, is buildings that "become functional and efficient sculptures". This is a loaded statement, and most of what follows hangs precariously upon it.

What A Machine Is Good At

Parametric design is a simpler idea than its reputation would lead those outside of the heady world of architecture to believe. Instead of drawing a fixed form, the designer writes a set of coded parameter-based rules that generate one. These parameters are things such as the relationships between spans of steel and concrete, sun angle and panel size, which a computer resolves into geometry. Change an input and the whole model updates. Patrik Schumacher of Zaha Hadid Architects declared the approach a style in its own right, "Parametricism", in 2008. Coop Himmelb(l)au, whose founders issued a manifesto titled "Architecture Must Burn" in 1980, arrived at it from deconstructivism, a movement that has always preferred the dramatic fold and curve to the right angle.

Aviation professionals will recognise the method, because they have used it for decades under other names. Gate allocation, stand planning, baggage routing, security lane staffing and runway sequencing are all parametric problems with many variables, measurable objectives and the need for constant recalculation. An airport, as essentially a gateway, may be one of the purest systems that architecture can serve. Its function is quite simple. Passengers, bags, aircraft, fuel and data must be balanced against one another every minute of the day, and the brief for a hub of this size is written in throughput, minimum connecting times and gate utilisation long before anyone mentions a curvy roof. Here the algorithm is on home ground. The firm's promise of artificial intelligence for processing and "intuitive smart wayfinding" belongs to the same family, and is the least contentious claim in its description.

The trouble starts with the envelope. A term architects use to describe the exterior surface of a building. Optimisation works when the goal can be measured. Glare, heat gain and the structural efficiency of a long-span shell all have numbers, and so have better and worse answers. Meaning, cultural and regional, has no number. The practice states that the roof is also "a powerful design statement, signifying the ambition and vision of Dubai and its Leaders". No daylight analysis produced that sentence. At the point where the software stops measuring



and starts signifying, the parametric method hands control back to the designer's eye, while keeping the vocabulary of computation as its alibi. The dune is a choice presented as a result.

This is where the line between the airport as an operating system and the building as a system blurs, and it is worth being a little more considered about where it falls apart. Systems are judged by performance over time. Buildings, the good ones at least, are judged by what they hold sacred and immovable. A baggage network that has been re-optimised a dozen times in thirty years is a success. A roof that needs the same treatment is a failure. Parametric design excels at the first kind of object and is prone to mistaking itself for the second.

The Problem Of Place

Kenneth Frampton, the famed architectural theorist, offered a useful test four decades ago. In his 1983 essay on critical regionalism, he argued that modern building should resist the placeless sameness of universal technique by attending to what a site actually offers: its light, its climate, its topography (shape and surrounding identity), the tactile experience of being there. He held up the sealed, air-conditioned box as the emblem of an architecture that had stopped listening to where it stood and who occupied it. He was equally wary of the opposite error, the regional motif applied as decoration, which he regarded as scenography.

Measured against that test, the Al Maktoum design is interesting for its contradictions. Its genuinely regional achievements are the invisible ones. The orientation of the terminal to prevailing winds, limiting solar gain, admitting daylight without glare. These are tactics Frampton would endorse, and they are the parametric tools at their best. The visible regional gesture, the dune, is the scenographic one. The practice says that "traditional design elements are seamlessly integrated with modern materials" without saying which elements it means. A dune is a landform, and its outline rendered in steel over a hall mechanically cooled through summers that routinely pass 40°C is a picture of the desert. The firm's insistence that its buildings are "open to their surroundings", and are no "sealed monumental silos", is metaphorical in the same way. In this climate the envelope must be sealed; the openness is visual, on the inside, across hundreds of metres of conditioned air.

None of this is peculiar to Coop Himmelb(l)au. It reflects the city it is designing for. Dubai is in many respects the logical end point of what Henry-Russell Hitchcock and Philip Johnson named the International Style in 1932: an architecture of universal technique, deployable anywhere, indifferent to local precedent, culture or context. Its contemporary guise swaps the white box for the glass tower and the computed curve, and the proposition is unchanged. The emirate's identity lies in its position on


Image Credit: © Coop Himmelb(l)au

the map and its skill at connecting other places. For a city defined by transit, a placeless airport may be the honest one. That is the generous reading of the dune: it is a logo, and a hub of this kind needs one.

A less generous reading matters more to the rest of the industry, because Dubai's choices are studied and copied. If the airport is becoming a city, with its own districts, rail loop and residents, it should be judged by the standards of urbanism as well as those of infrastructure. Cities succeed by accretion. They are partly unplanned, and they let later generations disagree with earlier ones. The long-span roof is sold on flexibility, a column-free hall that can be rearranged as processes change. That is a real virtue, and the right instinct for a building whose passengers may clear every checkpoint by face recognition before it opens. Yet a single sculptural roof over a 260-million-passenger hub is also a mega-build of the most irreversible kind. The interior may be modular. The mass sitting in the middle of a desert is fixed.

The brief already shows how far ahead it must project. The practice's project data specify 407 contact gates sized for Code E aircraft, the class of the 777 and A350, in the ultimate phase. The A380, which Emirates flies in greater numbers than any other airline and which needs Code F stands, does not appear in that line. Whether this reflects multi-aircraft ramp stands able to take the larger type, or a quiet bet that the superjumbo will have left the fleet by the time the final phase opens, the published data do not say. Emirates, for its part, broke ground in May on a US$5.1 billion engineering complex at the site, with a 285 metre free-span hangar able to take 28 wide-body aircraft at once and completion due in mid-2030. Both are commitments made on behalf of aircraft that nobody has yet designed.

A parametric model can tell you where the sun will fall on a gate lounge at four o'clock on a July afternoon, and how many stands a bank of departures needs at dawn. It cannot tell you what a building ought to mean, and when designers ask it to, the answer comes back as a shape borrowed from the landscape outside. The airport of the future will be a system and should be designed as one. The roof over it remains a building. At Al Maktoum, that distinction is about to be tested at a scale nobody has ever attempted before.


Image Credit: © Coop Himmelb(l)au

THE JOURNEY BEFORE THE TERMINAL

Kenya Airways is replacing technology that has supported its reservations, ticketing and airport processes for more than two decades. The more revealing story lies in how booking, loyalty, check-in and disruption management will begin to operate as parts of the same passenger journey.

World Airnews spoke to Jackson Kamande, Head of Pricing and Revenue Management at Kenya Airways, about the thinking behind the migration, what the new environment is intended to change for passengers and operations, and what lessons the programme may hold for other African airlines modernising legacy systems.

For most travellers, the airport still appears to begin at the terminal doors, although important parts of the journey now take place before the passenger reaches the building. A flight has been selected, a fare constructed, ancillary products added and a loyalty profile recognised. Check-in may already be complete, and if the journey is disrupted, alternative arrangements may appear on a passenger's phone before they speak to anyone at an airport counter.

The physical airport has not disappeared. But the systems that shape how passengers move through it increasingly extend well beyond its perimeter.

Kenya Airways' decision to replace the reservations and ticketing platform it has used for more than 20 years provides a useful African example of that change. The airline has selected Sabre to replace the core system supporting reservations, inventory, ticketing and airport check-in, while Branchspace will provide the digital commerce layer through which



Image Credit: Kenya Airways

customers interact with many of those capabilities. The migration also shows how the passenger journey is being redefined and how information can follow the traveller through it.

Why Replace A System That Still Works?

Major airline system migrations carry risk. Reservations, ticketing, inventory and check-in are not peripheral functions. They sit close to the operational heart of an airline.

The Kenya Airways decision was not prompted by a failed system. Jackson Kamande, the airline's Head of Pricing and Revenue Management, told World Airnews that cost and strategic timing were the main drivers.

After more than two decades on the existing platform, the airline concluded that continuing to retrofit legacy infrastructure to accommodate the direction in which airline retailing is moving would eventually become more expensive and complex than moving to technology designed around the newer operating model.

Legacy technology is often discussed as though old systems must first become unreliable before replacement can be justified. Kenya Airways' reasoning points to a different calculation. A system may continue to perform its established function while becoming progressively more difficult, costly or restrictive to adapt to new commercial and operational requirements. For African airlines, where capital expenditure and operational continuity both require careful management, that calculation may be as important as the technology itself.

From Booking Transaction To Passenger Journey

Traditionally, booking, loyalty, check-in and disruption management can appear as separate interactions supported by different systems and teams. Kenya Airways wants them to function as connected stages of the same journey rather than as isolated transactions.

Kamande describes digital retailing as the front end of a longer relationship with the customer. The offer presented when a passenger searches for a flight should, in the airline's model, remain connected to check-in, loyalty recognition and support when a journey is disrupted.

The airport experience is increasingly dependent on decisions and information created somewhere else. A passenger arriving at check-in is no longer simply presenting themselves for processing. The operational system may already know the booking, loyalty status, products purchased, servicing history and available alternatives if the original journey can no longer be completed as planned. The terminal therefore becomes one physical point within a much larger information environment.

What 'Offer And Order' Actually Means

Industry discussion of airline transformation increasingly uses the terms "offer" and "order", which can obscure a practical objective. Kenya Airways says the change should move it beyond a rigid reservation-record model and give it greater flexibility in constructing what is offered to each customer.

For the passenger, this could mean more flexible combinations of fares and ancillary services. For the airline, the intended benefit is greater flexibility in inventory, pricing and servicing, with a faster response to demand and disruption.

Sabre's Mosaic technology will provide the new core commercial environment, while Branchspace's Triplake platform will provide the customer-facing digital commerce layer. Here, an airline is trying to make information created at one stage of the journey useful at another.

When Booking Reaches The Airport

Kenya Airways says the new environment is intended to provide a shared data and offer foundation across booking, loyalty, check-in and disruption management rather than leaving each function dependent on separate legacy logic.

A passenger's booking and loyalty information could therefore influence what is available to them and how they are handled during check-in. If disruption occurs, the airline expects rebooking and reaccommodation to draw on the same inventory and customer information rather than requiring staff to navigate disconnected systems.

For passengers, much of this infrastructure will remain invisible, although airport staff could experience a significant difference. Disruption is where weaknesses between systems become most visible, because delayed or cancelled flights require passengers, seats, baggage, connections, loyalty status and onward travel to be reconciled quickly.

A digital journey that works during normal operations is useful, but a connected information environ-



ment that continues functioning during disruption matters more. This is where the boundary between airline technology and airport experience becomes difficult to maintain. The system that reaccommodates a disrupted passenger may be located nowhere near the airport, yet its operational effects will be felt at the gate, check-in desk or transfer counter.

Not Everything Changes At Once

Large-scale technology migrations also introduce their own operational risk. The initial announcement from Kenya Airways, Sabre and Branchspace described a modular transition towards an offer-and-order environment. The airline's subsequent response to World Airnews provides an important clarification.

The core passenger service system functions, including reservations, ticketing, inventory and check-in, are intended to move in a single coordinated cutover. Kenya Airways says this is designed to avoid splitting critical reservation or inventory information across two platforms.

Capabilities including personalised offer construction, dynamic bundling and the broader offer-and-order model will be phased after the core migration. Kenya Airways says this will allow it to assess customer and market behaviour, develop internal capability and adjust its approach as the newer functions are introduced.

Technology cannot simply be switched on with organisational change expected to follow. A reservation platform touches commercial planning, airport operations, distribution, loyalty, customer support and revenue management, so migration also changes processes, responsibilities and the decisions employees are expected to make.

The People Behind The Migration

Kenya Airways identifies sequencing and governance as lessons for other African airlines. According to Kamande, clear ownership, realistic implementation timelines and the staged introduction of capabilities can help reduce disruption risk.

People must also be ready for the change. Because the migration reaches across reservations, airport operations, distribution, loyalty and customer support, departmental engagement and training have to form part of the programme rather than follow the technical work.

A more connected passenger journey does not necessarily remove people from the system. It changes the information available to them, the processes they follow and the point at which human intervention becomes necessary.

The technology will ultimately be judged by how it supports a successful booking and, more critically, by how it performs when the journey does not proceed as expected.

When The Journey No Longer Starts At The Airport

Kenya Airways currently serves 42 destinations, 35 of them in Africa, through a network centred on Jomo Kenyatta International Airport in Nairobi. Its technology programme is therefore more than a website redesign at the edge of the operation; it reaches into systems that connect commercial activity with the airport environment.

The programme reflects a wider change across aviation. Passengers can book, select services, check in and receive operational information before reaching the terminal, while disruption management, inventory, check-in and customer data increasingly operate across interconnected systems.

The terminal, runway, apron and control tower remain physical and operational realities. Around them, passengers and information move through systems that begin well before arrival. Kenya Airways' programme reflects that transition by connecting booking, check-in, loyalty and disruption management through shared information and a more continuous passenger journey.

Airports remain places, but the journey increasingly begins elsewhere..

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AIRPORT WITHIN THE AIRPORT

To the passenger, an FBO (Fixed-Base Operator) can appear almost effortless: arrive by car, move through a private facility and board an aircraft only metres away. Behind that simplicity sits a tightly coordinated network of airside access, passenger and aircraft handling, fuelling, flight planning, crew support, maintenance, security and border-control interfaces. South Africa's leading FBOs have,in effect, created specialised aviation ecosystems operating inside larger airports.

For the passenger, the attraction of business aviation is often defined by what is absent: the queues, crowded concourse, long terminal walk and visible processing of a scheduled airline journey. A car arrives, bags are transferred, formalities are completed, and the aircraft may be waiting only metres away. The simplicity achieved through an increasingly complex aviation operation behind the scenes.

South Africa's fixed-base operators, or FBOs, occupy an unusual position within the country's airport system. They are neither airlines nor airports, yet sophisticated operations increasingly reproduce functions associated with both. Passenger and aircraft handling, apron operations, fuelling, flight planning, crew support, maintenance, hangarage, security, border-control interfaces, charter and aircraft management may converge around a single facility, creating something close to an airport within another airport. When the operation works well, the passenger sees very little of that complexity.

The defining achievement of the modern FBO may be its ability to make an extraordinarily complex airport operation feel almost invisible.



Image Credit: ExecuJet

More Than A Lounge

The traditional image of an FBO as a comfortable lounge attached to an apron no longer captures the scope of what the business is or does.

At Lanseria International Airport, ExecuJet and National Airways Corporation operate within an established business and general aviation environment. ExecuJet's facilities include passenger and crew lounges and direct private-apron access for domestic operations. The company also operates an FBO at Cape Town International Airport, where its infrastructure includes substantial hangarage and dedicated ramp parking. NAC follows a different model: headquartered at Lanseria, the South African aviation group combines charter, aircraft management, maintenance, parts, flight operations and other aviation services. Its published material describes a 24-hour suite extending from hangarage and aircraft care to management and arrival and departure support.

The reality is that an FBO rarely operates in isolation. An arriving aircraft may need parking, fuel, ground power, potable water, catering, cleaning, engineering support or hangarage. Its crew may need weather information, flight planning, accommodation or transport, while passengers may require customs and immigration processing, security coordination, onward ground transport or discretion. Coordinating these needs draws the FBO deeper into the airport ecosystem.

Where Does The Fbo End?

The apparent independence of a private aviation facility can be misleading. An FBO may provide its own terminal environment, passenger processing, apron support and aircraft services, but it remains embedded within a wider regulated system.

Air traffic control still governs aircraft movements through controlled airspace and on the manoeuvring area. Airport operating procedures determine access and movement. Security requirements remain applicable. Customs, immigration and other State authorities retain their respective responsibilities. Fuel supply, slots, permissions and ground movements may involve still more organisations.

The FBO operates at the intersection of systems the passenger seldom encounters directly. Its role is to coordinate those functions quickly enough that the complexity disappears from the customer's journey.At a conventional passenger terminal, check-in counters, security points, border-control desks, baggage systems and boarding gates make these functions visible and physically structure the journey. The FBO compresses that journey; the infrastructure remains, but much of it moves behind the scenes.

The Apron Changes Everything

Direct access to the aircraft is one of the most visible differences between scheduled and private aviation, but the apron is more than a convenience: it is working aviation infrastructure. Aircraft must be positioned, parked and protected, while passengers, crew, vehicles and service providers require controlled access. Fuel, catering, baggage and engineering services may converge around the aircraft within a short turnaround window.

The design and availability of apron space can therefore influence the efficiency of the FBO almost as much as the terminal itself.

ExecuJet's South African operations provide an effective example. At Lanseria, its domestic lounge provides access to a private apron, while its Cape Town facility includes dedicated ramp parking alongside hangar infrastructure. Even so, dedicated facilities do not make the FBO operationally independent: aircraft still enter and leave through the same airfield system.

The relationship between the private apron and the wider airport is consequently one of the areas World Airnews is exploring with South African FBO operators for this feature: where does private infrastructure genuinely create independence, and where does it simply create a different interface with the same airport?

Different Airports, Different Models

South Africa offers a particularly useful environment in which to examine the question because its FBOs operate in markedly different settings.

Lanseria has developed around a substantial business and general aviation community alongside scheduled commercial operations. ExecuJet and NAC operate there, while AXIS Aviation maintains its Johannesburg base at the airport. AXIS also operates from Cape Town International Airport and says each South African base is supported by an FBO facility. Cape Town presents a different model, with business aviation embedded in one of the country's major scheduled-airline airports.

ExecuJet, AXIS and Signature Aviation all maintain


Image Credit: Fireblade

operations in the Cape Town airport environment. Signature describes its facility as a private aviation terminal offering aircraft and passenger handling, crew facilities, fuelling and catering, together with customs and immigration assistance. The broad purpose resembles an FBO at Lanseria, but business aircraft here share an airport dominated by scheduled commercial operations, with different pressures on movements, airside access, parking and the interface with the larger airport system.

Fireblade Aviation offers another interpretation. Its Johannesburg operation, positioned in the OR Tambo International Airport environment, combines FBO facilities with Maintenance, Repair and Overhaul and Air Operator Certificate services. Aircraft-owner support extends across hangarage, regulatory compliance, flight planning, parking, fuelling, crew sourcing and aircraft management, while the passenger offering includes on-site customs and immigration. The FBO therefore functions as part of a wider aviation-services platform rather than primarily as a passenger gateway.

