

White paper

Thrust Through Trust

Logistics in the aerospace
supply chain reform

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Executive summary

The COVID-19 outbreak in 2020 is the most significant disruption the aerospace industry has endured. Nations locked down, flights were cancelled and aircraft stored. The exceptional scope and speed of the pandemic impacted every airline, MRO, OEM, vendor and lessor in the industry.

Even before this unprecedented turmoil, the aerospace industry showed signs of distress and the need for reform was apparent. Through the pandemic, this need became a crucial pre-requisite to support sustainable growth.

These pandemic years have impacted companies in many ways. In 2020, it was about adapting to the new give, securing cash flow, and working agile. In 2021, it was about resizing and preparing for growth, to assess future needs and suitable business models. In 2022, it is about implementing plans and developing new ways of working to enable a resilient way forward.

As the industry is preparing for reform, so is the supply chain that powers it. Over the last years, it has become clear that logistics is a success-critical element that needs to be embedded in the business model to enable success. Four dimensions will drive

the reform of the aerospace supply chain: **data, sustainability, partnership and continuous innovation.**

- **Data** - Clean data and predictive analysis are genuine game changers
- **Sustainability** - The leaders in sustainability will be the leaders in the industry, too
- **Partnership** - Logistics as an integrated part of the business model will be a key differentiator for end-customer satisfaction
- **Continuous innovation** - Only companies that innovate and keep close to their customers' needs will find their position in and beyond the aerospace supply chain reform

This white paper outlines how the logistics industry can support airlines, MROs, OEMs, vendors and lessors in delivering to the needs of their customers in this new business landscape. It outlines how trust is a key ingredient and how the dedication of logistics companies can support aerospace the industry in reforming to achieve sustainable growth.

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A message from Kuehne+Nagel

You’re boarding your flight. You receive welcoming smiles from the crew as you pass them in the aisle. It’s been a long time since you last flew. You find your seat and say hi to the passenger next to you. The aircraft is pushed back. The engines power up. You look out of the window. The taxi to the runway, the turn to line up and then... takeoff. That familiar thrill of being gently yet firmly forced back in your seat. The power; the thrust. And then you’re aloft.

The whole aerospace industry is currently climbing, too, out of the COVID-19 pandemic. For almost two years now, flights have been cancelled and aircraft parked or stored. As an industry, we have worked in crisis mode in the deepest crisis the sector has ever seen. Adjusting, adapting, responding to change and navigating the uncertainties. Now the industry is taking off again. Up to new altitudes. With renewed thrust.

At Kuehne+Nagel, we are part of this climb. We know the business, we know its logistics. And we are in it for the long haul. Our relations with our customers have grown ever deeper and ever more meaningful as the pandemic has progressed. With our decades of aerospace logistics expertise, we’ve become part of their teams. A genuine partner; a partner to trust. And that trust is now more vital than ever in mastering the many and varied challenges that the pandemic has imposed.

The COVID pandemic has confirmed to us, what we already knew: that doing business in a transactional way—with spreadsheets making the decisions—is not the way to a

sustainable competitive advantage. But trust always is. Airlines, MROs, OEMs, vendors and lessors all rely on having logistics that deliver. But in order to do so efficiently in the future, the supply chain needs reform. The industry is gaining new thrust. But it’s trust in companies and people, that will provide the competitive edge.

In this report we highlight the issues that we believe will be the drivers of aerospace supply chain reform. We also outline our ambition, and our vision of how we can support the industry today and in the future. It’s our take on what the aerospace industry will need in order to climb to new altitudes with new ways of working.

I would like to hear what you think, too, and exchange views and ideas. As would our entire Kuehne+Nagel aerospace team.

With warmest regards,

Erik Goedhart
Senior Vice President,
Global Head of Aerospace

Recovery ahead

The aerospace industry has started to recover from the COVID-19 pandemic that began in March 2020. As the most profound disruption that the industry has ever encountered, the pandemic has forced changes in all areas of the aerospace business.

Every week now, more and more aircraft are returning to the air. The demand for passenger transport is growing again, and air cargo volumes are stronger than ever before. The aerospace sector is regaining its thrust.

