Mesirow

Aerospace & Defense sector report

Andrew Carolus
Managing Director
Investment Banking

Adam Oakley
Managing Director
Investment Banking

Steve Simon
Vice President
Investment Banking

2022: Year-end update

The number of Aerospace & Defense (A&D) deals launched to market slowed in the second half of 2022, which coincided with growing global recession fears. However, improving fundamentals and industry-specific tailwinds helped create an encouraging mergers and acquisitions (M&A) market for many A&D businesses.

In the commercial aerospace sector, pilot shortages, strained supply chains and pent-up consumer demand has expanded backlogs and pipelines from OEMs through Tier 3 and 4 suppliers. Reverberating throughout the entire industry, a delay with one supplier ripples through the entire ecosystem. Boeing noted that while the demand for its airplanes remains strong, its ability to manufacture and deliver planes continues to be negatively impacted. Despite slower delivery times to customers, middle market A&D suppliers are propped up with strong end-demand, and are continuing to attract meaningful interest from buyers, particularly with fewer deals coming to market

For the defense sector, increased geopolitical tensions surrounding Ukraine and Taiwan have fueled government military budgets. In the U.S. specifically, Congress is poised to pass a roughly $857 billion defense budget, with other U.S. allies expected to grow their defense budgets as well. Not to be outdone, China and Russia are also expanding their defense budgets in kind. These countries are placing emphasis on next generation technologies, including hypersonic missiles, upgrading nuclear arsenals and support infrastructure and expanding air and naval fleets. Many middle market defense companies are securing long-term government contracts based on these expanding government budgets, which creates significant attention from buyers during a transaction process.

In the commercial space industry, prominent startups are now achieving significant revenue milestones and realizing impressive valuations. While early-stage investment has cooled, particularly for capital intensive endeavors, there remains meaningful private and government interest in space-related assets. In fact, part of the estimated $857 billion defense budget will be allocated to the space industry, including Space Force and other customers focused on developing U.S. space assets. One vital space capability that has earned significant attention due to its relevancy to both the public and private sectors is Earth observation (EO).

In all, the A&D M&A market faces macroeconomic challenges headlined by fears of a global recession and rising interest rates making transactions more expensive. Yet, aided by the tailwinds discussed above, Mesirow foresees continued buyer interest in strong-performing A&D companies. Looking back throughout 2022, and forward into 2023, here are the key highlights discussed in this report:

Commercial Aerospace Highlights

1. Strong and resilient demand for commercial air travel
2. Rising private jet demand
3. Robust opportunity pipelines with strained supply chains

Defense Highlights

4. Globally, defense budgets get a boost
5. U.S. national security concerns prompt renewed focus on military supply chain

Space Highlights

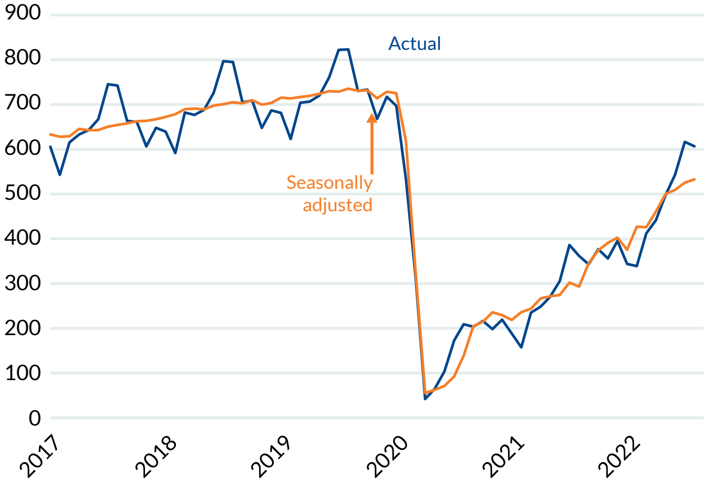
6. Space venture funding is cooling, but investor attention remains with transformative M&A announcements
7. Earth observation data showcases immediate value of space assets

1. Strong and resilient demand for commercial air travel

In our mid-year report, as well as our 2021 year-end report, we highlighted the return of both business and personal travel. Although some business travel has increasingly turned to the private jet market, broad demand for commercial air travel has persisted. According to October FAA data, total business jet operations has increased almost 20% YoY, with the second half of 2022 particularly strong at more than 400,000 arrivals and departures per month since the summer months.

