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Vertical Focus: E-commerce

The evolving handling needs of this fast-growing sector

Regional Report: North America

Meeting e-commerce and special cargo demand

Technology Interview: Lionel van der Walt

A new phase of digitalisation in logistics

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Editor's NOTES

Will Waters

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Putting the AI in air freight

Cross-border e-commerce logistics has been expanding rapidly in the last decade to become a very significant part of the air freight market, estimated to be around 20%, and its fastest-growing segment. And in an overall global air freight market that has been flat or in decline for much of the last 18 months, the continued growth of e-commerce traffic has focused minds even more clearly on satisfying its needs.

As highlighted in the E-commerce report on page 6, air cargo stakeholders have accelerated their efforts to adapt to this vertical's evolving needs. And the return of bellyhold capacity since the end of the Covid pandemic has encouraged some major cross-border e-commerce shippers to turn again to a 'supply direct from China' model, requiring further adjustment by air cargo stakeholders.

Beyond investment in specialist facilities and capabilities, the growth of this segment has other implications for the market – including because e-commerce brands are prepared to pay a premium for air freight services. By absorbing a substantial portion of the capacity and influencing global pricing levels, it potentially squeezes out or makes it more challenging for traditional cargo customers to find capacity, at peak times or on certain lanes.

As highlighted in the North America report on page 14, the growth of e-commerce traffic and other special cargo verticals has increased the pressure on airport facility planners to respond

to the changing requirements of these sectors. In locations where facilities handle traditional freight and have been specifically adapted to accommodate e-commerce traffic, the diverging requirements require a balancing act. As one cargo handler observes in that report, companies like Amazon and USPS want dedicated space, 'so it de-synergises your warehouse space'. Although it is 'a very different model', in another way it's no different from other types of specialist cargo that require dedicated facilities.

Meanwhile, there's an AI theme in two specific technology-focused articles. In the Technology Interview article on page 20, Raft's Lionel van der Walt highlights how several factors are driving a new phase of digitalisation within logistics, especially the growing power and acceptance of AI and impending sustainability reporting. And in the Innovation Insights article on page 26, Sabari Ramnath from Unisys outlines how 'conversational AI' can bridge the gap in personalisation within online booking platforms that can lead to forwarders and airlines manually booking cargo shipments.

Last but by no means least, this issue also contains the annual Outlook report, in which selected senior executives and organisations involved in air freight reflect on their experiences of the last 12 months and share some expectations for 2024. As ever, we are grateful for their thoughtful contributions.

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Handling air freight's growth engine

Air cargo stakeholders have been adapting rapidly to the evolving needs of the ever-growing e-commerce sector. And the return of bellyhold capacity since the end of the Covid pandemic has encouraged some major cross-border e-commerce shippers to turn again to a 'supply direct from China' model, requiring further adjustment, reports *Megan Ramsay*

E-commerce is the fastest-growing segment in the global air freight market, accounting for over 20% of total volumes, according to IATA, and that proportion is considerably higher in some markets. Access to a global

marketplace of products, convenience, and often the low cost of online shopping, make e-commerce an attractive option for consumers, and that looks set to continue. And while the dramatic increase seen during the Covid-19 pandemic has flattened off, growth has not stopped – although the nature of air cargo's

“
E-commerce influences global pricing levels by absorbing a substantial portion of the capacity

”
Zeid Houssami



Zeid Houssami
Flexport

involvement in its delivery has continued to evolve.

For example, the return of air cargo bellyhold capacity since the end of the pandemic has encouraged some major cross-border e-commerce shippers to turn again to a 'supply direct from China' model that relies more heavily on air freight transport direct to consumers, requiring a further adjustment by stakeholders.

IATA estimates that around 80% of cross-border e-commerce was transported by air. And the surge in e-commerce within the air freight space, specifically, "is largely attributed to the sector's emphasis on timely deliveries", argues Zeid Houssami, vice president and global head of air freight at Flexport.

"E-commerce brands, recognising the critical importance of on-time performance, are prepared to pay a premium for air freight services. This willingness has a significant impact, as it influences global pricing levels by absorbing a substantial portion of the capacity," he adds.

Both air freight and ocean freight transport have become "more complicated" since e-commerce has begun taking up so much space, points out U-Freight America CEO Rick Keller.

"For example, rates from Asia to Europe or the US during peak seasons are very high... There's no real bottleneck with the airlines for e-commerce though; it's more challenging for traditional cargo customers [to find capacity], because e-commerce pays more."

It's more challenging for traditional cargo customers, because e-commerce pays more

Rick Keller

If carriers were to offer dedicated e-commerce flights, they might ease the pressure on capacity for traditional cargo; but the greater expense of routinely using freighters for the capacity would elevate the costs of the air freight component beyond the level that many e-commerce shippers, customers and goods could normally justify or support – and eliminate much of the price advantage air freight has over integrator products and services.

Brian Bourke, global chief commercial officer at SEKO Logistics, observes: "The pandemic disrupted the (e-commerce) business model because this (model) only works as an alternative to integrators or post offices when there is ample passenger belly capacity in the market. That's why we are able to do this efficiently and cost-effectively. When international passenger capacity evaporated within 48 hours, it absolutely disrupted the model.

"Luckily, like other forwarders, we started to do air charters to keep capacity there on behalf of our clients." But of course, that chartered capacity came at a cost.

End-to-end solutions

Currently, e-commerce constitutes approximately 20% of Flexport's total volume, including both B2C and B2B customers.

Houssami outlines: "It's working best for e-commerce brands that need dedicated capacity to ensure reliability and on-time performance" – regular capacity that forwarders can secure on behalf of their clients.

"Our customers are increasingly looking for comprehensive, end-to-end solutions. This includes the incorporation of Section 321 US Customs clearance, parcel injection services, and robust parcel-level visibility to streamline their logistics.

"There's a growing dialogue between



Rick Keller
U-Freight

carriers and some of the world's largest e-commerce brands, focusing on air freight capacity solutions that emphasise dedicated supply chains (end-to-end logistics solutions). However, it's important to note that carriers often face challenges in providing first-mile or final-mile solutions."

Cost is one aspect of this, while in some markets (like the US, for instance), there is a long-running shortage of truck and local courier drivers.

Partial specialisation

Still, the traditional air cargo industry appears to be effectively providing adequate end-to-end e-commerce transport through collaboration and partial specialisation.

For instance, Lufthansa Cargo's heyworld subsidiary – an in-house B2C e-commerce freight forwarding specialist – leverages the capacity and connections of Lufthansa Cargo as well as partnering with service providers for last-mile delivery to offer, effectively, end-to-end cross-border e-commerce services that are fast and yet also affordable on a global scale, the elusive 'hybrid' air freight solution.

According to heyworld managing director Boris Hueske: "The demand for e-commerce solutions in air freight has been growing steadily – and the need for cross-border e-commerce services (especially fast and affordable services) is growing faster than e-commerce overall. Geographically, Frankfurt is ideally located in the heart of Europe and especially within Europe's largest



Hacis has a dedicated cool zone for perishable e-commerce items like chocolates and fresh fruit



Boris Hueske
heyworld



Brian Bourke
SEKO Logistics

e-commerce market – Germany.”

Recognising this potential, heyworld was founded in 2019 and is dedicated to providing specialised e-commerce logistics solutions.

The transport chain for e-commerce is different and more complex than for general cargo. Most important, Hueske points out, is the capability to handle business at parcel level, including Customs clearance and returns. These processes are complex – and absolutely necessary for the e-commerce market, which depends utterly on consumer

demand. The success of this model hinges on integrating the various parts in a fragmented air logistics chain, supported with the right digital tools.

“The sheer volume demands efficiency, and you need to provide speed and visibility,” Hueske adds. “We partner with multiple service providers for last-mile delivery [and] the integration of our IT enables us to share information and have high visibility of data across the e-commerce supply chain.”

He continues: “Our software is at the heart of supply chain orchestration. If

you’re not one of the incumbents with integrated existing supply chains, you have to work with partners to provide full-service spectrum and you need technology capabilities to integrate and connect data to provide transparency.

“We orchestrate different aspects of the supply chain with our own transport management software and with our own sorting capabilities in Frankfurt. In particular, a robust and interconnected multimodal network is essential for the fast delivery of goods in e-commerce. Thanks to Frankfurt’s central location in Europe and its one-of-a-kind transportation network, we benefit from an advantageous multimodal system.”

The ‘hybrid’ approach

Wilson Kwong, chief executive of handler Hong Kong Air Cargo Terminals Ltd (Hactl), says the ‘hybrid’ approach to moving e-commerce has been “hugely beneficial” to the traditional air freight industry.

“In fact, it’s exactly where our value-added logistics subsidiary Hacis is today, collaborating with e-commerce forwarders to provide an alternative to dedicated uplift and single-entity end-to-end supply chains, and also providing airport-based fulfilment,” he says.

E-commerce traffic through Hactl, as a handler, is not always clearly identifiable, as some e-commerce supply chains rely on bulk shipping to regional distribution centres and fulfilment centres where product is broken down into individual consumer orders.

“What is identifiable, though, is the e-commerce traffic handled through Hacis, which now operates a dedicated E-fulfilment Centre to provide physical handling and processing for intermediaries who wish to have an airport base in Hong Kong. This traffic is growing steadily,” Kwong highlights.

Hacis is generating business not only for Hactl, but also for its customer airlines, as its setup in Hong Kong is facilitating and attracting traffic that might otherwise not exist, or which might be shipped direct from China.

“We have identified a demand for fulfilment and processing of time- and



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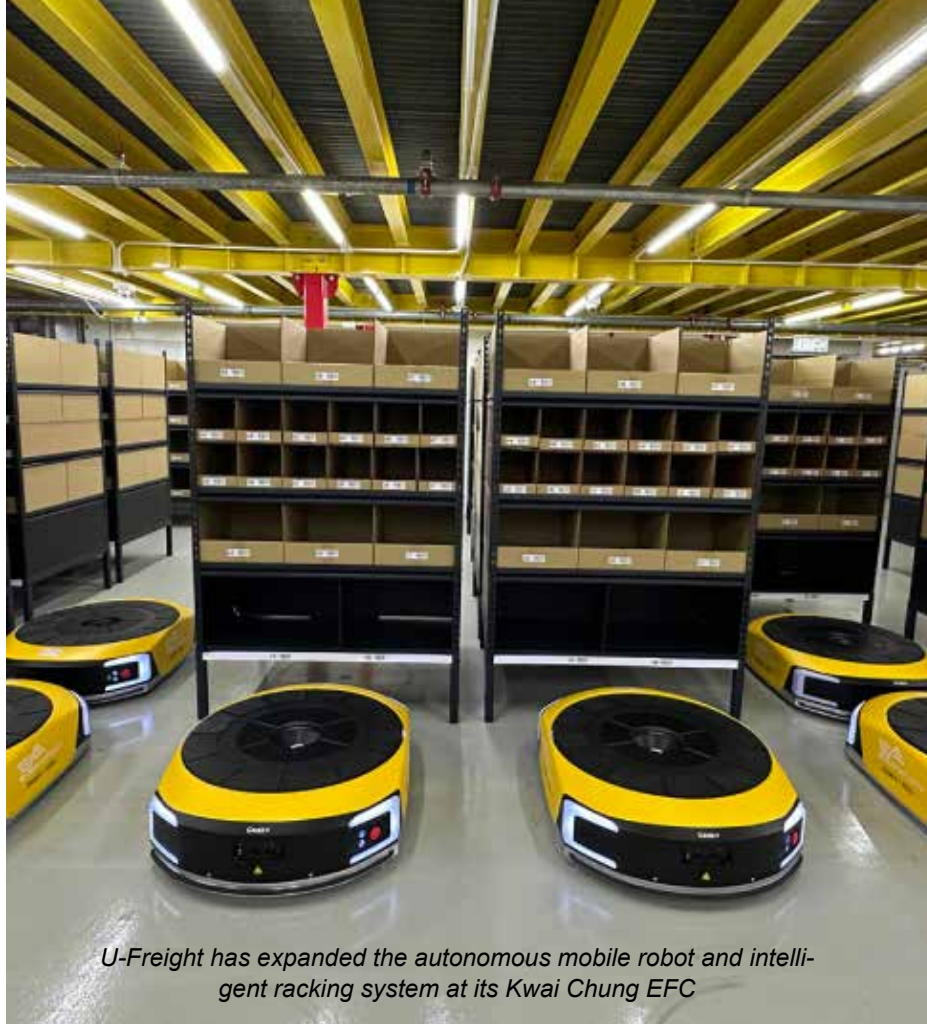
temperature-sensitive e-commerce goods such as chocolates and fresh fruit, and responded by opening a dedicated Cool Zone where all handling is carried out at controlled temperatures,” Kwong goes on.

Digital information flows

Hacis is also collaborating on digital information flows to ensure that all parties to the e-commerce supply chain – including the end customer – have access to the stock flows and status information they demand.

Kwong notes: “The ‘traditional’ industry needs more systems integration and digitalisation of processes in some locations, but overall the principle that traditional airfreight can provide a viable alternative service, at attractive cost, to e-commerce customers is already well proven. The final mile is likely to remain where it is: satisfied by a combination of own-account and outsourced local delivery resource.

“Carriers can, in our view, provide



U-Freight has expanded the autonomous mobile robot and intelligent racking system at its Kwai Chung EFC

Logistics firms fine-tune solutions for SMEs

Forwarding and logistics companies are developing new services to bring smaller e-commerce players the ability to participate competitively in cross-border markets.

For example, U-Freight Logistics’ e+Solutions (ePlus) product allows small online retailers with limited resources to buy space in U-Freight’s 290,000sqm warehouse in Hong Kong, offering a comprehensive e-commerce logistics package, from dedicated storage space for products to order processing and fulfilment services.

“[Retailers’] inventory is managed via an app, and we deliver to their customers,” Keller explains. “Sixty percent of people start with one bin, and within six to 12 months they are taking an entire shelf system.”

U-Freight intends to expand ePlus in

2024. For instance, Tokyo would be a perfect market for the product, Keller says.

More generally, U-Freight wants to grow its presence in southeast Asia, the Middle East and Africa, and intends to add automation to its facilities in Los Angeles and Chicago in 2024. Research into suitable robotics is currently in progress.

In 2023, the company finished expanding the autonomous mobile robot and intelligent racking system that was installed two years ago at its 2,000sqm eCommerce fulfilment centre (EFC) in Kwai Chung, Hong Kong.

In addition to the USA, U-Freight has fully functioning EFCs in Hong Kong (where e-commerce accounts for approximately 40% of its revenue), Penang, Incheon, Amsterdam and Heathrow (Sunbury). It is planning to turn its existing hubs in Japan, Shanghai and Thailand into full EFCs, too. ■

“
Hacis is collaborating with e-commerce forwarders to provide an alternative to dedicated uplift and single-entity end-to-end supply chains

”
Wilson Kwong

services that are suited to the e-commerce sector, with our support. But it is not necessary for them to offer dedicated e-commerce services, which are really the province of logistics service providers and forwarders,” he emphasises.

Forwarders choose the airlines and airports they use for e-commerce business carefully, though. Bourke explains: “We are selective in who we work with, because some airlines are more supportive of the efficiency that e-commerce needs.

“B2C or forwarding for international e-commerce has similarities with shipping perishables: it has to get there right away,

“
Carriers can provide services suited to the e-commerce sector, with our support. But it is not necessary for them to offer dedicated e-commerce services, which are really the province of logistics service providers and forwarders
 ”

Wilson Kwong

and consumers have expectations. If these are not met, the reputation of the brand is lost, so there's pressure – but also opportunity, as companies need the services freight forwarders can provide.”

Bourke says international e-commerce accounts for 35-40% of SEKO's air freight revenue, noting: “The integrators are very good at what they do because they have built out and invested in all of the touch points and transfers around the world. We're working with a lot of different partners – airlines, ground handling agents, airports – and there can be challenges.”

Plus, government requirements for data sharing are increasing and will continue to evolve. Harmonisation between governments would be helpful, Bourke says, because “borders wouldn't appear overnight, for example”.

Despite the difficulties, partnerships remain a promising model for enhancing the quality of e-commerce air logistics, Houssami believes, particularly as major global gateways are increasingly developing e-commerce and parcel sort centres, which are crucial in this model.

“These centres are strategically located for quick access to cargo straight from the runway, enabling expedited operations to integrate parcels into networks swiftly,” he observes.

Acquiring expertise

Given that a key factor in achieving a fully integrated solution is working on a scale similar to the operations of

integrators like UPS and FedEx, Houssami points to strategic acquisitions aimed at rapidly building the necessary scale to compete effectively. Flexport last year acquired the assets of Shopify Logistics, including Deliverr, in order to offer a fully integrated e-commerce solution. Then-CEO Dave Clark describing the acquisition as “the last piece of the puzzle that enables us to drive technology-fuelled solutions across the entire product life cycle from the manufacturer's floor, across the oceans and skies, through ports and fulfilment, and, now, right into the hands of customers.”



Wilson Kwong
Hactl





Flexport acquired Shopify Logistics, including Deliverr, in order to offer a fully integrated e-commerce solution

In Houssami's view, the integration of e-commerce fulfilment specialists into 3PL operations is a useful way forward, particularly since e-commerce is the fastest-growing vertical in the global air freight market.

"Such acquisitions can bring together the agility and specialised capabilities of e-commerce fulfilment entities with the extensive networks and resources of larger 3PLs," he says. "This synergy has

the potential to create more-efficient, responsive, and comprehensive logistics solutions tailored to the dynamic needs of the e-commerce market."