Thrust: the force of moving an aircraft through the air

Two industries in disruption

The COVID-19 pandemic not only disrupted our way of life. It had an immense impact on the aerospace sector—more so, indeed, than on almost any other industry. As whole countries locked down, flights were cancelled, business travel came to a standstill and thousands of aircraft were parked or stored.

As the numbers of passenger flights rapidly dropped, air cargo capacity also declined. The volumes of capacity available for ‘belly cargo’—cargo carried in the hold on passenger aircraft—were reduced by more than 70%. Belly cargo had previously

accounted for 50% of the total air cargo market. So the loss of such capacity led directly to logistical bottlenecks and global cargo rate rises.

Global sea freight, meanwhile, was also experiencing exceptional pressures, unsettling the entire logistics industry as never before. The Suez Canal blockage caused by the 20,000 TEU Ever Given container vessel disrupted 12% of global trade. At the same time, the market experienced a shortage of both containers and manpower in ports and on trucks. Parallel to all this, the growth in eCommerce was more than double its projections and shows no sign yet of slowing down. All these disruptions have impacted—and continue to impact—companies and their ability to serve their end customers today.

In brief, both the aerospace industry and the logistics market have experienced disruptions of previously unseen proportions.

More than a bump

Back in 2017, IATA predicted that China would be the world’s largest passenger market by 2036. The same studies projected that India would rise to 3rd and Indonesia to 5th place in the passenger air travel rankings. As a result, the global aircraft fleet would double from some 20,000 to 40,000 aircraft.

This long-term perspective still holds: half the world’s population is not yet travelling,



but they will do so in the future. And Airbus still forecasts a demand for 39,000 new aircraft between now and 2040 of which only just over 15,000 can be regarded as replacements.

The aerospace industry is also used to disruption. Past events such as 9/11, SARS and the Financial Crisis caused turbulence as well. **But the COVID-19 pandemic has been a truly global ‘hit’, and one that has set the industry back some 60 years, in terms of the number of flights that take off. As such, it is much more than just another ‘bump’ in the industry’s continued growth. It is a significant interruption. And it has tellingly illuminated a clear need for reform.**

According to analyst and consultancy firm Roland Berger, repercussions of the COVID-19 pandemic are expected to affect the aerospace industry until 2026. A planned ramp-up of narrow body aircraft should surpass their pre-pandemic numbers as early as 2023. And the disrupted logistics

market and the significant growth in eCommerce have also created a lasting demand for dedicated freighter aircraft: slots for passenger-to-freighter conversions are fully booked for the next five years.

In view of these trends and projections, OEMs have asked suppliers to prepare and be ready to ramp up. But ramping up in a disrupted logistics market is about more than just new challenges. It calls for reform, new concepts and new ways of working.

At the same time, the World Economic Forum (WEF) shared a report which suggests a strong likelihood of events similar to the COVID pandemic occurring in the future. The WEF considers the risk prevalent, and the industry will hopefully be better prepared to deal with these events. **One crucial part in this is to have a logistics partner that supports a reform of the present industry supply chain, to keep it effective and efficient for airlines, MROs, OEMs, vendors and lessors alike throughout any further turbulence which may lie ahead.**

The journey to reform

Reform: changing into an improved form or condition

The aerospace sector has experienced clear phases in its present COVID-prompted journey. The ‘Adjust’ phase is over; the ‘Prepare’ phase is about to be concluded; and the ‘Reform’ phase is about to begin.

2020: Adjust

In the initial phase of the COVID-19 pandemic, masses of aircraft were parked or stored and asset values plummeted. Governments stepped in to support the

industry, with securing liquidity a key focus and concern.

As capacities were reduced, cargo and eCommerce business boomed. The sudden demand for goods such as personal protective equipment (PPE) opened up new growth areas within the cargo sector. Wherever possible, aircraft were flown for cargo purposes only, with main passenger decks temporarily converted for cargo carrying purposes: the ‘preighter’ was born.