While business air travel demand continues, so too does personal air travel demand. In Q3, major U.S. airlines, including American Airlines, Delta Air Lines and Southwest Airlines, reported record revenues; likewise, Jet Blue achieved its first quarterly profit since the start of the pandemic. Such financial success stems from stable demand. Recent data from the International Air Transport Association (IATA) shows Revenue Passenger-Kilometers (RPKs), a measure of demand, saw an increase of 67.7% YoY in August.

CHART 1: **GLOBAL AIR PASSENGER VOLUMES (RPKs) |**
Industry RPKs (billion per month)



Source: IATA Economics, IATA Monthly Statistics.

As we have written in the past, the sustained demand for air travel has not been without its problems. Pilot shortages have led to a reduced number of flights. Despite heavy hiring -- more pilots have been hired this year than any year since 1990 -- the industry still faces a severe shortage, which is expected to endure. The Bureau of Labor Statistics anticipates an additional 18,000 pilots will be needed per year for the next decade. As one expert noted, the pilot shortage is improving, but at the expense of lower frequencies and fewer connection opportunities for travelers.

With less flights, but increased volume, unsurprisingly, passenger complaints and flight delays are on the rise. Add in inflationary pressures, rising fuel price costs and impending recession fears, and the industry does face headwinds that could threaten its growth.

Despite these challenges, it is believed that commercial travel demand will continue to hold its current high level. The U.S. Travel Association expects business travel to reach 81% of pre-pandemic levels by the end of 2022 and 96% by the end of 2023.

Overall, in the U.S., despite inflationary pressures and available seat limitations, the commercial aviation industry appears poised for continued positive outlooks. In reviewing forward bookings, 2022 U.S. domestic and international traffic levels are virtually on par with their respective levels in 2019. Such data indicates consumers' willingness to travel, both domestically and abroad, creating a baseline for continued future growth across the commercial aviation industry.

2. Rising private jet demand

Rising crude oil prices, the war in Ukraine, increasing labor costs, a strong U.S. dollar and stubborn global inflation—any of these alone would normally be enough to dampen demand for private jets. Yet, throughout 2022, the private jet market has boomed with indicators showcasing continued demand.

Honeywell's 31st annual Global Business Aviation Outlook recently forecasted up to 8,500 new business jets to be delivered over the next decade. Strong demand is rooted in sold-out business jet production lines spanning the next several years. If realized, Honeywell's decade-long demand projections would equate to about $274 billion in value.

However, perhaps unexpectedly, the persistent increase in demand for private jets has naturally coincided with an increase in charter prices. According to Jim Segrave, CEO of flyExclusive, charter prices are up about 30-35%, with the average deposit for jet card memberships reaching almost $300,000 in 2022. Indeed, there is a growing chorus of users -- about 62% of new and long-term users surveyed by aviation website Private Jet Card Comparisons -- that are frustrated by the rising cost.