However, effectively merging these acquired entities with the existing forwarding networks of 3PLs can be challenging. It involves not only logistical integration but also the harmonisation of different data models – connecting parcel-level data with broader shipment

information. As such, Flexport's technology platform is at the heart of its e-commerce solution, Houssami notes.

Going direct

Another shift in the industry is a move away from local distribution centres in consumer markets, towards more direct shipping from source to end customer.

Most of SEKO's e-commerce business comprises B2C shipments, which combine its air freight line haul with first- and last-mile partners. "This is the primary driver of our growth," Bourke says.

"The biggest shift that we saw [during the pandemic] was that rates were very elevated when capacity was constricted, so a lot of companies looked to position their inventory closer to consumer markets. We offer fulfilment services around the world to help companies with that if it makes sense for them. You don't need to be in the same country – you could just be in the region, so it's still cross-border transport," he adds.

Now, as capacity has come back, direct shipping has returned to favour. The move away from the traditional approach of using local distribution centres, primarily supplied via surface transport, to a 'supply direct from China' model that relies more heavily on air freight transport direct to consumers, is gathering pace, largely driven by companies like Temu, Shein, TikTok Shop and Alibaba.

The direct-to-consumer model allows e-commerce sellers to reduce carrying costs and accelerate their order-to-cash cycle. However, there is a trade-off, Houssami continues. "Sellers often have less control over lead times, as they depend on manufacturers to fulfil orders and select carriers.

"In response to these changes, air freight operators have adapted their networks. They are now accommodating more loose cartons in their consolidations.

"This adjustment is particularly attractive because it allows for better utilisation of air freight capacity. Such a cargo profile is advantageous in the evolving e-commerce logistics landscape, where speed and efficiency are key."

Driving air freight's green transition

At the start of the pandemic in 2020, shippers "just wanted capacity", and paid little attention to sustainability, according to SEKO's Brian Bourke, who notes: "It didn't matter if that was on a 30-year-old Boeing 747. But now, interest in sustainable aviation fuel (SAF) has skyrocketed and the industry is coming together.

"For example, United Airlines is investing in the production of more SAF because demand is outpacing supply and rates are going up. This (shortage of supply and rising prices) is not good if we're to decarbonise the industry; it's

going in the wrong direction."

SEKO itself has been working with Air France KLM Martinair Cargo on the carriers' SAF programme, and is looking to expand to other airlines this year in response to demand from customers. Bourke continues: "This trend is driven primarily by e-commerce and high-tech items.

"We're not far from the tipping point; there are a lot of other technologies out there that will lead to complete decarbonisation of the industry, but SAF will get the industry closer in the medium term. There is a lot of potential and promise for increasing supply in the future." ■

Fulfilment closer to source

Developments in Hong Kong, too, suggest that fulfilment is gradually moving closer to source. Although such a move might impact business levels for some logistics companies and forwarders, and possibly some carriers and handlers, the underlying growth in the market with a constant influx of new operators should more than mitigate the impact, Kwong believes.

“We are also conscious of a subtle switch to air from ocean where supply chain resilience is important, such as in the ability to fulfil e-commerce orders in a timely manner,” Kwong adds.

At U-Freight, Keller wants to see ocean e-commerce traffic and revenue increase and become more consistent.

“People don’t tend to think of ocean freight as being used for e-commerce shipments, but customers purchasing significant volumes from factories will ship via ocean to their distribution centres and then from there to the end customer, hybridising the e-commerce product,” he observes. “Even Amazon does this. It

depends on the product – if it’s heavy, you’ll tend to use ocean freight, while retailers selling smaller products often use air freight to supply direct to the end customer.”

Thus, U-Freight uses direct injection into the mail or last-mile delivery system in some locations, such as South America, while elsewhere it holds stock in its warehouses for fulfilment, as it does in Amsterdam. The latter model also works for a high-density population like Hong Kong.

Long-term business

However the air freight industry handles it, e-commerce is here to stay for the foreseeable future and volumes look set to continue to grow. Consumers have the world at their fingertips, as Bourke puts it, adding: “That type of differentiation or customisation is hard to scale in any one country, so there will always be demand for goods shipped from other countries. With the continued rise of the Internet and the rise of total retail sales coming from e-commerce, this will continue.”

The convenience factor plays a main

role in this sustained growth. Consumers worldwide have become accustomed to the ease with which they can purchase a vast array of products online.

Houssami notes: “While certain products will inevitably continue to necessitate in-person shopping experiences, the majority of consumer needs are increasingly being met through digital channels. Furthermore, technological advancements, particularly in augmented reality (AR), are poised to further revolutionise the e-commerce experience.

“AR technology has the potential to bridge the gap between the physical and digital shopping realms, offering consumers a more immersive and interactive online shopping experience. This advancement is likely to drive consumers towards e-commerce further, accelerating the shift in spending habits,” he believes.

Eventually, e-commerce growth is likely to slow as it reaches its logical market share of all trade, says Kwong, “but we are years – perhaps even decades – away from that point”. ■

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Traffic shifts open doors to more special services

Cooling general cargo demand and returning passenger capacity mean some airports are less eager to push forward with cargo capacity projects, while others are pressing ahead. And airport facility planners need to respond to changing requirements, for example to meet e-commerce and special cargo demand, reports Ian Putzger

An unexpectedly strong spike in traffic at the end of the fourth-quarter (Q4) peak season lifted inbound volumes to the region in December, but it could not prevent a drop in annual demand. Figures from WorldACD Market Data indicate that North America's inbound

air cargo tonnages fell by 2% in 2023, while outbound tonnages dropped by 15%. And according to IATA, North American carriers showed the worst year-on-year performance of all regions with a 5.7% decline in cargo tonne-kilometres, with international traffic contracting 4.3%.

"We've seen a downturn, which was not unexpected," reports Zack Oakley, executive director of Chicago Rockford International

airport (RFD). Integrator traffic softened, which prompted the likes of UPS and Amazon to down-gauge some capacity while leaving frequencies largely intact, and international cargo charters decreased.

Shawn McWhorter, president for the Americas at Nippon Cargo Airlines, says the supply chain backlogs that lifted demand in the previous two years were largely cleared, while flows of

semiconductors and auto parts returned to their normal pace.

Although the market appears to have stabilised, the main economic indicators do not point to any imminent sustained upturn, barring disruptions.

Softer market

David Barker, regional CEO for the Americas at cargo handler Dnata, notes: “For 2024 we see a softer market. We expect about the same levels as in 2023.” And RFD’s Oakley reckons that the first two quarters of this year will be soft.

There was always suspicion that the rebound of passenger business and the return of cargo demand to more historical levels might dampen the appetite of airports for cargo development. Plans for new facility development at Atlanta’s Hartsfield International airport seem to have hit a roadblock, for example, one industry executive remarks.

“Some of us advised in the salad days, when air cargo had its halo, that all that was going to come off at some time, so airports should start as many projects as possible,” says Mike Webber, president of airport cargo consulting firm Webber Air Cargo.

Some of the momentum appears to have waned, but in a number of locations plans for development are moving forward, he adds. He points to New York JFK and Los Angeles International airport (LAX), which are planning to remove some old facilities that came onstream 60 years ago or earlier.

Long game

The return of demand to slower growth should not seriously affect development plans, Webber says, noting: “You shouldn’t focus too much on current trends. It takes years to finish a project. You need to be somewhat disciplined and ignore current demand conditions.”

But Dnata’s Barker says many passenger airports have not forgotten the lesson from the pandemic, noting: “Some passenger-focused airports are coming to us and asking ‘what can we do to get cargo into our airport?’ This gives us the opportunity to work in partnership with the airport and help develop a value proposition to diversify their portfolio.”

And some public taps for development



Dnata is expanding its facility at DFW

funding are still open. At the end of January, Washington announced nearly US\$250 million in infrastructure funding to modernise airports in 37 states. And north of the border, Vancouver International airport started 2024 with a pledge from the federal government to invest up to C\$74.3 million (US\$55.1 million) from its National Trade Corridors Fund in cargo infrastructure development at the nation’s Pacific gateway. This money will go towards the addition of four parking spaces for widebody freighters, a new warehouse, and an upgrade of an access road.

Optimising capacity

Webber points out that major gateway airports like JFK and San Francisco will run out of capacity before they get to the timeframe of their master plan. For them, the focus is on maximising resources rather than trying to attract new business.

“You’re no longer just building for growth,” he says. “It’s more about optimisation than growth. How do you deal with growth in the best way possible? How do you do more with the same or less?”

Some are running out of space to add facilities and are taking a leaf from Asian operators like Hong Kong Air Cargo Terminals with a push for multi-storey buildings. Both LAX and Miami are moving in this direction.

LAX developments

Last summer, Los Angeles World Airports nominated a consortium led by Aeroterm, the airport arm of Realterm, to redevelop the airport’s sprawling and disjointed freight set-up into a consolidated operation. This will include a vertical structure with a high degree of automation in order to boost efficiency on a limited footprint. The consortium’s plan for redevelopment envisages a two-storey facility with 1.6 million sq ft (150,000sqm) of floor space.

Throughput at LAX is forecast to grow at a compound average rate of 2.6% to reach 7.7 million tons in 2045. In 2022 it handled close to 2.7 million tons.

Maersk Air Cargo, the freighter airline arm of shipping giant Maersk, opened a 130,000 sq ft facility halfway between LAX and the port complex of Los Angeles/Long

Beach last autumn in its plan to make LAX its third international US gateway.

Most of the infrastructure at LAX is outdated, with some cargo buildings in action since the 1950s. An assessment by the airport authority concluded that many of the facilities were “not compatible with current industry operating standards”.

The project is overdue. It was supposed to get underway three years earlier but got pushed back while the airport was dealing with the modernisation of its passenger terminals and their access roads and the construction of an elevated people-mover system.

Miami's needs

Miami International airport also has a need to build. Last year it handled 2.76 million tons, breaking the previous record of 2.75 million tons set in 2021. For the past three years it has seen tonnage over 2.7 million tons, says Jimmy Nares, section chief for aviation marketing at Miami-Dade Aviation Department.

While the expansion of belly capacity drove cargo traffic in many airports last year, Miami saw a 1.75% rise in all-cargo flight operations, while the passenger tally went up 0.5 percent. Miami is host to 46 cargo and 53 passenger carriers, and about 80% of its volume moves on freighters.

“We’re approaching our on-airport capacity, which is about 3 million tons,” Nares remarks.

With no land to expand, Miami is also going for a vertical structure, which will be built in a public-private project, with air cargo developer Airis leading the private side. Nares says that breaking ground will likely happen late this year or early in 2025.

New specialist facilities

Before the new cargo building comes onstream, a phytosanitary and cold chain processing facility should open for business on the airport’s doorstep. This is a joint undertaking with the port of Miami for cold storage and fumigation on a parcel of land just outside the airport’s perimeter.

The RFP for this project went out in January, and Nares expects the ground



Last summer, Menzies took over RFD's newest cargo building

breaking to happen in the latter part of this year.

A few years back the airport obtained Foreign Trade Zone (FTZ) designation covering its entire area, which allows airport tenants to receive and process materials and merchandise with reduced or eliminated Customs duties upon entry into the country at MIA, and

operate manufacturing, warehousing or distribution centres on airport property, and have their federal tariffs deferred, reduced or eliminated – providing time and cost savings for approved importers and exporters. LATAM Cargo is performing FTZ activities at Miami, and the aviation department is planning to attract more users – preferentially from high-value

Special cargo is also on the rise at Rickenbacker airport



industries like avionics, aerospace, electronics and pharma, says Nares.

RFD developments continue

Rockford has opened 240,000 sq ft of warehouse space over the last 3.5 years, and it is not done yet. The first couple of buildings were raised in a hurry to keep up with the increase in activity as soaring traffic and congestion at Chicago pushed a lot of freighter flights to RFD. Last summer, Menzies took over the airport's newest cargo building, and now plans are taking shape for a large facility that will occupy half of Rockford's remaining area for cargo development.

"I think this one will be either built in a joint venture with a developer or by a developer on his own, says Oakley.

With its rapid growth, Rockford has been one of the 'poster boys' of North American airports with a major focus on cargo through a mix of e-commerce and dedicated freighter operations for large international logistics players. Maersk Air Freight is using the airport and Greenville Spartanburg for

B767F flights from China and Korea. The carrier is scheduled to receive two B777 freighters during the first quarter.

Oakley says that flights for forwarders have gone away, but the forwarders themselves have stayed and flights may be picking up again due to the disruption of shipping in the Red Sea. E-commerce has lost some momentum but remains strong.

Warnings that alternative gateways could be hit hard by the return of bellyhold capacity to the skies have not been borne out so far. "It seems the alternatives are starting to get traction – not only the Rickenbackers and Rockfords, but also the likes of Birmingham and Greenville Spartanburg," comments Webber.

E-commerce challenges

The rise in e-commerce is bringing up new challenges. McWhorter observes that Chinese platforms Temu and Shein, together with e-commerce logistics specialists, have changed the playbook. Instead of moving goods in volume to

distribution centres, they produce in China upon receipt of orders and fly these to international gateways for delivery, essentially bypassing distribution centres.

"The handling requirements are different. When the e-commerce gets here, it's not six skids – it's a lot of little boxes to be broken down. This will clog up your warehouse if you're not prepared for it. You've got to plan into transit from the beginning," he says.

Dnata is very familiar with the concept of handling e-commerce for final-mile.

When the e-commerce gets here, it's not six skids – it's a lot of little boxes to be broken down. This will clog up your warehouse if you're not prepared for it

Shawn McWhorter



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**Bryan Schreiber, LCK****Jimmy Nares, MIA****Michael Webber****Zack Oakley, RFD****Shawn McWhorter, NCA**

“We’re doing that already,” says Barker, “... with Cainiao Airlines in Dallas and with USPS in 10 Cities. It’s a very different model – a lot of conveyor belts, sorts, and segregations.”

At the 10 facilities dedicated to the US Postal Service, Dnata performs first- and last-mile sort of the agency’s first-class priority mail. In January it added three stations: Rochester, Tulsa and Sioux Falls.

In locations where Dnata handles both e-commerce and traditional freight, the diverging requirements require a balancing act.

“Most of the time the Amazons and USPSs want dedicated space, so it de-synergises your warehouse space to some level. You can’t drive forklifts around when you have conveyor systems, so what you see is a proposition based on tonnage or poundage through your warehouse in dedicated space versus cargo storage, cargo warehouse and cargo movement of build and break,” says Barker. “It’s a very different model, but for me it’s no different than when we put animals in our warehouse for veterinary and transport

“*Most of the time the Amazons and USPSs want dedicated space, so it de-synergises your warehouse space to some level*”

David Barker

services. It’s a different business line that helps diversify our portfolio.”

Facility planning implications

These developments are beginning to leave their mark on facility planning. Oakley says that the plans for the next cargo terminal at Rockford will take these into consideration.

Special requirements multiply as operators look to up their game and chase special cargo like cell and gene therapy shipments, which require cryogenic transport capabilities. Dnata has a strong focus on high-yield types of cargo, which

is frequently a key plank in its strategy to create a value proposition for an airport. It is currently preparing for expansion at Dallas/Fort Worth, where it started with a 38,000 sq ft facility with 18,000 sq ft for temperature-controlled cargo to develop perishables and pharmaceutical traffic flows. This footprint has grown to 115,000 sq ft, with a commitment to another 150,000 sq ft.

Special freight is also on the rise at Rickenbacker airport as the Columbus Regional Airport Authority has diversified its mix of cargo.

“While our international cargo mix has been traditionally a fashion-heavy consignment, we are now seeing more high-tech, automotive and medical shipments,” reports Bryan Schreiber, manager of air cargo business development. He adds that throughput at Rickenbacker’s animal export facility grew last year and that “there is great interest in utilising the Rickenbacker Pharma Center, pending an adjustment in international flight schedules that are more conducive to those flows”.

Schreiber is also looking to boost exports, encouraging forwarders that have inbound flows to funnel exports from the Midwest through Rickenbacker. He is looking to tap into a new seam next year. “We anticipate the coming semiconductor business will generate export flows starting in 2025,” he says.

For airports like Dallas/Fort Worth and Miami, the growing trend of nearshoring offers rising demand on their links with Latin America, which are also seeing growing e-commerce volumes out of Asia. Nippon Cargo Airlines is looking to increase its flights to Dallas in response to these developments, says McWhorter.

Expansion is also on the cards for Dnata. Barker hopes to secure two more postal contracts this year, and he is in advanced negotiations for a large facility at an airport that is looking for a strategic concept to develop air cargo. In addition, he wants to open a warehouse in another second-tier airport.

Despite the slower market, there are still many opportunities for expansion, development, and optimisation. ■



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Artificial intelligence in logistics and air freight

Several factors are driving a new phase of digitalisation within logistics, especially the growing power and acceptance of AI and new sustainability reporting requirements for companies and their supply chains, Lionel van der Walt, chief growth officer at Raft, tells Will Waters. And these developments are likely to have implications for all logistics stakeholders, including within air freight

Logistics technology has clearly been a dynamic and rapidly evolving space in the last few years. But this has moved on significantly in the last 12 months due to a number of factors, but particularly developments and public awareness around artificial intelligence (AI), according to Lionel van der Walt, chief growth officer at 'intelligent logistics platform' Raft. So, how does he see this area developing, and what are the implications for air freight?

This greater awareness of AI is certainly helpful for a company like Raft that is focused on using AI to support freight forwarders and customs brokers – by automating as many of their processes and activities as possible, from operations, finance, customs, and sales to visibility and emissions reporting. He says the last few months have been a busy time for a company only founded in 2017 and that now serves around 60 freight forwarders in more than 30 countries, including around 40% of the world's top 25 global players.