There is no single South African FBO model. The surrounding airport, the services under the same roof and the aircraft being supported all change what the facility has to become.

When The Fbo Becomes An Aviation Platform

The integration of FBO, maintenance, aircraft management and flight operations is particularly significant because an aircraft owner does not necessarily experience them as separate problems. The aircraft must remain airworthy; pilots and crew must be managed; insurance and regulatory requirements met; hangarage secured; flights planned; fuel supplied; and passengers handled. Bringing these activities together creates a different kind of aviation business.

Fireblade publicly presents FBO, MRO and AOC activities as interconnected parts of its operation. NAC similarly spans charter, maintenance, aircraft management and international flight operations, while AXIS has developed its South African business around aircraft operations and asset management alongside its FBO facilities following the integration of Absolute Aviation's flight-services activities in 2024. The modern FBO can therefore sit at the centre of a much larger relationship with an aircraft owner or operator, even if the passenger lounge remains its most visible component.

The Border Inside The Fbo

International private aviation adds another layer of complexity because private passengers remain subject to border formalities. Where and how customs and immigration take place can significantly shape the FBO experience.

Fireblade explicitly offers on-site customs and immigration within its guest operation, while Signature Cape Town provides customs and immigration assistance as part of its private-terminal service.

This is one of the clearest ways a private aviation facility begins to resemble a terminal in its own right: border control moves closer to the aircraft and into a smaller passenger-processing environment. The authority itself remains public, however. Government border agencies retain their responsibilities; the FBO redesigns the interface rather than replacing the State or the airport. That distinction is central to the 'airport within the airport'.

Crew Are Part Of The System

Passengers dominate the public image of business aviation, but the aircraft cannot depart without the crew, and modern FBO infrastructure increasingly reflects that. Crew need places to rest, prepare and communicate; access to flight planning and operational information; and, particularly for international or long-range operations, arranged transport and accommodation.

ExecuJet lists dedicated crew lounges and communications facilities within its South African offering; Signature Cape Town includes a crew room, and Fireblade provides dedicated pilot and crew amenities alongside its passenger and operational facilities. These services may seem peripheral to the passenger journey, but crew are another essential part of the system the FBO coordinates.

The Invisible Operation

The most revealing aspect of the FBO is the contrast between complexity and appearance. A commercial terminal makes aviation infrastructure visible; an FBO often conceals it. The passenger sees the lounge, the vehicle and the aircraft, while air traffic control, airport operations, security, border agencies, fuel suppliers, ground handlers, maintenance teams, flight planning, catering, baggage, crew scheduling, hangarage, regulatory compliance, transport and third-party providers operate behind those three points.

The success of the operation depends on those systems interacting without becoming the passenger's problem.

That makes the FBO a useful expression of World Airnews' October theme, Airports as Ecosystems, Not Terminals. An airport is defined as much by the systems that move aircraft, passengers and crew safely and efficiently as by its buildings; the FBO rearranges those systems around a different passenger journey.

What Comes Next?

The model is likely to continue changing.

Digital flight-support systems already affect the way aircraft are dispatched and managed. Passenger-processing technology is becoming increasingly automated in the wider airport sector. Sustainable aviation fuel, electrified ground equipment and eventually new propulsion technologies may alter infrastructure requirements again.

At the same time, business aircraft themselves are becoming larger and longer-range, placing new demands on apron space, hangarage and ground support.

For FBO operators, the challenge extends well beyond delivering a better lounge. They must design operations capable of absorbing changes in aircraft, technology, regulation and customer expectations without undermining the speed and simplicity on which private aviation depends.

World Airnews has approached several South African FBO operators for their perspectives on these changes and on the operational realities behind the passenger experience. Their views will be incorporated into this feature ahead of publication.

Perhaps the simplest question is: What has to happen for a passenger to feel that the airport has disappeared? The answer is a sophisticated process of coordination between entities.

The private passenger may experience less of the airport precisely because the FBO has learned to manage more of it.

An Airport Hiding In Plain Sight

The term 'fixed-base operator' can make the business sound narrower than it has become. At its simplest, an FBO remains a service point for private and business aircraft; at its most developed, it can bring passenger processing, aircraft handling, maintenance support, flight operations, crew services, border interfaces, hangarage and aircraft management into one specialised environment.

The FBO is not an independent airport: it relies on the surrounding runway, airspace, regulation, security and operational framework. Within those boundaries, however, the modern Fixed-Base Operator is building an aviation ecosystem of its own. The passenger sees little because another airport, largely invisible behind the quiet lounge and waiting aircraft, is doing the work.

THE AIRPORT YOU DON'T SEE

An airport can satisfy the requirements of an audit without proving that its wider operational system is resilient. The harder question is what happens between audits, at handovers, across contractors and at the interfaces where one compliant organisation depends on another. Elliot Molemi, Director of Professional Aviation Services, argues that this is where some of aviation's least visible exposure sits.

An airport can be compliant in every obvious place and still carry risk in the spaces between them.

That is not an argument against regulation, formal programmes or audit. Aviation depends on all three. It is an argument about what those mechanisms can and cannot prove. A security programme can be approved, training records can be current and audit findings can be closed, while the quality of a handover, a contractor's day-to-day performance or a frontline decision under pressure remains difficult to see from the paperwork alone.

For Elliot Molemi, Director of Professional Aviation Services and an aviation security and dangerous goods practitioner with more than 15 years' experience, the important distinction is between demonstrating compliance and sustaining it operationally.

"All organisations have to be always audit ready, but that is not the true measurement of compliance," he says. "Genuine operational compliance is visible in consistent daily behaviour rather than documentation alone."

The Interface Problem

The modern airport is built around divided responsibility. Airport operators, airlines, ground handlers, cargo operators, security providers and State agencies each carry defined obligations. The system works only when those obligations remain intact as people, information, cargo, baggage and responsibility move between them.

Molemi identifies those intersections as recurring points of exposure. Incomplete or inconsistent information transfer at handovers, different interpretations of the same requirement, uneven training or supervision between organisations and pressure to favour throughput over thorough checks can all weaken a control that appears sound when examined in isolation.



Image Credit: IATA



Image Credit: Pexels

The issue becomes particularly important where functions are contracted. Security duties may be performed by third-party providers, but accountability for the operation does not disappear with the contract. The operational question is whether the standard written into a programme or service-level agreement is being reproduced on every shift, including when resources are stretched and no audit is taking place.

Molemi points to Local Airport Security Committees as one formal mechanism for coordinating the airport, tenants, State organs and other security stakeholders. Their existence also illustrates the underlying problem: airport security cannot be managed effectively as a collection of independent controls.

"Aviation security is effective only if all operational systems function together on a daily basis." — Elliot Molemi

Audit Assurance Is Not Operational Assurance

Audit readiness is necessary. Molemi's concern is what happens when it becomes the principal measure of performance.

He identifies several warning signs: heavy emphasis on documentation with comparatively little investment in practical supervision; employees who can repeat procedures but struggle to apply them under realistic conditions; low levels of internal reporting or near-miss capture; and findings that are formally closed without evidence that the underlying behaviour has changed.

A particularly uncomfortable indicator is a consistently clean external audit picture that does not correspond with frontline feedback.

That distinction matters because airport systems are rarely tested operationally under ideal conditions. They are tested at peak periods, during staff shortages, when a late movement compresses a turnaround, when equipment becomes unavailable or when a consignment does not match what the paperwork suggests.

Molemi's definition of genuine compliance therefore places weight on competent judgement, clear accountability at handovers, effective supervision and internal assurance capable of identifying problems before an external audit does. He also stresses a reporting culture in which operational concerns and mistakes can be raised and acted upon.

"Audit readiness is necessary but insufficient; the system must still function correctly at peak hours, even with constrained resources and staff under pressure." — Elliot Molemi

Dangerous Goods: A Test Of The Chain

Dangerous goods provide a useful test of this systems argument because the risk can migrate across several organisational boundaries before reaching an aircraft.

The professional challenge is not simply knowledge of the Dangerous Goods Regulations. It is declaration accuracy, the recognition of undeclared or misdeclared articles within general cargo or courier traffic, acceptance competency under time pressure, correct segregation and handling, and the integrity of the transfer between shipper, cargo operator, ground handler and airline.

Molemi notes that ordinary-looking consignments can contain regulated material. A control failure at the point of origin may therefore become another organisation's problem further along the chain, where the opportunity to identify it may already have narrowed.

This is the interface problem in a particularly tangible form. Each participant can have a procedure, but aircraft safety ultimately depends on the chain performing as a chain.

Third-Party Assurance At Airport Scale

The same challenge expands when applied to the airport workforce. Molemi notes that a large airport can have more than 30,000 people on site, employed not only by the airport but by State agencies, tenants and service providers.

Those organisations do not arrive with identical management priorities, resources, staff-retention patterns or training standards. Yet their employees operate inside the same regulated environment.

Contracts, security programmes, oversight, audits and performance monitoring create the formal assurance structure. Molemi's point is that they do not automatically create a common operational culture. Day-to-day delivery can still vary.

For airport and airline management, that shifts the question from whether a supplier has demonstrated compliance to whether the organisation has sufficient visibility of how the supplier performs between assurance events. Sustained engagement, clear expectations, practical support where necessary and consequences where standards are not met become part of operational resilience rather than procurement administration.

When Better Technology Changes The Human Requirement

Screening, surveillance and access-control technology are becoming more capable. Molemi refers to AI-enabled X-ray and surveillance systems and supports further investment in modern screening technologies. His qualification is important: technology changes the human requirement; it does not remove it.

More capable equipment can improve detection, reduce some forms of human error and create auditable records. It can also introduce different dependencies. Competent operators, maintenance, exception handling and procedures for acting on system outputs become part of the security control.

Over-reliance on technology without those supporting capabilities, Molemi argues, can create new vulnerabilities.

That makes competency-based training more significant as technology advances. Attendance, content delivery and a basic test may satisfy the administrative record, but Molemi distinguishes these from training built around realistic scenarios, practical exercises, measurable competency, supervision, feedback and refreshers informed by incidents or near misses.

The point is not that the human remains important despite technology. It is that the required human competence changes as the technology does.

"Technology is an enabler inside a system that still depends on people who understand the intent of the controls." — Elliot Molemi

The African Question Is Capability, Not Lower Standards

Any discussion of aviation security in Africa risks flattening a highly uneven operating environment into a single narrative. Molemi explicitly rejects that approach. He points out that the continent has world-class airports with infrastructure comparable with airports in developed economies, while others face significant infrastructure and resource constraints.

The more useful question is how international standards are sustained across those different environments.

Molemi identifies infrastructure quality, skills migration, differing levels of regulatory capacity and enforcement, complex multi-stakeholder environments and limited specialist training capacity in some markets as practical pressures. His response is not to relax ICAO standards.

Instead, he argues for pragmatic implementation, strong local ownership, realistic timelines and investment in infrastructure, people and supervision. In other words, adaptation should address how a

standard is achieved, not reduce the standard itself.

For African airport operators and regulators, the skills issue may become increasingly consequential. Molemi points specifically to experienced personnel moving to Europe and the Middle East for higher salaries. Retaining competence is therefore not simply a human-resources issue. Where specialist capability is scarce, it can become an assurance and resilience issue as well.

The Cost Of Treating Security As A Cost

Molemi is unusually direct on another pressure point. He describes security as a "grudge purchase" in parts of aviation, with organisations seeking to spend as little as possible on a function they are nevertheless required to maintain.

He links this to the professionalisation of aviation security and raises the remuneration of certified Aviation Security Screeners as an example. His argument is that a trained and certified screener is performing a specialised aviation-security function and should be valued accordingly.

The broader implication is worth considering. If security is managed primarily as a compliance cost, organisations have an incentive to optimise for the visible evidence of compliance. Resilience asks a different question: whether the people, controls and interfaces will continue to perform when the operation is under pressure.

What The Airport Does Not Show Us

The least visible part of an airport may therefore not be its baggage system, screening equipment or perimeter infrastructure. Aviation professionals know those systems are there.

What is harder to see is the quality of the connections between them.

It is whether one organisation's interpretation matches another's, whether a contractor reproduces the required standard every day, whether an employee reports a near miss, whether an audit closure represents lasting change, whether a misdeclared consignment is recognised before the next handover, and whether new technology is supported by the competence needed to use it properly.

Molemi's argument ultimately shifts the measure of security away from the existence of programmes and certificates towards consistent real-world performance.

That is also what makes the airport an ecosystem rather than a collection of regulated parts. No individual organisation can demonstrate the resilience of the whole merely by demonstrating the compliance of its own component.

The airport you do not see is not simply what happens behind the terminal. It is what happens between the systems.



ELLIOT MOLEMI.
Director, Professional Aviation Services

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Image Credit: Malaysia Airports Holdings Berhad (MAHB)

THE AIRPORT AS ENERGY NODE

Could Africa's constrained grids become the catalyst for a new generation of self-sufficient aviation infrastructure?

Electric and hybrid-electric aircraft are forcing airports to confront an infrastructure problem that begins long before the first aircraft plugs in. For Africa, where power reliability remains uneven across many markets, the challenge appears formidable. Yet the same constraint could create the commercial case for airport-led microgrids, distributed generation and energy storage, turning airports from large electricity consumers into resilient energy nodes serving aviation and, potentially, the communities around them.

For most of aviation history, electricity has been something an airport consumed. It powered terminal buildings, runway lighting, baggage systems, air traffic facilities, hangars, offices and ground equipment. Fuel arrived separately, usually by road or pipeline, and the wider electricity system remained largely outside the operational business of aviation.

That division is beginning to blur. Electric and hybrid-electric aircraft, advanced air mobility, increasingly electrified ground fleets, data-intensive airport systems and new fuel technologies are forcing airport planners to look beyond terminals and runways towards something much larger: the airport as an energy system in its own right.

For Africa, that transition presents an uncomfortable question. What happens when the aircraft of tomorrow arrives at an airport connected to an electricity system that is already struggling to meet the needs of today?

Across sub-Saharan Africa, electricity reliability remains a significant economic constraint. Energy investment remains uneven, grid capacity is limited in many markets, and power interruptions continue to affect businesses and infrastructure. That would appear to put parts of the continent at a disadvantage as aviation becomes more dependent on electricity.

It may. But it could also force a different model. Rather than waiting for national grids to develop sufficient capacity, some airports may increasingly need to generate, store and manage more of their own power. In doing so, the airport could begin evolving from a large electricity consumer into something closer to a local energy node.

When The Aircraft Becomes An Electrical Load

The scale of the challenge becomes clearer when aircraft charging is treated not like charging a car, but

as an aviation operation. Aircraft have schedules. Turnaround times matter. Energy may have to be delivered rapidly and predictably between flights. Several aircraft could require charging at approximately the same time, alongside all of the airport's conventional electrical demand.

Research by NASA and the US National Renewable Energy Laboratory is beginning to quantify what this could mean. Their Airports as Energy Nodes, or ÆNodes, programme was established to investigate how airports might accommodate future battery-electric aircraft, air taxis and other advanced aircraft while developing energy infrastructure that could also provide value to neighbouring communities.

The programme examined two smaller US airports, Winchester Regional Airport in Virginia and Tweed New Haven Airport in Connecticut. NASA's 2025 technical summary concluded that the energy requirements of aircraft using batteries or cryogenic hydrogen could overwhelm existing infrastructure, particularly at smaller and more remote airports. Preliminary modelling indicated that unrestricted adoption of advanced battery-electric aircraft could increase electricity requirements by a factor of two to four and push peak daily power demand to around an order of magnitude above existing levels at the airports studied.

This fundamentally changes the infrastructure conversation. An airport operator considering electric aviation may no longer be asking simply where a charger should be installed. It may have to ask whether the local substation can deliver the required load, whether transmission and distribution infrastructure must be upgraded, whether on-site generation is necessary, how much battery storage is required and what happens if the external electricity supply fails halfway through an operating day.

The Infrastructure Before The Aircraft

There is another difficulty: who invests first? Airports are unlikely to spend heavily on specialised energy infrastructure for aircraft that are not yet operating commercially from their runways. Aircraft operators, meanwhile, cannot establish services at airports unable to provide the energy their fleets require.

NASA researchers have described this dilemma precisely at smaller airports. Without advanced aircraft traffic, there may be little justification for major energy upgrades, but without those upgrades, the aircraft cannot operate there. It is a classic infrastructure chicken-and-egg problem, and one that becomes particularly relevant to developing aviation markets.

Africa may therefore face two very different possible futures. In one, electricity constraints delay the adoption of new aircraft technologies because airports cannot provide the required infrastructure. In the other, the commercial requirements of aviation help justify investment in local generation, stor-



Image Credit: Redflow



age and microgrids that might otherwise have taken considerably longer to develop.

That second possibility deserves attention. Africa has already demonstrated in other infrastructure sectors that development does not always follow the same sequence experienced elsewhere. Distributed technologies can sometimes bypass the need to replicate every stage of legacy infrastructure. Could airport energy do something similar?

From Grid Dependence To Microgrids

A microgrid allows a defined site or community to coordinate different electricity resources, which could include solar generation, battery storage, conventional grid supply and other generation technologies. For an airport, the attraction is not simply renewable energy. It is control and resilience.

The airport can potentially manage when it produces power, when it stores it, when it draws from the national or municipal grid and which loads receive priority when energy supply becomes constrained.

NASA's ÆNodes work goes further by examining whether airport energy infrastructure could ultimately serve surrounding communities as well as aviation. One goal of the programme is to develop systems capable of supporting local municipalities while also enabling future transportation.

This turns the conventional relationship between airport and utility on its head. Instead of asking whether the electricity network has sufficient capacity for the airport, planners can begin asking whether the airport itself could become part of the regional electricity solution.

There are already operational examples of the wider concept. California's Redwood Coast Airport Microgrid combines a 2.2 MW solar photovoltaic array with an 8.87 MWh battery energy storage system and additional behind-the-meter solar generation. The project is designed as a community microgrid rather than specifically as an electric-aircraft charging project, but it demonstrates that airport land and energy infrastructure can already be combined to support a broader electricity network.