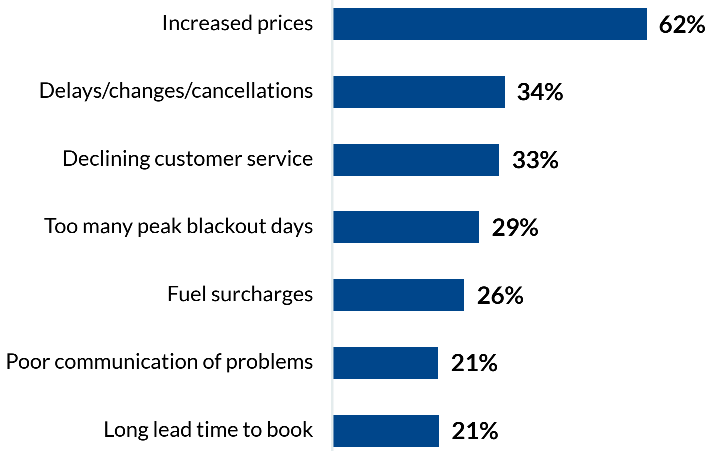
Yet, despite costs, 94% of new clients surveyed still say that they plan to continue flying private. In his recent interview, Mr. Segrave noted that despite rising costs, demand appears to be inelastic, with no negative impact realized. As expected, such inelastic demand has translated into sales for manufacturing companies of private jets as well, with companies like Gulfstream seeing record sales over the past 24 months.

The industry's current demand inelasticity is seen to be coming from a convergence of multiple factors: clients' preferences to avoid public spaces due to COVID-19, pent-up demand from executives for business travel, dissatisfaction due to commercial airlines' delays and fewer flight options and the rise of a younger clientele focused on moving from point A to point B in a time-efficient manner.

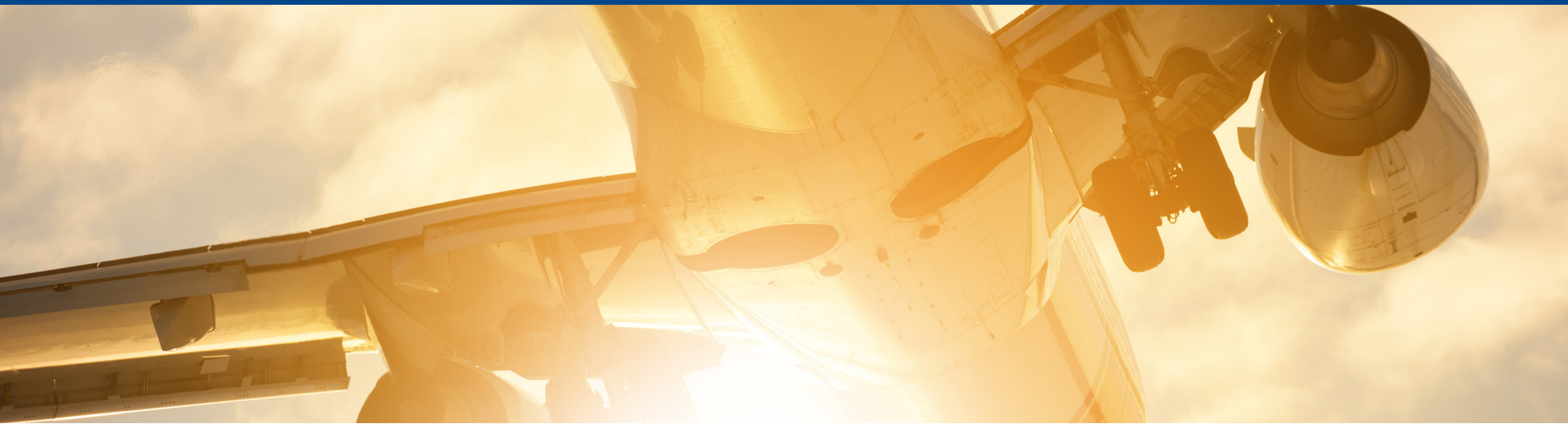
CNBC's coverage on the rising demand for private jets noted that 40% of new clients to the industry stated they were likely to continue utilizing private jet services "regularly," down from 57% in the prior year. However, 89% of long-term clients indicated they were likely to utilize these services as much or more in 2023 than they did in 2022.

Ultimately, even if demand weakens slightly, experts anticipate private jet flight costs to remain high due to supply constraints stemming from pilot and parts shortages as well as continued inefficiencies of commercial airlines. Although increasing costs could deter some clients from utilizing private jet services, industry experts believe the number of clients willing to pay more for private jet usage shadows the supply available. Thus, rising costs, as seen throughout 2022 and expected to continue into the near-term, is not anticipated to dampen demand or industry sales.