"Right now, our key focus is to make

sure our products are aligned with our customers' needs. And we've seen this huge shift, not only in the industry, but globally, where people are becoming more and more aware of AI and the power of AI and automation within organisations," notes van der Walt.

"This builds off what happened over Covid, where we saw a lot of companies starting to focus on the adoption of technology. But now it's hitting another gear, with a focus on AI. For us, the key areas we have focused on is finance, customs and operations. And we really

want to make sure we are getting a strong return on investment for our clients, making it as easy as possible for them to implement these solutions – and getting the people engaged and adopting once they've implemented."

That process of getting people engaged is talked about a lot in tech implementation, with the rise of AI bringing new concerns for employees.

Van der Walt notes: "In 2023, AI was seen as the scary monster. As we progressed through the year, and especially with Chat GPT and Google Bard and these things coming to the fore, and more people coming to use it, people are starting to realise there's a lot of value we can get.

"And now we're starting to see the transition of that into the workplace, specifically in logistics. The solutions are now coming, and people are starting to understand this is not going to take away our roles, it's here to help us become more effective in our roles."

Rather than AI taking away people's jobs, "the real mantra should be that people who are using AI will be taking my job away", he says. "So, if you're not keeping abreast of all of these changes, you're putting yourself at risk."

Van der Walt says "significant" interest has been building about AI adoption in logistics and supply chain industries, estimating that "about 80% of the major players are very involved in this". He highlights a study last year reporting that 57% of supply chain companies are already making use of AI and automation, or in the early stages of adoption, and another last year reporting that 82% of logistics companies have increased their technology investments since 2020, and 95% will be increasing or maintaining the current levels this year.

"There's a clear trend. And AI and automation is not the future any more. This is already deeply embedded into many companies. And we have definitely seen that growth with the organisations we're working with."

'Slow' air freight adoption

People often talk about air freight being

slow to adopt technology, but van der Walt notes that "most supply chain or logistics companies and freight forwarders are multimodal", adding: "I think you're going to see no difference on the ocean or the air side in the adoption rates as these companies start bringing in these technologies: they are going to want to do that across their whole business to get the greatest value out of it."

He believes attitudes within the air freight industry have "shifted since Covid, where people have started paying attention to the adoption of technology, and how we work collaboratively in the industry to bring greater value and the transformation that is needed. So, the momentum is there. I think it's heading in the right direction."

“

The real mantra should be that people who are using AI will be taking my job away

”

Lionel van der Walt

He highlights that one of the key challenges air freight faces is how to manage demand efficiently in a business full of peaks and troughs, operationally. "It's been done mostly manually, with some systems in there. But with the latest technologies and AI, you can start doing predictive analysis, and doing things in a proactive manner to manage that better."

Another challenge is finding labour to manage the cargo, something that other technologies may help solve, such as via automation or automated vehicles, he highlights.

"Also, when you have this difficulty finding labour, and you have a large amount of churn... there are already companies using augmented reality to train people and getting them up to speed very quickly and certified to be able to work on ramps," he adds.

"All these technologies are going to become more important, for the industry to survive – and also react. Because in the

logistics industry and air cargo, there's always a crisis." These crises sometimes bring positive things – such as a shift from ocean to air because of supply chain disruptions. But if what's happening in the Middle East pushes up oil prices and the cost of operations, "certain technologies can help you be as cost efficient as possible – and to be resilient, to be able to react very quickly to these external forces".

Driving forces

He believes the biggest freight forwarding and logistics companies and their customers will continue to explore and invest in these kinds of new technologies, and in turn push others further up and down their logistics chains to participate. And once their customers experience those services and visibility, "they're going to demand that from everybody".

Another key driver is going to be emissions and sustainability regulations, and the imminent and growing need for companies to report their environmental performance and those of their supply chains.

"It's really going to hit home this year in the European Union (EU) with the corporate sustainability reporting directive, where companies are going to be forced to report at the end of the year," van der Walt notes.

The first phase of this requires large EU companies and listed companies – including EU subsidiaries of non-EU companies – to report on the environmental and social impact of their business activities in the 2024 financial year, for reports published in 2025, with similar requirements of smaller companies in subsequent years. Similar rules are being finalised in the US and are expected to be published this year, with other jurisdictions at various stages of introducing regulations.

Van der Walt says this is "forcing forwarders across the globe to raise the standards within their organisation. And it's really going to require a lot of data and data processing."

He adds: "So, if you are a freight forwarder in the US, if you're working with large clients in the EU, they are going to say: 'I need this information; I need it in this



format'. And you are going to have to find ways to use technology to do it – because you cannot do it manually.”

Other types of regulations by governments around the world are also going to force further change, “especially customs regulations are busy changing and evolving, and many of the customs authorities are using AI and different technologies”, he notes. “And that’s going to push companies to adhere to these new regulations.

“So, in my mind, there’s a perfect storm coming. And everybody is focused on becoming more efficient, and using technologies to do so.”

Digital dependence

Van der Walt acknowledges that some, particularly of a certain generation, are wary of going so far down the digital road, for example with AI, that any disruptions to the digital infrastructure may leave

people not knowing how to do anything anymore. But he stresses that “the greatest value is combining the human element with the technology”, noting that “ultimately, there is a human component”.

He adds: “I think it’s like any technology. When we were transitioning into the internet, people had the same concerns. Is that a concern now, to do your banking and all these things using the internet? No, because as the technology evolves, so do all of the businesses that thrive on how to make it more secure. So, I think that fear will be there initially, but as people start using it and becoming more educated in these technologies, it’s going to be the norm.

“Like when IATA was talking about transitioning away from paper tickets to electronic tickets, there was a lot of concern from airlines, governments and users. Fast forward to today, it’s not an issue: you’ve got it on your phone; you’ve

got it on multiple devices; and even if your phone goes down, you are able to get it printed out at the airport. So, you have these backstops and failsafe processes that come into play to overcome those challenges. And I think the same thing is going to apply with AI and these new technologies and processes.”

Generational factors

For a generation used to doing manual processes and doing things in a certain way, acceptance may take longer, and decisions about new technology adoption still focus largely around return on investment (ROI). “But if you look at the next generation, they growing up in a world where everything is (digital and) AI driven,” notes van der Walt. “That’s an expectation they have.”

As a result, organisations that still rely heavily on paper and manual processes “are going to have a huge struggle” with recruitment and retention. “I think companies like ours, and others that are using the latest technologies, are actually going to be a catalyst to attracting that next generation,” he notes. “(And) you’re going to need less persuasion for them to adopt (technology) within organisations; it’s going to be more of a requirement from their side; that they expect these technologies to be in place and used within logistics.”

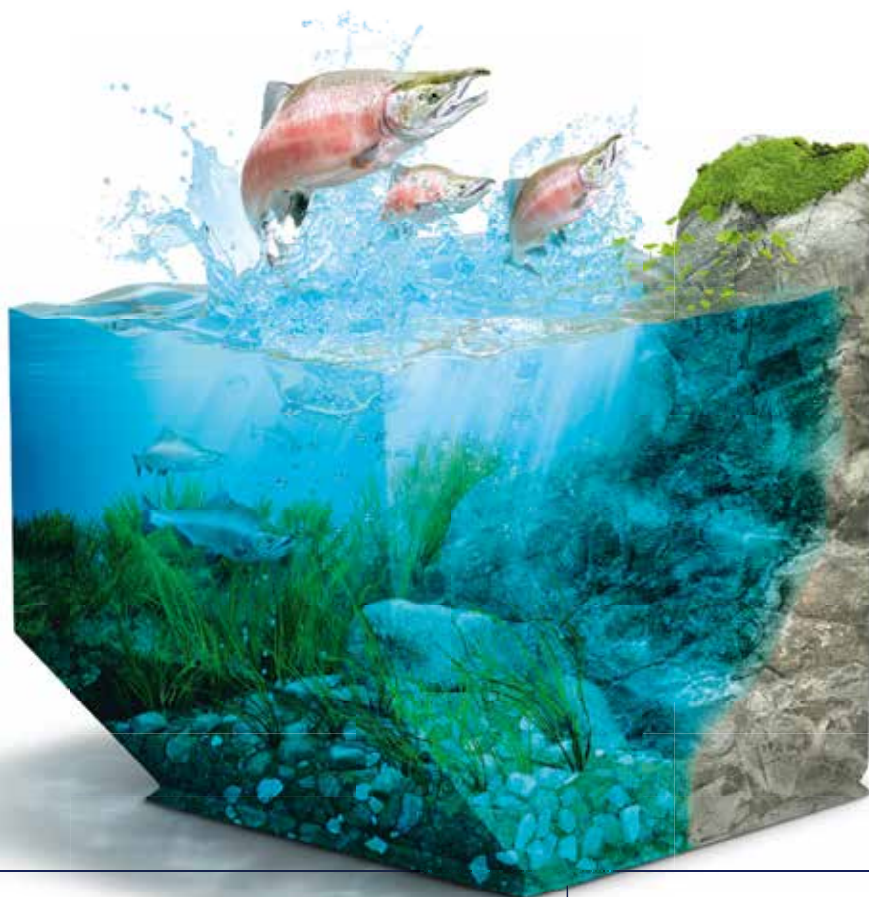
But of course, there is still a need for any business selling a product or service to demonstrate the return on investment for customers – and to investors.

Technology investment environment

Indeed, the logistics technology investment environment has changed somewhat since the rise in interest rates in 2022, with logistics tech companies now having to work harder to secure funding from venture capital and private equity sources.

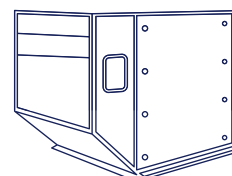
“The fact that Raft was able to do our series B (fundraising round) in this time period is a testament to the value that the organisation provides to its clients,” notes van der Walt. “For new companies now wanting to get capital, it’s a lot tougher; there’s a lot more scrutiny and

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**Lionel van der Walt**

the valuations are going to be at a lower multiple than in the past.

“So, you really have to prove you’ve got a strong business model, and that you can be profitable. And that you’ve got very strong scalable processes to be able to achieve the growth that they are banking on – not a 5% or 10% return in a year; they are looking to get 100%, 200%, 300% growth, so they can get the return on investment.”

Implementation best practice

Returning to the challenge of implementation, van der Walt says communication is the key thing. “It’s making sure (employees’) expectations are set (appropriately), and they really understand what the technology is, how it adds value, and how it works. If you can really educate people in advance, the implementation side becomes a lot easier. There’s a lot of responsibility internally in the companies that we sell to; it’s not just from our side.”

He adds: “What we have found to be

really valuable is doing a collaborative change management process, working with our clients to ensure that their internal stakeholders are aware of what’s coming, what the value is to them in their day-to-day tasks. Because, ultimately, it’s the end user that’s going to get the value out of this, and that has to adopt and be engaged in using these technologies. You can have the greatest technology out there, but if nobody’s using it to its fullest extent, you’re not going to get the value that you’re banking on.”

Logistics tech outlook

Looking ahead to how the logistics tech environment is likely to play out in the next few years, van der Walt predicts that “within the next three to five years, AI is going to be mainstream – like having an iPhone. Everybody’s going to be using it in some form or other; they’re going to be comfortable with it, and it’s going to be a daily occurrence.”

Other changes he sees include the introduction of cargo drones able to carry ULDs; more robotics on the apron and in warehouses – where “we’re already seeing that shift” – plus further moves towards more-sustainable vehicles, including aircraft and on the maritime side, such as “hard sails, different fuel types, etc. Everybody is becoming aware that we have to be more sustainable, so that shift is definitely coming.”

Other technology-facilitated improvements, innovations and initiatives likely to reach critical momentum over the next two or three years will include further progress on visibility across supply chains, driven by the freight forwarding and logistics sector and their customers. Greater visibility of touchpoints and the use of predictive analytics will mean stakeholders can be “proactive versus reactive”, notes van der Walt – for example, leading to action to prevent delays, or rescheduling planned events, or reallocating resources if a consignment is to be rerouted or delayed.

And more generally, “the interconnectedness of everything is going to become more prevalent. When you bring together all the information, you’re going to

have a really smart ecosystem, where you can manage things in a more sustainable and profitable manner. Is that easy? No, it’s not. And that’s one of the challenges, both for companies and clients: building the trust where we can be more collaborative, and we see more data sharing.”

Collaboration between and within organisations

Some progress is being made within air freight in collaborations between companies via initiatives such as cargo communities, while technology platforms like Raft also can pull together diverse sources of data within and between organisations. Van der Walt describes it as “a layer on top of TMSs and other systems, whereby we can bring in and collect all of these different views, so you’ve got a central platform that the clients can use. For example, if you’ve got a large forwarder, they’ve got an ocean division and an air division, and they normally don’t speak to each other; you start bringing these into one platform where you can tie the different elements together. So, you’ve got that visibility across your whole supply chain, and then using that to automate and bringing in reporting, that can give you visibility on trends; and then you can start managing proactively – for example, for multimodal shipments.”

And the impending sustainability reporting requirements will add to the requirement to pull together all these diverse sources of data.

“Exactly,” agrees van der Walt. “When you report on sustainability, especially from a logistics perspective, it’s across your whole logistics value chain – including the downstream and upstream logistics processes.”

And as new sustainability reporting regulations push environmental and emissions responsibilities from CSR departments to CFOs and CEOs – and companies’ increasingly important CTOs – the imperative to comply, and deploy the necessary technologies to do so, is set to gain irreversible momentum, van der Walt and others argue. And that momentum is expected to pick up significantly in Europe from later this year, he believes. ■

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Conversational AI's role in air cargo efficiency

Digital booking platforms have brought about remarkable improvements in the air cargo industry, but existing digital systems tend to cater to broader needs. Conversational AI can bridge the gap in personalisation that can lead to freight forwarders and airlines manually booking cargo shipments, says Sabari Ramnath from Unisys

Freight forwarders managing air cargo on behalf of their customers and airlines, facilitating the global transportation of goods, all contribute to an intricate web of interactions. Reliance on traditional phone conversations tends

to impede operations. While digital booking solutions offer some relief, they don't address root causes like delays or misunderstandings that lead to customer dissatisfaction.

There could be a new option on the horizon: conversational AI. Combining this technology with digital booking

systems can help evolve how airlines and freight forwarders communicate and collaborate. This shift to digital bookings has the potential to shorten call centre wait times and slash the time it takes to move parcels efficiently through the supply chain. Let's dive deeper.

Traditionally, call centres are pivotal in facilitating communication between freight forwarders and airlines. Freight forwarders rely on call centres to inquire about flight availability, request quotes, track shipment statuses, resolve issues, and more. The problem with phone-based customer service is that it can involve long wait times and miscommunications. Limited support available outside of traditional business hours can hinder operational efficiency and impact customer satisfaction. Plus, the average cost of these support calls tends to run high. Finding a way to serve customers better – and at a reduced cost – is alluring.

The power of digital bookings

Digital booking platforms have changed how the air cargo industry operates. These platforms offer efficiency, transparency and accessibility, transforming the booking process from a cumbersome task into a streamlined and dynamic experience.

Forget lengthy phone calls and manual paperwork. With just a few clicks, freight forwarders can access a vast array of flight options, compare rates and make bookings instantly. This eliminates time-consuming processes and allows forwarders to focus on other critical aspects of their operations, enhancing overall efficiency.

Digital booking platforms have brought about remarkable improvements in the air cargo industry, but some challenges remain – namely when a freight forwarder has a specific need. While each forwarder operates with distinct requirements and preferences, existing digital systems tend to cater to broader needs. This gap in personalisation can lead to freight forwarders and airlines manually booking cargo shipments.

The emergence of conversational AI

As the industry advances, success lies in

bridging the gap between generic digital platforms and the niche needs freight forwarders seek. Conversational AI can help fill the void by tailoring digital interactions to each forwarder. Now, booking air cargo becomes an engaging conversation, seamlessly blending the familiarity of human-like interactions with the efficiency of digital automation.

Here's how conversational AI can streamline how freight forwarders and airlines collaborate:

Precise personalisation: By analysing historical data, previous interactions, and individual requirements, AI-powered chatbots or virtual assistants can tailor their responses and recommendations to match each forwarder's needs. This level of precision in personalisation builds trust and rapport, fostering a strong and lasting relationship between forwarders and airlines.

Streamlined communication: Conversational AI is a 24/7 virtual

assistant ready to engage with freight forwarders in real time. Forwarders can now communicate instantly and efficiently with airlines instead of waiting in long call queues or dealing with delayed email responses. Whether inquiring about flight availability, tracking shipment status, or making booking changes, the conversational interface simplifies and accelerates the entire process.

Self-service empowerment:

Conversational AI brings self-service capabilities to freight forwarders. Through the conversational interface, forwarders can easily manage bookings, track shipments, request changes and access vital information without human intervention. This self-sufficiency enhances their overall experience and frees up valuable resources and time for both forwarders and airlines.

As conversational AI continues to evolve, its ability to understand

context, learn from interactions, and adapt to changing preferences will only strengthen. This technology empowers the air cargo industry to elevate customer service to unprecedented heights, fostering better collaboration between freight forwarders and airlines and paving the way for a more efficient, intelligent and customer-centric future.

Infusing intelligence into conversations with conversational AI brings efficiency and effectiveness to daily operations, ensuring that the future of air cargo communication is intelligent and tailored to meet the needs of all stakeholders involved.

Sabari Ramnath is Senior Manager for Solution Management, Enterprise Computing Solutions, at Unisys. With nearly two decades of experience in the air cargo industry, he has worked with various IT companies specialising in cargo solutions

<https://www.unisys.com/blog-post/ecs/join-the-discussion-conversational-ai-role-in-air-cargo-efficiency/> ■



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OUTLOOK 2024 REPORT

As in previous years, CAAS asked a small number of selected people and organisations involved in the international air freight sector to contribute to the 'Outlook 2024' report, reflecting on their experiences of another extraordinary year in 2023 and sharing some of their expectations for 2024.

