Mesirow

Aerospace & Defense sector report

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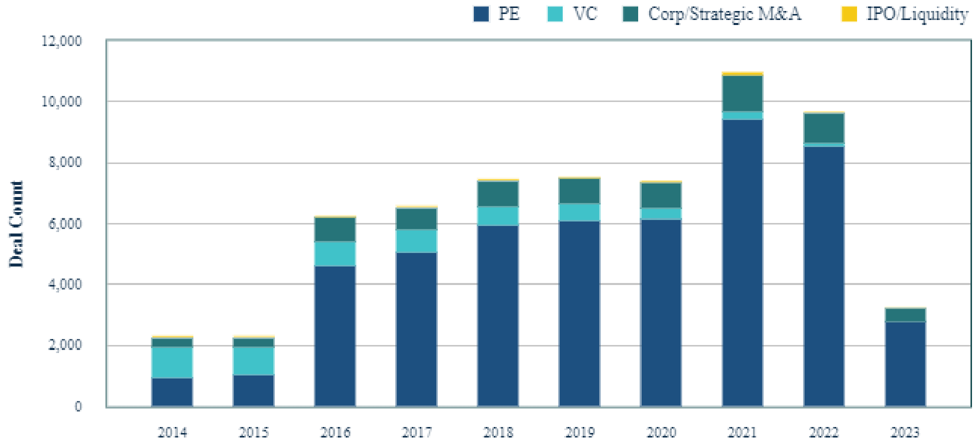
2023: Mid-year update

Similar to our report at the end of 2022, the A&D M&A market continues to face both macroeconomic uncertainty and tight capital markets. While Mesirow anticipates these broad, challenging conditions to persist through 2023, there remains potent interest in diversified, well-performing businesses, particularly for those that are servicing established commercial airframe platforms or government agreements on programs of record.

CHART 1: **KEY STRATEGIC INVESTMENT TRANSACTIONS SINCE 2014**



Source: Pitchbook Data.

In this report, you'll find our highlights of the past six months within the A&D sectors as well as some forward-looking thoughts for the rest of 2023. Here's a brief recap as well as the highlights found within this report:

Commercial Aerospace Highlights

1. Commercial aviation demand persists, but some supply chain issues still linger
2. Continued exploration of AI in commercial aerospace with a focus on labor shortages and supply chain optimization

Defense Highlights

3. Ukraine-Russia war continues geopolitical shockwaves, prompting focus on innovation and rebuilding supplies
4. U.S. shows increased focus on naval assets

Space Highlights

5. Venture funding for space companies remains tight
6. Space data is a prioritization for national security

1. Commercial aviation demand persists, but some supply chain issues still linger

Throughout our recent reports, we have noted the continued increasing demand for commercial air travel as COVID restrictions ease. Halfway through 2023, this trend carries on as Revenue-Passenger Kilometer ("RPKs"), an essential metric for the commercial aviation industry, continues to climb. In fact, global RPKs are only 12.0% off their 2019, pre-COVID levels. While all regions continue to see growth driving RPKs higher, the International Air Transport Association (IATA) reports that the global recovery to pre-COVID levels is currently being pushed by demand within the Asia Pacific region.