CHART 2: **REASONS FLYERS MAY SWITCH JET PROVIDERS**



Source: Private Jet Card Comparisons Survey, published October 2022



3. Robust opportunity pipelines with strained supply chains

As highlighted throughout this report, demand within Aerospace & Defense continues to remain strong. Indeed, the industry recorded a noticeable uptick in both resources and parts procurement. To help ensure the necessary resources are available when needed, many OEMs and their manufacturing partners have begun placing orders for parts well in advance of when they normally would do so. In turn, this has created surging demand and an expanding backlog for many suppliers.

Yet, the rise and persistence of demand has led to an industry-wide struggle to meet the corresponding and requisite ramp-up on the supply side. These challenges are further exacerbated by lingering affects of COVID-19. During the pandemic, OEMs had to reduce capacity, particularly in air travel subsectors. These scale-back actions echoed throughout the entire A&D supply chain ecosystem, resulting in lower earnings and cash flow for OEMs as well as their suppliers.

Because all these companies needed to ramp back up, resources (both human and physical), were difficult to find. For instance, JetBlue's CFO, Ursula Hurley, stated, "I think we're all well aware that they're struggling from ramp up challenges driven by manpower and supply chain."

Similarly, Boeing CEO Dave Calhoun noted that, "we're not anticipating or suggesting that the supply chain world is going to get much better in the near term. We expect it will continue to be challenged over the course of 2023." Those challenges have prevented Boeing and its counterparts from further increasing production, driving a stubborn and growing backlog. In 2022, Boeing is expected to complete 375 Boeing 737s, but in January of 2022 the company had estimated that number to be north of 500.

Despite the continued supply chain challenges, growing backlogs provide companies with an opportunity to invest and grow their business. For instance, many middle market manufacturing businesses have begun implementing technologies to ease burdens brought on by labor shortages, such as labor-reducing machinery or data analytics to improve production. Investments in these areas are often rewarded upon a sale of the business as buyers typically have favorable views of well-invested, modern operations that can circumvent potential business disruptions.

4. Globally, defense budgets get a boost

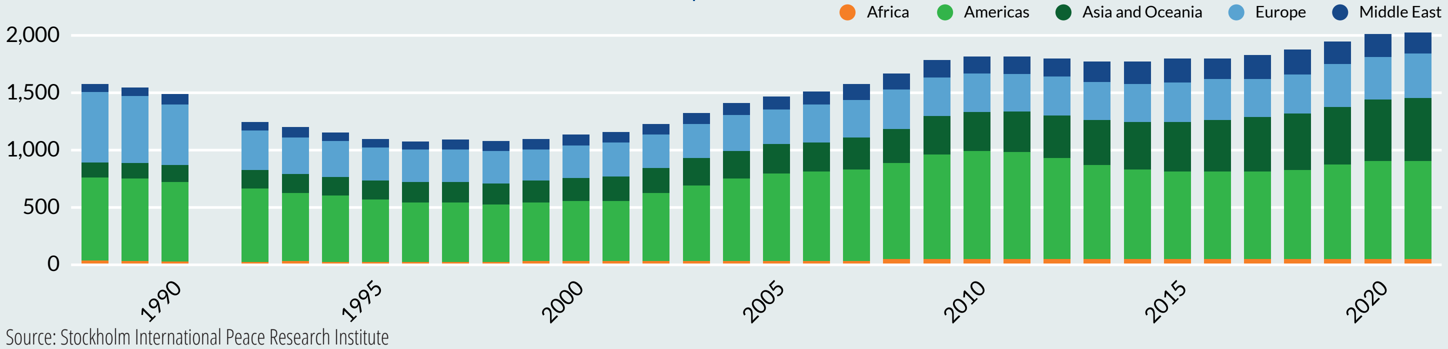
With the war between Russia and Ukraine ongoing and rising tensions between the U.S. and China over Taiwan, national security has become top of mind for many government and military personnel. Unsurprisingly, 2022 defense budgets received meaningful boosts with more increases on the way in 2023. According to the Stockholm International Peace Research Institute (SIPRI), total global military spending rose 0.7% in real terms and 6.1% in nominal terms from 2021, crossing the $2 trillion mark for the first time ever. Across nations, states are funding their 'war economy' through refreshing ammunitions and equipment while investing in next generation technologies like hypersonic missiles and anti-satellite capabilities.