Some of the contributors responded to a set of specific questions, while others took a more free-form, narrative approach. The result is a rich variety of analyses, reflections and updates that I think you will find an interesting and worthwhile read. As ever, we are grateful for their thoughtful contributions.

Work towards air cargo modernisation

The ongoing work towards a modern Global Air Cargo Programme that represents today's commercial realities is top of this year's agenda, says FIATA director general Stéphane Graber

What is FIATA's top priority for air freight this year?

The ongoing work towards a modern Global Air Cargo Programme that benefits all regions worldwide, and that is representative of today's commercial realities is top on FIATA's agenda. The establishment of a Global Programme is very much overdue, as recognised by both airlines and freight forwarders. The lack of a joint programme with harmonised global standards has led

to significant fragmentation in the rules applicable to airfreight, particularly in the regions Asia-Pacific and Africa-Middle East. The marketplace has undergone considerable changes which need to be addressed, and which transcend the current legacy IATA Cargo Agency programme, including: eCommerce; integrated services and new market entrants; digitalisation; and heightened safety and security concerns, with increased handling requirements. A global programme with common standards around the world, jointly administered by IATA and FIATA, would enable airlines and



Stéphane Graber, FIATA

freight forwarders to address these critical supply chain issues and leverage airfreight operations, furthering the future growth of

the industry.

Work towards air cargo modernisation has been ongoing between IATA and FIATA for a decade now under the previous Cargo Agency Modernisation Programme working group (CAMP) and the IATA-FIATA Air Cargo Programme (IFACP). The current work builds on the progress reached previously and strong airline-forwarder collaboration which garnered agreement on many key points. Considerable support was shown of this work at last year's Cargo Agency Conference (CAC), and FIATA has now submitted a plan to the CAC/51, which includes a proposal for the CAC to authorise the establishment of a mutually beneficial joint airline-forwarder working group to review FIATA's Global Programme proposal, agree on any necessary amendments or refinements, and finalise the proposal for final agreement between the two organisations so that a pilot can commence to the benefit of all actors involved in the airfreight business.

What does this mean for FIATA's involvement in the IATA Cargo Agency Programme?

FIATA continues to represent freight forwarders at the IATA-FIATA Consultative Council (IFCC), which is a consultative body formed to provide views and recommendations to the Cargo Agency Conference (CAC). This process tends to be more focused on clerical work and daily revenue collection matters, which is very much administrative and rooted in the now largely defunct agency concept rather than involving top executives to discuss the business issues of the airfreight industry.

A recent, positive development has been the joint appointment by FIATA and IATA of two new Cargo Agency Commissioners. The now reinforced Office of the Cargo Agency Commissioner is crucial, acting as an independent arbiter in serving agents/intermediaries and airlines. For the first time, a Commissioner with considerable experience in the freight forwarding business was appointed, Mr Paul Cheetham, alongside a Commissioner with a solid background in the airline business, Mr Marco Alvarenga. This is an excellent industry development as it ensures good synergies for the industry, combining different geographical

competencies and demonstrating the positive evolution in FIATA and IATA's collaboration.

How is FIATA supporting the implementation of pre-loading advance cargo information (PLACI) programmes?

FIATA's work on PLACI programmes was catalysed by the launch of the European Union's (EU) ICS2 Release II, which has required significant work in its implementation. To provide comprehensive support to freight forwarders and logistics operators worldwide, FIATA created a dedicated cross-disciplinary taskforce comprised of experts hailing from airfreight, customs and safety and security backgrounds, to develop industry guidance and resources. Of particular importance is the work that FIATA has been doing to provide guidance on multiple filing, which was a new feature of ICS2 Release II and will be coming up increasingly in other PLACI regimes for enhanced data quality and sovereignty. A multi-stakeholder group consisting of airlines, IATA, as well as multinational and SME forwarders, to develop joint industry guidance on bilateral multiple filing agreements between airlines and forwarders for ICS2 and future PLACI regimes worldwide. This is important to ensuring clarity on the parties' respective rights and obligations to facilitate successful compliance due to the multi-layered nature of the reporting. This kind of project illustrates the nature of FIATA's long-standing role as a promoter of best practices globally and a standard setting organisation.

FIATA is very involved in industry training and education. Can you outline some topics specific to airfreight?

FIATA is a longstanding partner of ICAO and active member of TRAINAIR Plus, an ICAO cooperative network of civil aviation training centres developing training courses based on a standardised methodology aimed at maintaining and monitoring high standards of training and competency for aviation personnel worldwide and in a cost-effective manner. ICAO and FIATA have developed the ICAO-FIATA Dangerous Goods by Air (IFDG) Training Programme. Primarily geared towards staff of freight forwarders,

the course provides professionals with the essential knowledge and skills required to handle dangerous goods safely and in compliance with international regulations. It complies with the ICAO Technical Instructions for the Safe Transport of Dangerous Goods by Air (Doc 9284) and the ICAO Dangerous Goods Regulations.

Through the reinforced partnership with ICAO, we expect to further develop this training all around the world.

What is FIATA doing to support process optimisation?

Given the multi-stakeholder nature of airfreight processes, collaboration is key to optimisation. In 2023, IATA reached out to FIATA to help it update the IATA Cargo Handling Manual (ICHM) Edition 7 (Chapters 1-7 and 15-19), and to provide the freight forwarding perspective, evidencing recognition of FIATA's expertise. FIATA carried out this work under the auspices of the FIATA Airfreight Institute through a special Safety and Security Taskforce, to ensure the processes were practical and fit-for-purpose to cover the practices of forwarders of all sizes around the world.

This work is complementary to FIATA's participation in the multi-stakeholder Cargo IQ Board, which it joined last year, and which will allow FIATA to provide the freight forwarding and logistics perspective in Cargo IQ's work, which is focused on creating and implementing quality standards for the worldwide air cargo industry. FIATA's Airfreight Institute Chair has already committed to implementing the Cargo IQ processes, and this is a positive step towards collaborative process optimisation for the benefit of the industry, and demonstrating to our members the benefits of such quality processes.

In a nutshell, what is your view for 2024?

Uncertainty will remain high due to inflation, geopolitics, wars and adverse climate events, and flexibility and adaptability will be key for supply chain actors to ensure a seamless flow of goods at a competitive cost. Logistics actors and freight forwarder members will be able to count on FIATA throughout the year to help them navigate these challenging times. ■

Weathering the challenges

By embracing agility, collaboration, and technological advancements, the air cargo industry can adapt to changing customer demands, ultimately emerging stronger and more efficient, says Brandon Fried, executive director of the Airforwardsers Association

We expect the air cargo sector to see a moderate recovery in 2024, with growth hovering

around 2-4%. Continued geopolitical tensions and inflationary pressures might still cast shadows, but overall, demand is likely to stabilise and potentially increase, with consumer spending rebounding.

Our organisation will support members in navigating this fluctuating market. We'll focus on advocacy, promoting policy changes that boost industry competitiveness, and providing members with essential information and resources to adapt to changing customer needs and technological advancements.

Customers increasingly demand faster, more transparent, and environmentally sustainable air freight and logistics solutions. They want real-time cargo tracking, flexible pricing options, and increasingly ecologically conscious practices.

Airforwardsers must invest in digitalisation and data analytics to enhance transparency and visibility throughout the supply chain. Integrating automation and sustainable solutions will also be crucial to meet customer expectations.

Improving air freight services

In 2023, forwarders streamlined documentation processes and increased collaboration with airports and airlines to improve ground handling and cargo flow, promoting innovative packaging solutions to reduce wasted space and optimise capacity.

For 2024, we aim to continue these initiatives, further leverage data analytics to predict demand and optimise route planning, explore partnerships with AI companies to enhance traceability and efficiency.

The entire air freight chain, from shippers

and forwarders to airlines and regulatory authorities, needs to collaborate effectively, making stakeholder cooperation essential. Sharing data, standardising processes, and investing in digital solutions will significantly improve efficiency and visibility.

2024 steps forward: Fostering industry dialogue forums and promoting data-sharing standards. We are particularly excited about our ongoing technology webinar series, where providers interact with members about new products and enhancements to bring efficiencies to their businesses. Of course, we will continue to advocate for simplified customs procedures, simplified cargo security, and faster airport cargo-area throughput.

Emerging technologies

Automated Intelligence (AI) and operational automation will transform air cargo by improving security, traceability, and operational efficiency. These technologies will optimise route planning, automate paperwork, and enable predictive maintenance.

We also expect to see digitalisation enhance sustainability initiatives through green fuel solutions, electric ground handling equipment, and carbon-neutral packaging will be crucial for reducing the air cargo sector's environmental footprint.

Other priorities for 2024

Talent acquisition and retention continue to be challenging for many of our member companies, so attracting and retaining skilled professionals will be critical for the continued success of air cargo. The industry must invest in training, offer competitive compensation packages, and promote exciting career opportunities.

The world is now fraught with geopolitical risks such as the war in Ukraine, the emerging China threats, and the Israel-Gaza



Brandon Fried, AfA

war in the Middle East. These risks require mitigation with proactive planning and robust contingency plans forwarders provide that will be essential to navigate potential disruptions caused by geopolitical tensions or unforeseen events.

The booming e-commerce market will continue to be a key driver of air cargo demand, posing challenges and opportunities for the industry. However, in the United States, we should expect to see increased government scrutiny of low-value goods imports to address the threat of fentanyl and other dangerous items arriving through the e-commerce supply chain.

Finally, expect consolidation trends to continue as airlines and major logistics players consolidate, impacting smaller forwarders and requiring strategic adaptation.

We at the Airforwardsers Association are cautiously optimistic about 2024. By embracing agility, collaboration, and technological advancements, the air cargo industry can weather the challenges and adapt to changing customer demands, ultimately emerging stronger and more efficient. ■

Dealing with disruption

Air cargo faces another year of challenge, but is equipped better than ever with great new technology, says Glyn Hughes, director general of TIACA

2023 was marked by several events which impacted global supply chains and air cargo. We saw continued increases in central bank rates designed to curb inflation by slowing down economic activity. This resulted in continued subdued consumer activity, increased global inventory levels, and therefore reduced demand for air cargo. Meanwhile, international passenger numbers returned with huge momentum, which prompted a significant return of belly capacity. The resulting situation of increased capacity and reduced demand saw air cargo yields declining for most of the year.

The war in Ukraine has continued to impact air cargo by forcing most operators serving Asia-Europe routes to suffer from longer flight times and increased costs.

Sadly, we then saw in October some tragic events in the Middle East which resulted in escalated tensions and conflict, which had a spillover into supply chain disruption from November in the Red Sea, in the form of attacks on commercial ships passing through. Maritime operators have mostly now decided to avoid Red Sea routings, adding up to 14 days and US\$2 million in additional costs for sailings from Asia to Europe, and container shortages, leading to increased demand for air cargo.

The effect of the extended sailings around Africa will not just impact the cost of each journey but also has the effect of taking out a significant portion of global maritime capacity, estimated to be around 6-8%. This removal of capacity will place additional pressure on maritime, with further price rises expected. Increased maritime disruption, in particular narrowing cost differentials to air cargo, could see a further



Glyn Hughes, TIACA

boost to air cargo demand.

If tensions increase further, we could see further impacts to other crucial shipping channels. It could accelerate near shoring or further supply chain diversification and de-risking.

Disruptive influences

So how does the air cargo industry adjust to deal with current, and what will no doubt be further, disruptive influences?

The most important aspects of preparation for known and unknown challenges are communication, collaboration, and preparation. Freight forwarders and shippers need to be as precise as they can with regards to what their transport needs will be. That precision and transparency will enable freight forwarders to look at various contingency plans, possibly involving air,

rail, sea, or combinations of all. Sea-air blended supply chains may be crucial to avoid continuing restrictions in the Panama Canal as well as the Red Sea, if that continues to be an issue.

With inflation coming under control in most developed economies, and wage rises working their way through, we can expect to see renewed consumer activity through 2024, with high-tech, pharmaceuticals, e-commerce, and perishables expected to grow.

Sustainability will also play a large part going forward following COP28 commitments and global focus on minimising global temperature increases.

So, another year of challenge lies before us. But air cargo is equipped better than ever with great new technology, a renewed purpose, and adaptive leadership to deal with disruption. ■

Fostering agility to overcome instability

The amazing growth of e-commerce logistics requires a concerted industry-wide effort to safely handle air freight shipments containing lithium batteries and detect undeclared goods, highlights Joshua Bowen, global head of air and ocean freight at CEVA Logistics

At the outset of 2024, we are seeing an increase in both air freight volumes and rates as a result of the situation in the Red Sea and its effects on maritime shipping through the Suez Canal. The knock-on effects and momentum in air freight will continue in the run up to, and even after, the Chinese New Year. The main drivers will be the equipment shortages at origin ports due to the longer ocean shipping rotations around the Cape of Good Hope, as well as congestion in handling those delayed vessels, initially at European ports, and then again in Asia upon return. With the increasing pressure on capacity, we expect a corresponding increase in air freight rates in the coming weeks on some specific trade lanes.

With the geopolitical instability that we are observing in certain parts of the world, agility will continue to be important. Outside of these black swan events, 2024 should represent an improvement in market conditions in comparison to 2023. We continue helping our customers build resilience into their global supply chains to deal with any volatility that comes our way in 2024.

We are supporting customers with multi-modal Ground and Rail or Sea-Air products, but the majority of interest at this point is direct air transport. Ultimately, we remain ready to discuss and apply whichever solution our customers need – the right route with the

right timing at the right cost.

On another topic, we continue to be amazed at the growth of e-commerce logistics and its impact on the air freight market. The volume demanded in order to satisfy cross-border e-commerce shipments will be interesting to watch in 2024 and over the next few years.

Lithium battery challenges

As a result, the increase of goods containing lithium batteries continues to climb as well. Air freight shipments of lithium batteries, or products containing them, face extensive restrictions due to the critical risk of thermal runaway if the shipments are mishandled or stored improperly. A situation involving thermal runaway can lead to fires or explosions, which could endanger lives – on the ground or in the air. Consequently, not all airlines are inclined to accommodate these batteries. Many impose stringent weight limits and other regulations, such as a maximum state-of-charge of 30% of their rated capacity. Other airlines choose to ban batteries exceeding 35 kg (like EV batteries) in passenger cargo compartments.

After teaming up with IATA to develop and pilot the CEIV Lithium Battery Certification in 2021, CEVA Logistics became the world's first company to receive this IATA CEIV certification at our Singapore and Amsterdam locations. CEVA now has a global network of nine strategically located air freight stations certified under the programme:



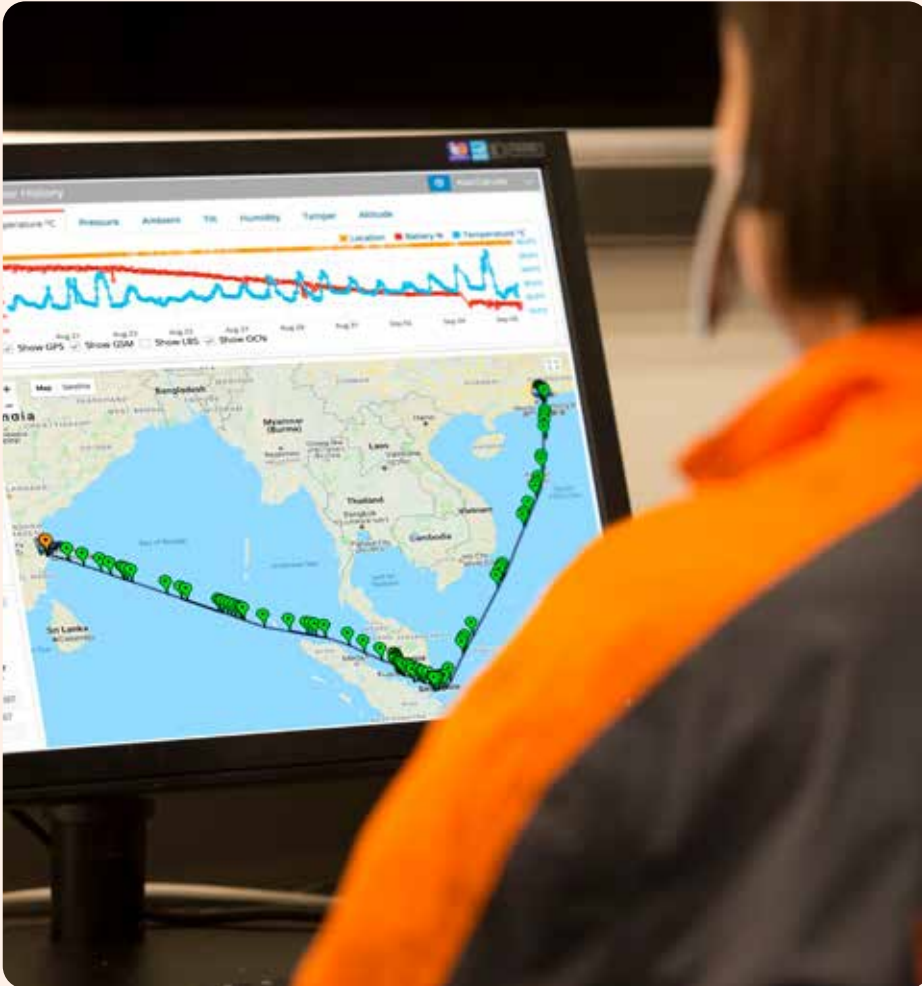
Joshua Bowen, CEVA

Amsterdam, Atlanta, Detroit, Hong Kong, Frankfurt, Incheon, Shanghai (PVG), Singapore and Tokyo.