For aviation, that distinction matters. The airport energy node does not have to wait for electric aircraft before becoming economically useful.

Africa Is Not Starting From Zero

The concept may sound futuristic, but elements of it are already visible in South Africa. Airports Company South Africa reported that six airports in its network had solar photovoltaic installations during the 2024/25 reporting period: George, Kimberley, Upington, King Phalo, Chief Dawid Stuurman and Bram Fischer International airports.

ACSA describes the programme as part of an effort to reduce reliance on grid electricity, improve resilience, manage costs and lower emissions. It has also planned rooftop solar installations for the three major international airports and has been procuring battery storage for George, Kimberley and Upington.

Importantly, these projects were not created to support electric aircraft. They are responses to the energy requirements of airports as they operate today. But they establish something potentially significant for tomorrow.

Once an airport has generation, storage, energy-management systems and experience operating them, the step towards supporting new forms of electrically dependent aviation is different from starting with nothing. ACSA's own corporate planning also identifies expanded solar deployment and investigation of hydrogen infrastructure among its longer-term energy priorities.

The foundation of the future airport energy system may therefore be laid well before the first electric passenger aircraft requests a charging slot.

The Regional Airport May Matter Most

It is tempting to imagine this transition beginning at major international hubs. The opposite may prove equally plausible.

Many early electric and hybrid-electric aircraft concepts are aimed at relatively short sectors. That places regional air mobility, rather than long-haul airline operations, near the centre of the infrastructure discussion. NASA and NREL have consequently focused considerable research attention on smaller and underused airports and on the possibility of connecting communities through shorter regional services.

NREL is specifically modelling how flight demand translates into charging demand and what that means for electricity generation, transmission, distribution and land requirements.

That has particular relevance in Africa. A regional airport serving tourism, mining, agriculture, industry or an isolated community may be exactly the kind of location where future short-range aircraft could prove useful. Yet such airports may also have some of the weakest electricity connections.

The contradiction is striking. The airports that could potentially gain most from new regional aircraft technology may also be among those least prepared to power it, unless the energy infrastructure is developed with the aviation service.

The Solar Opportunity

Africa also possesses an important counterweight to the infrastructure problem. Solar resources are abundant across large parts of the continent, while airports often control substantial areas of land and roof space with predictable daytime electricity demand.

That does not mean every airport can simply cover unused land with photovoltaic panels. Aviation safety, glare, environmental requirements, land value, transmission capacity and future airport expansion all have to be considered.

Nor does solar generation solve the charging problem on its own. Aircraft may require energy after sunset, during poor weather or in short bursts at power levels significantly higher than the airport's normal load. Storage therefore becomes critical. So does intelligent energy management.

The more interesting possibility is consequently not a "solar airport", but an airport where solar generation, battery storage, grid supply and potentially other generation sources operate as one managed system.

Stored or excess electricity could support other airport users or surrounding networks during low demand, while aviation takes priority during peak periods.

The airport becomes less a consumer at the end of an electricity cable and more an active participant in the energy network.



Image Credit: Enel Green Power

Who Pays For It?

Technology may ultimately prove easier than finance. Airport infrastructure has traditionally been funded through combinations of aeronautical revenue, commercial income, government investment and borrowing. Building substantial generation and storage capacity adds another layer of capital requirement.

There is no reason to assume the airport operator must carry it alone. Independent energy producers could finance and operate generation under long-term power purchase arrangements. Development finance institutions could support infrastructure with wider economic or resilience benefits. Airlines or aircraft operators could invest in specialist charging equipment. Utilities could participate where airport generation strengthens a local network.

The precise structure would vary from airport to airport. But the financing question cannot be separated from the wider benefit.

If a multimillion-rand energy installation exists only to charge a handful of aircraft, its business case may be difficult. If that same infrastructure also lowers an airport's electricity costs, protects critical operations during outages, powers commercial tenants, supports ground transport and provides energy services to surrounding developments, the calculation begins to change.

That is one of the central ideas behind the ÆNodes research. NASA specifically set out to explore infrastructure that could provide value before and after advanced aircraft arrive, helping to create an investment pathway rather than waiting for aviation demand to materialise first.

Hydrogen Complicates The Picture

Electricity is not the only possible future energy requirement. Hydrogen-powered aircraft development introduces an entirely different infrastructure problem involving production, transport, cryogenic storage, handling, safety and airport real estate.

The ÆNodes research programme included investigation of cryogenic hydrogen storage, while manufacturers and energy companies continue exploring what an airport hydrogen ecosystem might eventually require.

The timeline remains uncertain, and that uncertainty itself is important. Airports making infrastructure decisions today do not yet know whether the future fleet mix will predominantly require conventional aviation fuel, sustainable aviation fuel, batteries, hydrogen, hybrid systems or some combination of them.

Future-proofing therefore cannot mean betting the airport on one propulsion technology. It means creating infrastructure that can adapt.

A Different Way Of Thinking About Resilience

There is a danger in presenting the energy-node concept purely as another chapter in aviation's decarbonisation story. It is broader than that.

For many African airports, the first argument for distributed energy may be operational resilience rather than emissions. An airport is critical infrastructure. Runway lighting, navigation systems, security, communications, passenger processing, refrigeration, data systems and emergency services cannot simply stop when the external electricity supply becomes unreliable.

As airports become more digital and aircraft themselves become more dependent on electrical energy, that requirement for continuity will only increase.

This is where Africa's apparent disadvantage could produce a different development path. Grid constraints alone will not create the airport of the future. Without capital, policy, technical skills and viable commercial models, they could just as easily prevent it.

But they do make the case for self-sufficiency harder to ignore.

The question may therefore be shifting. Instead of asking whether an African airport can rely on the national grid to support the next generation of aviation, planners may increasingly ask how much of that dependence is necessary at all.

If the answer leads to airports generating their own electricity, storing it, managing it and eventually supplying energy beyond their own perimeter, the consequences reach well beyond aircraft propulsion.

The airport stops being simply a destination for energy. It becomes part of the energy infrastructure of the region it serves.

And that may turn out to be one of the most important ways in which the airport of the future moves beyond the terminal.



Image Credit: Heathrow NATS. Commons Licence

AI MOVES INTO AIR TRAFFIC MANAGEMENT

Why the airspace above and around an airport is becoming part of its digital ecosystem.

An airport has always extended beyond the terminal building: its runways, taxiways, stands, navigation aids and controlled airspace form a single operating environment. What is changing is how those elements are connected.

Digital towers can move controllers away from an airport while preserving their view of the airfield through cameras, sensors and communications links. Artificial intelligence is entering air traffic management through forecasting, flight-plan processing and trajectory prediction, while drones are creating demand for digital traffic-management services that can exchange information with conventional aviation. Together, these developments raise a more complex question: where does the modern airport end?

The Tower Moves Away From The Airport

Remote tower technology is one of the clearest examples of the airport becoming a distributed system. In April 2015, Sweden's Örnsköldsvik Airport began receiving operational remote tower services from LFV's Remote Tower Centre in Sundsvall, more than 150 kilometres away. LFV had received operational approval in late 2014 after an extensive programme of technical, operational, safety and human-factors validation.

Air traffic control had not become autonomous: the controller still made the operational decisions. What changed was the controller's location and the means of observing the airport. Cameras, microphones, communications links and associated systems represented the airfield remotely, turning the traditional tower window into a digital interface.

London City Airport demonstrated that the same principle could be applied at a major international airport. In 2021 it became the first major internation-



Image Credit: Congonhas Airport (CGH:SBSP) Brazil



Image Credit: EUROCONTROL. Maastricht Upper Area Control Centre (MUAC)

al airport to be fully controlled through a remote digital air traffic control tower. NATS controllers work at Swanwick in Hampshire, approximately 115 kilometres from the airport, using an enhanced-reality view of the airfield.

That changes the relationship between airport and tower. The airport remains physically in London, but one of its most important operational functions is being performed elsewhere. The control service is still part of the airport ecosystem even though the people providing it are no longer standing beside the runway.

The Airport's View Becomes Data

A conventional control tower relies heavily on direct visual observation; digital towers recast that view as data. High-definition cameras, panoramic displays and other sensors can reproduce and sometimes augment the airfield picture, combining what was once seen through glass with information from other systems.

This matters because the modern airport is already dependent on multiple sources of surveillance and operational information. Aircraft position, flight plans, weather, runway status, airport capacity and traffic demand all contribute to decisions made around the airport.

As those data sources become more closely integrated, the boundary between airport operations and air traffic management becomes less distinct. The airport is not simply a place being observed by ATC. It becomes one node within a much larger information network.

Ai Moves Into Air Traffic Management

Artificial intelligence adds another layer to the network, though its present role should not be overstated. EUROCONTROL says several AI applications already support operations at the Maastricht Upper Area Control Centre and Network Manager functions, including traffic forecasting, automated flight-plan processing, traffic and trajectory prediction, airport operations, conflict-detection and resolution research, speech-to-text applications and other decision-support functions.

The shift is not from human controller to machine controller. Instead, increasingly capable systems process large quantities of information, identify patterns and provide predictions or recommendations while human operators remain responsible for decisions. Around airports, this division of labour matters because traffic demand, runway availability, weather, departure sequencing and arrival flows are interconnected; a better prediction in one part of the network can change decisions elsewhere.



Automation can reduce routine workload and improve consistency, but it also raises familiar human-factors questions. Operators still need to understand the systems they supervise, recognise when a recommendation is inappropriate and remain able to intervene when conditions fall outside what the automation handles well.

A New Layer Of Traffic

Drones make the question of the airport boundary more complicated because they introduce large numbers of potential airspace users that do not fit neatly into the traditional model of a controller speaking individually to every pilot.

Europe's U-space framework provides one example of how that problem is being addressed. U-space is a regulatory and service framework for unmanned aircraft operations in designated airspace. Mandatory services include flight authorisation, geo-awareness, network identification and traffic information.

These services are digital by design. A drone operator can receive information about airspace restrictions and nearby traffic without reproducing conventional voice-based air traffic control for every small unmanned aircraft. Drones still need to remain connected to the wider aviation system: in controlled airspace, coordination with air traffic services is necessary, and EASA's framework includes dynamic airspace reconfiguration to accommodate crewed and unmanned operations safely.

The operational challenge appears where these systems meet. A drone may need to operate close to an aerodrome. A helicopter may enter the same area unexpectedly. General aviation aircraft may be operating without the same level of surveillance equipment as commercial traffic. The system therefore needs a way of making different classes of user visible to one another.

When Different Airspace Users Have To See Each Other

In May 2026, EUROCONTROL and EASA published electronic-conspicuity use cases intended to support safer shared airspace between manned aviation and drones.

One use case addresses U-space without an air traffic control service. In that model, information from electronically conspicuous manned aircraft can be received by U-space service providers and passed to drone operators so that they are aware of nearby traffic and can take appropriate action.

The development shows how lower-level airspace management is evolving. Rather than creating permanently separate skies for crewed aircraft and drones, the emerging approach uses shared information to help different users coexist safely where their operations overlap.

For airports, that overlap will become increasingly important. Drones may be used for surveying, in-

spection, security, infrastructure monitoring and other functions close to aerodromes. At the same time, conventional aircraft, helicopters and emergency services continue to use the surrounding airspace. The airport ecosystem therefore extends into the digital services that help those different users understand who else is nearby.

AAM Adds Another Question

Advanced air mobility adds a further layer, but this is an area where the distinction between present capability and future ambition is important.

Current European U-space rules were designed around unmanned aircraft operations and are not, at this stage, intended to support passenger-carrying eVTOL operations. EASA guidance states that integrating passenger-carrying UAS operations would require reassessment of the framework, including the acceptable level of safety and potentially additional mandatory services and onboard capabilities.

The digital infrastructure being developed for drones offers useful building blocks for more complex future airspace, but today's U-space arrangements cannot simply absorb high-density passenger air-taxi operations without further regulatory and technical development.

The broader direction, however, is clear. If eVTOL and other advanced air mobility aircraft begin operating regularly between vertiports, airports and urban destinations, they will have to coexist with conventional traffic, helicopters, drones and controlled airspace. Their integration will therefore be as much an airspace-management question as an aircraft-certification question.

Here the airport ecosystem begins to extend vertically. A future airport may need to manage activity on the runway and apron together with the movement of new aircraft categories through the surrounding airspace.

When Machines Talk To Machines

The scale of future operations makes digital coordination increasingly important. Conventional air traffic control works because direct controller attention remains manageable within carefully structured sectors and procedures; that model cannot simply be copied for very large numbers of small unmanned aircraft.

Instead, some routine coordination can occur through data exchange between systems. A U-space service can process a drone flight authorisation, receive traffic information and distribute relevant constraints. Conventional ATM systems can manage the crewed traffic above or alongside that operation. Interfaces between the two can exchange the information needed to keep each side aware of the other.

Machine-to-machine communication does not remove people from the system. Human responsibility remains embedded in the organisations that operate, supervise and regulate those services, while routine coordination is handled digitally and exceptions, conflicts and higher-risk situations are escalated to people who can interpret the wider operational context.

The South African Question

South Africa is already moving towards a more digitally connected airspace. ATNS uses digital tools to manage demand and capacity and has explored the use of unmanned aircraft for inspecting navigation infrastructure.

This does not signal an imminent move to remote towers or high-density U-space operations. It does, however, point to the same underlying requirement: conventional aviation, unmanned aircraft, surveillance and traffic-management systems will increasingly need to share information and airspace safely.

For a country of large distances and airports of very different scales, the challenge is how to achieve that integration while maintaining resilience and appropriate human oversight.

The Airport Beyond The Fence

The physical airport boundary will remain. Operationally, it is becoming far less distinct.

Surveillance, traffic management and decision-making can already extend far beyond the airport itself. Drones add another layer, and advanced air mobility could add another still.

The airport is therefore becoming part of a connected airspace system in which digital infrastructure may matter as much as physical infrastructure.

So where does the airport end? Physically, at the perimeter fence. Operationally, the boundary is becoming much harder to draw.

So where does the airport end? Physically, the answer may still be the perimeter fence. Operationally, the answer is becoming much harder to draw.



Image Credit: EHANG

MOVING BEYOND THE TRADITIONAL AIRPORT

Vertiports, electric aircraft and new transport networks are beginning to distribute aviation functions once concentrated within the conventional airport boundary.

For most of aviation history, the airport has been geographically obvious: runway, apron, terminal, hangars and control tower sit inside a defined operating environment, separated from the surrounding city by a physical boundary. Advanced Air Mobility is beginning to challenge that geography.

In Shenzhen, electric vertical-lift aircraft can operate from compact urban facilities combining passenger handling, charging, hangarage and take-off infrastructure. In Dubai, a new vertiport network is being developed to connect the international airport with locations across the city. In the United States, existing airports, heliports and new vertiports are being drawn into similar network planning.

These developments do not replace the conventional airport. They show that aviation infrastructure can be distributed rather than concentrated in one place.

Building Aviation Into The City

Advanced Air Mobility is as much about infrastructure as aircraft. In Shenzhen's Luohu district, EHang's 753-square-metre Urban Air Mobility Exhibition and Experience Centre combines hangarage, charging and passenger boarding, with an automated lift moving the EH216-S to an upper operating level for take-off.

The wider Luohu programme targeted 100 take-off and landing sites by 2026, including 32 for passenger aircraft. When the centre opened, EHang reported that 15 passenger-carrying vertiports had already been established.

There is no conventional runway or large terminal complex. Instead, aircraft storage, energy supply, passenger handling and flight operations are compressed into a small urban footprint, allowing aviation infrastructure to become part of the city rather than something located beyond it.

Airport functions can increasingly be distributed across the city.

That distinction matters because the arrival of a new aircraft category does not by itself create a transport

system. Operating sites, charging, ground support, route structures, airspace arrangements and passenger access all have to exist around the aircraft.

EHang's commercial development remains a work in progress. The company said in August 2026 that the two Chinese operators holding operating certificates for the EH216-S were continuing routine trial operations in Guangzhou and Hefei while working towards broader commercial passenger service. It also acknowledged uncertainty around the timing of wider passenger-service approvals.

Autonomous air taxis have not replaced ground transport across Chinese cities. The more relevant development for airport planners is that aircraft and parts of the distributed infrastructure needed for future operations are beginning to exist together.

Aviation infrastructure no longer has to resemble a conventional airport to perform some airport-like functions.

Joby Takes Another Route

Joby Aviation provides a different interpretation of the same structural change. Its aircraft is designed to carry a pilot and four passengers, taking off and landing vertically before transitioning to wing-borne flight for the cruise.

More important in this context is the network being developed around Joby's aircraft, with Dubai emerging as the most visible example.

Joby and its partners have completed the Dubai International Vertiport at Dubai International Airport. By August 2026, Joby said the second of four planned Dubai vertiports was close to completion. The initial network is intended to include locations serving the American University of Dubai area, Dubai Mall and Atlantis The Royal alongside the airport hub.

Rather than bypassing the conventional airport, the model extends its reach by linking the airport hub with urban vertiports.

A traveller arriving on a long-haul flight could eventually transfer to an electric vertical-lift aircraft for the final part of the journey into the city. In the opposite direction, a passenger could begin the aviation component of an international journey at an urban vertiport before reaching the main airport.

One Journey, Several Modes

The implications become clearer when surface transport is included. In February 2026, Joby and Uber demonstrated how the planned air-taxi service could appear inside the Uber application, combining road and air transport within a single passenger journey.

The concept links three stages into one journey. Surface transport takes the passenger to a vertiport, an air taxi crosses part of the city, and a final connection completes the trip.

For the passenger, the important change is not the terminology attached to each mode. It is whether the transfers can function as one journey.

If that model succeeds, the vertiport becomes less like a miniature terminal and more like an interchange within a wider transport network.

The Network Extends

Joby's US activity illustrates how AAM networks may combine conventional airports with urban vertiports. In September 2026, the company conducted integration flights across Dallas-Fort Worth, including connections with Dallas Fort Worth International Airport, and has established an operating facility at Perot Field Fort Worth Alliance Airport.

In Los Angeles, an existing Century Plaza helipad is intended to become a Joby vertiport. The boundary between airport, heliport, vertiport and urban transport interchange is becoming less distinct.