In the U.S., military spending is again on the rise after dropping 1.4% from 2020 to 2021. In particular, the U.S. is focused on key initiatives determined to be essential to national security, including upgrading its nuclear weaponry and support infrastructure, advancing hypersonic capabilities, undertaking key research and development initiatives to maintain technological superiority and investing in space-based assets. Looking ahead to 2023, the U.S. is projected to again increase its defense budget, with expectations of military spending at roughly $857 billion. Within that total, the U.S. has earmarked about $800 million for Ukraine, which the Kremlin commented to be "confrontational." According to the U.S. Department of State, since January 2021, the U.S. has invested approximately $20 billion in security assistance for Ukraine. The U.S. and its allies' commitment to supporting Ukraine is not expected to waiver, further driving geopolitical tensions and escalating military spending.

Countering the support Ukraine is receiving from allies, Russia is also planning to spend more on its defense. From 2017 through 2021, Russia's average military spending was about $63 billion. However, after suffering setbacks in eastern Ukraine, the Russian government is changing its priorities to double-down on its military ambitions. As such, Russia's 2023 defense budget is expected to top $80 billion. To accommodate these changes, capital is being rerouted away from health, education, and domestic infrastructure.

In Asia, defense budgets are also on the up as tensions over Taiwan are escalating. China, Japan, Australia, and many other countries are expanding 2023 defense budgets. As noted by SIPRI Senior Researcher Dr. Nan Tian, "China's growing assertiveness in and around the South and East China seas have become a major driver of military spending." For China, 2023 will be the 28th consecutive year that is has increased its military spending.

CHART 3: **WORLD MILITARY EXPENDITURE BY REGION | 1988 - 2021**



Source: Stockholm International Peace Research Institute

5. US national security concerns prompt renewed focus on military supply chain

President Biden has labeled these coming years as "a decisive decade." As discussed previously, there are many hotspots around the globe driving widespread uncertainty. To promote democracy, support its allies, and ensure national security, the U.S. has entered an era focused on deterrence. Deterrence typically comes in the form of strength, and the U.S.' priorities suggest that will continue to be the case.

In the coming years, the U.S. has committed to the development and procurement of several systems: the new, recently unveiled B-21 bomber, more F-35 Lighting II and F-15EX fighters, the construction of nine battle-force ships (as well as more nuclear-powered aircraft carriers and submarines), both land-based and air-launched hypersonic missiles and, to top it all off, $34 billion to modernize its nuclear triad and support infrastructure.

Yet, for all its technological innovation, the U.S. relies on the manufacturing support of the very adversaries it is trying to deter – specifically, China. Elbridge Colby, co-founder of The Marathon Initiative states it simply, "We can't rely on China to build components for our weapons, which is to some extent, potentially what we have done." For instance, 18 new F-35 fighters sat idly outside a Lockheed Martin facility for months given concerns that a key component of the engine had been developed with raw materials sourced from China, a violation of federal procurement rules. Ultimately, the Department of Defense granted a waiver for the alloy, but this instance highlights a growing concern: in a global world, how does the U.S. guarantee national security by keeping counterfeit and unauthorized materials outside its supply chain?

Counterfeit materials pose both an intellectual property risk as well as a manufacturingrisk. The Pentagon is worried that the worldwide semiconductor shortage will facilitate an influx of counterfeit chips. In 2018, microchips developed with a sub-contractor from China and that had been used to spy on private companies had also made their way into Defense Department data centers, CIA drone operations and U.S. Navy ships. More tragically, an Air Force pilot lost his life in 2020 due to a failed ejection seat, which contained no less than 10 suspect components based on the ensuing investigation.