It is critical to have the right processes and procedures in place that help detect undeclared goods – which is a major concern for this topic. The IATA certification is an important step, and we firmly believe that it has and will continue to improve the safe handling and transport of lithium batteries. However, we also believe that the industry needs the support of regulatory and governmental bodies to enforce existing regulations to deter those who would jeopardise safety through means of false declarations or paperwork. Such practices pose a safety threat to air cargo handlers, transport crews – and, in the case of passenger cargo transport, the passengers and crews on board.

Our industry can dedicate itself to safety in this area, and we are taking significant steps to improve safety at every step of the transport process, but there must be much stiffer penalties and real, consistent enforcement from local and international bodies to curtail false declarations from shippers willing to risk lives to avoid properly declaring shipment contents. People's lives are at stake. ■

Replacing manual data entry



New AI technology can improve clearance times and increase operational efficiency and accuracy, believes Emma Rowlands, strategic sales director for Kerry Logistics Network (UK)

Expectations for 2024
In 2024, we expect demand and rate levels to remain higher than the previous year until the Red Sea crisis is resolved. We anticipate that e-commerce will continue to be a key factor driving the growth of the air freight industry in Q3 and Q4.

Customers need strong and reliable

products as well as stable rates. In the face of current market uncertainty, Kerry Logistics has agreements in place with its preferred carriers to minimise the risks of rate changes and to continue providing the most reliable service possible to our customers.

Improving air freight services

We have continued to develop our product offering with new products like our

Sea-Air and Road-Air freighter service for inbound UK shipments, as well as building our outbound Air-Sea service to Australia and New Zealand. We expect to see increased demand for multimodal shipment options in 2024, especially as shippers are looking to avoid delays along key maritime routes due to the ongoing Red Sea crisis.

Technology is the key to improving collaboration and communication between various stakeholders. Kerry Logistics offers two levels of visibility for our customers. The first level is provided with Kerry's instant Track and Trace solution (Ktreker), which gives our customers and partners access to the latest information, documentation, and updates in real-time. This is vital to minimising delays and preventing compliance issues, as well as being good practice for customs auditing by ensuring all documentation for each shipment is visible.

For more complex supply chain customers where we are handling multiple shipments from various locations and suppliers, we offer a full Purchase Order Management solution, called Virtual Buying Office (VBO). This enables better planning before the shipment is booked to eliminate bottlenecks and manage lead times more efficiently, ensuring cargo arrives exactly when required by the customer by utilising the most cost-efficient routing. The visibility provided by VBO also enables us to proactively address any issues, such as delays, rerouting, or mitigate potential risks associated with shipments, such as security threats, regulatory compliance, or operational disruptions. This approach ensures we maintain a secure and compliant supply chain.

Applications of AI

AI is a beneficial tool for customs entries, especially for data entry and discrepancy identification. New AI technology can improve clearance times and increase operational efficiency and accuracy. The future is to replace manual data entry with AI as well as using AI-driven solutions to automate certain processes. ■

Elevating cargo handling quality

The planned rollout in mid-2024 of the Changi Air Cargo Community System's Truck Dock Slot Booking application is expected to bring greater predictability, says Lim Ching Kiat, EVP for air hub and cargo development at Changi Airport Group



Lim Ching Kiat

In 2023, Changi Airport handled 1.74 million tonnes of airfreight. On a rolling-12-month basis, as of October 2023, Changi is ranked 11th globally by international cargo traffic, the busiest in Southeast Asia. Changi's top five air cargo markets for the year were China, Australia, Hong Kong, the United States of America and India.

Overall, worldwide air cargo demand has been dampened by inflationary pressure, global trade tensions, and economic slowdown. In the coming year, we anticipate persistent headwinds for the air cargo industry due to ongoing pressure on the demand for goods, as indicated by the New Export Orders Index from S&P Global's Purchasing Managers' Index (PMI) business surveys. However, we notice some bright sparks in certain sectors. Global semiconductor demand is expected to pick up in the later part of 2024, fuelled by artificial intelligence-related data centres and electric vehicles. Emerging markets like India exhibit continuous trade improvements and India is poised to become the world's third-largest economy by 2030.

From a broader perspective, Changi Airport holds a positive outlook on the future of global and regional air cargo, particularly in Southeast Asia. With expected advances in urbanisation and industrialisation, it is primed for growth in manufacturing, trade, and logistics. Singapore, strategically located

at the heart of Southeast Asia, is set to play a crucial role in global supply chains, facilitated by strong regional trade partnerships such as the Regional Comprehensive Economic Partnership (RCEP).

Expanding air cargo connectivity and pursuing new opportunities are critical focal points as we aim to solidify Changi's position as a leading air cargo hub. Our cargo capacity has fully recovered to pre-pandemic levels, driven by the return of passenger flights and significant contributions from dedicated freighter operations. Over 25 airlines at Changi Airport now operate freighter services to more than 45 cities worldwide.

Last year, Changi Airport welcomed new freighter services from Myanmar National Airlines, MSC Air Cargo, and Sichuan Airlines. On 17 November 2023, Myanmar National Airlines operated its first weekly Yangon-Singapore freighter service. On 5 December, Changi Airport welcomed the inaugural Liège-Singapore-Xiamen freighter service, operated by Atlas Air on behalf of MSC Air Cargo. Additionally, Sichuan Airlines commenced a daily freighter service from Nanning to Singapore on 25 December, further boosting freighter connectivity between Singapore and China.

Community collaboration

To enhance competitiveness, Changi continues efforts to elevate service quality in cargo handling, and leverage automation and digitalisation for increased productivity

and capacity, through partnerships and community collaboration. Our digital transformation initiatives, most notably the Changi Air Cargo Community System (ACCS), demonstrate our commitment to building a more interconnected air cargo ecosystem. Within the ACCS, the Truck Dock Slot Booking (TDSB) application streamlines cargo lodgement and collection at airfreight terminals, reducing wait times, optimising resources, and enhancing transparency of landside activities. This digitalisation effort aims to bring predictability to forwarders, trucking companies, and cargo handlers while supporting Changi's sustainability goals to reduce emissions. The pilot phase is completed, and plans are underway for a community-wide rollout in mid-2024. We are also developing additional use cases under ACCS, targeting end-to-end visibility and predictive risk mitigation.

Changi's cargo terminal operators are also investing in warehouse automation and digitalisation projects to address manpower challenges and boost efficiency and capacity. Partnering with logistics technology solutions provider Speedcargo, dnata has implemented Cargo Eye and Assemble solutions for Etihad Cargo at Changi Airport. Cargo Eye utilises advanced vision-based 3D technology to capture precise dimensions, volume data, images, and labels of the cargo, creating a comprehensive digital record. Assemble then generates a digital plan, optimising the pallet-building process and providing valuable guidance to cargo handling teams. This innovative technology is being considered for integration with other airline partners, contributing to the continuous improvement of business operations.

As we navigate the challenges and opportunities of 2024, Changi Airport remains committed to building a sustainable air cargo hub. Key focus areas in our environmental sustainability strategy include promoting the acceleration of SAF uplift in Changi Airport, enhancing waste management, transitioning airside vehicles to cleaner energy, and intensifying collaborative projects with industry partners for a more sustainable Changi. ■

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A decisive impact on the cargo landscape

Frankfurt Airport operator Fraport has co-founded a new joint venture with software company Dakosy, to drive forward the digitalisation of air freight handling in Frankfurt and internationally, outlines VP for cargo development Max Conrady



Max Conrady, Fraport

What are your expectations about how 2024 is likely to develop – for the air cargo sector and your organisation's area of activity within the sector?

2024 will remain challenging for the cargo sector, and aviation industry in general, as they are fundamentally linked to global economic development. The current wars, crises, and conflicts, for example in Ukraine, are still resulting in lower airspace capacities and increased inflation and lower consumer demand – with corresponding consequences for cargo volumes.

Furthermore, the logistics sector is struggling with staff shortages. Finding qualified workers is crucial for our location's performance. For this reason, it is even more important to create predictable staff deployment schedules to ensure efficient processes. To achieve this, we, as the airport's operator, are pushing ahead with

the digital transformation. New technologies will provide us with opportunities for a standardised transfer of data.

Another specific example of how we deal with this key trend at Frankfurt Airport is our commitment to 'Digital Test Field Air Cargo', a sector-wide and multi-location research project backed by the German Federal Ministry for Digital and Transport. We're using the project to lay the foundations for the automation and autonomation of aviation handling and transport processes. By doing so, we are seeking to play a leading role in the development of digital air cargo standards. For example, the use of driverless transport systems such as cargo and baggage tugs can boost predictability, reduce the number of staff tied up in the job, and improve resource management.

In addition, the Air Cargo Community Frankfurt has taken up this challenge. They are a network of cargo experts from different fields and work together in teams to tackle various challenges. The Human Capital Competence Team promotes

logistics and air cargo careers to job seekers. They invite local employment agencies to visit our industry and see the workplaces, such as warehouses. They also make it easier for newcomers to join the job, by explaining the steps and requirements, such as the reliability check. The Human Capital Group also runs a job portal for airfreight and logistics vacancies at and around Frankfurt Airport.

How have customers' requirements and expectations been evolving, and how are you responding to that? What are the biggest challenges currently to meeting customers' requirements and expectations?

One of the key trends that reflects the changing requirements of customers is e-commerce. E-commerce is booming and attracting many new players. This changes how goods are shipped and requires new and adapted solutions, especially for import handling. Data quality is crucial for smooth processing. In Frankfurt,

we faced this challenge proactively and worked closely with customs and the local community. For example, in 2021 we launched the digital 'FRA-OS/Import' platform for exchanging cargo data. This made Frankfurt one of the first major European cargo hubs to offer a comprehensive, customs-compliant solution for importing consolidated shipments. Fraport, the airport's operator, has developed the platform together with Dakosy and numerous other partners in the air cargo community.

We know that speed, efficiency, and customer satisfaction are key for successful e-commerce handling. Frankfurt has a strong cargo community and maintains close relations with the authorities, which gives us an advantage over other locations. However, e-commerce also poses challenges for logistics providers in the source countries, especially in compliance as well as customs processes. We are aware of the situation and are working on solutions, as we believe that e-commerce

will remain a vital part of our airport and the global market.

What role will new and emerging technologies play? Do you have any other priorities or targets for 2024 that you can share?

Digitalisation will have a decisive impact on the cargo landscape moving forward. We recently founded a new joint venture, 'Allivate', with the software company Dakosy, to focus even more strongly on digital transformation. With Allivate, we want to drive forward the digitalisation of air freight handling both in Frankfurt and internationally. The aim is to raise the speed, efficiency and reliability of air and landside processes on the import and export side to a new level.

Since 2015, Fraport and Dakosy have been working closely with local companies and authorities at Frankfurt Airport to build one of the most modern cargo community systems in the world. All of

FAIR@Link's functionalities are bundled together under Allivate. In addition to the ramp slot booking process, this includes the digital handling of customs, security, dangerous goods, consolidation and SCM processes. More than 1,000 companies are already benefiting from the Cargo Community System.

The next stage of digitalisation is already underway at the Frankfurt site with the Cargo Community System. This means that new digital applications can be developed based on the comprehensive database in FAIR@Link alone. The potential of the existing data can be used to further accelerate processes in three areas in particular: implementing customs requirements even more conveniently; further developing the digitalisation process for delivery/collection; and expanding the already highly automated e-commerce functionalities. The joint venture is designed to establish and operate cargo community systems at other airports worldwide. ■





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Enhancing the cargo experience

Embracing a true data-sharing environment rather than simply digitising paper documents will be key, as customers demand faster, more-efficient, and more-sustainable services, says Camilo Garcia Cervera, chief sales and marketing officer at IAG Cargo

What are your expectations about how 2024 is likely to develop – for the air cargo sector and your organisation's activity within the sector?

Our focus in the year is on enhancing the customer experience, bolstering our pharmaceutical offerings, elevating our premium product range, and enhancing our digital capabilities. We anticipate the continuation of strong e-commerce activity, particularly out of Asia, as well as the growth of pharmaceutical and perishable shipments. We will continue our commitment to supporting these key industries by expanding our cold chain offering, for example having recently already opened a new Constant Climate station in Cape Town.

How have customers' requirements and expectations been evolving, and how are you responding to that?

Consumer demands are shifting, demanding faster, more-efficient, and a more-sustainable service, and our customers are adapting to deliver on these requirements. To respond to this, we have been investing in our digital platforms to enhance our online booking capabilities and make our extensive network more accessible to customers 24/7. We are always exploring the possibility of expanding our product offerings in collaboration with our customers to

ensure we are catering to their specialised needs, such as temperature-sensitive pharmaceuticals and perishable products. Additionally, we are committed to making air cargo more sustainable with initiatives such as investing in SAF partnerships to help reduce the Scope 3 emissions of our customers. This not only aligns with our drive to be a socially responsible business but also aids our customers in meeting their own sustainability objectives.

What are the biggest challenges currently to meeting customers' requirements and expectations?

In today's fast-paced world, our primary challenges in meeting customers' needs stem from navigating market trends amid shifting commodity demands and effectively leveraging digital and automation solutions. These dynamics require constant monitoring of the market to ensure that our services remain timely and effective. This proactive approach ensures we remain successful in providing tailored solutions that exceed customer expectations in this dynamic industry landscape.

What role will new and emerging technologies play in how you and other stakeholders in the air freight supply chain work more effectively, improve efficiency or visibility, and streamline cargo operations and processes?

Digitalisation has enabled us to re-evaluate our processes to provide a more streamlined experience for



Embracing a true data-sharing environment rather than simply digitising paper documents will be key

Camilo Garcia Cervera

customers and will remain a critical factor in the air cargo industry's progression. Embracing a true data-sharing environment rather than simply digitising paper documents will be key, which is why we are making substantial investments in enhancing the functionality of iagcargo.com to create a more robust platform for direct customer interaction.

New and emerging technologies will play a crucial role in improving operational efficiency, enhancing customer interaction, and promoting sustainability. For instance, we are moving towards a cloud-first approach for scalability, flexibility, and improved data accessibility. In addition to this, we are working towards 100% e-AWB adoption. In 2023, we implemented a new Material Handling System at our Madrid hub and opened New Premia, our new semi-automated cargo handling facility at London Heathrow, which enables double the amount of cargo to be processed daily. ■

Mutually beneficial partnerships

Greg Schwendinger, president at American Airlines Cargo, emphasises the importance of two-way agreements with customers that leverage the strengths, and add value to, both parties

We are excited for the 2024 road that lies ahead for many reasons, but in particular due to the moderation and stabilisation we began to see in the marketplace in 2023. While we've all spent some time wondering when the market would return to some semblance of normalcy following the Covid-era, and the search for stability has been slower than we've all hoped, I believe we are starting to see green shoots. In particular, our peak holiday season ended stronger than expected, and we are starting to see economies get inflation under control – which should lead to easing monetary policy in many of the regions where we operate.

Beyond market and economy trends, our 2023 accomplishments provide us with a strong foundation to excel in this new year. Last year, we made some significant enhancements to our digital capabilities – for example, enabling additional direct connections with customers, expanding our offerings on third-party digital booking platforms, and delivering new capabilities to our own booking channel, aacargo.com – all of which have allowed for improved service to our customers along their journey.

Better operational performance

We also achieved strong operational performance in 2023 compared to previous years and our own industry peers, thanks to improved training and collaboration with handling partners,

as well as leveraging deep analytics and automation behind the scenes. As we look ahead, our focus areas for 2024 continue to revolve around customer experience and operational success – but our charge is to see how we can maximise our potential in these areas and push our progress further.

For starters, we want to ensure we offer an industry-leading customer experience, placing customers' needs, preferences, and challenges at the forefront of our operations. Network optimisation is a focus for us this year, making sure we are using the full breadth of our network, from our trucking network to interline agreements, which expand the reach.

Our approach also emphasises the importance of two-way agreements with customers, moving beyond one-way transactions to mutually beneficial partnerships that leverage our strengths and add value to both parties. Digital capabilities, like direct connections, are an example of this, as they enable a more personal booking experience while making it easier to do business with us.

And while we made tremendous strides distributing our products across new digital channels over the last 18 months, we have even more ambitious plans to deliver digital bookings options in 2024 – options that include more channels, products, commodities, and cargo configurations, as well as delivering even more post-booking digital enhancements that customers will appreciate.

Operation excellence and customer experience go hand-in-hand, and we are aiming to build on our operational



Greg Schwendinger, AA Cargo

excellence from 2023 this year across our major hubs, both within the US and internationally. We know that continued training and digital capabilities – like improved shipment visibility and digital connections with our handling partners – will drive improvement in 2024. And while there will undoubtedly be factors out of our control, it's the way we prepare for those things and enact plans when disruption occurs that will continue to set us apart. Internally, we have developed an array of measuring, monitoring and reporting structures that help us better understand and ultimately reduce the frictions that may arise along the shipment journey. Leveraging data, machine learning, and other digital tools enable us to provide an increasingly seamless experience for our customers, every step of the way.

We look forward to how we can adapt, improve, and deliver on the continuing and evolving needs of our customers and the industry in 2024. ■

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Embracing the air cargo paradox

The evolving market and challenges demand a broader range of cargo options and digital solutions, says Kirsten de Bruijn, EVP at WestJet Cargo

Expectations for air freight in 2024

Despite the anticipated economic growth deceleration, the air cargo industry is expected to see a modest expansion in volumes. The IATA projection highlights a paradox where air cargo volumes are expected to increase, but revenues may face challenges due to declining yields. This underscores the importance of cost efficiency and strategic pricing models for air cargo operators to maintain profitability.