The industry’s adjusting phase was all about resizing companies to ensure their survival and work towards a profitable future. In the second part of 2020, though, ‘return’ scenarios began to be evaluated. Still, hypercare and daily agile decision-making remained indispensable.

The ‘preighter’ – connecting the dots

As the need for passenger aircraft more or less vanished in the early weeks and months of the COVID pandemic, airlines scrambled to find ways to keep their assets productive. Kuehne+Nagel, as experts in air cargo, brought their expertise to the table, helping airlines and lessors to swiftly transform their passenger aircraft into preighters.

In a next step, Kuehne+Nagel has worked closely together with customers to devise the ‘Passenger to Freighter’ (P2F) solution. Converting passenger aircraft to freighters can’t happen fast enough. And the new P2F solution shortens the lead times for such conversions by hours per week.



2021: Prepare

After the shock of 2020, aerospace companies began to prepare themselves, to ensure they were ready to apply full thrust when the expected recovery came in the course of 2021. As passenger travel became possible again, the airlines considered which business model they should move forward with, what core competences they should keep and what general direction they should head in. Still, the daily challenges of ground handling, flight irregularities, travel restrictions and safety and security remained. And air cargo is still driving the airlines’ revenue streams today.

In future business models, passenger safety will include touchless travel, flight sanitising and biosecurity guidance. With virtual meetings now part of the ‘new normal’, business travel is likely to remain

some 30% below its pre-pandemic levels. But air cargo is expected to keep growing at a CAGR of 4%.

2022: Reform

2022 should see a further transition to the ‘reform’ phase, when a new competitive landscape will evolve. This will include developing new ways of working to create a resilient infrastructure that can cope with the next challenge. Passenger travel will recover to close to pre-pandemic levels. New concepts such as long-haul narrowbody (LHNB) services using aircraft like the Airbus A321LR and A321XLR will start to earn market share on intercontinental flights.

A clear example as to how new business models are being explored are the significant shifts that will be seen in the cargo value chain, with logistics providers

¹ https://www3.weforum.org/docs/WEF_The_Global_Risks_Report_2021.pdf

buying cargo aircraft and airlines to secure their capacities. The question will then be whether to change business models or to change ways of working within an existing business model. Whichever is preferred, “more of what we did in the past” will not be an option. On the passenger front, meanwhile, further sanitising and the aspirations for a touchless cabin will prompt a boom in aircraft refurbishments.

The corresponding supply chain reform will be about meeting these demands and laying the foundations to deal with the new challenges ahead in this modified competitive landscape.

Kuehne+Nagel insight

In April 2020, the aerospace team at Kuehne+Nagel evaluated the situation and discussed strategies and approaches. We decided to stay committed to the aerospace industry and aim for increased market share in a now-smaller market. New initiatives were launched and the dedicated aerospace team bonded globally with customers as never before. This included developing new offerings towards lessors, ramping up engine logistics services, developing a dedicated P2F solution, and more.



Driving aerospace supply chain reform

Before the COVID-19 pandemic, the aerospace industry was highly profitable for logistics providers. Not even the sky was the limit. In the course of the pandemic, the interest in aerospace rapidly declined as the market came to a standstill. And since aerospace is highly labour-intensive, workforces were substantially downsized, and many people left the industry. In this low-volume high-value sector, the future landscape for logistics providers will be significantly different.

In order to position for the future, the way forward was to adjust and reform. This entailed an intensive ongoing journey driven by four key dimensions: data, sustainability, partnership and continuous innovation.

Data: predictive analysis

In the past, and to some extent even today, estimates have been reactive and based on old data. Business predictions were off, because the models used paid too little regard to the rapid pace of change. With all the recent developments in the business environment, it has become clear that real-time data is needed as a basis for predictions. With data that can be sourced and prepared today, airlines, MROs, OEMs, vendors and lessors can acquire knowledge and insights that are invaluable to managing the future supply chain and making agile decisions.