Passenger processing is shifting too, with off-airport check-in, baggage services and digital identity moving parts of the journey beyond the terminal. AAM goes further by changing where access to the aircraft itself can occur.

The Runway Is No Longer The Starting Point

The conventional airport is not disappearing. Long-haul aviation will continue to depend on runways, maintenance, energy, rescue services, security, border facilities and complex air traffic management.

What is changing is where some journeys may begin and end. Vertiports and existing heliports could bring aircraft access closer to cities and connect directly with surface transport, while conventional airports remain anchors for longer journeys.

For Africa, the important question is not simply when air taxis will arrive, but what infrastructure will be needed if some forms of aviation no longer require passengers to begin their journey at a conventional airport.

The airport fence will remain, but aviation access may increasingly begin and end beyond it.

THE REAL TEST FOR EHANG

The EH216-S has been certified, carried passengers and flown across multiple markets. Now EHang faces the more difficult challenge of turning a pilotless eVTOL into a repeatable transport system.

EHang, the self-described "world's leading autonomous aerial vehicle (AAV) technology platform company", has crossed a major threshold in Advanced Air Mobility. Its EH216-S has been certificated in China, operators have received approval for human-carrying services, and the aircraft has flown in markets well beyond its home country. The bigger challenge is turning those achievements into a durable transport operation.

Certification, demonstration flights and passenger-carrying appearances at controlled events can show that autonomous vertical flight works, but they do not create a transport system.

A transport system requires repeated flights, reliable charging and turnaround, and routine maintenance, dispatch, passenger handling, airspace coordination and emergency procedures. Regulators must be satisfied, passengers must trust the service and, even-



tually, the economics must work. EHang and the EH216-S are now entering that stage.

The EH216-S looks unlike the conventional aircraft around which passenger aviation has developed. There is no cockpit and no pilot on board. Two passengers sit inside a compact cabin beneath a distributed electric propulsion system comprising 16 propellers driven by 16 independent electric motors mounted on eight arms.

It takes off vertically, flies autonomously along predetermined routes and lands without a runway. Compared with conventional fixed-wing aircraft, its published performance is modest, with a maximum range of 30 km, a flight time of approximately 25 minutes and a maximum design speed of 130 km/h.



Image Credit: EHANG

The aircraft is intended for short-distance, low-altitude movement rather than as a replacement for an airliner or regional aircraft.

Certification Was Only The First Step

EHang has achieved something that distinguishes the EH216-S from many other eVTOL programmes. The aircraft has received a Type Certificate, Production Certificate and Standard Airworthiness Certificate from the Civil Aviation Administration of China for pilotless passenger-carrying operations. In March 2025, operators EHang General Aviation and Heyi Aviation received Air Operator Certificates covering human-carrying pilotless aerial vehicle services.

Those milestones established the certification and operating basis for the aircraft in China. They did not mean that autonomous air taxis suddenly began operating across Chinese cities in the same way as conventional scheduled transport.

EHang said in August 2026 that its Guangzhou and Hefei sites had maintained routine trial operations for 17 months while the company strengthened personnel training, operational support, insurance, airspace coordination and emergency-response systems. A first point-to-point test route at its Guangzhou headquarters had also entered internal trial operation.

The regulatory environment has simultaneously become more cautious. EHang reported that a serious accident elsewhere in China's low-altitude aviation sector had prompted greater regulatory caution and increased uncertainty over the timing of wider passenger commercial-service approvals.

Certification of the aircraft and its operators has enabled flights and the development of operating procedures, but large-scale public passenger transport will emerge gradually rather than through a single regulatory milestone.

From Aircraft To Operating System

EHang's next challenge is to prove the operating system around the aircraft rather than the aircraft alone.

By the end of the second quarter of 2026, the company said the EH216 series had flown in 23 countries and completed nearly 100,000 flight missions. That figure covers the broader flight history of the aircraft family and should not be interpreted as 100,000 commercial passenger journeys.

More revealing is the infrastructure being devel-



Image Credit: EHANG

oped around those flights. In China, EHang is standardising operating data, training, ground support and safety management into a model that can be repeated across sites and potentially exported to other markets.

Practical developments show what this requires. EHang says a battery-cooling vehicle can increase daily utilisation to between 12 and 15 flights per aircraft, while an independent cabin air-conditioning system improves passenger comfort in hot operating environments. Such changes may attract less attention than a city-centre vertical take-off, but they help make charging, turnaround, dispatch, maintenance, ground handling, passenger management, emergency planning and route control repeatable.

Switzerland: A Different Use Case

In July 2026, the EH216-S completed its first flights in Switzerland at Quinto in Ticino. The Alpine environment presents a different proposition from urban operations in Guangzhou. EHang and its Swiss partners have identified possible applications including regional passenger transport, tourism, logistics and emergency response, particularly where difficult terrain makes conventional surface transport slower or more complex.

The flights were conducted in cooperation with the Swiss Federal Office of Civil Aviation, the Municipality of Quinto and EHang's local partner DroneVia. That does not make Switzerland an established EH216-S commercial market. The programme remains focused on evaluation and possible future deployment.

A short-range vertical-lift aircraft may offer different value in an Alpine valley than in a congested megacity, making the Swiss trials a test of a distinct use case rather than a simple replication of Chinese urban operations.

Kazakhstan: Passengers On Board

A month later, the EH216-S reached another international milestone. During the Games of the Future 2026 in Astana, Kazakhstan, the aircraft conducted multiple route flights carrying passengers, including Kazakhstan's Minister of Transport, Nurlan Saurambayev.

The development is notable because Kazakhstan had established an initial national framework for eVTOL aircraft, vertiports and unmanned-aircraft traffic management two months earlier. The comparatively modest first phase under consideration consists of demonstration and tourism flights lasting

between five and 30 minutes, with urban transport potentially following later.

This phased approach allows early AAM markets to start with defined routes and applications, build operational experience and expand gradually instead of attempting an immediate citywide air-taxi network.

Hong Kong: Testing Frequency, Not Just Flight

Hong Kong represents another variation on the same theme. On 28 August 2026, the EH216-S made its first public flight at Hong Kong Cyberport under the territory's Low-Altitude Economy Regulatory Sandbox X programme.

The aircraft performed vertical take-off and landing, low-altitude cruise and hovering along pre-programmed routes from the Cyberport waterfront vertiport. More importantly, the programme was designed to continue with repeated public flight sessions to test system reliability and safety under regular, higher-frequency operating conditions.

Hong Kong's programme shifts the test from whether an autonomous aircraft can fly to whether it can operate repeatedly, predictably and safely within a busier transport system.

The African Connection

For African aviation, EHang is not entirely a distant Chinese development. On 5 September 2025, the EH216-S completed what EHang described as the first pilotless human-carrying eVTOL flight on the African continent during the Aviation Africa Summit in Kigali, Rwanda.

Rwanda Civil Aviation Authority personnel were among those who flew in the aircraft, while President Paul Kagame, infrastructure officials and aviation representatives attended the event.

A demonstration flight in Kigali does not establish an African air-taxi market, although it places the technology within the continent's aviation debate. African cities will need to assess which applications can support the economics, infrastructure and operating requirements of short-range vertical flight rather than copy networks developed elsewhere.

From Use Case To Corridor To Network

That may be the most useful way to understand where EHang is heading. Its recent international activity extends from Switzerland and Kazakhstan to Hong Kong, Rwanda and other markets, while the company has also launched what it calls a Global Fast Track Program intended to create a repeatable pathway for introducing pilotless eVTOL operations into additional countries. Sri Lanka became the first participant in August 2026.

At an FIA mobility event in Madrid in September, EHang Europe and Latin America president Victoria Xiang described a three-stage progression from use cases to corridors and ultimately to networks.

That sequence matters more than the futuristic image traditionally associated with the air taxi. The EH216-S has shown that a pilotless passenger eVTOL can be certificated and flown in multiple operating environments; the harder test is whether it can become useful at scale.

Success will depend on useful, repeatable operations that fit existing airspace and transport systems, earn regulatory and passenger confidence, and produce workable economics. The meaningful next milestone is therefore a transport system that continues operating after the demonstration ends.

Ehang Eh216-S | Technical Snapshot

Aircraft	EH216-S
Configuration	Pilotless, two-seat passenger-carrying eVTOL
Propulsion	Distributed electric propulsion
Propellers/motors	16 propellers driven by 16 independent electric motors on eight arms
Capacity	Two passengers; no onboard pilot
Maximum take-off weight	620 kg
Maximum range	30 km
Maximum flight time	Approximately 25 minutes
Maximum design speed	130 km/h
Width	5.73 m
Height	1.93 m
Flight mode	Autonomous flight along predetermined routes
Landing gear	Skid-type
Primary role	Short-range, low-altitude passenger transport

CAN THE TURBOPROP REINVENT ITSELF?

The ATR 72-600 is already earning its keep on regional routes. Now the same aircraft has been chosen to help test hybrid-electric propulsion, placing a proven turboprop at the centre of a much bigger question about what regional aviation becomes next.

The ATR 72-600 is a mature twin-engine turboprop already carrying passengers across regional networks. At the same time, the type has been selected as the flying testbed for a European programme intended to demonstrate hybrid-electric propulsion at regional-aircraft scale. That makes it an unusually useful aircraft through which to examine how aviation moves from proven efficiency to new technology, without confusing ambition with operational readiness.

Aviation has never lacked visions of its future. Battery-electric aircraft, hydrogen propulsion and increasingly electrified aircraft systems all feature prominently in plans for lower-emission flight. The more difficult task is turning a promising technology into an aircraft that can be tested, certified, supported and operated economically every day.

That distinction matters particularly in regional aviation, where aircraft often serve lower-density routes and smaller airports. Capacity, runway requirements, fuel burn, maintenance, turnaround, crew



training and the economics of keeping a route viable all matter.

The ATR 72-600 sits squarely in that operational world. Yet it has also been chosen as the flight-test platform for hybrid-electric technologies under the European Union Clean Aviation programme. The result is an aircraft that offers a view of regional aviation in two timeframes at once: what can be done now, and what still has to be demonstrated for the future.

Built For The Regional Mission

The ATR 72-600 is a twin-engine turboprop designed for regional operations. ATR lists a standard 72-seat cabin at 29-inch pitch and a maximum 78-seat layout at 28-inch pitch. The current production aircraft uses two Pratt & Whitney Canada PW127XT-M engines, each rated at 2,750 shaft horsepower.

Manufacturer data list a maximum take-off weight of 23,000 kg, a maximum payload of 7,400 kg and a range of 740 nautical miles with maximum passengers under ATR's stated reference conditions. Maximum cruise speed is 270 KTAS at the specified weight, altitude and standard-atmosphere conditions.



Image Credit: ATR

For airports, ATR quotes a take-off field length of 1,315 metres at maximum take-off weight, ISA and sea level, and a landing field length of 915 metres at maximum landing weight and sea level under EASA Air Ops assumptions. These are reference figures rather than guarantees for every operating condition, but they show the design emphasis on regional airfields.

Current fleet decisions illustrate that operating role. Air Algérie ordered 16 ATR 72-600s in July 2025 for delivery from 2026 to 2028, together with a full-flight simulator that ATR describes as the first of its kind in Africa. Air Congo received its first ATR 72-600 in Kinshasa on 30 April 2026 under an Ethiopian Airlines lease arrangement, with the aircraft intended to support domestic regional services. Beyond Africa, Indian regional airline FLY91 announced a firm order for 40 ATR 72-600s in September 2026, with deliveries scheduled from 2027 to 2032. The orders are a reminder that airlines are still committing capital to conventional turboprops while next-generation propulsion remains developmental.

Efficiency Before Revolution

The environmental discussion around aviation can create the impression that meaningful reductions must wait for an entirely new propulsion system. Regional turboprops illustrate a more incremental path.

ATR states that its -600 series with the PW127XT burns 45% less fuel and emits 45% less CO_2 per trip than similar-size regional jets. That is a manufacturer comparison and depends on the mission and comparator aircraft, so it should not be read as a universal performance figure. ATR also attributes an additional 3% fuel-efficiency improvement to the PW127XT compared with the previous PW127M generation.

The important point is not the marketing percentage on its own. Aircraft efficiency is mission-dependent. A turboprop designed around shorter regional sectors has a different set of compromises from a jet optimised for higher cruise speed. On routes where passenger demand and sector length match the



Image Credit: ATR

aircraft, fuel consumption can be reduced without waiting for a new propulsion architecture.

This is a less dramatic form of innovation, but aviation has always advanced through accumulated improvements as well as major breakthroughs. Engines, propellers, aerodynamics, systems, operating procedures and maintenance all contribute to performance over an aircraft's service life.

Saf: Changing The Fuel Before Changing The Aircraft

Sustainable aviation fuel adds another near-term pathway. Drop-in SAF is produced through approved pathways from non-petroleum feedstocks and is intended for use within existing aviation fuel systems, subject to the applicable fuel standard and blend limits. Its climate benefit is assessed primarily across the fuel lifecycle rather than simply at the engine exhaust.

ATR has used the ATR 72-600 in a series of SAF demonstrations. In 2019, Braathens Regional Airlines operated what ATR called a "Perfect Flight" using a 50% SAF blend as part of a wider package of operational measures. In February 2022, ATR reported ground and flight tests with 100% SAF in one engine of an ATR 72-600 prototype. In June 2022, an ATR 72-600 operated a demonstration flight using 100% SAF in both engines in cooperation with Braathens Regional Airlines and Neste.

Those demonstrations did not make routine 100% SAF operation immediately available to airlines. ATR's current published position is that its turboprops are certified for SAF blends up to the present 50% limit and that the company is targeting 100% SAF readiness by 2030, subject to international fuel-standard validation by ASTM.

That distinction is central to the wider story. Establishing the standards, approvals, supply chain and commercial availability required for routine airline use is another.

When The Aircraft Becomes The Laboratory

The next step is more technically demanding. ATR is leading two projects within the EU Clean Aviation programme, HERACLES and DEMETRA, as part of work towards an Ultra-Efficient Regional Aircraft concept.

HERACLES is intended to define the integrated aircraft concept. Clean Aviation says the project brings together hybrid-electric propulsion with high-performance batteries, an optimised thermal engine capable of operating on 100% SAF, advanced propeller concepts, a highly optimised airframe and enabling technologies for a more-electric aircraft.

The programme target is a minimum 30% reduction in CO_2 emissions on typical regional routes compared with a 2020 reference aircraft. That wording is important. It is a Clean Aviation technology target against a defined 2020 state-of-the-art reference, not a verified 30% reduction against today's ATR 72-600.

DEMETRA is the flight-demonstration element. Clean Aviation describes it as the flagship flight-dem-

onstration project of its Regional Aircraft Thrust, using a representative CS-25 regional aircraft platform to demonstrate and validate hybrid-electric technologies under real flight conditions. The work includes integration of a hybrid powerplant, electrical and thermal-management systems, high-energy-density batteries, avionics and test instrumentation, alongside ground-based work on propeller integration and control systems.

ATR has identified the ATR 72-600 as the flying testbed. Its February 2026 programme update said HERACLES and DEMETRA aim to demonstrate a hybrid-electric ATR 72-600 flying testbed by the end of 2029. Clean Aviation's wider regional-aircraft work is aimed at maturing technologies for a possible 2035 entry into service.

The word "possible" matters. A demonstrator exists to generate evidence. It does not guarantee that every technology being tested will appear on a production aircraft, nor does it mean that a commercial hybrid-electric ATR has already been defined.

Certification Is Part Of The Engineering

Hybrid-electric propulsion is easy to simplify in a diagram. On a commercial aircraft, the integration problem is far more demanding.

High-voltage electrical systems, batteries, thermal management, control logic, power electronics and conventional propulsion all have to work within an aircraft that must continue to meet airworthiness requirements. Failure modes have to be understood. Maintenance implications have to be defined. Crews and engineers need procedures and training. The aircraft must remain supportable in normal airline service.

Clean Aviation places certification readiness explicitly within the DEMETRA programme. The project is intended to build experience in aircraft modification, system integration and hybrid-electric operation, while progressing the maturity of the technologies and the associated certification approach.

This is one reason the pace of aviation innovation cannot be judged only by the speed at which a prototype can be built. A technology becomes useful to commercial aviation only when it can be integrated into a safe, certifiable and economically workable transport system.

The Aircraft Does Not Change Alone

New propulsion technology cannot be introduced in isolation from the systems that support the aircraft. Hybrid-electric regional aviation could eventually affect airport power, maintenance, emergency procedures and technical training, while greater SAF use depends on fuel being available at the airports an aircraft actually serves.

The same principle already applies to conventional fleet development. Air Algérie's ATR order includes a full-flight simulator, while Ethiopian Airlines and ATR have separately announced cooperation to develop ATR maintenance capability in Ethiopia. Regional connectivity therefore depends not only on acquiring aircraft, but on building the training, maintenance and support systems around them.

A Particularly Relevant Question For Africa

For African regional aviation, the immediate question is not whether the continent should wait for a future hybrid-electric aircraft. Current-generation turboprops are already being introduced into African networks while the technologies intended for the next generation remain in research, demonstration and certification development.

Operators can therefore assess present-day aircraft on current economics, airfield performance and support requirements, while airports and governments focus on the infrastructure needed for existing regional services. In parallel, the industry can prepare for changes in fuel supply, electrical systems, maintenance and training if new propulsion technologies mature.

That separation matters. Regional connectivity has to work with the aircraft, infrastructure and economics available now, even as the industry prepares for technologies that may alter those requirements later.

A Path Rather Than A Promise

The ATR 72-600 is a mature regional turboprop, but it is also becoming a testbed for technologies that may shape the next generation of regional aircraft.

Efficiency improvements and SAF capability can be introduced into existing operations, while programmes such as HERACLES and DEMETRA test hybrid-electric technologies and generate the evidence needed for future certification.

For now, the ATR 72-600 remains firmly an aircraft of the present, while helping determine which elements of aviation's proposed future can become operational reality.