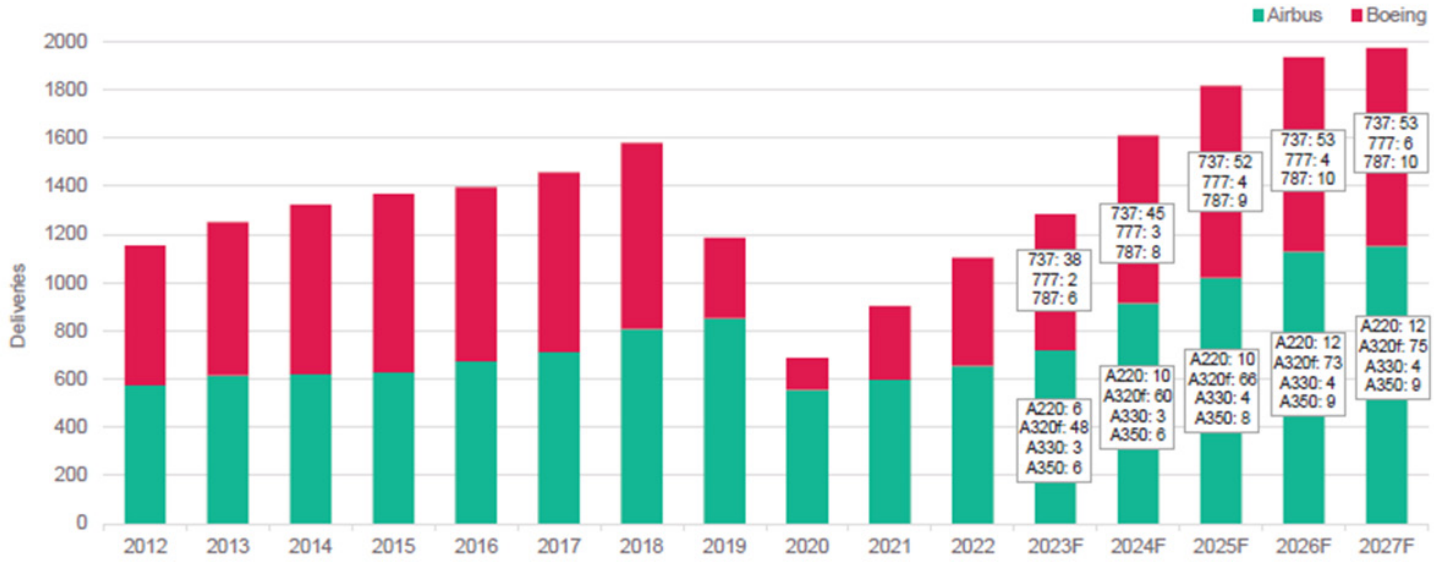
With regards to ticket sales, IATA reports that domestic RPKs nearly reached their pre-COVID levels in March, which showcases the strong demand consumers have for air travel. With such demand, hope of a robust and sustained commercial aviation recovery continues. Such a recovery seems to be likely as both Boeing and Airbus have reported strong backlogs for their commercial jets of all sizes.

This year, during the Paris Air Show, there was much buzz around the increased new aircraft booking orders, including a record 500-plane deal between Indian airline IndiGo and Airbus for A320neos. In total, Airbus left Paris with more 801 new orders and Boeing with 230. Although Airbus was the clear winner coming out of the Air Show, the industry might be the true winner given the optimism stemming from the number of orders received and the perceived continued revival of the commercial aerospace industry.

Yet, although demand for commercial jets remains strong, the large airplane manufacturers are struggling to meet demand. As we received finalized 2022 numbers, it was apparent that last year's delivery volumes failed to meet initial benchmark targets due to supply chain challenges and workforce shortages.

Boeing and Airbus have improved upon their delivery performance throughout the first half of 2023, but many industry executives are still seeing stubborn supply chain issues limiting manufacturing capabilities.

CHART 2: 2022 DELIVERY VOLUMES FAILED TO MATCH INITIAL TARGETS DUE TO SUPPLY CHAIN ISSUES, 2018 TOTALS UNLIKELY TO BE EXCEEDED BEFORE 2024