1. Data
2. Sustainability
3. Partnership
4. Continuous innovation

myKN– A single source of data

myKN is Kuehne+Nagel’s global digital visibility platform. It is a “one-stop-shop” for customers to quote, book and track their shipments. myKN is a platform that relies on a powerful database that brings together all available data for all shipments. This one single source of data keeps evolving, and allows predictions on future aerospace dynamics in regards to logistics. And we willingly make these data available to our customers, too.

The key, however, is to have one single source of data for all transactions: movements, trade, operations, finance, CO2 and more.

With skilled analysts tasked to interpret and contextualise such data, companies can truly benefit from their power and move to their predictive use. This offers significant opportunities for staying agile, flexible and resilient. Real-time data and transparency

are already available today to give companies visibility on their shipments. The predictive value of data is extremely high; and if this is tapped into, the resulting impact on strategic decisions, business scenarios and operational actions will be invaluable.

Clean data and predictive analysis are genuine game changers.



The Net Zero Carbon initiative

As the industry commits to achieve carbon-neutrality in 2050, Kuehne+Nagel has already rolled out an initiative that will support the industry in reaching the set goal. In 2019, we launched the Net Zero Carbon initiative, outlining two main targets to be reached:

1. Be fully carbon neutral in our direct sphere of influence as of 2020
2. Committed to the SBTi to support our customers to reduce their CO2 emissions by one third by 2030

The first target has been successfully reached. Our focus now lies on solving the second challenge. An important step to achieve this was reached as we began offering the opportunity to all our customers to choose SAF for air freight. This is just one of many steps that will allow us to support the industry—and our environment.

Sustainability

The aerospace industry has committed to making air transport carbon-neutral by 2050 . To achieve this, the entire sector will invest in innovation and establish and refine mutually beneficial ecosystems. **Although the reform of its logistics supply chain is not primarily driven by environmental motivations, there can be no successful reform thereof without a clear focus on sustainable solutions.**

In the short to medium term, these green gains will be made through new engine technologies and the greater use of sustainable aviation fuel (SAF). But in the mid to longer term, new propulsion systems based on such sources as electricity and hydrogen will play a significant part.

The role of a logistics partner in achieving such progress is to support the industry by developing innovative solutions that enable sustainable processes. For the present, however, making environmental impact visible and measurable is key. From there, companies can discuss and agree on ways to reduce, avoid or offset. As such, the logistics part of the supply chain can and needs to be carbon-neutral by 2030. Transparency and one single source of data are the starting points.

The leaders in sustainability will be the leaders in the industry, too.

² <https://www.iata.org/en/pressroom/2021-releases/2021-10-04-03/>



Partnership: logistics as an integrated part of the business model

With two disrupted industries, the role of logistics is changing, or the change which was needed anyway is accelerating. Logistics are currently managed as indirect procurement, aimed at securing the lowest price per transaction and square metre, comparable to buying paper clips or envelopes. And the basis for tenders has been data at least one year old. In the future, spreadsheet calculations will be part of the work, but rather to support businesses in making conscious decisions, not in determining outcomes. In the future, it will need to follow the processes of direct procurement.

This shift was already under way before the pandemic struck. Companies were working towards reducing the number of their logistics suppliers, entering instead into strategic collaborations with a few trusted partners. Price was still the dominant

factor; but strategic data transparency and sustainability were already growing in importance. Supply chain design had also started to be closely interconnected with end-customer satisfaction. **All in all, it has become increasingly clear how logistics contribute to make-or-break strategies and operations. And it has become equally clear that logistics are a success-critical component which should be firmly embedded in the business model.**

With the pandemic's telling impact and global markets in turmoil, logistics climbed to the top of the agenda for companies worldwide. Its business-critical nature was revealed; and the vital importance of a transparent and efficient supply chain was underlined to circles far beyond the company's logistics and procurement teams.

Logistics as an integrated part of the business model—and not as a

commodity—will be a key differentiator for end-customer satisfaction.

Continuous innovation

With market dynamics shifting by the week, every company active in the aerospace industry must remain resilient over time. To do so, they must continuously innovate and be flexible. And, of course, change cannot be expected unless we change the way we operate.