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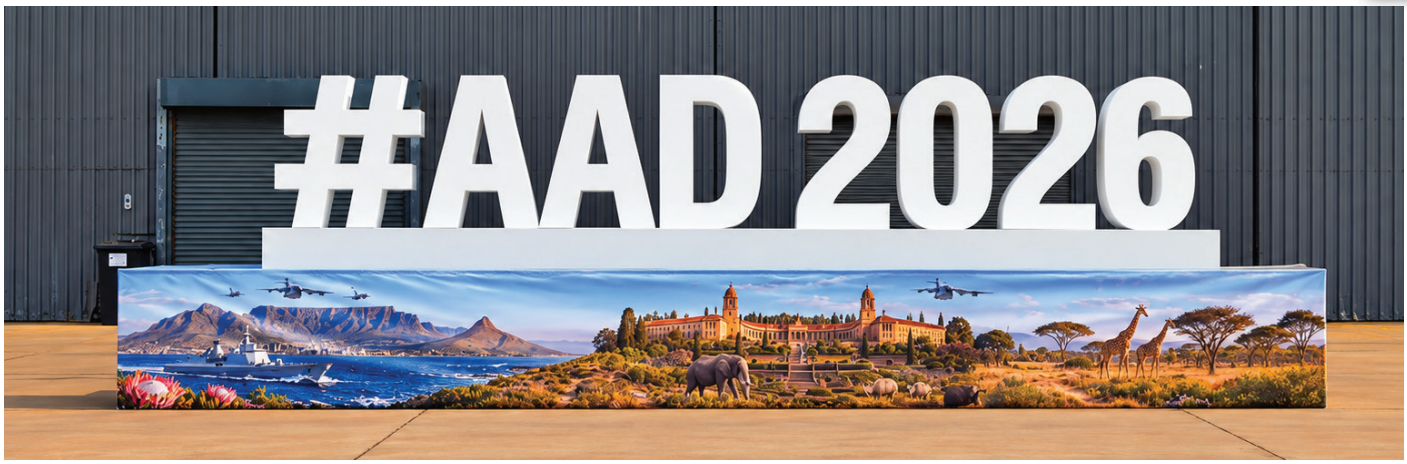

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HENLEY 222
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DESIGN | DEVELOP | DELIVER
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BEYOND THE FLIGHT LINE

At Waterkloof, World Airnews' reporting explored the work behind aerospace capability: maintaining aircraft, developing technical skills, connecting systems and turning industrial ambition into sustained operations.

An aircraft on a flight line is a visible expression of capability. The engineering, training, maintenance and supply arrangements that keep it operational are considerably harder to display.

At Africa Aerospace and Defence 2026, those supporting requirements formed a recurring thread in World Airnews' conversations with manufacturers, maintenance providers and technology companies. Discussions about equipment led into questions about local support, industrial participation and the practical demands of operating across African markets.

Held at Air Force Base Waterkloof from 16 to 20 September, AAD combined three trade days with a public air-show weekend. Its format brought the commercial and technical business of aerospace into the same event as the flying displays through which a wider audience encounters aviation.

The reporting in this section concentrates on the business behind that public view. What does an acquisition require after delivery? How can existing engineering capability become sustainable work? And what must be in place for increasingly complex aircraft and systems to remain useful throughout their operating lives?

Support Behind The Sale

For an aircraft manufacturer, entering a market involves decisions that extend well beyond the initial fleet requirement. Operators need access to training, maintenance, spares and technical assistance. The location and availability of that support can influence how effectively an aircraft serves its intended mission.

Embraer's discussion with World Airnews around the C-390 Millennium raised precisely those questions. Its African ambitions brought local technical capability and support arrangements into the conversation alongside the aircraft itself.

The subject also has a direct commercial-aviation application. ExecuJet MRO Services' account of its African strategy focused on extending customer reach and technical support from its existing operation. It provided a useful perspective on how a maintenance business can serve a wider market without making additional permanent bases the starting point.

These are different businesses, serving different aircraft and customers. Both, however, illustrate why the support available to an operator deserves attention alongside the equipment being offered.

Industrial Ambition Meets Delivery

For South African aerospace and defence companies, the challenge includes sustaining the engineering and manufacturing capacity on which future programmes depend.

In World Airnews' interview with Denel, the discussion centred on translating capability into executable business. The questions concern programmes, customers and the work required to sustain technical expertise over time.

That is an important distinction when assessing industrial announcements. A partnership can establish an intention to cooperate, but its practical value be-

comes clearer when responsibilities, investment and actual work are defined.

For an editorial assessment of localisation, the useful questions are concrete. What engineering or manufacturing activity will take place locally? Who will acquire new skills? What maintenance capability will remain available to the customer? Can that work continue beyond an initial order?

Rosoboronexport's emphasis on maintenance, repair and localisation offers another perspective on this discussion. Its proposals and figures remain the company's own account, examined with that attribution in the feature that follows.

The published AAD conference programme placed African defence industry between sessions on the future of warfare and commercial and military aviation. That structure provided a forum for considering industrial development alongside changing operational requirements.

The Electronic Side Of Airpower

The visible aircraft is also increasingly dependent on systems that are less immediately apparent to an exhibition visitor.

Sensors, communications, identification, electronic warfare and data links influence how information is gathered, interpreted and shared. Their integration raises questions about compatibility, spectrum use and the ability of different equipment to function together.

HENSOLDT's contribution to this edition examines that electronic side of airpower. It also brings South African technology development into the discussion, widening the industrial story beyond airframes and propulsion.

For buyers and operators, this creates another layer of assessment. The performance of an individual component matters, but so does its relationship with the systems already in service and the people who must operate and support it.

The reporting therefore needs to look beyond a product's stated capability to the conditions in which that capability can be used.

Unmanned Aviation And The Ground Network

Unmanned aviation brings these issues together, with aircraft increasingly supported by docking facilities, communications, remote supervision and data services, shifting the focus from an individual flight to the reliability of the wider operation.

It also brings the ground environment firmly into view. Power, communications, maintenance access and operational oversight become part of the service being delivered. Airspace coordination and regulatory arrangements remain essential to how that service can develop.

This provides a connection with October's airport theme. Whether the subject is a conventional airport, a maintenance operation or a remotely operated aircraft, performance depends on relationships between organisations and infrastructure.

Those relationships deserve as much scrutiny as the aircraft.

What Follows The Exhibition

An exhibition brings people, products and proposals together within a concentrated period. The outcomes take longer to assess.

A discussion may become a contract. A technical partnership may lead to engineering work. A proposed support arrangement may develop into a service on which an operator can depend. Each requires follow-through beyond the exhibition itself.

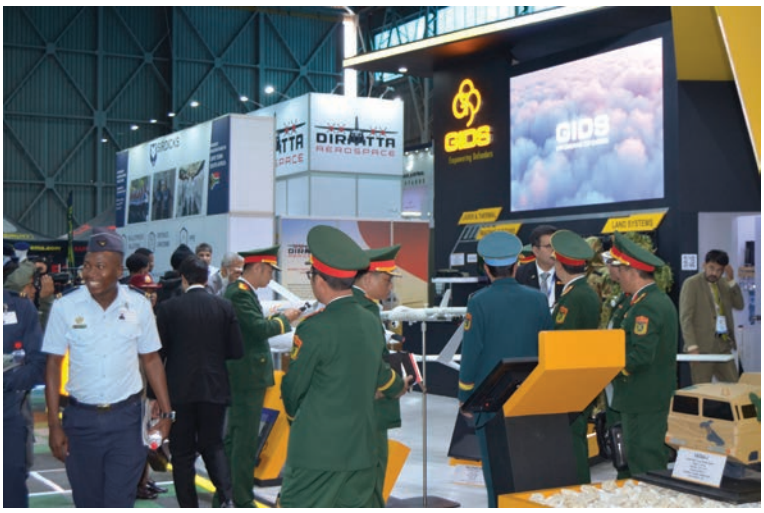
That is where the reporting in this section is directed. The interviews examine what companies say they intend to deliver, the capabilities on which those plans rest and the practical questions that will determine their progress.

They do not amount to a single verdict on the African aerospace and defence market. They offer a series of views from businesses working within it: manufacturing, aircraft supply, electronic systems, maintenance and international support.

Together, they provide a basis for following what happens next.

What matters now is whether the activity visible at AAD translates into sustained capability between exhibitions. For African operators and defence organisations, that means more than acquiring equipment. It means access to skills, maintenance, spares, engineering support and partnerships that can remain viable over the life of a programme.

The lasting significance of AAD 2026 will emerge through that subsequent work—in the programmes that proceed, the support that becomes available and the technical capability that continues to develop after Waterkloof's exhibition stands have been dismantled.

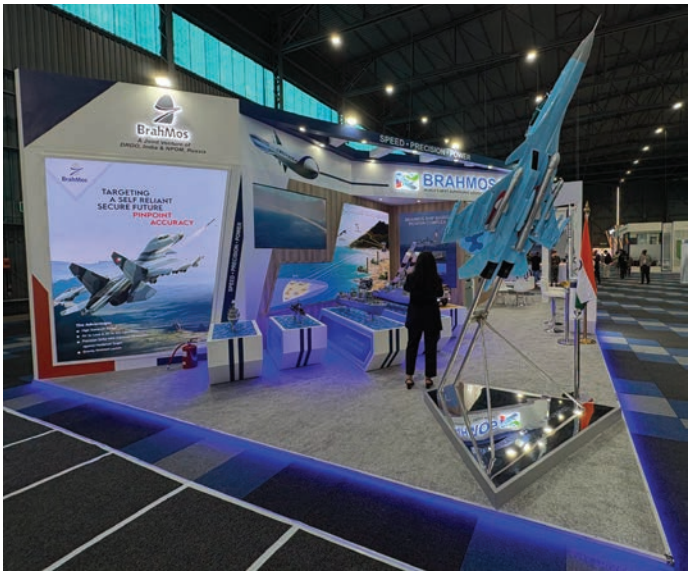

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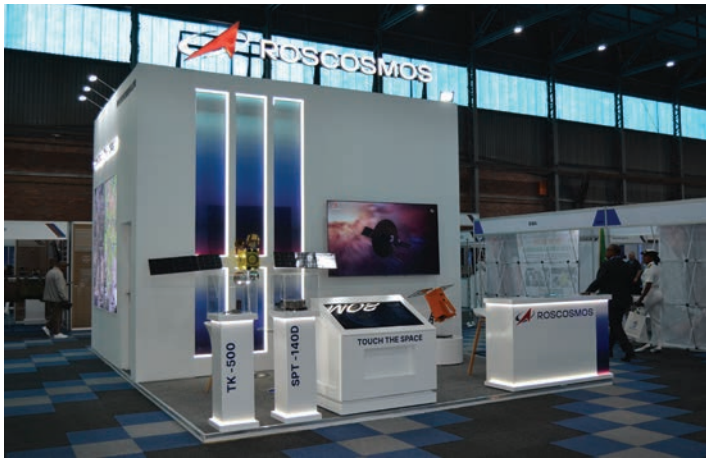

ARMSCOR
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RECEPTION




RUSSIA


GENERAL ATOMICS
AEROTEC
MISSION ADVANTAGES
HARRIS


BrahMos
TARGETING
A SELF RELIANT
SECURE FUTURE
PINPOINT
ACCURACY
BRAHMOS


ROSCOSMOS
TOUCH THE SPACE
ROSCOSMOS
TK-500
SPT-140D


Images ©WAN



Image Credit: Embraer

WHAT EMBRAER'S AFRICAN GROWTH REQUIRES

Embraer believes the C-390 Millennium suits Africa's distances, airstrips and multi-mission demands. Speaking to World Airnews at AAD 2026, José Gustavo, who leads the company's defence sales in Europe and Africa, argued that success on the continent will depend on something the aircraft cannot supply by itself: support close to where it flies.

On 4 August, Colombia signed for two KC-390 Millennium aircraft, becoming the 13th country to select the type and the first Latin American customer beyond Brazil. The order carried Embraer's medium airlift campaign into another region, after selections across Europe, Asia and the Middle East.

Africa remains the conspicuous gap on that map, and José Gustavo, Vice President of Sales and Business Development for Europe and Africa at Embraer Defense & Security, intends to fill it. "One of our objectives is really to grow our presence in Africa with the C-390 in different countries," he told World Airnews at Africa Aerospace and Defence 2026, adding that this also meant expanding partnerships with companies on the continent.



The second clause is more telling. Whether the subject was performance, medical evacuation, cruise missiles or counter-drone work, José Gustavo kept returning to a single line of argument. African air forces operate small fleets and need each aircraft to do several jobs. An aircraft that does several jobs is valuable only if it is available, and availability depends on support that is close at hand. A sale establishes a fleet. Keeping it flying is the larger commitment.

A Small Fleet, Many Missions

The operational case begins with geography. Distances are long, terrain varies widely, infrastructure is uneven, and military transports are routinely asked to move people and equipment into remote areas with limited airfields. José Gustavo singles out airlift capacity and the ability to operate from short, semi-prepared and unpaved runways as particularly relevant to the continent.

"One of the values that we are proposing with the C-390 is the added speed and payload," he said. "What you can do with this aircraft is much more than what you could do with legacy platforms. It can cover distances much faster."

The figure he emphasised, however, concerns availability. He put the C-390's current mission-capability rate at 93%, a number Embraer also cites publicly, and contrasted it with the lower availability that ageing legacy fleets can deliver. Across ten aircraft, 93% means roughly nine ready for tasking on an average day. For an air force with three or four transports the arithmetic is harsher: each grounded airframe removes a large share of national airlift, and with it the ability to meet concurrent transport, humanitarian, peace-support or emergency demands.

This is where the C-390's versatility earns its place. The aircraft can be configured for air-to-air refuelling, and Embraer and Saab completed Gripen E refuelling certification flights in 2025. José Gustavo also pointed to removable internal fuel tanks, which Embraer says can extend range or time on station. A transport that can double as a tanker changes the force-structure sums for a country that cannot afford a dedicated fleet for every role.

The same logic applies in civil emergencies, when floods, fires, epidemics and evacuations call on military airlift after civil options run out. "One of the key elements of the C-390 is also its multi-mission capability," José Gustavo said. "It is not only a defence-related tool, but also a support for the population in terms of casualty evacuation, medical evacuation." He described medical configurations extending to what he termed "flying hospitals". The Netherlands has contracted a roll-on/roll-off aeromedical system for its future C-390 fleet, capable of supporting full life support, and Hungary was the first operator to receive an aircraft fitted with a roll-on/roll-off intensive care unit. In both cases the aircraft converts to the role and back again without being permanently given over to it.

A Pallet Of Missiles

The most striking extension of that list came at the Farnborough International Airshow in July, where Embraer and the US defence technology company Anduril signed a memorandum of understanding to pursue integration of the pallet-launched Barracuda-500M stand-off cruise missile with the C-390. The system would rely on palletised deployment and conventional aerial-delivery procedures, allowing the aircraft to keep its transport role and take on a strike mission when required. It remains an integration initiative and is not yet a fielded capability.

Asked whether a weapons role might complicate the pitch to an air force that mainly wants a transport, José Gustavo was unequivocal. "Not at all, because that doesn't change anything in the platform," he said. "This important collaboration with Anduril simply gives an additional option for countries that want to have other types of defence capability."

Few African customers are likely to want palletised cruise missiles. The programme's relevance to the continent lies in the principle it demonstrates. Military aircraft have traditionally been bought within tidy categories: airlifter, tanker, surveillance platform, strike aircraft. Modular systems blur those lines, and for a smaller air force the ability to add or remove a capability without acquiring another aircraft type could reshape the economics of fleet planning.

"It is not only a defence-related tool, but also a support for the population in terms of casualty evacuation, medical evacuation."

An Older Airframe, A New Mission

Embraer is applying the same approach to an aircraft Africa already knows. The A-29 Super Tucano has an established presence on the continent, and José Gustavo expects continued demand from existing and new operators alike. "Countries that are already operating the A-29 are buying more aircraft, which means that they are very happy with the platform, its capabilities and its reliability," he said.

The type continues to evolve. Portugal is the launch customer for the A-29N, configured around NATO operational requirements including NATO-specific communications. In November 2025 Embraer added

counter-UAS missions to the A-29's portfolio, and in March 2026 it partnered with Valkyrie Aero to add AI-enabled technology to that capability. "We are tweaking some things on the A-29 to perfect it for the counter-UAS mission," José Gustavo said.

The phrasing is modest despite the problem it addresses. Countering inexpensive drones with costly missiles fired from fast jets is an economic equation few air forces can sustain for very long. Platforms able to find, intercept and engage at lower operating cost are attracting renewed interest. José Gustavo does not regard that as a European concern alone. "Africa is no different," he said.

"Some of the challenges are similar and others may be slightly different, but we believe that we will continue to see this interest from African countries in the Super Tucano."

Capability Has To Live Somewhere

Each addition described so far, a tanker role, a medical fit, a missile pallet, a counter-drone upgrade, raises the same question for an African operator: who will support it? It is here that the interview reached what may ultimately decide how far Embraer's African ambitions go.

Through-life support, spares, technical skills, training capacity and maintenance infrastructure determine whether an aircraft remains an operational asset years after delivery. For sophisticated platforms, relying on technicians flown in from another continent is expensive and operationally restrictive, and it erodes the very availability on which the C-390's case rests.

José Gustavo acknowledged that Embraer already has support collaborations in Africa and said the company intends to expand them as its customer base grows. "If you are selling into Africa, I think it is an obvious thing to do," he said. "We are already working on that, and we will have collaborations with companies in Africa that will support, let's say, the increase in terms of our presence and the number of customers, because we see that as a responsibility as well."

"We want to have that capability locally."

His aim is for the air forces themselves, and the local companies Embraer partners with, to hold the skills. "We want to give capability to the air forces and to those future companies with which we are developing these partnerships," he said. "We want to have that capability locally." He draws a pragmatic line. "For some specific skills that are not used every week, it makes sense to bring in capability from abroad. But for many things, it makes sense to have



Image Credit:Embraer

the capability located where the aircraft are and not to rely on bringing in resources all the time."

In April 2025 Embraer and Denel signed a memorandum of understanding covering potential KC-390 collaboration in aerostructures manufacturing and maintenance, repair and overhaul. It is a framework for possible cooperation and not yet an operational support centre. It does perhaps represent a first step in proving their stated commitment to broader African localization initiatives.