The air cargo sector's recovery is expected to be gradual, with demand growth predicted to be only 1-2%, while supply may grow by 2-4%. This slow recovery could lead to a classic seasonality pattern in air cargo operations, necessitating flexible and adaptive strategies.

The freight forwarding industry's increasing reliance on digital tools indicates a recognition of the imperative nature of digitisation. It is not only seen as a competitive advantage but also as a critical component for crisis response, decision-making, and sustainability optimisation.

How have customers' requirements and expectations been evolving, and how are you responding to that?

Customers increasingly expect streamlined and digital solutions. WestJet Cargo has embraced digital partnerships and the launch of a new cargo website, anticipating a shift toward self-service options to meet this expectation.

The evolving market demands a broader range of cargo options. WestJet Cargo has responded by introducing new products such as special loads, compassionate shipments, valuables, vulnerable items, and live animals to cater to diverse customer needs.

There is a growing emphasis on a customer-centric approach. WestJet Cargo prioritises customer feedback, actively listens to customer needs, and adjusts schedules promptly to provide optimal solutions.

Customers expect efficient and reliable air freight services. Initiatives such as standardising operations, integrating systems for operational efficiency, and reducing offloads through dynamic forecasting demonstrate a commitment to meeting these expectations.

What else have you been doing to improve services?

In 2023, WestJet Cargo has worked on standardising operations by reducing the number of Ground Handling Agents (GHAs), ensuring consistent quality. Integration of the SK system with WH systems through EDI messages has improved operational efficiency and communication between different components of the cargo logistics chain. The introduction of a training portal demonstrates a commitment to enhancing team skills, contributing to improved service quality and operational excellence. Collaboration with digital partners like Wiremind indicates a commitment to leveraging technology for streamlined cargo operations. Ongoing partnerships with Awesome Cargo and Flexport also showcase a commitment to innovation and expanding global reach.

WestJet Cargo plans to explore and add new destinations and routes in 2024, incorporating both freighters and passenger belly cargo flights. Expect ongoing efforts to embrace digital solutions for enhanced efficiency and service delivery. This may involve further collaborations with digital partners and the implementation of advanced technologies in cargo operations. The company is likely to continue employing a strategic planning approach to navigate market dynamics effectively.

WestJet Cargo plans to continue investing in its people, focusing on career development, diversity, and inclusion. This aligns with the recognition that human capital is crucial to the company's success.

What role will new and emerging technologies play in how you and other stakeholders in the air freight supply chain work more effectively, improve efficiency or visibility, and streamline cargo operations and processes?

New and emerging technologies will play a transformative role in shaping the future of air freight and cargo operations. IoT devices can be embedded in cargo shipments, providing real-time tracking and monitoring. Sensors can capture data on location, temperature, humidity, and other environmental factors. Enhanced visibility and condition monitoring will improve cargo security, reduce the risk of damage, and enable proactive decision-making in case of anomalies. Blockchain can be used to create secure, transparent, and tamper-resistant records of transactions and cargo movements across the supply chain.

AI and Machine Learning algorithms can analyse vast amounts of data to optimise route planning, predict demand fluctuations, and identify patterns in cargo handling. (leading to) improved decision-making, cost reduction, and increased operational efficiency. Predictive analytics can assist in proactive issue resolution and optimisation of cargo movements.

Advanced data analytics tools can process large datasets to extract valuable insights into cargo trends, customer behaviour, and operational performance. Informed decision-making, improved demand forecasting, and the identification of opportunities for operational optimization, contributes to better resource allocation and strategic planning.

Automation technologies, including robotic systems, can be employed in warehouses and cargo handling facilities for tasks such as sorting, packing, and loading/unloading, (leading to) increased operational speed, reduced labor costs, and enhanced accuracy in cargo handling processes. Robotics can also contribute to minimising the physical strain on workers.

Augmented Reality and Virtual Reality technologies can be used for training purposes, allowing personnel to simulate cargo handling procedures and emergency scenarios. Autonomous ground vehicles can be used for transport within cargo facilities, improving the efficiency of goods movement.

Improving the wider air freight supply chain

To enhance efficiency, visibility, and streamline cargo operations and processes in the air freight supply chain, WestJet Cargo and other stakeholders can: Foster stronger collaboration among stakeholders, including airlines, ground handling agents, customs authorities, and technology providers. Implement advanced communication systems and platforms to facilitate real-time information sharing. Invest in comprehensive technology solutions that integrate different components of the supply chain, allowing for seamless data exchange. Explore the use of blockchain technology for secure and transparent record-keeping across the supply chain. Work towards standardising data formats and protocols to ensure consistency in information exchange. Adopt industry-wide data standards to enhance interoperability and reduce the complexity of integrating diverse systems. Promote the use of digital documentation and automated processes to reduce paperwork and manual errors.



Other measures include:

Conduct regular risk assessments to identify potential vulnerabilities and proactively address them.

Collaborate with regulatory bodies to facilitate the acceptance of digital documentation for customs and compliance purposes. Explore and implement supply chain visibility platforms that provide end-to-end visibility, enabling all stakeholders to monitor the status of shipments in real time. Ensure these platforms are user-friendly and accessible to all relevant parties in the supply chain.

Invest in ongoing training programmes for personnel involved in air freight operations to ensure they are proficient in using new technologies and adapting to evolving processes. Encourage a culture of continuous learning and improvement among employees. Collaborate on risk management strategies and develop contingency plans to address unforeseen challenges such as natural disasters, geopolitical events, or disruptions in the supply chain. ■

Investing in the ‘phygital’ future



The modernisation of its Frankfurt hub ‘will play a decisive role in the operational success of Lufthansa Cargo’, improving turnaround times and increasing efficiency and service quality, the German carrier says

Expectations about 2024

The ongoing geopolitical crisis and international tensions that have affected trade relationships and the cargo sector over the last two years will continue to have an impact in 2024. Globalisation has been a driver of global prosperity in recent decades. Now, as some groups come into conflict, the world’s prosperity is almost visibly declining and could affect global demand, productivity, and prices. However, due to the systemic importance, we expect the air freight market to remain broadly stable in 2024, and we expect growth from e-commerce and special commodities such as pharmaceuticals.

Meeting evolving customer needs

We expect a rise in demand for fast and dependable transport options. Especially e-commerce is a growth market and plays a major role in our business and

for our customers. We have strengthened Lufthansa Cargo with our subsidiaries heyworld and CB Customs Broker to driving forward the expansion of the e-commerce business worldwide.

We are constantly reviewing our activities and operations. This includes increasing our capacities with the introduction of our fourth A321F freighter at the end of last year, as well as the expansion of our B777F fleet. With the start of our winter schedules in autumn 2023, we have added new destinations and expanded our network. In 2024, we will continue to create capacity where it’s needed and respond quickly to new customer demands.

Streamlining cargo operations and processes

Digitalisation is the key to comprehensive and efficient processes and collaboration.

Lufthansa Cargo will continue to digitise shipment information and speed up data exchange throughout the supply chain, transforming previously analogue, complex processes into digital, efficient workflows. In 2024, digital processes should be expanded, but the focus should also be on ensuring more-stable options. Great potential lies in the ‘phygital’ future, which combines a digital core with human expertise: real-time, connected and data-driven.

Other developments in the air cargo industry pertain to the current labour market, which is calming down after the pandemic. This is expected to have a positive impact on the air cargo industry, especially in attracting new talent – from handling staff to pilots and lawyers.

In addition, Lufthansa Cargo is investing around €500 million in the construction and modernisation of Cargo City North

as part of the LCCEvolution project. The Frankfurt hub plays a decisive role in the operational success of Lufthansa Cargo. The modernisation will improve turnaround times and increase efficiency. For customers, this means faster handling speeds, easier transport processes and an improvement in service quality.

Emerging technologies

The use of new technologies is a prerequisite for the successful transformation of the global air cargo industry.

Artificial Intelligence (AI) could be a major turning point for many areas of the cargo business, improving efficiency, accuracy, and productivity across all business units, from predictive analytics for route planning to inventory management in cargo handling. The integration of AI will also require a transformation in the skills of employees. It's difficult to predict exactly how the further development of AI will affect certain areas of the cargo business, but keeping up with the speed of this

technological progress will be a key priority. We intend to remain at the forefront of the industry in this exciting new field.

Sustainability priorities

Our sustainability strategy includes a number of actions: fleet modernisation, fuel efficiency, Sustainable Aviation Fuels (SAF), ground processes, as well as contribution to high-quality climate protection projects. We operate the most fuel-efficient cargo aircraft on the market. Since October 2021, we have switched our longhaul fleet completely to the Boeing 777F – today's most modern freighter with the best environmental performance in its class. The fleet is expected to grow to 18 B777Fs in 2024.

Lufthansa Cargo offers all customers the use of Sustainable Aviation Fuels (SAF). Compared with fossil fuels, SAF reduce CO2 emissions by up to 80%, while the remaining emissions are offset through a contribution to certified high-quality climate protection projects. To further increase efficiency, we are also

equipping our fleet with new technologies such as AeroShark, a functional surface film that imitates the microscopic structure of shark skin. It reduces the aerodynamic drag on the fuselage and engine nacelles of the Boeing 777F, resulting in fuel and emissions savings. In 2024, we will continue to pursue our sustainability goals.

European aviation encounters a significant challenge: It must find a way to retain its global competitiveness while at the same time achieving the green transition. It is essential to instil competition-neutrality into the EU regulatory framework, creating a level playing field and easing the one-sided costs imposed on European network airlines. Furthermore, the EU and national governments must encourage the production of SAF and reduce the price gap with conventional jet fuels. Incentives similar to those in the US, not penalties and new competition-burdensome taxation, should be the answer. ■

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The post-pandemic realignment of supply chains, emphasising the need for more-diversified sourcing, boosts the role of freighter operations and charters, says Or Zak, CCO of the Challenge Group

In an era marked by instability and volatility, the indispensable role of the freighter operator in the supply chain cannot be overstated. Amid unpredictable conditions when the passenger business all of a sudden disappears, it is the freighter operator that provides the essential continuity needed for the seamless flow of global trade and the uninterrupted progression of goods and materials across borders. The freighter operator is not just a service provider but a cornerstone of global commerce.

As we anticipate the developments in 2024, the integration of four additional new aircraft into our fleet necessitates a strategic adaptation of our organisational structure and internal procedures. This adjustment positions us to effectively manage a broader fleet, enabling us to explore and engage in new markets and offer to our customers a wider range of destinations. Our focus extends to addressing the specific local logistics requirements, encompassing diverse verticals, environments, and operational processes.

Evolving customer requirements and expectations

The landscape of customer requirements and expectations is undergoing a significant transformation. Fuelled by global geopolitical and economic shifts, as well as lessons learned from the challenges posed by the pandemic, supply chains are strategically realigning themselves. Concepts such as near shoring and friend shoring are gaining prominence, emphasising the need for diversified sourcing and reduced dependency on a single origin.

Recognising the critical role of freighter operators in ensuring stability amid these shifting dynamics, we understand that the charter product is poised for growth. Our commitment to maintaining a flexible fleet positions us to respond swiftly to unexpected disruptions and short-notice requests, enhancing our competitiveness in this dynamic market segment.

In this era of heightened cost control and a drive for efficiency throughout the supply chain, customers are placing greater pressure on freight forwarders. Stability is

paramount, leading them to seek reliable and transparent partners who can navigate these changes seamlessly, providing a trustworthy service without surprises. As we navigate this evolving landscape, our focus remains on meeting and exceeding these evolving expectations, ensuring a resilient and responsive approach to the demands of our customers.

Improving services, operations and communications

In 2023, our focus revolved around improvement of our end-to-end product. The goal was to provide a seamless solution by mitigating potential risks associated with multiple handshakes throughout the supply chain. To achieve this, we undertook a thorough review of our operational processes, ensuring their alignment with the evolving landscape of logistics and meeting the dynamic needs of our customers.

Looking to 2024, we plan to augment overall transparency through new distribution channels within our sales and operations, by integrating advanced technologies and tools. This strategic move aims to further elevate our ability to adapt to industry changes swiftly and anticipate and meet the unique needs of our valued customers.

Industry priorities

Collaboration, efficiency and visibility in the air freight supply chain are paramount, and stakeholders, including ourselves, are committed to advancing these crucial elements. We recognise the significance of transparency and foster strategic partnerships as foundational steps toward improved operations.

As we step into 2024, the rallying call is for major industry associations to take the lead in setting global standards. This involves providing industry stakeholders with clear guidance and supporting tools to streamline cargo operations and processes.

In our increasingly technology-driven world, the role of new and emerging technologies in the air freight industry is a game-changer. Acknowledging the significance of technology, we recognise that as a traditionally labour-intensive industry, there exists a need to bridge the technological gap. Compared to other industries or sectors, we understand that we are behind schedule, and it is imperative to catch up. ■

Responding to evolving market dynamics

Neil Dursley, chief commercial officer of Chapman Freeborn, gives his insights and outlook on the 2024 air cargo charter market

Market outlook

Despite the challenges of 2023, it stands as Chapman Freeborn's fourth-most-profitable year in its 50-year history across all its business sectors.

2024 is also set to be a challenging year for the industry, requiring stakeholders to continue to be agile and adapt to the turbulence of geopolitical events and ongoing humanitarian crises.

The ongoing Red Sea conflict has disrupted ocean freight supply chains, causing a surge in prices and making air freight an increasingly viable alternative. We see a rise in Sea-Air solutions, aimed at circumventing prolonged transit times around Africa into Europe and port-related bottlenecks – we have begun to witness a surge in inquiries for these routes, a trend we expect to persist well into 2024.

Anticipating shifts in cargo flow, historical multimodal hubs like Singapore, Dubai (Jebel Ali), and Seattle are emerging as pivotal points for Sea-Air shipments. Jebel Ali, in particular, is becoming a primary Sea-Air port of choice, connecting Europe, Turkey, and South Africa.

Product diversification and specialisation

In 2023 we bolstered our team by recruiting over 100 professionals and strategically expanded our global presence with the inauguration of new offices in key locations, including China, the US, and the UK.

In response to evolving market dynamics, Chapman Freeborn is strategically broadening its product offerings in 2024. The recruitment

of industry experts in Europe, the Americas, and the Middle East is a core part of our strategy to expand Chapman Freeborn's services in energy, automotive, government, and humanitarian sectors.

Having focused on diversifying our global portfolio in 2023, Chapman Freeborn saw a substantial increase in livestock movements, particularly with our subsidiary company Intradco Global, which now holds a 60% market share in cattle transportation. We are looking to further expand this in 2024, following a rise in demand for specialised livestock movements, including conservation projects in Africa for exotic animals like white rhinos and giraffes.

Our On-Board Courier (OBC) product has also seen significant expansion, both in terms of headcount and locations, and the establishment of IntradcoDynamics, a sub-brand within Intradco Global, marked the start of our venture into supporting events and music tours, expanding our presence in the project cargo space.

In 2024 we expect to see more demand from customers for greater flexibility in shipment sizes and as such we are collaborating with multiple operators and purchasing block space services to extend our offering beyond the traditional model of full charter aircraft. This ensures that we can tailor our solutions to meet the needs of every client and pride ourselves on adapting to each customer's individual needs.

In the face of persistent challenges and complex geopolitical events, providing unparalleled customer experience and steadfast support has become more crucial than ever. We pride ourselves in

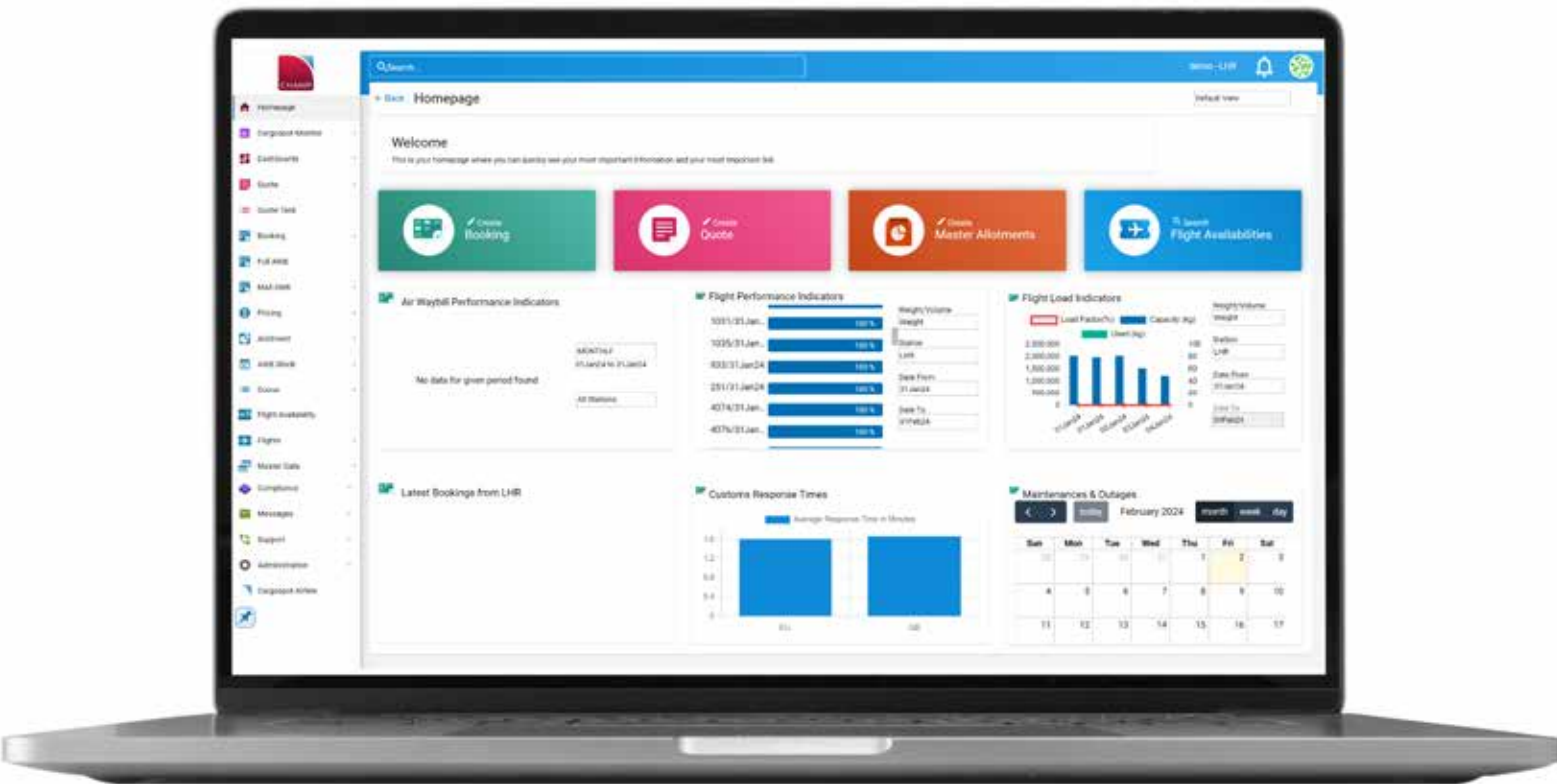


Neil Dursley, Chapman Freeborn

“
We are purchasing block space services to extend our offering beyond the traditional model of full charter aircraft
”

Neil Dursley

providing the best service and support for customers and will continue to grow our workforce and establish additional offices worldwide in 2024. ■



A busy year for air freight tech specialists

Technologies promising to bring further efficiencies to air freight supply chains include IoT, AI, large language models, and ‘Digital Twins’, highlights CHAMP Cargosystems

2024 will be shaped by “exciting new technological developments, which present enormous opportunities for the air cargo industry”, according to air cargo tech specialist CHAMP Cargosystems, while some of the global pressures affecting the business environment currently “will require a focus on efficiency gains”.