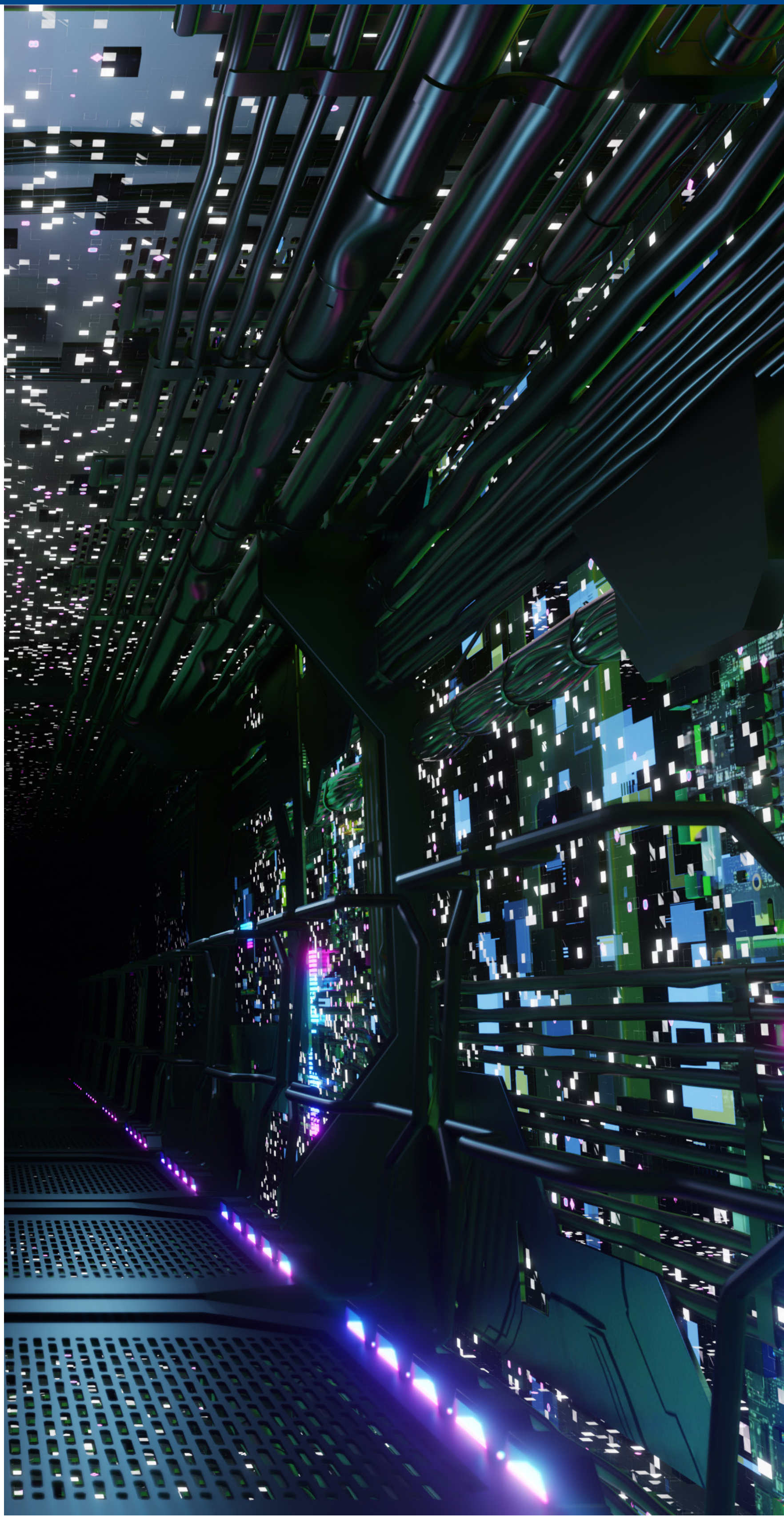
Source: Cirium Fleets Analyzer and 2022 Cirium Fleet Forecast for 2023-27 (amended for recent market developments), boxes show average monthly deliveries..

CHART 3: AIRBUS: COMMERCIAL AIRCRAFT ORDER BACKLOG

(Jan-2019 to Jan-2023)

Source: CAPA – Centre for Aviation and Airbus.

The challenges stemming from supply chain uncertainty are further exacerbated by an aging inventory of airplanes, most notably relatively few young single-aisle aircraft. As such, although consumer demand is in a period of sustained growth, meeting the demand is proving to temper a full-blown recovery. Nevertheless, Mesirow sees commercial aviation continuing its stubborn rebound despite supply chain headwinds. Moreover, we remain cautiously optimistic that as supply chain obstacles abate, transactions for key commercial aviation suppliers will increase.