Being There

José Gustavo did not name a prospective African C-390 customer or announce a regional support hub, and stated intent should not be mistaken for infrastructure already in place. What he offered was a clear account of how Embraer sees the next stage of its African defence business as a larger presence, an airlifter suited to the continent's conditions, continued demand for the A-29, and an acknowledgement that more aircraft must eventually bring more support capability with them.

That final point is also the fairest test of the overall strategy. For an African operator, the long-term value of a multi-mission aircraft will depend on whether it is available when needed, whether crews can be trained and whether maintenance can be carried out without constant reliance on distant networks. José Gustavo put it plainly.

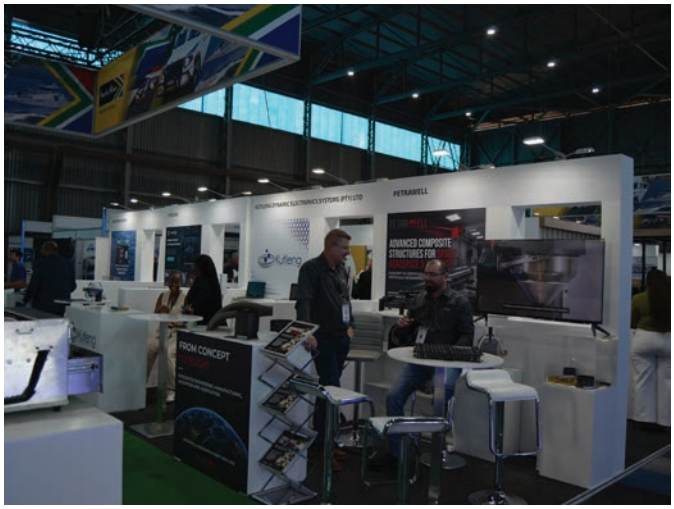
"It is about being there, being there all the time, and supporting as best we can the increasing number of customers on the African continent."

For Embraer, the African opportunity begins with the aircraft. Whether it becomes a lasting presence will depend on what the company builds around them.


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PETRAWELL
ADVANCED COMPOSITE STRUCTURES FOR
FROM CONCEPT




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LEADING BY LEARNING

Two months into her tenure as President and Managing Director of Saab Grintek Defence, Sara Radu is still doing more listening than announcing. At AAD 2026, she spoke to World Airnews about learning the business, the challenge of building scarce technical skills and why developing the next generation of engineers begins long before they enter the workplace. For Radu, the company's future capability begins with its people, and in the classroom.

New chief executives at a defence show usually arrive with a message to deliver: an order book to talk up, a strategy to unveil, products to point at. Sara Radu, who took charge of Saab Grintek Defence in July, came to AAD 2026 with something closer to a set of questions. Some two months into the job, she was candid that her task for now is to listen, understand the business and learn from the people who already run it.

We had come prepared to discuss Saab's industrial footprint, Gripen support, GlobalEye and African markets. Instead, the conversation turned to people: how they learn, grow and see technical careers as open to them. For Radu, that is central to the job. A technology business can advance only as far as the skills, knowledge and imagination of its people.

The Skills Problem On Her Desk

Saab Grintek Defence works in electronic warfare, sensors, avionics and support systems, fields increasingly defined by software, data and systems integration. Radu spoke about the difficulty of securing enough software engineers to support the company's digitalisation plans and future product development.

In August, hundreds of final-year software and IT engineering students were considered for a recruitment initiative at Saab's Centurion operation. Thirty-eight were invited to complete technical exercises, problem-solving tasks and team challenges rather than being judged on their CVs alone. Radu took part herself, alongside engineers, HR staff and members of the executive team.

A managing director sitting in on graduate assessments is a small but telling detail. It reflects Radu's belief that building a technology business begins with recognising and developing the people who will carry it forward.

Starting In The Classroom

The same thinking extends to schools. Within weeks of Radu's arrival, Saab Grintek Defence joined Lanseria International Airport and the South African Civil Aviation Authority to host the third annual Nelson

Mandela International Career Expo. About 650 learners from the Tshwane region met engineers, aviation professionals and technical specialists.

For Radu, early exposure matters. It is hard to aspire to a profession you have never seen. One conversation will not produce an engineer, but it can prompt a question that leads to a subject choice, further study and, eventually, a career.

Her conviction is rooted in her own experience. At the age when young people begin choosing a direction, Radu did not have a clear path. Exposure to science and engineering helped steer her towards technical education, an early intervention she believes widened her options.

An Engineer's Habits

That career began at Lund University in Sweden, where she studied fire protection engineering and risk management. Her early academic work involved fire modelling, evacuation simulation and organisational risk.

The habits of that training are easy to recognise in how she describes her first months at Saab Grintek: understand the system, understand the people within it, identify what matters and decide on evidence.

Familiar Ground

Over the following two decades Radu moved beyond engineering into risk management, manufacturing, supply chain and distribution, and international sales. At Atlas Copco she worked in enterprise risk management before becoming Managing Director of its subsidiary Berema AS. She later completed an Executive MBA at the Stockholm School of Economics.

Africa was part of the picture well before Saab. As Vice President Africa at energy-storage company Polarium, she worked on energy resilience and new systems in African markets. She then became Sweden's Trade Commissioner and Country Manager for Business Sweden in South Africa, while also serving as Interim Vice President and Head of Middle East and Africa.

So when she arrived at Saab Grintek Defence in July, the company was new to her. South Africa, and the demands of leading across cultures and sectors, were not.

The Questions Ahead

There is a larger Saab story still to be told: its South African footprint, exports, localisation, research and development, and place in a shifting global defence market. World Airnews will return to it once Radu has had time to settle into the role.

For now, the first conversation reveals a leader whose starting point is people. Aviation and defence habitually measure capability in platforms, programmes and budgets. Radu's attention is on the engineers who write the software, manage risk and solve integration problems, and on where the next generation will come from.

The questions extend well past Saab: how Africa keeps its technical talent, how industry builds credible pathways for young engineers and how companies keep learning while the technology around them changes.



Sara Radu is President and Managing Director of Saab Grintek Defence. She brings extensive international business experience and a strong understanding of the African market.

Previously, Sara served as Trade Commissioner and Country Manager at Business Sweden, where she built strategic partnerships across government and industry.

She has also held senior positions at Atlas Copco, Epiroc and Polarium, with expertise spanning operations, supply chain and sales.



Image Credit: ExecuJet MRO

EXECUJET PLANS AFRICAN MRO GROWTH WITHOUT NEW BASES

ExecuJet MRO Services sees further African growth coming from customer relationships, technical capability and mobile support as opposed to additional bases on the continent. At AAD 2026, Regional Vice President Africa, Vince Goncalves explained how the Lanseria operation is serving aircraft from across sub-Saharan Africa.

ExecuJet MRO Services expects its African business to grow, but does not currently foresee that growth requiring additional maintenance facilities across the continent. From Lanseria International Airport, the company is already drawing scheduled maintenance and repair work from sub-Saharan African operators, while mobile teams can travel into the region for appropriate defect and engine work.

For Vince Goncalves (Regional Vice President Africa), the next stage is about extending what the existing operation can do and widening the customer base, rather than adding more locations.

"We believe we are in the footprint we need to be."

Speaking to World Airnews at Africa Aerospace and Defence 2026, Goncalves said the South African facility supports customers from markets including Nigeria and the Congo, as well as other markets across sub-Saharan Africa. "Our business is local, but it's mostly African," he said.

African Work, Lanseria Base

The model is straightforward. Aircraft requiring scheduled maintenance or substantial repair work are brought to the approved facility at Lanseria. Where the task permits, ExecuJet can send mobile repair teams into the region for defect rectification and selected engine work.

Goncalves was careful to distinguish between the two. Mobile teams extend the company's reach, but they do not replace the controlled environment and regulatory approvals required for scheduled maintenance.

ExecuJet says its Johannesburg facility provides about 9,000 m² of hangar space and can accommodate aircraft up to the size of the Dassault Falcon 8X and Bombardier Global family. Its current capabilities cover a broad range of Dassault, Bombardier and Embraer aircraft, together with Hawker and King Air types.

The operation also holds South African and foreign regulatory approvals. Instead of reducing that framework to any one approval, the relevant point is

that the facility is set up to work on aircraft carrying a range of registrations, subject to the authority and aircraft concerned.

Growth Through Capability

Goncalves said ExecuJet does not currently intend to establish additional African bases. If the market justifies expansion, he expects it to be through capability: adding support for an aircraft type, investing in training and tooling, or deepening relationships with operators whose fleets fit the company's approvals.

"Expansion, I think, is going to be with regard to the customer base," he said.

That approach can already be seen in the company's Embraer work. ExecuJet expanded its authorised service capability in Africa to include additional Embraer business jet types, building that capability into the existing South African operation rather than opening another facility.

Goncalves also emphasised the importance of reputation in relatively small aviation communities. Owners and operators often share operational experiences, he said, making service delivery an important factor in winning repeat and referred business.

People Are The Constraint

The more difficult question is whether the skills base can keep pace with the work. Goncalves said ExecuJet has developed many of its engineers internally, taking apprentices through initial licensing and then sending them for factory-approved training as they progress onto specific products.

"All of our engineers are South Africans. We don't have foreign engineers," he said. Some have been with the company for 15 to 20 years after entering through the apprentice pipeline.

The pressure comes once those engineers are experienced. Goncalves pointed to South African-trained engineers working elsewhere in Africa, including Nigeria, as evidence of the competition for technical skills.

He linked that difficulty partly to remuneration and taxation in South Africa. His wider point was that training is only one part of the skills problem. Once engineers acquire specialised, factory-backed experience and hours, local employers are competing for them in an international labour market where remuneration may be paid in US dollars, making it difficult for South African companies to match the earning potential available abroad.



Image Credit: ExecuJet MRO

That concern is consistent with the wider African MRO debate. At the inaugural African MRO Conference in Addis Ababa in March 2026, workforce development and retention were among the issues identified as important to building more maintenance capability on the continent. The conference was principally focused on airline MRO, but the skills pressure remains a central issue.

OEM Support And Global Supply Pressures

ExecuJet's operating model depends heavily on OEM relationships. Goncalves referred to the company's work with Dassault, Bombardier, Textron and Embraer, and said parts are sourced through OEM channels wherever possible, with alternative sourcing used where necessary.

He also pushed back on the idea that every parts problem encountered in Africa is an African supply problem. Where an OEM faces a shortage, he said, the constraint can be felt by MRO facilities worldwide.

Taken literally, the supply chain can be more complex because operators and MROs may have access to alternative inventories or serviceable material. Manufacturer shortages and long lead times can affect operators globally, not only those based in Africa.

On MRO availability itself, Goncalves was restrained. "It may be underserved because of the availability of MROs," he said. A shortage of suitable maintenance capacity on the continent is different from assuming that every maintenance constraint originates in Africa.

In their case, Dassault Aviation owns ExecuJet MRO Services, but Goncalves states that the business continues to operate across several manufacturers,

focusing more on multi-OEM service to drive a sustainable business.

Business Aviation Connectivity Gap

Goncalves also linked demand for private aviation to the practical difficulty of travelling between some African cities on scheduled services. His example was familiar to many operators on the continent: travellers can sometimes be forced to fly away from their destination to connect through a hub before flying back again.

"Sometimes we have to fly east to go west," he said.

IATA provides broader context for that observation. It reported in 2026 that only 19% of intra-African routes had direct flights, with limited connectivity contributing to longer journeys and fewer travel options. That does not by itself predict business aviation growth, but it helps explain why direct access and time-saving can matter to aircraft owners and charter users.

Goncalves said he is seeing pre-owned aircraft enter the South African market. ExecuJet also cited a Falcon 2000 and an Embraer Phenom 300 added to the South African register ahead of AAD 2026 as examples of continuing and resilient activity in the local market.

Why Execujet Is At Aad

The connection is longstanding. ExecuJet says the South African Air Force has been a customer since 1991. More recently, the company has reported SAAF work that includes heavy maintenance and component support on Falcon aircraft, as well as Honeywell engine support associated with the Falcon and CASA C-212 fleets.

In the interview, Goncalves argued that local capability and OEM support should not automatically be treated as opposing choices. "The OEMs want to see their aircraft fly," he said. His emphasis was on using manufacturer support where appropriate while continuing to develop South African technical capability.

AAD therefore serves more than an exhibition function for ExecuJet. It places existing customers, OEMs and other international aviation organisations in one environment, creating an opportunity for the face-to-face contact on which Goncalves places considerable value.

A Measured View Of 2028

Goncalves did not offer a dramatic forecast for the next AAD. His priorities were narrower: retain experienced people, add technical capability where demand justifies it and increase the customer base served from the existing operation.

Asked where he expected ExecuJet to be when the exhibition returns in 2028, his answer was succinct.

"Our focus is on steady, sustainable growth. By 2028, I expect us to have strengthened our capabilities, broadened our customer base, and further cemented our position as a trusted MRO partner across Africa."

It is a pragmatic outlook, and one that reflects the strategy Goncalves described throughout the interview. ExecuJet's African growth plan is not built around more dots on a map. It is built around strengthening the Lanseria operation and extending its relevance to more aircraft, operators and markets across the continent.



Image ©WAN

Vince Goncalves – Regional Vice President Africa, ExecuJet MRO Services

Vince Goncalves has more than three decades of aviation engineering and maintenance experience. A qualified Avionics Engineer, he joined ExecuJet in 2008 and progressed through senior maintenance roles before becoming Regional Vice President Africa in 2016. He oversees ExecuJet MRO Services' South African facility and is a member of the Group Management Committee.

FOLLOWING AFRICA'S CHANGING AVIATION MAP

Aircraft orders and new routes may attract the headlines, but another measure of aviation growth is where manufacturers put the people, parts and technical capability needed to keep aircraft flying.

Behind every fleet sits a less visible network of technical support, maintenance, spare parts and logistics. Across Africa, where operators are separated by distance and complex cross-border supply chains, that network can be as important as the aircraft themselves.

A conversation with Pratt & Whitney at Africa Aerospace and Defence (AAD) provided a glimpse into how that support map is evolving.

South Africa remains an important technical base, with a substantial installed engine population and local technical and mobile maintenance capability. Support requirements, however, extend across the continent, with resources positioned to serve East Africa and other regional markets.

When Distance Is Not The Only Problem

Moving an aviation component across Africa is not simply a question of kilometres. Customs, freight connections and border processes can determine how quickly a part reaches an operator.

In some cases, an established international distribution hub can provide a more effective route into an African market than moving a component between two countries on the continent. When an aircraft is grounded, the real measure of the supply chain is not proximity, but how quickly the correct part arrives.

This adds another layer to global pressures around parts availability, maintenance capacity and shop-visit turnaround times.

Manufacturing Moves Onto The Continent

Pratt & Whitney's African footprint is also extending beyond support and maintenance.

In April 2026, Pratt & Whitney Canada opened a 130,000-square-foot manufacturing facility in Casablanca, Morocco, producing static and structural machined parts for engines including the PT6 family. The facility is expected to employ around 200 people by 2030.



Image Credit: Pratt & Whitney

It places part of Pratt & Whitney's global production system in Africa, adding manufacturing to a relationship traditionally centred on aircraft operations, maintenance and support.

The Propulsion Transition

Pratt & Whitney engines can operate with approved sustainable aviation fuel blends of up to 50 per cent with conventional Jet A, while work continues towards wider use of 100 per cent SAF. The PW100 family is certified for blends of up to 50 per cent SAF, with the PW127 also used in testing involving 100 per cent SAF.

Hybrid-electric propulsion remains further from widespread commercial operation, reinforcing the distinction between technologies being demonstrated and those supporting everyday operations.

For Africa, the immediate issue is more practical. Aircraft need serviceable engines, and engines need technicians, parts, repair capability and reliable supply chains. As operations develop across the continent, those supporting systems must develop with them.

To understand where African aviation is developing, it may be worth following not only the aircraft, but the infrastructure that keeps them flying.

DENEL'S SECOND ACT

Having cleared a delivery backlog that stretches back to 2018, South Africa's state-owned defence group wants to be judged on orders instead of history. Chris Boshoff, Group Executive CEO – Denel Aerospace, tells World Airnews why its future lies well beyond South Africa's borders.

For the better part of a decade, any conversation about Denel began with the same question: would, or worse, should it survive? The state-owned aerospace and defence group spent those years moving from one recapitalisation to the next, missing delivery dates and, at its lowest point, struggling to pay its own staff in full. Customers lost patience, engineers left, and capabilities that South Africa had taken generations to build seemed at risk of quietly slipping away.

Chris Boshoff focuses our attention on a bright new future rather than dwelling on the past. Sitting down with World Airnews at Africa Aerospace and Defence (AAD) 2026, the head of Denel Aerospace, who came to the role with a background in finance and commercial aviation, sounded less like the custodian of a national heirloom than a determined manager with a sales target. Denel, he concedes, is still in "the revival phase". But the test he now applies is not whether the company endures, instead it is whether it delivers - and whether customers will pay it to do so.

His reasoning is plainly commercial. "You need to be able to make money. You need to have your export markets. You need to be able to sell what you have."

Back In The Right Ecosystem

Boshoff dates the turn to a structural change. Denel had been administered as a public enterprise, which in his telling left it "floating around in an area where we didn't really belong". Its move into the Department of Defence placed it alongside the people and the institutions it exists to serve.

He is careful not to present Denel as uniquely afflicted. "Our ecosystem was actually broken," he says. "Not only was Denel damaged, the whole ecosystem, the SANDF, all of the players in the environment, all of them were struggling." The pandemic then compounded the damage for everyone, and Boshoff regards the undeniable fact that Denel came through it as a considerable achievement. A new executive team has arrived over the past two years, a new board took office in February, and relations with the South African National Defence Force (SANDF) - Denel's principal customer - have improved markedly.

Reorganisations are easily announced and less readily felt by customers. Asked for the clearest evidence that Denel Aerospace can execute again, Boshoff points to the order book. Projects that had been running late since 2018 have been brought up to date, and customers are placing new orders. "The clearest proof is that our clients are happy again with us."