Shahzad Aslam, VP for CHAMP’s cargo management portfolio, notes that with the current international financial and inflation challenges, trade fragmentation, slowdowns in many economies and climate-related impacts, and the conflicts in the Middle

East and (Russia’s war) in Ukraine, the air cargo industry is going to be under pressure in 2024, adding: “This business situation will demand more automation and digitalisation to ensure maximum efficiencies can be captured to the bottom line. Solution providers like CHAMP are expecting higher demand for IT and digitalisation services as organisations are looking to get rid of legacy processes and systems and move to digital platforms.”

Edward Dorr, VP of CHAMP’s eCargo portfolio, notes that disruption events to sea transport are boosting air cargo, “so systems need to be ready to flexibly accept short-term shifts in transport modes”. And

with the increase in e-commerce, CHAMP has “created a purpose-built solution called Traxon Global eCommerce to efficiently ensure these types of goods are declared so there can be a quick and smooth handover to airlines for transport”.

Dorr adds: “We are also seeing continued adoption of security pre-load regulations globally as more countries start to enforce similar programmes.” He says CHAMP works closely with authorities around the world to shape and ensure smooth adoption of regulations, with examples including UAE, EU, and Canada, “where CHAMP has had a leading role in mass adoption of new

regulations thanks to its large client base”.

Key tech drivers include AI and ONE Record

Lucas Fernandez, VP Innovation & Insight, notes: “I see two main technological pushes in our industry: Machine Learning usages and the increased pressure around ONE Record development. In fact, many customers start to pull data together and do their own ad-hoc machine learning models and predictions in excel files. As the barrier to entry continues to lower, they will use it more and more. Another priority in 2024 is digitalisation and connectivity which will continue with ONE Record.

“In terms of sustainability and environmental, social, and governance (ESG) compliance, the pressure (on our customers) will continue to increase.”

Dorr says the company is “committed to the industry evolution of standards such as ONE Record and helping the industry to transform towards new business models in the most effective way

possible. We are improving productivity by providing systems that blend in most modern and ergonomic Graphical User Interfaces (GUIs) that use Artificial intelligence (AI), as well as driving expansion in the use of Application Programming Interfaces (APIs) where a benefit can be achieved.”

Customised and ‘out of the box’ solutions

As customers prioritise automation, digitalisation, and efficiency, software providers need to be able to provide more “out of the box” solutions, notes CHAMP. But “this comes with an emphasis on customisation, openness and flexibility, easy scalability, and evolving with customer’s needs”.

Shahzad Aslam notes: “Customers are expecting more intelligent and automated solutions with no paper-based processes and digital customer experience. The use of AI injected into core business processes and systems is expected out of the box. “Our approach to our new Cargospot Neo

products follows exactly that approach, where we take our customers’ worries away and ensure we continuously evolve as per business needs by leveraging the latest technologies.”

Fernandez adds: “Customers require a deeper understanding of what is happening in their supply chain to get a cockpit view. Many try to develop solutions based on BI and flat files export, but it lacks real-time data and requires high maintenance and manpower to be maintained. The need for a solution is strong and slowly increasing. ONE Record may be the decisive technological change enabling it.”

Biggest challenges currently

Dorr says the main challenges currently, from a service provider’s perspective, include the continued shortage of qualified staff on the market, repeated training, and onboarding, as well as differing needs of clients.

Shahzad Aslam notes: “One of our key challenges is to ensure that we take all key stakeholders and members of our



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industry forward on the same page, by quickly adopting the latest standards and technologies and give up old ways of working which have been considered the norm for decades.”

Recent initiatives

Among recent initiatives to improve air freight services, operations and communications, Shahzad Aslam highlights that CHAMP last year “successfully digitalised many paper processes for our customers, including digital checklists for special cargo, online shopping for space, various customer self-service portals, and apps. Our focus in 2024 is more on Artificial Intelligence (AI) and IATA’s ONE Record. We would like to bring our industry into alignment with the latest standards to ensure we can collaborate more effectively by having event-based self-integrations. Our Neo platform has AI-enabled cargo processes which enable organizations to gain maximum efficiencies.”

Lee Booth, chief information officer, says broader air cargo industry “efficiencies will be improved by several emerging technologies. One prime area for efficiencies to be realized is through accurate data being available at the right time and the right place,” Booth notes.

“IATA’s ONE Record initiative is pivotal in providing an environment which allows participants in the supply chain to access data at the time they need it, knowing that parties further up the chain have provided their information at the right time. Organisations like CHAMP are creating approaches to simplify the access to ONE Record through a simplified interface.”

Fernandez agrees that “enabling more open and tighter integration between our customers is what they want. This even starts from the shipper’s system to the freight forwarder, across the supply chain.”

Crucial technologies

According to Booth there are several emerging technologies that will help efficiency in the air freight supply chain, highlighting the Internet of Things (IoT), AI, large language models, and ‘Digital Twins’.

Booth notes: “We are at the beginning of seeing the ubiquity of sensors on airfreight.



Ed Dorr



Lee Booth



Lucas Fernandez



Shahzad Aslam

Today, sensitive freight is tagged, but having full visibility of the location and state of all air freight will be transformational in the reduction of errors and improvement in planning and modelling.

“AI solutions are becoming more widespread, and they will prove to be integral in a wide number of airfreight processes. They excel at identifying patterns and prediction – ranging from booking patterns and pricing, through to anomaly identification of potential risks.

“Natural language and large language models trained in air cargo can provide a valuable resource as an expert responder to questions, freeing up human resources to focus on value-adding activities.

“Digital Twins where data is used to model physical objects such as an air waybill, container or package. IATA’s ONE Record embraces this concept, having a single source of truth captured for each element in the ONE Record ‘repository’.”

Autonomous Vehicles are another area, with Booth noting that “warehouses will become more automated with autonomous vehicles and robots.” And finally, he notes that Application Programming Interfaces (APIs) are becoming more widespread, “simplifying

the inter-connectivity between systems in the air-cargo supply chain”.

Priorities for 2024

After numerous pilot projects with customers, CHAMP will go live with its first ONE Record use cases in 2024. These have been developed with an inbuilt process of continuous improvement; and CHAMP customers can expect to experience the benefits of ONE Record in advance of the proposed deadline of 2026, the company says.

CHAMP also recently launched Traxon Global eCommerce, a purpose-built solution to navigate the complexities of ICS2 reporting for e-commerce. This aims to allow users to maximise business opportunities by exploring new markets, simplifying the filing process, and avoiding costly delays. Serving as a centralised repository for shipment data, TGE ensures compliance with EU-ICS2 standards, and others as they evolve, for both pre-load and pre-arrival declarations, CHAMP says, noting that TGE “streamlines communication between the customer’s organisation and authorities, offering real-time visibility through a comprehensive dashboard”. ■



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Continual evolution and heightened competitiveness

Business dynamics are rapidly changing, driven by the pursuit of a zero-capex IT model, revenue generation through digitalisation, and a strong focus on customer-centricity, highlights Amar More, CEO and co-founder of Kale Logistics Solutions



Amar More, Kale

What are your expectations about how 2024 is likely to develop – for the air cargo sector and your organisation's area of activity?

In 2024, global trade is poised for a resurgence, benefiting from logistics stabilisation post-pandemic. Air cargo will embrace extensive tech adoption, reaping rewards from digitalisation like cost efficiency, reduced cargo dwell time, rapid information exchange, and heightened efficiencies.

We anticipate that inter-modal collaborations will be key to supporting synchronised supply chains in 2024 and global entities like IATA, TIACA, UN, and WTO will likely play pivotal roles in achieving this.

In 2024, Kale's commitment to innovation persists, with targeted IT solutions leveraging Blockchain, AI, IoT, and Big Data.

How have customers' requirements and expectations been evolving, and how are you responding to that?

In a landscape where customers prioritise forward-thinking solutions, anticipating and addressing both current and future challenges is paramount. Notably, customer demand for trial experiences before making significant commitments is becoming increasingly prominent. Business dynamics are also rapidly changing, driven by the pursuit of a zero-capex IT model, revenue generation

through digitalisation, and a strong focus on customer-centricity.

Our solutions are designed to meet these demands effectively. We provide Proof of Concepts with a quarter pre-project commitment. By utilising SaaS-based cloud applications, we eliminate the need for physical infrastructure, enabling airports and ports to generate revenue through value-added services. This approach not only fosters market equity but also incorporates tailored customer-centric strategies.

Sustainability was the war cry in 2023 as far as air cargo is concerned. Authorities and stakeholders are now keen to monitor and reduce the emissions produced in each step of the supply chain.

In 2023, our primary focus was to enhance communication by facilitating end-to-end collaboration among stakeholders through digitalisation, to improve the timeliness and accuracy of port and airport operations.

How can you and other stakeholders work more effectively to improve efficiency or visibility, and streamline cargo operations and processes?

The universal adoption of cargo community platforms to offer real-time visibility from booking to delivery is a transformative strategy for enhancing efficiency in the logistics journey. Stakeholders benefit from anticipatory insights, proactive disruption management, and optimised routing.

Industry-wide adoption of common data formats facilitates seamless information

exchange, mitigating errors from incompatible systems. In the pursuit of improved supply chain dynamics, 2024 demands a focus on data standardisation, real-time information sharing, piloting, and scaling AI-powered solutions, critical infrastructure upgrades at key airports, fostering collaborative partnerships, and advocating for e-commerce-friendly solutions to advance the industry into a new era.

In 2024, our organisational mission involves spearheading the digitalisation of over 150 airports. Globally, strategic point solutions like advance truck slot management and online airline delivery orders are gaining widespread acceptance. Our focus extends to pivotal trade corridors, enhancing our cargo community systems with a versatile multi-modal corridor. Recognising the need of the hour, establishing robust freight marketplaces becomes imperative, offering ample opportunities for growth, competitiveness, and innovation within the air cargo ecosystem. This initiative is poised to elevate industry dynamics, fostering a climate of continual evolution and heightened competitiveness.

What role will new and emerging technologies play?

In the next decade, the logistics industry will witness a profound impact from cutting-edge technologies like Artificial Intelligence (AI) and Blockchain. AI's predictive capabilities will foresee disruptions, optimise cargo placement, and propose alternative routes, fostering proactive decision-making. Additionally, AI-driven document processing is gaining momentum, automating tasks like paperwork and customs clearance, thereby cutting processing times and minimising human error. Integrating blockchain for secure and transparent data sharing across the supply chain promises to instil trust, diminish the risk of fraud, and combat illegal trade practices. ■

The market share of GSSAs will rise because of pressures on airline costs, staff availability shortages, and a need for increased flexibility in a world with more unpredictability, believes Sebastiaan Scholte, CEO at Kales Airline Services



Sebastiaan Scholte, Kales

E-commerce now accounts for around 10% of all global air cargo shipments, and is growing at 9% per year in the coming years. This is potentially leading to more directional imbalances, because of the high demand for products by Alibaba, Temu and Shein from Hong Kong and China.

Shifts in trade patterns

Boston Consulting Group (BCG) made a projection in which GDP growth will outpace global trade growth, with global trade forecast to grow at 2.8% per year through 2032 – less than the 3.1% annual increase forecast for global GDP over the same period. There is more near-sourcing due to increased protectionism, and hence there will also be some shifts in trade patterns. Trade between China and the US will decline, whereas Mexico, India and Southeast Asia will see much more export growth. The share of iPhones made in India, for example, is expected to rise from around one in 20 last year to perhaps one in four by 2025, making India a potential future production powerhouse.

Looking at shipping for this year. The Red Sea conflict could potentially (continue to) disrupt sea freight, leading to higher prices and more air freight. Without the Red Sea crisis, there could potentially be an oversupply of ships, which again could negatively impact air cargo, if all other conditions remain the same.

More outsourcing of cargo sales

There will, most likely, increasingly be more outsourcing and focus on one-stop-shop solutions for externalising cargo sales. Therefore, more consolidation is expected in the GSSA sector. The market share of GSSAs will increase because of: continuous reduction in manpower; a need for increased flexibility in a world with more unpredictability; and more need to work with a lean, entrepreneurial company – like, for example, Kales.

This reduction in manpower reflects pressures among airlines to downsize their cargo staff, and difficulty among airlines to recruit or retain good cargo staff. There is a general shortage of labour – quantitative and qualitative. Many airlines are reluctant to add manpower, and may still have pressure

to downsize. On top of that it is easier for a GSSA, like Kales, with an entrepreneurial mindset, to quickly upscale manpower if the operation and volumes require.

E-commerce and shipping companies have moved into air cargo. An investment in an aircraft fleet must be taken with a time horizon of at least 20 years, due to technical and economic depreciation; nevertheless, the Covid crisis has led to some additional freighter investments.

Simply looking at demographics, we will continue to face an aging, shrinking population in many developed countries in the future. Even though AI will bring some welcome relief to offset labour shortages, it will continue to be challenging to find quality people. Air cargo unfortunately gets little attention in most of the logistics schools and universities, but it is a great industry to join for young energetic people who want to impact the world.

Our priorities for Kales for 2024 will be to continue focusing on delivering an excellent service for our existing and future customers. At the same time, we will be looking at further expansion. ■



A paradigm shift for GSSAs

Carriers are increasingly demanding highly professional and dedicated services, requiring specialist expertise and associated investment in specific verticals and product areas, says Adrien Thominet, executive chairman of ECS Group

How have customers' requirements and expectations been evolving, and how are you responding?

Carriers are increasingly demanding highly professional and dedicated services, particularly in operational efficiency, safety and security, business intelligence, and strategic guidance. Recognising the shifting demands, we have undertaken a transformation of the traditional GSA model. Our approach, defined by the introduction of ten key abilities, is designed to align with the unique and specific requirements of our

clients, recognising the growing need for specialised expertise. The era of a one-size-fits-all approach is no longer sustainable.

Our response to this shifting paradigm involves the introduction of specialised teams – 'squads' – within distinct domains. This ensures that our airline partners benefit from tailor-made solutions.

For example, TCE (Total Cargo Expertise) introduced services like on-site freighter turnaround supervision and third-party supplier audits. Our data processing back-office service, Squair, optimises processes by leveraging data analytics, ensuring a superior level of service to our partners and

ECS Group's Niger Air Cargo freighter resumes

ECS Group subsidiary Niger Air Cargo in October reinstated its weekly B747 freighter service between Liège (LGG), Belgium and Niger's main cargo hub, Niamey International Airport (NIM), the sole direct full-freighter connection between Europe and Niger. The service had been disrupted because of the military coup in Niger, which led to the temporary closure of the country's airports and airspace to commercial traffic. The service offers a unique cargo link not only to Niger's domestic market, but also to neighbouring Nigeria and Mali, regularly transporting agricultural products, raw materials, apparel, and healthcare products. ■

contributing to the overall success of their operations. Mail and More, specialising in connecting key players in the postal world, as well as e-commerce consolidators, bridge the gap between air capacity providers and airlines, offering commercial development exclusively for the Parcels commodity, expanding networks to increase market reach, and participating in RFPs to position parcel products effectively. With expertise in both Mail and Forwarding languages, we ensure operational efficiency, compliance with airlines' and postal operators' processes, and end-to-end visibility through digitalisation for partners.

This paradigm shift redefines the role of a GSSA in the contemporary air cargo landscape. We are pioneering a new standard of service that is responsive, innovative, and intricately attuned to the diverse requirements of our airline partners; where adaptability, innovation, and specialised expertise converge.

What have you been doing to improve air freight services, operations and communications?

ECS brings together experts from independently operating member companies to drive digital transformation in the air cargo industry with comprehensive solutions and consultancy services, fostering collaboration and innovation for industry advancement.