Agility and flexibility must become part of the company DNA. And any indulgence or complacency must be immediately flagged. Empowered teams with an entrepreneurial approach and an extensive business knowledge will make all the difference in positioning the companies they work for.

Companies that innovate and keep customers' needs close find their position in and beyond the aerospace supply chain reform.

Kuehne+Nagel insight

As the pandemic evolved, Kuehne+Nagel saw the clear need to act. Three initiatives were swiftly launched to support the company's customers:

- **Connecting the dots** – The urgent need to increase airfreight capacity resulted in our P2F solution, which ensures that aircraft conversions are implemented fast and without any logistics-related delays. **With this solution, we have managed to reduce conversion time hours per week.**
- **The touchless cabin** – The world is seeking ways to reduce health risks based on lessons learned. For travel, this means replacing human interaction with electronic support where possible. **We develop logistics solutions that help airlines adopt the touchless cabin.**
- **Leasing support** – The leasing segment has been challenged by repossessions of aircraft, engines and components. Drops in aircraft values have not yet bottomed out. Now, in the recovery phase, aircraft need to be prepared for their next operator or scrapped with eco-friendly disposal. **We launched a solution to support leasing companies throughout the aircraft life cycle.**
- **P2F conversions** – To answer the need for passenger-to-freighter conversions, Kuehne+Nagel has developed a dedicated solution that supports companies in carrying out efficient conversions.

A reformed supply chain: “Thrust through trust”

Trust: confidence in a person or quality

The importance of personal collaboration and trust has already clearly increased since the beginning of 2020 and in view of the recent disruptive events. This importance will continue to grow, and such confidence and trust will constitute the future basis of any competitive edge. Aerospace's recovery and ramp-up have begun, and the industry is on track for growth that will exceed pre-pandemic levels. The sector is climbing again towards a more resilient and more

sustainable future that is founded on real-time data and agile decisions.

For this, airlines, MROs, OEMs, vendors and lessors will look for partners they can trust. Trust is about working together, co-devising solutions, being open, keeping promises and jointly setting new standards.



Trust must be built. And any company seeking a logistics partner with whom to develop a trusting long-term relationship will ask and address three key questions:

1. Who are they?

What are the DNA, the identity and the authenticity of the company that we are looking to collaborate with on the logistics front? And what is their track record in terms of their commitment to this industry?

2. Where are they?

Do they see logistics as a key element in a sustainable supply chain which can cope with the next event or 'bump'? Do they view logistics as a commodity, or as an element close to direct procurement in the business model? Can they give us the broad logistical insights which will bring our company forward and deliver a beneficial end-customer experience?

3. What are they?

Is the logistics partner we are seeking to collaborate with ready for the next disruption? Will they be able to pivot? Can they identify new ways forward and bring new solutions? Do they work with one global source of real-time data to predict future business developments? Can they be our trusted partner to navigate through uncertainty? Do they speak our language?

The way forward

Reforming the aerospace supply chain is a challenging and complex undertaking. It is also an opportunity to gain a competitive advantage in a totally new business landscape. But it will require all the expertise, the experience and the commitment of your chosen logistics partner.

Through innovation and collaboration, beneficial and sustainable ecosystems will be created. The industry will be able to scale up—and if necessary scale down—as and when required. And a solid partnership will be established and developed, with the backbone of a single data source.

Continuous interactions among all the industry's players will make all the difference here. Complacency and copying the past are not an option. The pandemic has taught us new ways of working together, bonded as partners through challenging times. So let's make the most of this experience to set new industry standards.

We are pleased and proud to be working with the aerospace industry to reform its supply chain. Kuehne+Nagel has been delivering value and reliability since 1890. We know logistics and we know aerospace. And together we can reach new altitudes, generating thrust through trust.

About us

Kuehne+Nagel is one of the world's leading logistics providers. We support our customers in sea, air, road, and contract logistics with a clear focus on integrated and industry-specific solutions.

We continuously work to offer relevant and innovative supply chain solutions to the aerospace community. Our network of global and local specialists ensures compliance with all regulations and industry requirements.

Learn more about our services

→ kuehne-nagel.com