The harder fix, he admits, is internal. "It's the most difficult portion for me, I think. Morale." He describes a workforce that is once again coming to work with some conviction, and notes that "the cultural environment of the organisation is also changing". He



Chris Boshoff – Group Executive (CEO), Denel Aerospace.

Chris Boshoff is an Associate Board Director of HENSOLDT South Africa. His career includes senior leadership roles within the NAC group, including CEO of Placo, and Vice President at Barclays Corporate Banking Group, following an investment banking role at Absa Corporate & Investment Banking.


Image Credit: Denel

does not claim the change is universal. Some staff remain unsettled, which he treats as part of the price of turning an institution around.

A Flagship That Must Pay Its Way

Denel has always been two things at once: a company expected to trade, and a repository of strategic capability that the state has reasons to keep whatever the commercial demand. Asked whether those purposes still pull against each other, Boshoff does not pretend otherwise. "There are still two mindsets," he says. One holds to traditional sovereign capability under full state ownership. The other asks how Denel might work with the right industrial partners while the state retains its stake. That discourse, he recognizes, is still under way.

His own resolution keeps South Africa and the SANDF at the centre, but does not treat them as a licence to haemorrhage money. Properly approved partnerships, in his view, are how Denel sustains both its service capability and the people behind it.

He makes the sovereignty case in industrial terms, stripped of all sentimentality. "For me, Denel is a flagship of South Africa. We're the only flagship in the defence industry." Its value lies in its ability to draw "six or seven hundred different companies" into a functioning supply base, a role no other South African firm has shown it can perform. Restoring Denel is therefore about more than simply one company, it is about reweaving a complex network of relationships. "So we need to fix that again so that we can actually move forward," he says. "And that in itself will protect the sovereignty of South Africa."

Maintenance, Repair, Modify

None of this amounts to an argument for preserving everything Denel has ever made or indeed founded. On legacy products Boshoff is notably tough. "I'm a firm believer that if something isn't working anymore and you can see that it's past its lifetime, let it go."

He borrows a formulation from the Chief of the SANDF, who at a recent industry forum urged the sector to move from MRO (maintenance, repair and overhaul) towards what he called MRM: "maintenance, repair, modify". Supporting an ageing platform, in other words, need not mean freezing it in its original configuration. Some of Denel's dormant capabilities, Boshoff argues, "are actually like a sleeping giant. They just need to be revived. Then we can actually modify them, and once you've done that, you have a brand-new product."

The Rooivalk attack helicopter is the obvious precedent. It drew on the dynamic systems of the Puma before extensive redesign produced a distinctly South African combat helicopter. "We utilised an old


Image Credit: Denel Technical Academy

platform, and then we modified it and rebuilt it," Boshoff says. "We did exactly that with the Rooivalk." The more complex issue, which the interview left unanswered, is which of today's "sleeping giants" merit that treatment, and who will fund the waking.

Borrowing Back The Model

No industrial revival gets far without people, and Denel lost a great many experienced engineers and technicians during its lean years. Boshoff's take on all this begins well before recruitment. Through the Denel Technical Academy, the company is running courses designed in parallel with industry, and not only for aviation: he cites green energy and Rand Water as places its trainees might equally go. Denel is working with universities and visiting schools and expos to explain what aerospace and defence careers involve.

Within his own part of the business, 120 students joined over the past year. They are paired with senior engineers and rotated roughly every three months to find where they fit, before moving into permanent posts. "It's a pipeline right from the ground up, all the way through."

The model carries an irony that Boshoff clearly enjoys. On visits to Embraer in Brazil, Denel found a business that had built much of its model on Denel's own. Turkey's defence industry, he says, drew on it too. Faced with an ageing workforce, the Turks reintroduced a new model built around younger talent, and Denel has since borrowed their approach. South Africa, in effect, is relearning its own lessons from the pupils it once taught.

A Market Much Bigger Than Home

The same pragmatism governs how Boshoff talks about foreign partners. He names Embraer, Airbus and Lockheed Martin among the companies Denel is working with or courting, and its relationship with Embraer around the C-390 Millennium has become something of a showpiece. But he has little appetite for Denel becoming a local agent or maintenance subcontractor for overseas manufacturers. "Our strengths are industrialisation and manufacturing," he says, and he frames the purpose of partnership in terms of South African jobs and lower unemployment. "We want programmes and partners who are willing to work with us."

Capability built at home is meant to be sold abroad: into SADC, the rest of Africa, the Middle East, wherever the demand lies. "We're not going to focus on South Africa anymore," he says. Asked whether Denel is now looking at a market much larger than its own, he does not hesitate. "Much bigger." Partners unwilling to build on those terms are given short shrift. "If they don't want to partner with us in that environment, then they're not real partners for us."

This may prove the most consequential shift of all. South Africa's defence budget cannot, on its own, keep specialised production lines running and specialised people employed. Exports therefore stop being a distraction from sovereignty and become the means of paying for it.

The Test Ahead

Boshoff believes the pitch is landing. This year's AAD was not the largest edition, he notes, but the quality of discussion with visiting delegations impressed him. "For me, it's not about the size," he says. "It's about the quality." Then comes the headline number: "We have orders just from what we've signed, over a billion rand's worth of orders, R1.8 billion worth of orders, just in this one week, from one division." He did not name the division or the customers, and the figure will ultimately be judged on deliveries not signatures.

The remaining questions are the ones that attend any recovery. Skills take years to rebuild. International partners want financial certainty and a record of on-time delivery that Denel is only beginning to re-establish. And not every capability inherited from its past will earn a place in its future.

Yet the argument itself has changed. Denel is no longer asking to be valued for what it once built, but to be judged on what it can supply now. What pleases Boshoff most about this year's show is not its scale but the direction of the traffic. "People are coming to us asking for solutions." A marked shift in Denel's fate.



Image Credit: Yury Laskin

THE LONG GAME

Rosoboronexport brought an extensive display to AAD 2026, but its more consequential message concerned what happens after delivery. With more than 20 maintenance, repair and localisation projects under way or in preparation across Africa, the company is making sustainment and industrial cooperation a central part of its defence offer to the continent.

For African defence forces, acquiring an aircraft, helicopter or weapons system is only the first step. Its operational value over decades depends on maintenance, spares, overhaul capacity, trained technicians and the ability to carry out repairs without sending equipment thousands of kilometres back to the manufacturer.

That was an important part of Rosoboronexport's proposition at Africa Aerospace and Defence 2026. Its display covered unmanned reconnaissance and strike systems, helicopters, a combat trainer, small arms, maritime equipment and security systems. Alongside the equipment was an emphasis on longer-term technical support.

From Procurement To Sustainment

Rosoboronexport says it is implementing or preparing more than 20 African projects involving maintenance, repair and localised production for land, naval, air and air-defence forces. The company has not identified every country, contract value or schedule, but the projects indicate a strategy extending into support infrastructure and industrial cooperation.

For operators, this matters directly to availability. Aircraft grounded for parts or awaiting specialist overseas maintenance provide no operational capability. Local MRO can reduce turnaround times, develop technical skills and give operators greater control over fleet availability.

Localisation can extend further, from assembly and component manufacture to licensed production and technology transfer. The important measure is not simply whether activity takes place locally, but how much engineering knowledge, workforce capability and control of the support chain remains in the country.

"For African operators, acquisition is only part of the calculation. Equipment must also be maintained, repaired and supported locally throughout its service life."

Rosoboronexport describes Africa as one of its most important markets. In 2026, Director General Alexander Mikheev said the company maintained military-technical cooperation relationships with 46 African countries and that Africa represented about 30% of its order portfolio. He valued contracts involving technological cooperation at more than US$1.7 billion. These are company figures and have not been independently verified.

Aviation And Unmanned Systems

The aviation systems displayed at Waterkloof included the Mi-171Sh military transport helicopter, Mi-28NE attack helicopter and Yak-130 combat

trainer. Their missions differ, but all depend on specialist tooling, trained engineers, spares and scheduled maintenance.

Unmanned systems added another dimension. Rosoboronexport displayed the upgraded Lancet-E, the Skat-350M reconnaissance UAV paired with the KUB-2E loitering munition and the RUS-PE reconnaissance-strike system.

Their presence reflected a broader theme visible across AAD: growing attention to unmanned systems, local manufacturing, MRO, supply-chain resilience and domestic industrial capability. Procurement increasingly involves not only the performance of a platform, but also operating cost, integration, replenishment and the availability of technical support.

A Competitive Market

This strategy is unfolding as Russia's position in the international arms market changes. SIPRI data shows that Russian exports of major arms fell sharply between 2016–20 and 2021–25. African imports of major arms also declined across the same periods, although sub-Saharan Africa recorded an increase.

SIPRI's figures measure transfers of major conventional weapons and are not directly comparable with Rosoboronexport's order portfolio, which may include maintenance, technology cooperation and other activities. They nevertheless illustrate a market in which suppliers increasingly compete through support, training, financing, technology transfer and local production as well as the equipment itself.

For African customers, the substance of localisation will therefore matter. A maintenance facility or licensed-production agreement has greater long-term significance when it creates engineering capability, develops technicians and reduces dependence on distant supply chains.

Rosoboronexport has not disclosed the full industrial scope of the projects it says are under way or being prepared. Their implementation will ultimately determine how much capability is transferred.

"Localisation should be judged by the capability that remains in the country once a programme is established."

Keeping Capability Operational

At AAD 2026, Rosoboronexport was therefore presenting two interconnected propositions: military equipment across several domains and the infrastructure required to support it.

How much industrial capability these projects create remains to be seen. Ultimately, capability depends on whether equipment can be maintained, repaired and kept operational.



Image © WAN



Image ©WAN

BEYOND THE HARDWARE

Engineer and Armscor executive Segomotso Tire, Pr Eng, speaks to World Airnews about technology, skills, industrial capability and why South Africa's defence future will depend as much on people and judgement as on the systems themselves.

The hardware at AAD 2026 naturally commanded attention, with aircraft, surveillance technologies, vehicles and defence systems filling the exhibition space at Air Force Base Waterkloof. A conversation with Segomotso Tire, Pr Eng, Executive Manager: Business Development and Industry Support at Armscor, shifted the focus beyond what could be seen on the exhibition floor.

For Tire, defence capability cannot be measured by the number of platforms a country possesses. Every aircraft, sensor, surveillance system or piece of defence equipment depends on engineering knowledge, research, skilled people, industrial capability and the judgement to determine which technologies genuinely serve a country's needs. This perspective is grounded in Tire's engineering background and professional experience.

Tire holds an MEng, a BEng in Electronics and a BSc in Biological Science, together with executive leadership training. Armscor has previously listed her expertise across engineering management, digital transformation, business intelligence, strategic leadership and business development. She joined the organisation's executive committee in August 2022 and now leads Business Development and Industry Support.

She has also occupied a wider leadership role within South Africa's aerospace and defence community. Tire chaired the AAD 2024 Executive Committee and represents Armscor on the defence industry's export council, placing her at an intersection between government, industry and international markets.

At AAD 2026, our conversation began with a question concerning Armscor's objectives at the expo.

More Than Hardware

Armscor is South Africa's defence acquisition agency, with responsibilities that extend across acquisition, defence research, technology development, analysis, testing and evaluation. Its mandate places it between the requirements of the Department of

Defence and the industrial and technological capability needed to meet them.

Armscor's intermediary role was evident in its AAD presence, where Tire highlighted maritime and aerial surveillance, hazardous-material protection, biological and chemical detection, ergonomics and human-machine interaction, research and development, and the data and analytical systems that increasingly support defence decision-making.

The intention, she explained, was to reveal what lies beneath the visible hardware. An aircraft, vehicle or weapons system may attract the eye, but the deeper capability lies in understanding its operating environment, designing and testing it appropriately, interpreting the information it produces and supporting it throughout its life.

That distinction matters increasingly as defence technology moves beyond the traditional platform. Artificial intelligence, autonomous and remotely operated systems, advanced sensors, cyber security, data analytics and additive manufacturing are expanding defence capabilities while accelerating the pace at which decisions must be made.

For Tire, technological change makes engineering judgement more important rather than removing the need for it.

"What is important is really applying what works."

Designed For The Environment

Our conversation repeatedly returned to the limits of transferring technology unchanged from one operating environment to another.

Africa presents particular operating realities. Distances can be immense, borders long and difficult to monitor, and infrastructure uneven between regions. Heat, dust and other environmental conditions impose further requirements, while equipment may need to function far from extensive support infrastructure.

For Armscor, Tire said, those conditions have to be considered from the research and design stage. Engineers must understand international technological change while testing whether a system meets the operational environment in which South African personnel, or personnel elsewhere on the continent, may need to work.

The principle extends beyond the military. Tire pointed to Armscor's increasing work with law-enforcement environments, where technologies and systems must function within civilian spaces and under different operational constraints. Armscor has, for example, supported acquisition and through-life activities for other organs of state as allowed under its mandate.

An engineering mindset starts from the principle



Image © WAN

that new technology is not automatically appropriate.

The challenge is not simply to acquire the most advanced technology available, but to understand the problem being solved, the people who will use the system, the environment in which it must function and the support required to keep it operational.

Ai Needs A Human Behind It

Tire approached artificial intelligence with caution, emphasising that its value depends on how organisations evaluate the information it produces.

AI can process extraordinary quantities of information and accelerate access to data, but more information does not necessarily produce better decisions.

The fundamental challenge is how that information is evaluated. Organisations must separate reliable data from poor data, synthesise it, establish checks and balances, define where governance sits and ensure that technology supports human decision-making rather than replacing the critical thinking needed to question its output.

For a defence organisation, those questions carry significant importance. Tire stressed governance and ethics alongside AI adoption, as well as the rigour needed to interrogate information before decisions are made.

Armscor also possesses specialised decision-support capability intended to transform complex information into usable intelligence for decision-makers. Possessing more data may offer no advantage unless an organisation can interpret it effectively.

Technology may provide the speed, but human judgement still determines what the information means.

Sovereignty Is Also A Supply-Chain Question

Recent geopolitical tension has demonstrated another vulnerability: even sophisticated equipment becomes ineffective when operators cannot obtain the parts, materials or support required to sustain it. Tire acknowledged that defence procurement is not immune to global supply-chain disruption.

For Armscor, responding to global supply-chain issues begins with procurement risk. The work involves identifying potential vulnerabilities, assessing their consequences and developing alternatives before problems occur.

The very same principle applies to emerging manufacturing technologies. Additive manufacturing, for example, raises extraordinary possibilities for producing components closer to the point of need. But in safety-critical aerospace and defence environments, it also raises questions around materials, certification, configuration control, digital-file integrity and the engineering assurance behind a part.

Armscor must understand emerging technologies and keep pace with them, but adoption must be guided by what works for South Africa and its requirements. This demands more than buying technology; it depends on retaining people capable of evaluating it.

The People Behind The Capability

Maintaining Armscor's technical capability requires attention to the skills pipeline long before an engineer reaches a senior position.

Tire spoke passionately about bursary programmes, youth development initiatives and Armscor's talent-development pipeline, which introduces young people to the workplace and begins building the practical experience often missing when graduates first enter industry.

That practical experience is essential because a defence industrial base cannot be rebuilt quickly once experienced engineers, scientists and technicians have left the system. Knowledge accumulates over years, sometimes decades, and much of it cannot be recovered from a manual.

At the same time, rapidly developing technologies mean that established professionals have to continue learning. The skills challenge therefore runs in two directions. Organisations must transfer hard-won knowledge to a younger generation while ensuring that established engineering professionals remain receptive to technologies developing at an unfamiliar pace.

For South Africa, with its wider employment and skills-development pressures, skills pipelines matter because they develop technically capable people through a process of making and sustaining connections, a method Tire relates to her own professional journey.

The Engineer Who Wouldn't Assimilate

Engineering remains a profession in which women are frequently outnumbered, and defence has historically amplified that imbalance.

Tire's career has taken her through the Air Force, engineering and defence, often in traditionally male-dominated environments. Her response is to reject the idea that progress requires conforming to those already in the room.

"It's not about assimilating."

She argues that different perspectives strengthen problem-solving and challenge the echo chambers that develop when organisations approach problems in the same way. Capability remains fundamental, but diversity has little value if everyone is expected to fit the same intellectual mould.

For Tire, achievement also brings responsibility: to clear pathways, build support networks and create opportunities for those who follow. It is a principle that connects personal experience with a wider industrial challenge. Sovereign capability cannot depend indefinitely on a small pool of established specialists; it must develop the next generation.

Doing More With Less

Tire believes South African engineering retains an international reputation for solving difficult problems with constrained resources. In international engagements, she has encountered recognition of South African defence technologies and the durability of locally developed products.

South Africans, she says, have learned to "do a lot with much less."

Ingenuity alone, however, cannot compensate for inadequate investment. Its value lies in combining technical capability with skills development, international partnerships and an industrial base capable of turning engineering expertise into sustainable programmes.

For Tire, international engagement therefore extends beyond selling products to partnerships, skills transfer and rebuilding industrial depth.

Beyond The Hardware

AAD naturally focuses attention on aircraft, vehicles, sensors, weapons and unmanned systems. Tire's perspective shifts it towards the capability behind them: engineers, scientists, technicians, data specialists and the next generation being prepared to take responsibility for increasingly complex systems.

For South Africa, preserving defence capability may therefore depend as much on retaining and developing its intellectual and industrial infrastructure as on acquiring the next platform.

South Africa's future defence capability will ultimately depend on retaining the people and skills needed to develop and sustain its defence systems.



Image Credit: Armscor



Image ©WAN

THE INVISIBLE LAYER OF AIRPOWER

HENSOLDT South Africa's exhibits showed how spectrum management, sensors, electronic warfare and datalinks are becoming as consequential to air operations as the aircraft themselves, and how local engineering is finding export customers.

Aircraft are the most visible expression of airpower, dominating flight lines, procurement budgets and defence exhibitions. Yet their effectiveness increasingly depends on systems that attract far less attention.

Communications, radar, identification, electronic warfare, tactical datalinks and unmanned aircraft all rely on the electromagnetic spectrum. As connected systems multiply, managing that spectrum becomes an operational requirement rather than a back-office function.