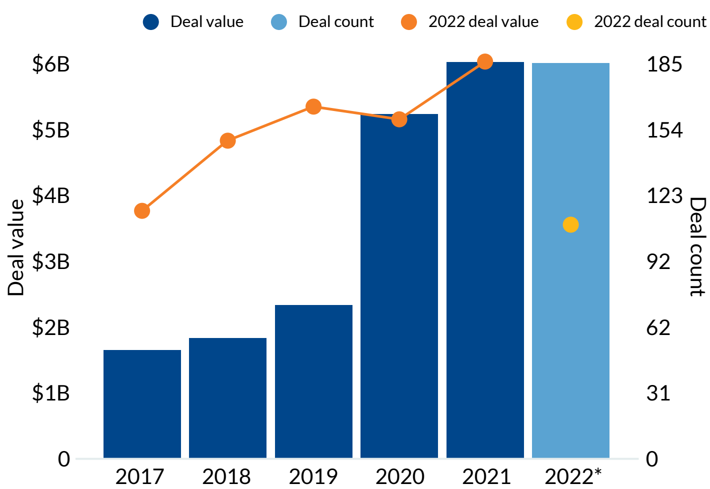
To combat these troubles, the U.S. has adopted new policies, including requiring the reporting of suspect materials within a short window, utilizing AI to detect counterfeit components and even discussing the implementation of blockchain technology to validate the supply chain. Regarding semiconductors specifically, the Department of Defense is also exploring a 'Zero-Trust' policy, which would require the assumption that no microchips are safe until tested and validated.

While many of these initiatives are in their pilot phase, the status quo has been that each sub-contractor is responsible for their own IP, production and sustainment. The challenge has been that prime contractors -- particularly those sub-contractors that are deeper down and closer to the raw material supplier -- expect compliance from these smaller firms yet often leave the burdening financial responsibility to them as well. Although the industry still struggles with a 'tug-of-war' responsibility game, the matter has been getting more attention from the government. Hence Tier 2 and down suppliers are starting to renew their emphasis on supply chain validity through traditional and innovative means – a trend likely to continue as military spending progresses and geopolitical tensions are prolonged.

6. Space venture funding is cooling, but investor attention remains with transformative M&A announcements

Space technology investment is anticipated to hit another record year in 2022, as both venture investors and proliferating startups continue to pour assets into the industry. Although the overall number of deals are expected to be down from 2021, the overall value of dollars committed will likely be a record year. The reduced number of investments reflects the maturing of the earliest startups, large fund sizes, and the need for increased capital to continue fueling growth.

CHART 4: **GLOBAL VC FUNDING IN SPACE TECHNOLOGY**



Source: PitchBook | *As of Oct. 24, 2022

2022 saw investors most interested in geospatial intelligence, in-space manufacturing, space launch and space tourism. While capital investments slowed in the second half of the year -- largely dampened by inflation, rising interest rates and macro global fears of a recession -- investors still have an estimated $300 billion of dry powder dedicated to the space ecosystem. While some believe investors are waiting for opportunistic valuations, a growing chorus anticipates a slower investment period with a 'risk-off' mentality, given ongoing recessionary concerns. Hence, some of that dry power will likely be utilized by investors to support existing portfolio companies during these uncertain economic times. Additionally, some new businesses may struggle to obtain funding, particularly those that require significant capital expenditures, like large-scale infrastructure efforts.

Yet, for businesses that foresee a faster path to revenue and profitability, with less capital requirements, investor funding is still available. Specifically, those companies providing data, insights and critical services remain highly attractive, especially those secured by long-term government contracts.