Furthermore, substantial progress was made with our internal training platform, Discovery, facilitating the training of nearly 1,500 employees globally. This platform is a notable achievement, directly educating employees on the intricacies of our industry, enabling them to advance, save time, and undertake tasks with higher added value.

As a result, we were able to offer more sophisticated digital solutions to both our employees and clients, particularly in areas such as space optimisation, revenue management, and rapid market analysis. Our collaboration with Cargotech empowered us to efficiently deliver premium solutions, establishing us as an industry leader.

Looking ahead to 2024, our dedication to innovation remains unwavering. We will continue leveraging our partnership with Cargotech to drive further technological advancements and deliver exceptional value to our customers.

How can you and other stakeholders in the air freight supply chain work more effectively to improve efficiency or visibility, and streamline cargo operations and processes?

In 2024, we're poised to achieve significant advancements in efficiency and visibility within the air freight supply chain, particularly through our strategic partnership with CargoTech. This partnership has evolved through three transformative phases.

In Phase 1, our collaboration with CargoTech has already yielded improvements in existing solutions, enhancing transparency and operational efficiency. Through this partnership, we've been able to implement digital tools that provide immediate transparency, laying the groundwork for streamlined cargo operations and processes.

Phase 2 marks a pivotal moment as we integrate cutting-edge technologies from companies like Wiremind, CargoAi, Rotate, and Charter Sync. These collaborations enable us to stay at the forefront of technology, offering our airline partners and clients

unparalleled services.

Moving into Phase 3, we are focused on further enhancing and strengthening each of the solutions, enriching the offerings available to clients. By continuously improving and innovating, we aim to provide even greater value and efficiency to all stakeholders in the air freight supply chain.

This profound digital leap positions ECS Group as a trailblazer in embracing the future of air cargo logistics.

What role will new and emerging technologies play?

In 2024, the air freight industry is poised for significant evolution. To address the pressing need for airlines to maintain margins and optimise revenue, there will be a strong focus on pricing and revenue optimisation techniques. This shift is essential to prevent a downward spiral of rates and ensure profitability in an industry where cargo revenues were once only expected to cover variable costs.

Sustainability will become a central principle, as societal and customer demands for environmentally friendly practices grow.

In the medium-term, the most significant challenge in digitalisation will be Change Management and Adoption. While technology solutions are readily available, organisations often struggle to implement them due to resistance to change and fear of job loss. To address this challenge, there will be a greater emphasis on explaining, training, and demonstrating the value of digital transformation to employees.

This is exactly the ambition of the ecosystem of CargoTech and we are proud to be part of it.

Overall, the future of technology in air freight in 2024 will be characterised by a commitment to revenue optimisation, sustainability, and effective change management. As the industry evolves, technology solutions will continue to adapt to meet new business needs, ensuring that companies remain competitive and resilient in a rapidly changing landscape.

Expectations and priorities for 2024

In 2024, we anticipate significant developments in the air cargo sector and, specifically, within our organisation's sphere



Adrien Thominet

of activity. We aim to position ourselves as a resilient and forward-thinking player. Our focus on commercial development, finalising our digital transformation, and new abilities will contribute to our organisation's growth but also ensure we remain adaptable and innovative in a rapidly evolving industry.

Our strategic focus in 2024 revolves around fortifying our commercial development, leveraging the capacity of carriers. This involves refining partnerships, pursuing global expansion, and capitalising on emerging opportunities to elevate our market presence.

Equally essential is our commitment to nurturing a skilled workforce. Our strengthened social policy underscores this, with investments in the qualification and skill development of our staff. Through comprehensive training programmes, we aim to enhance expertise, with a specific emphasis on product and revenue management, ensuring our teams remain at the forefront of industry practices. This dual focus positions us for sustained growth, innovation, and continued success. ■

Standardised and bespoke solutions



Airlines are increasingly operating with leaner structures, resulting in varied and more-specific service requests, highlights Beau Paine, global head of cargo at Menzies Aviation



Beau Paine, Global Head of Cargo

Expectations for 2024
After a strong end to 2023, with air cargo tonnages approaching 2019 levels, we're optimistic that 2024 will see a return to pre-Covid trading in most countries. Regions such as the Middle East, Asia and Oceania have seen particularly strong volumes, with growth in Oceania driven in part by challenges surrounding sea freight and port volatility in other regions.

In 2024, our focus will be on digitising transactions and providing our customers with standardised levels of service across our global network of 75 cargo locations. We have five cargo locations

now accredited with IATA's CEIV Pharma certification and will be proactively working to secure further accreditations in Oceania and Africa.

Evolving customer expectations

Reliance on a truly integrated ground handling relationship is crucial as airlines are increasingly operating with leaner structures, resulting in varied and more-specific service requests. We have always been an extension of our airline customers but now more than ever, there is a stronger need to provide agile and responsive services. The same can be said of our freight forwarding partners; we have extended our sphere of influence in many

locations by providing first- and/or last-mile trucking services, labour services, off-site quality checks, and more.

We are also committed to ensuring we have highly trained staff working both in our own facilities and providing services to our customers at different locations. Our people are our biggest asset, and essential in ensuring that we are effectively adapting to changing customer expectations.

Challenges and solutions

Recruitment and retention continue to be a big challenge in the current market. Here, a generational change in thinking has resulted in a greater willingness to

change jobs frequently, which when combined with economic cost-of-living pressures, has meant that we have found staff retention and development to be a significant priority for our business and the aviation sector in general.

We were proud to unveil Menzies Aviation Cargo Handling (MACH) system in 2023. Launching in Bucharest, we are rolling out the new cargo management system across our network in 2024.

MACH represents a significant enhancement on Menzies' current cargo management system, boasting a modern user interface (UI) with easy-to-use navigation, making it exceptionally user friendly for all stakeholders. Its cloud-based architecture ensures accessibility from anywhere, any time, and on any device, providing real-time insights and data. Operating from a 'single source of truth', MACH seamlessly integrates with other systems, helping to simplify and standardise all processes. An integral part of the cargo management ecosystem, it improves data accuracy as all electronic information is

populated automatically across the system. MACH's drive to standardise is matched by its ability to generate bespoke solutions where necessary.

In addition to MACH, we are investing in further innovative technology solutions such as our award-winning robot inventory solution 'Mimi', cargo dimension assessment tools, and wildlife tracking solutions.

Waste is also a top priority for many of our stakeholders. In 2023, we partnered with BioNatur Plastics to help make our cargo operations more sustainable, but also ensure we are working in partnership with our customers to meet their own ESG goals.

Cargo iQ certification

Air cargo demands the open sharing of trusted and secure information. To ensure we are meeting industry standards for exceptional cargo ground handling, we will ensure all our primary locations have Cargo iQ certification, and we encourage industry partners to do the same.

In addition, every Menzies cargo

location will accurately share location details on Validaide by the end of 2024. This means that the global network, along with Menzies' customers and stakeholders, will have access to information surrounding our facility details, credentials, and handling capabilities, driving transparency and visibility across our network.

New and emerging technologies

Technology already underpins the air cargo industry, and it will continue to influence and enhance solutions of the future. We are exploring facility design to allow for robotics and autonomous vehicles to assist and support our people and customers. Whether it be in ULD build up, dangerous goods acceptance, or security screening algorithms, technology plays an important role in mitigating risk to keep our industry safe and secure. We are also acutely aware of the need to embrace technology to be an attractive employer of choice for our people, and effectively engage with our teams. ■

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Responding flexibly to increasing volatility

Shifting trade patterns and the rise of e-commerce require cargo handlers to be adaptable and flexible, says Guillaume Crozier, Dnata's SVP of UAE Cargo & Global Cargo Strategy

2023 clearly highlighted volatility in the market and the trade lanes between countries. We see that trade lanes have shifted; hence, volatility will increase and we will need to be even more agile. We saw some stations, such as in The Netherlands, increase volumes, whereas others were not as full. But then, of course, everywhere received this influx at the end of the year. Asia Pacific is still recovering slower than other regions, but getting there, step by step. Australia, however, is doing very well.

In Dubai particularly, we have experienced a continuous rush in volume from the summer through to the present time. This is because the UAE is a logistical platform being used by the world as it is geographically positioned conveniently and efficiently. The infrastructure is solid and robust. The connectivity between ports and airport is strong, and that helps us to provide solutions to a lot of requests from the

supply chain, especially when it comes to sea-air solutions. That has resulted in high volumes of sea-air solutions once again.

The domestic UAE market also grew in 2023. A strong domestic market supports good growth across all product lines, including valuables, commodities and fast-moving goods. This is a trend that has been set up to continue growing in 2024.

In 2023 there were some air cargo industry advancements, where we see more and more data requirements to inbound control systems expected from the authorities across the globe. Some key milestones ahead include the enforcing of Pre-Loading Advance Cargo Information, highlighting how big data is at the heart of our industry's evolution.

In 2024, as a market, there is a global aspiration of a 5% year on year volume increase. We are going to see some faster acceleration in some regions, particularly the Middle East and Africa, and potentially some surprises such as Europe bouncing back after a very difficult 2023. The growth will be scattered and diverse, and there will

be that continued volatility for some regions – which will mean the true growth figure will be difficult to judge. The UK will have its highest cargo revenue this year, again filling all their sheds, while in Amsterdam there are of course challenges with the flights slots which has prevented us from increasing volumes.

In the area of digitalisation, the implementation of our OneCargo platform will continue throughout 2024, including Switzerland and Tanzania and in the UAE in February. That is an important milestone for the year. Additional countries and a big road map are planned, with the rollout continuing to the UK, Germany, and Belgium. We expect to cover the network within the next two years.

In addition, the new generation of our airport community system, Calogi, will be launched in 2024. This enables us to connect with all our stakeholders, covering the handling operation from end to end, driving paperless volumes. This will help us to deliver on our cargo



We must gear ourselves up in terms of technology and data capability to be able to work on the e-commerce product at piece level

Guillaume Crozier

strategy to bring the customer more near real-time visibility. It will also provide the customer with more service offerings within the world of cargo and logistics – from a traditional warehouse offering to more third-party logistics, and covering fulfilment centres, which is requested by our customers. This includes transportation on the ground, road feeder services, and of course first-mile, last-mile activity for e-commerce.

Agile resource management

In order to remain efficient and streamline operations and processes, stakeholders will remain agile to increase or reduce their capacity, depending on the season. That will create some difficulties in terms of resource management and sizing of our operations from month to month.

Multi-modal transportation is being pushed further, so we see more and more multi-modal logistics solutions being built. The sea-air solution is one of these. But in e-commerce, you have hub and re-distribution centre strategies which are

changing and evolving. That creates for us, on the ground, some new challenges in terms of flows and volumes. All of us – handlers, carriers and forwarders – are very much connected and are expecting e-commerce volume to keep driving upwards, but that also increases the expectations.

All stakeholders are targeting to deliver for their B2C customers, focusing on the end-to-end process. We, as a ground handling agent, must gear ourselves up in terms of technology and data capability to be able to work on the e-commerce product at piece level.

In terms of new and emerging technologies, we have an ambitious investment plan around computer vision technology which forms part of our new cargo vision strategy. Combined with our expansion plan built on state-of-the-art new infrastructure at facilities currently under construction, such as those at Amsterdam Schiphol and Erbil, we will offer our customers an enhanced service offering, based on near real time visibility with optimisation tools. ■



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E-commerce driving a return to modest growth

Hactl's new E-loading initiative is among a number of digital initiatives improving cargo processes and giving customers real-time insights, highlights CEO Wilson Kwong

2023 has been a challenging year as we came down off the protracted Covid boom and suffered the impacts of inflation in many developed economies. But throughput steadily improved throughout the second half, with a year-end peak driven by e-commerce activities. We anticipate a return to modest growth in 2024 – buoyed particularly by a fresh resurgence in e-commerce activity, for which we have geared up.

E-commerce is leading the charge in a return to growth for our industry. So, our value-added logistics arm, Hacid, has opened an E-commerce Fulfilment Centre to provide support services for intermediaries desiring an airport base. This has recently been enhanced with the creation of a Cool Zone which is capable of performing handling and fulfilment in a climate-controlled environment suited to commodities such as chocolates and fresh fruit.

Improving air freight services

Hactl's innovation journey continues. We are extending our use of robotics and automation with the introduction of our first driverless towing tractors on the

ramp, which are helping us confront the eternal challenge of staff recruitment; and which, being electrically powered, are also contributing to our climate protection measures.

We have also opened 12 new Automated Service Kiosks that automate and speed up the checking of documents required before release of cargo. This is designed to improve security and reduce customer waiting times.

New and emerging technologies

The key, as always, is digital processes, replacing paper-based ones. Digital supply chains share data seamlessly and automatically, and enable updates by all parties, as well as reducing labour costs and waste. This is something we at Hactl have been working on for years, both in the warehouse and on the ramp – where our new E-loading initiative reduces ramp travel, speeds up loading, improves flown-as-booked performance, makes us more responsive to late cargo or bookings changes, and allows customers real-time insights into work progress, as well as reducing paper waste. As one of the largest operators in the world, we can justify the investment required to drive

such constant innovation; but we are also happy to share our ideas to encourage their adoption across all operators, as our industry must provide uniformity and display best practice across all locations, if it is to grow and prosper by satisfying customer demands.

Other priorities or targets for 2024

We intend to fully leverage the opportunities presented by infrastructure developments throughout the Greater Bay region, that are improving multi-modal connectivity; and we look forward to realising the potential opened up by the full implementation of Hong Kong's three runway system, which will enable more freighter operators to serve Hong Kong.

Sustainability is vital to the industry's future, as it is to our planet's. Our Sustainability Strategy Framework now guides and sets targets for all aspects of our operations. Sustainability must also be about more than climate change mitigation: we must also look after our people and our communities. Our annual Sustainability Report provides detailed insights into our many actions, and we hope this will inspire others to follow our lead. ■



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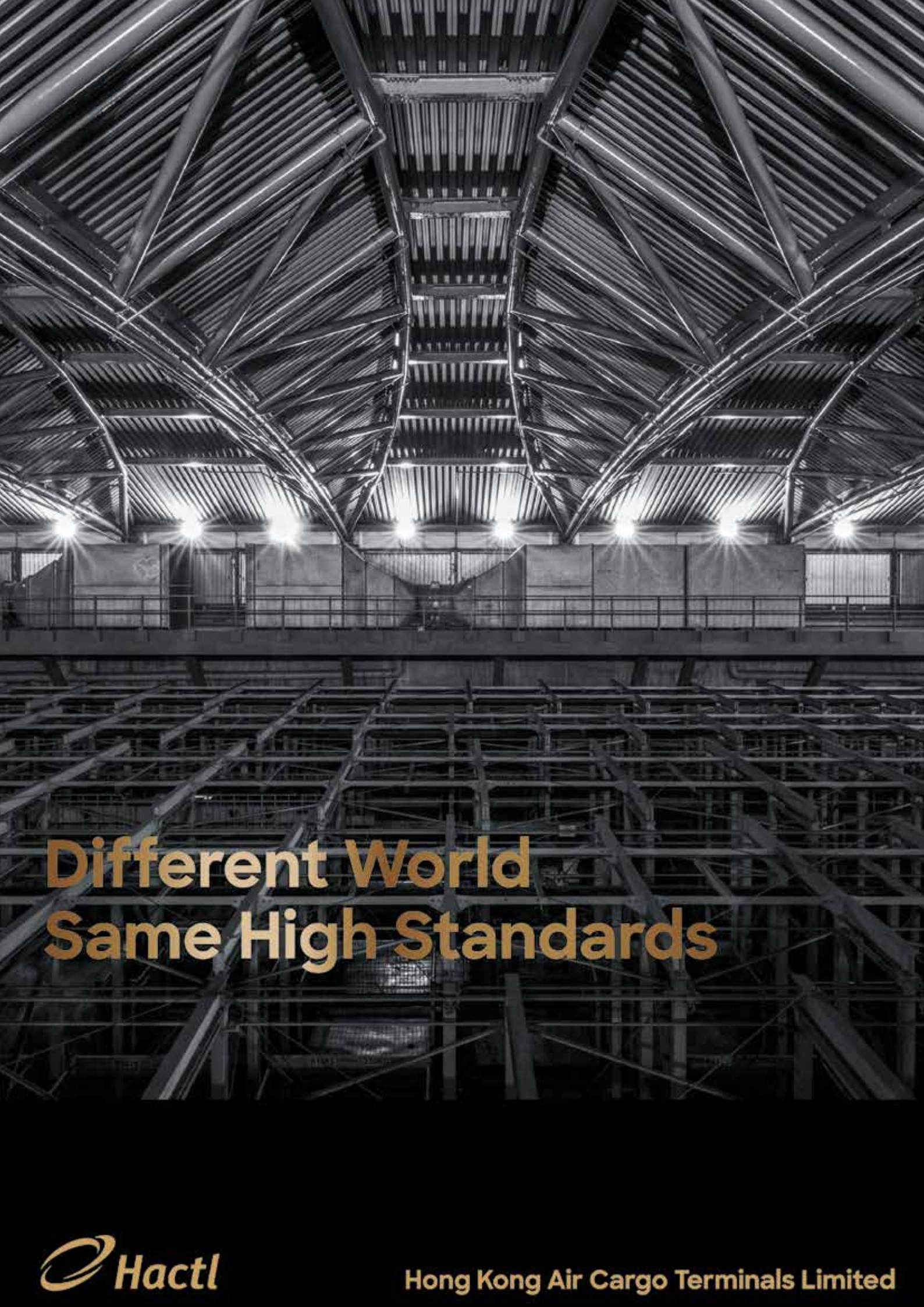
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