That was a useful way to view HENSOLDT South Africa's presence at Africa Aerospace and Defence 2026: not simply as a collection of products, but as parts of the electronic architecture surrounding an aircraft.

Spectrum As An Operational Resource

Among HENSOLDT South Africa's introductions at AAD was its Automated Spectrum Management System (ASMS), designed to address the growing problem of coordinating spectrum use.

Military, civilian and commercial users share the electromagnetic environment. Within defence alone, communications, sensors, command-and-control and electronic-warfare systems must operate across multiple services and locations without conflicting assignments or interference.

ASMS combines spectrum planning, application processing, engineering, enforcement and monitoring. Rules can account for intended use, duration, location, user role and equipment type.

The operational issue is straightforward: every radar, radio, datalink and connected platform requires access to spectrum. As demand increases, frequencies must be allocated and monitored quickly enough to keep those systems functioning together.

Seeing Is Only The Beginning

HENSOLDT's other AAD exhibits illustrated what happens within that environment. They included



the ARGOS family of airborne optronics, TAERVUS electronic warfare systems, Quadome 3D AESA radar, identification friend-or-foe systems and the DL-6000 tactical datalink.

Together they trace a chain from detection and identification to interpretation and distribution.

A sensor detects an object, another system helps establish what it is, and a datalink distributes that information to an aircraft, command post or other system. The value of each element increasingly depends on how quickly and reliably information can move through the network.

Aircraft performance still matters. But so does the quality of the information available to the crew and the resilience of the electronic systems carrying it.

The Counter-Uas Problem

The South African-developed KENIS 1280 AK provides another example of how this electronic architecture is being applied. The ultra-low-latency mid-wave infrared thermal imaging sensor is intended for applications including counter-UAS and long-range surveillance.

Small drones present a particularly difficult sensing problem. They may have limited visual, infrared or radar signatures, fly at low altitude and operate close to terrain, buildings or other background clutter. Detecting something in the air is therefore only the beginning. A system must establish where it is, determine what it is, maintain an accurate track and, when necessary, pass that information to a response system.

This makes counter-UAS inherently layered. No single sensor is likely to provide the complete picture across every operating environment. Radar, electro-optical and infrared sensors can contribute different information, while communications and command systems must combine and distribute that information quickly enough for an operator to act.

HENSOLDT does not present KENIS as a complete counter-UAS solution. Its role is as a specialised sensor within that wider surveillance architecture, particularly where rapid thermal detection and tracking are required.

Its significance also extends beyond the exhibition stand. During AAD, HENSOLDT announced that Estonia's HEVI Optronics had ordered 200 KENIS systems following earlier orders. For a South African-developed technology, that provides a tangible measure of export demand beyond the domestic defence market.

From South African Engineering To Export Markets

HENSOLDT South Africa employs more than 700 people across five sites and is the group's largest industrial base outside Europe. Its activities span electronic warfare, optronics, spectrum monitoring, radar, IFF and datalinks.

Its position within the international group gives South African engineering access to a wider defence-electronics network while retaining local product-development capability.

That distinction matters. A locally developed sensor securing overseas orders is a more meaningful measure of industrial capability than its appearance on an exhibition stand.

Beyond The Aircraft

AAD naturally draws attention to fighters, transports, helicopters and unmanned aircraft. But some of the systems determining their operational effectiveness are far less visible.

HENSOLDT's display brought several of those layers together: spectrum management, radar and optronics for detection, IFF for identification, datalinks for distribution and electronic warfare for operating within a contested electromagnetic environment.

The significance lies in how those capabilities work together. Detecting a target has limited value if it cannot be identified, the information cannot be shared, or communications are disrupted. Modern airpower increasingly depends on maintaining that chain from sensor to operator and, ultimately, to the platform required to act.

Together, these systems form the less visible architecture of modern airpower. The aircraft may dominate the flight line, but its effectiveness increasingly depends on the electronic systems around it.



Image ©WAN

WHEN THE DRONE BECOMES INFRASTRUCTURE

From mine surveillance and precision agriculture to medical logistics, advanced air mobility and military ISR, unmanned aircraft are moving beyond individual missions into permanently connected aviation systems. Speaking at AAD 2026, SSASS's Dean Polley traced an industry that has moved rapidly from experimentation to operational deployment, and raised a bigger question for Africa: whether regulation and airspace integration can keep pace.

There was a time, not very long ago, when commercial drone operations meant putting an aircraft, batteries and equipment into a vehicle, driving to a site, flying a mission and returning to the office to download and process the data. Dean Polley told delegates at Africa Aerospace and Defence 2026 that this is already beginning to look like the legacy model of unmanned aviation.

Polley, director and founder of South African unmanned aviation specialists SSASS, used his AAD presentation to show how far the industry has moved in little more than a decade. Rather than attempting to cover every potential drone application, he focused on areas in which unmanned aircraft are already changing the way work is performed. The common thread was automation, connectivity and the gradual removal of the operator from the aircraft's physical location, rather than simply better aircraft.

"What we were looking at only a few years ago is already starting to become a legacy drone application."

From Pilot In The Field To Pilot In The Control Room

Surveying and mapping were among the earliest commercial applications to achieve widespread acceptance. Photogrammetry, specialised sensors and, increasingly, LiDAR allowed unmanned aircraft to perform work that had previously depended on conventional aerial survey methods or labour-intensive ground operations. Those applications have now become routine enough for the industry to move into a new operational model built around the docked drone.

A drone-in-a-box installation allows an aircraft to remain permanently deployed at a site inside an automated docking station connected to power and

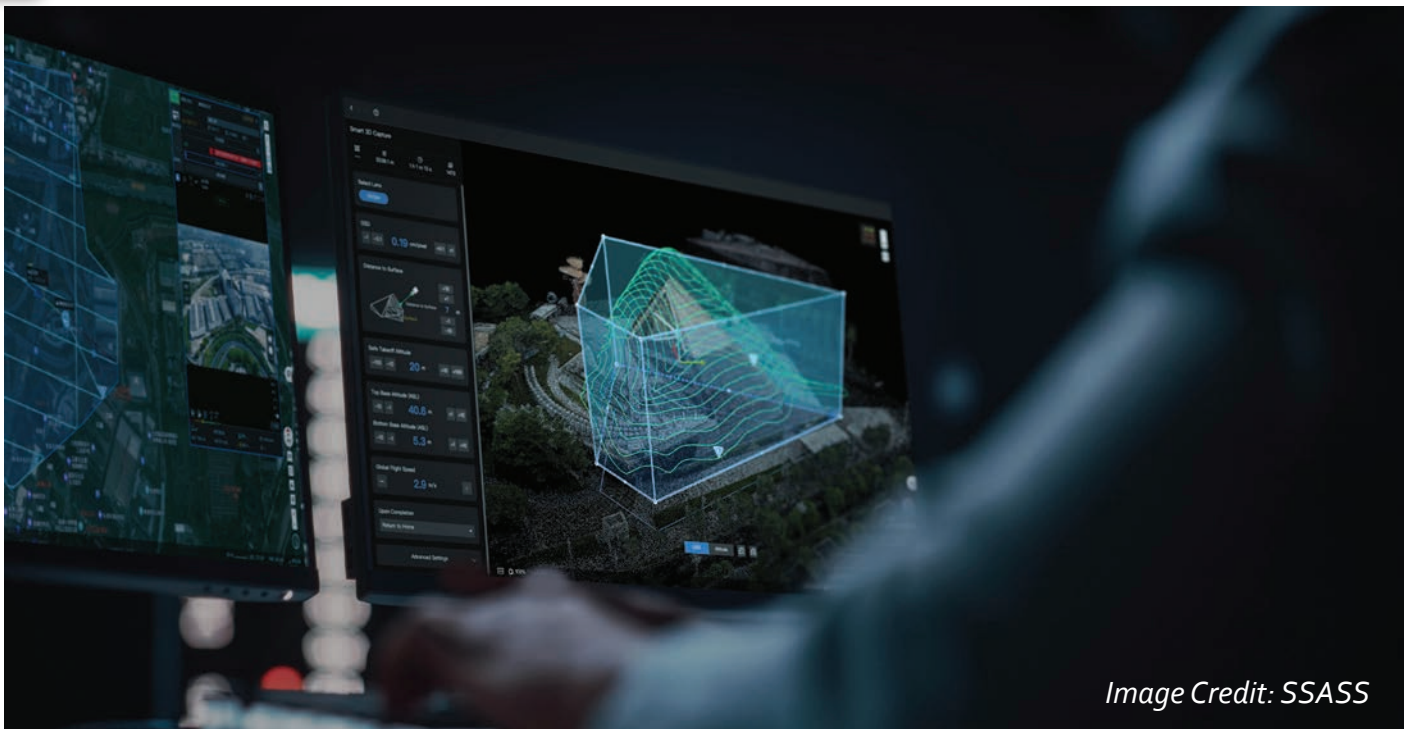


Image Credit: SSASS

communications. The pilot can sit in an office or command centre, initiate the mission remotely, monitor the flight and receive the resulting data through cloud-based systems. Once the aircraft returns to its dock, the information can be uploaded and passed into another processing platform without moving people, batteries, memory cards and equipment between the site and the office.

For Polley, the distinction matters because the technology has moved beyond demonstration. "This is not a concept," he told the AAD audience. "This is happening today." He said SSASS has developed workflows in which a pilot can complete the operational component of an entire survey without leaving the office, changing both the economics and, in some environments, the risk of drone operations.

Mining Provides The Proof Point

Polley used a South African mining operation to illustrate the scale of that transition. Security remains a substantial problem across parts of the industry, particularly where large operational areas must be monitored for intrusion, theft and other threats. At the operation he described, SSASS initially deployed two field teams, each with a pilot, aircraft, batteries, charging equipment, a vehicle and security protection.

The security element was central. Polley described drone pilots involved in certain surveillance operations as potential targets because criminal groups may understand what the aircraft is doing and attempt to attack the operator or bring down the drone. SSASS therefore removed the pilots from the field, installed two automated docking systems and relocated the crews to a command centre. Aircraft could then be operated from a more secure environment with better screens and oversight, while management observed flights, routes and diagnostics remotely.

The result is a security model based on persistent aerial surveillance rather than the occasional dispatch of a drone to investigate an incident.

"The drone pilot now is not in the field. They are sitting in a command centre or an office."

The significance extends beyond mining. Once an aircraft can remain permanently at a remote site and operate through a communications network, the relationship between aircraft, pilot and location changes. A single command centre can supervise a geographically distributed fleet, with pilots controlling aircraft hundreds of kilometres away. The drone is becoming part of the infrastructure rather than a tool carried to the job.

Agriculture Moves From Blanket Treatment To Precision

Agriculture offers another example of unmanned aircraft becoming part of a connected workflow. Polley described a survey drone using a multispectral sensor to identify areas requiring attention. Its data can be converted into a prescription file for an agricultural spraying drone, allowing treatment to be directed to the identified areas instead of applied

across an entire field. The aircraft, sensor, analytical software and spraying platform then function as one agricultural system.

Africa's Medical Delivery Case

Medical logistics provide one of Africa's clearest examples of unmanned aviation becoming part of a wider transport system. Polley pointed to Rwanda, where Zipline's network has used unmanned aircraft to move blood products and other medical supplies to healthcare facilities. The surrounding logistics network makes unmanned flight part of the healthcare delivery chain, a model relevant across Africa wherever geography makes surface transport slow, difficult or expensive.

Advanced Air Mobility Enters The Picture

Polley also pointed to advanced air mobility as evidence of how quickly the boundaries of unmanned aviation are expanding. He referred to a visit to China and to EHang's passenger-carrying autonomous aircraft, which have moved the discussion beyond a purely speculative concept in that market. For Africa, the immediate issue is whether regulators and airspace systems are preparing for increasingly diverse unmanned operations, rather than when such aircraft will arrive.

AAD Brings The Defence Question Into Focus

At AAD, the defence implications were unavoidable. Polley described an environment increasingly shaped by unmanned systems, with African applications spanning intelligence, surveillance and reconnaissance; border and maritime monitoring; target acquisition; communications relay; and logistics. The spread of capable, accessible systems also creates a counter-UAS problem and a continuing cycle in which each capability prompts a countermeasure, followed by a response to that countermeasure.

The Next Bottleneck Is The Airspace

The most important part of Polley's presentation came towards the end. The aircraft, sensors, remote command-and-control systems and cloud processing already exist; the pressing question is how unmanned aircraft can coexist safely with everything else in the sky. Polley discussed electronic conspicuity technologies that make unmanned aircraft visible to air traffic services while giving remote operators awareness of other airspace users.

An aircraft operating far beyond the pilot's visual range cannot depend on direct sight of conflicting traffic, so the aircraft, ground system and wider surveillance environment must provide that awareness electronically. Polley also described the demonstrations South African authorities require before approving more complex operations. For docked systems, these can cover operating range, battery limitations, safe return capability and alternative landing arrangements if the dock is unavailable.

His example of operating a heavy-lift unmanned aircraft at Lanseria also demonstrated that drones can be incorporated into conventional aviation environments when the necessary permissions, coordination, airworthiness measures and air traffic procedures are followed.

"Integration of drone operations into general aviation is possible."

Africa's Regulatory Question

A more difficult issue emerges when an operation crosses national borders. Polley had recently participated in discussions among African civil aviation authorities about closer alignment of regulatory systems. An operator approved for a mission in South Africa cannot assume that the same aircraft, licence and approvals will be accepted elsewhere because each jurisdiction has its own requirements. The problem becomes more complex as logistics routes lengthen, remote operators supervise aircraft across wider territories and advanced air mobility contemplates cross-border operations.

Technology may increasingly cross those boundaries, but regulation is not yet equally seamless. Closing that gap could become one of the defining issues for African unmanned aviation.

Beyond The Drone

The most striking conclusion from Polley's AAD presentation was how little the future of unmanned aviation now depends on the aircraft alone. The industry began by proving that drones could photograph, inspect, survey, monitor and carry payloads. Its next phase will connect permanent remote deployment with command centres, cloud platforms, automated data workflows and conventional airspace. That requires unmanned and conventional aviation to share the sky safely and, eventually, allows aircraft and operators to move between African jurisdictions without rebuilding the regulatory framework at every border.

IS THE WORD 'AIRPORT' BECOMING REDUNDANT?

By Rob Garbett

Take-off and landing may still define the word airport, but they no longer describe everything an airport has become. Around the runway and terminal sits an increasingly complex ecosystem of logistics, technology, property, energy, security, retail, hospitality and business activity. Aircraft remain the reason for the airport's existence, but the movement of passengers and cargo is now only one part of a much larger picture.

A good example is emerging at Lydd Airport in the United Kingdom, where the Centre for Future Flight Innovation has been established as an environment for testing, developing and scaling future-flight technologies. Its scope includes uncrewed aircraft systems, beyond-visual-line-of-sight operations, advanced air mobility, autonomous systems, green propulsion, sustainable aviation infrastructure and new approaches to air traffic and unmanned traffic management. The intention is not simply to display new technology, but to provide an operational setting in which it can be tested, evaluated and moved towards real-world deployment.

That tells us something important about the changing role of the airport. It can be a transport hub, certainly, but it can also become a laboratory, technology platform, logistics centre, property development and catalyst for wider economic activity. The runway becomes the foundation rather than the finished product.

The strategic value of airports as centres of business activity should not be underestimated. Good air connectivity supports trade, tourism, investment and access to markets. Airport development can also stimulate commercial activity far beyond the perimeter fence. This is particularly relevant to countries such as South Africa, where attracting investment and creating new centres of economic activity remain important national priorities.

The scale of future airport investment gives some indication of what is at stake. Airports Council International has estimated that approximately US$2.4 trillion in airport capital investment will be required globally between 2021 and 2040 to accommodate long-term passenger demand. That investment covers both new airports and the expansion and modernisation of existing infrastructure. It is a vast figure, but it also underlines how much of aviation's future will depend on what happens on the ground.

With that opportunity comes responsibility. What springs to my mind is the environmental impact that could result if development is pursued without sufficient restraint or mitigation. More infrastructure, more commercial activity and greater energy demand cannot simply be treated as an unquestioned good. The same ingenuity that allows us to build increasingly sophisticated aviation systems must also be applied to reducing emissions, conserving energy, managing waste responsibly and making infrastructure more resilient.

I hope that the many innovations developed by human beings over the ages will extend to solving the environmental consequences of our progress, and that short-term commercial gain is not allowed to override that responsibility.

South Africa has an interesting example taking shape in the Western Cape. Cape Winelands Airport, being developed on the former Fisantekraal airfield, is targeting 2028 for the opening of its first major phase. The approximately R8 billion Phase 1 development is planned around substantially expanded aviation infrastructure, while the wider precinct vision includes logistics, commercial and hospitality development.

If that vision is realised, its significance will extend well beyond a new runway and passenger terminal. The surrounding area could derive substantial commercial benefit from an aviation-led development in which the airport acts as an anchor for other forms of investment. In that sense, Cape Winelands may become a useful South African test of just how far the modern definition of an airport can stretch.

There is another side to this evolution that passengers rarely see. Behind the public terminal is an enormous operational framework: baggage handling and screening systems, communications networks, data centres, air traffic and airport operations systems, maintenance areas, staff facilities, emergency response capability, power systems and layers of security infrastructure. Much of it is invisible to the traveller, yet the airport cannot function without it.

Increasingly, digital systems connect these different layers. Biometrics, artificial intelligence, data analytics, automation and digital identity technologies are changing the way passengers, baggage, aircraft and information move through airports. Some of these



technologies promise greater efficiency and better use of existing infrastructure. They also create new questions about privacy, cybersecurity, accountability and how much decision-making we are prepared to hand to machines.

Which brings me back to the question in the heading. Is the word airport becoming redundant? Perhaps not. Aviation remains the backbone around which all these activities are built. But the meaning of the word is certainly expanding. The airport of the future may be as much an economic, technological and logistics ecosystem as a place from which an aircraft departs.

And then there is the flavour of the time: AI. My comment is simply this: be very careful.



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