Moreover, the U.S. Secretary of Defense recently established the Office of Strategic Capital. The Department of Defense has said that this new office aims to "connect companies developing 'critical technologies vital to national security' with private capital funding," as well as utilizing grants, contracts, loans and guarantees to help spur innovation. Although the Office's mandate will not be exclusively related to space, the ever-increasing import of space technology and assets will certainly mean the inclusion of space companies within the Office's scope. Thus, although early 2023 is likely to be highlighted by headlines of slowing investment in space startups, there remains significant sources of capital available to many businesses developing space technology.

It is also worth noting that the market remains open and viable with regards to M&A opportunities, for both growing and mature space companies. In fact, in just the past few months, there have been notable consolidation and IP-driven acquisitions, including L3 Harris' purchase of Aerojet Rocketdyne for $4.7 billion and Advent's purchase of Maxar Technologies for $4 billion; in the fall, a majority of York Space Systems was acquired by AE Industrial Partners, the firm behind Redwire Space.

7. Earth observation data showcases immediate value of space assets

Space launch systems usually get the most media attention, but one of the biggest drivers of the private space ecosystem are satellite companies. EO enables environmental monitoring, resource management, humanitarian responses, military advantages and even competitive edges amongst rival companies and investors.

As an overview, EO satellites reside in different orbits, revolving around the Earth at differing speeds. Through these various orbits, satellites provide unique perspectives and information, with some providing global coverage and others attached to a specific geographical point. As with anything, each orbit has its pros and cons, but also fulfills a different function. For instance, geostationary orbit (GEO) satellites – satellites that stay fixed over a certain geography – provide round-the-clock coverage best suited for uses like telecommunications; alternatively low-earth orbit (LEO) satellites revolve around the Earth roughly once every two hours and are utilized for environmental observations and military reconnaissance.

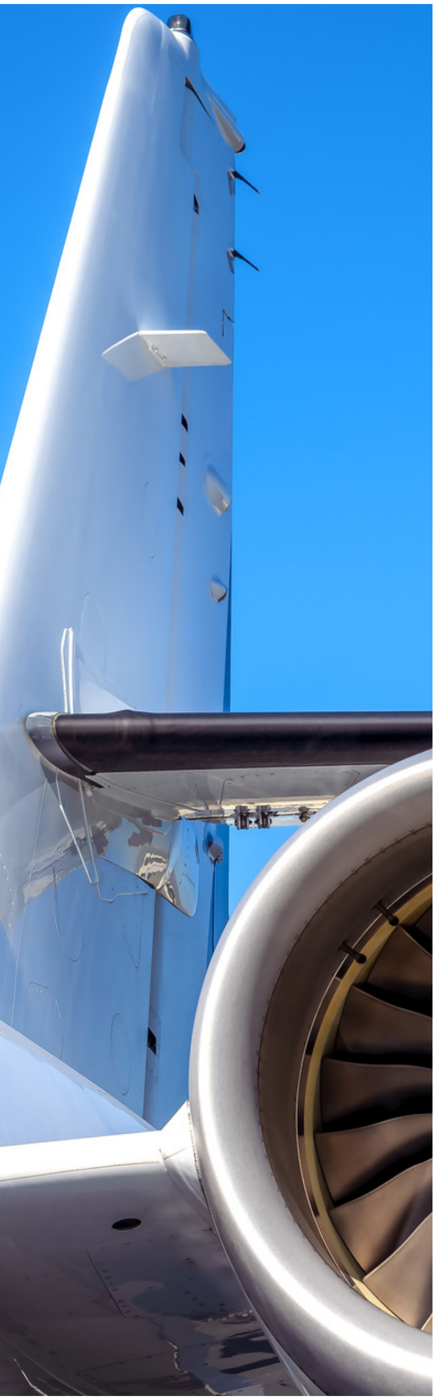
The abundant use cases of EO data highlights the reason why its garnering so much attention and is primed to explode in the coming years. Valued at about $3.6 billion in 2021, experts believe by 2030 the industry will be worth almost $8 billion. Moreover, consulting firms like McKinsey have issued articles on why companies need to be strategically planning to incorporate the use of EO data now, before being left behind.

One example of the immediate and essential use of EO services has been in Ukraine. EO data has influenced everything from military tactics to public perception. Stephen Wood, an imagery analyst with Maxar has stated that the Russia-Ukraine war is, “probably the most documented war in history.” Information once the province of only a select few governments, is now democratized and fully accessible to the public at affordable prices. For the Ukraine, which only had one civil satellite in orbit, the availability of EO data via private companies has allowed government and military decision makers to direct combat troops and also track the movement of opposition forces and materials. From the public’s view, these images have helped frame the war and rouse western support, most famously with the image of a 40-mile-long Russian convoy approaching Kyiv.

An EO satellite image of a damaged Chuhuiv airfield in eastern Ukraine in February 2022

Given the wide breadth of use, EO continues to attract significant investment from legacy A&D firms and startups alike. However, since there is so much demand and potential, within the EO value chain there is an entry for all types of investors and suppliers. Opportunities range from propulsion technology that gets the satellite into the correct orbit to sensors that capture the data, to ground terminals and software that receive and process the data for use. Accordingly, experts anticipate that as the overall space market grows toward its projected $1 trillion mark by 2040, the EO sub-industry of space will continue to play a major role in that development. From military contracts to government and commercial usage, there’s a lot to be excited about for EO.

An EO satellite image of a damaged Chuhuiv airfield in eastern Ukraine in February 2022



M&A Outlook

Overall, Mesirow foresees continued macro headwinds throughout the M&A market given the ongoing fears of a recession and increasing cost of capital. Yet despite longer transaction processes and M&A headwinds, there remains significant value to be unlocked from strategic and thoughtful M&A activity. As such, middle market activity has and is expected to persist for strategic assets.

Mesirow is seeing continued interest in relevant assets, given the persistent demand across both the aerospace and defense sectors. Many companies balanced across both sectors are experiencing growing backlogs and pipelines, underpinned by long-term contracts, many issued from the U.S. government. This enables businesses to achieve meaningful valuations despite global macroeconomic slowdowns.

Regarding the private capital market's impact on M&A activities, Mesirow's Head of Debt Advisory, Eugene Weissberger, notes that "while the private credit markets have taken a little bit of a pause, their rebound should be quicker than broadly syndicated markets." Looking ahead through 2023, Weissberger anticipates a slower start to the first half of the year, followed by a pick-up in the second half. Such a trend mirrors our expectations for A&D, particularly as the multiple gap between buyers and sellers narrows.

Within the M&A middle market, there is a delta between sellers and buyers on the appropriate valuation multiples; sellers are pushing for a sale based on forward projections whereas buyers are placing emphasis on historical performance. Not a new phenomenon, but sellers are pushing harder to realize the benefits of the expanded defense budgets and growing backlog of commercial aviation OEMs. However, as supply chains stabilize throughout 2023, we expect the division between buyers and sellers is likely to ease, further driving more M&A activity.

In sum, Mesirow anticipates a period of innovation and technology transformation given the geopolitical climate, increasing spend by governments, and persistent demand for air travel coupled with workforce and plane shortages. Although M&A activity has cooled from its 2020 and 2021 highs, continued demand paired with fierce competition often spurs intellectual property and product line expansion through M&A activity. Moreover, with private financial markets still available, Mesirow anticipates strategic assets will continue to garner significant interest from buyers.

Dedicated advisor to the Aerospace & Defense sector

Mesirow Investment Banking is consistently focused on elevating the experience for our clients. With extensive sector-specific expertise and deep long-standing relationships, our dedicated Aerospace & Defense team has a proven track record of completing highly tailored and successful transactions. Our highest priority is helping individuals and organizations achieve their financial and strategic goals.

To learn more, visit mesirow.com/investmentbanking.

Contact us

Andrew Carolus
312.595.7802
andrew.carolus@mesirow.com

Adam Oakley
312.595.6692
adam.oakley@mesirow.com

Steve Simon
312.595.6722
steve.simon@mesirow.com