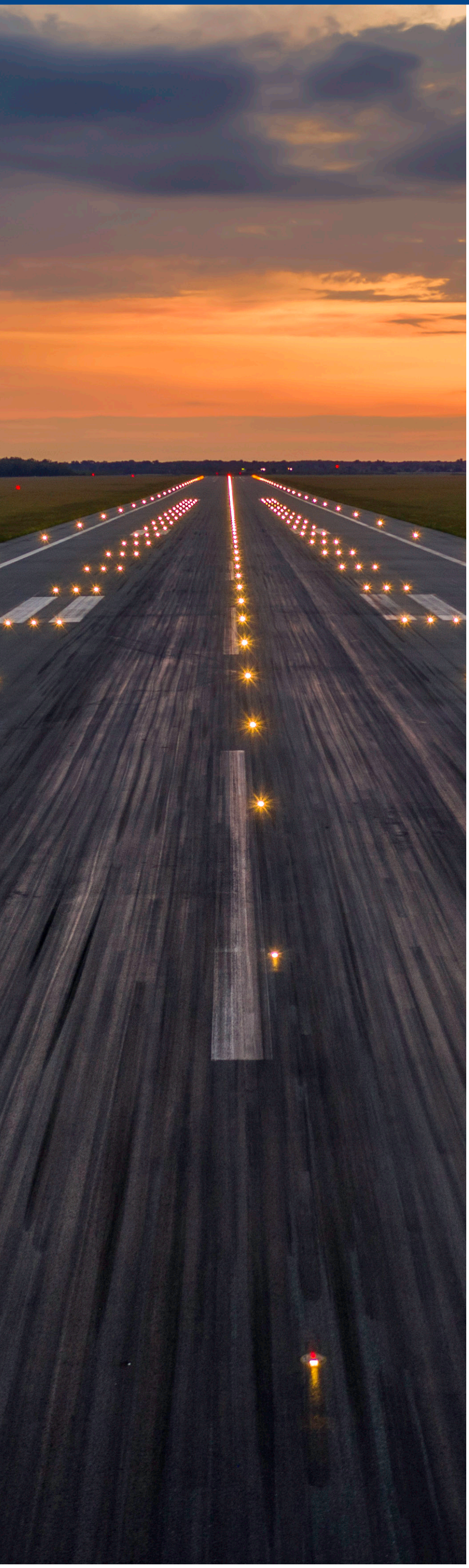


2. Aerospace and Artificial Intelligence

Perhaps one of the biggest topics over the past six to 12 months, not just in Aerospace and Defense but across all industries, is artificial intelligence. To be clear, AI has been embedded in A&D for years. However, what has recently changed – and what was the topic of many conversations at the Paris Air Show – was the explosion of generative language-learning AI models like ChatGPT.

For years, machine learning algorithms, also noted as AI, have been utilized in use cases across the A&D markets. From assisting with passenger flow at airports to predictive maintenance on airplanes and other essential equipment, both large and small industry players have sought to harness the power of AI to improve efficiencies and products. Both of those goals persist, but the further emergence of AI capabilities put much broader possibilities on the near horizon, including augmenting the responsibilities of everyone in the industry, from the engineers who design planes to the pilots who fly them.

From an M&A perspective, this has forced many big A&D players to seek out AI assets that could offer key partnerships, like Alaska Airlines' multiyear agreement with Flyways AI, but also the emergence of A&D-focused AI startups such as Rebellion Defense. Overall, while the emergence of generative AI is only just starting to scratch the surface of its potential, unless regulatory headwinds come into existence, many A&D firms will be putting significant resources into implementing AI models that could provide a competitive advantage. Accordingly, we expect to be writing about A&D and AI many more times in the reports to come.



3. Ukraine-Russia war continues geopolitical shockwaves, prompting focus on innovation and rebuilding supplies

The Ukraine-Russia war is something that Mesirow, and many other firms, have featured in reports since the war began almost a year and a half ago. Nevertheless, the war continues to have dramatic effects for both the two warring countries as well as the rest of the world. Beyond the military ramifications, the war has reignited the world's thirst for defense technologies – whether to outdo opponents through innovating superior technology or simply rebuilding dwindling supplies.

Although NATO allies are wary of being pulled into the war directly, many NATO governments have shed their reluctance to provide Ukraine with more sophisticated weapons, including battle tanks, aircraft, and ammunition. In fact, the U.S. recently approved providing cluster bombs to Ukraine, which came shortly after the U.S. gave its permission for allies to provide Ukraine with F-16 jets.

CHART 4: **COUNTRIES PROVIDING MILITARY AID TO UKRAINE**
As of July 2023

Note: In some cases military aid only includes assistance with clearing landmines. | Source: Council on Foreign Relations, Antezza et al., Ukraine Support Tracker, Kiel Institute for the World Economy; CFR research.

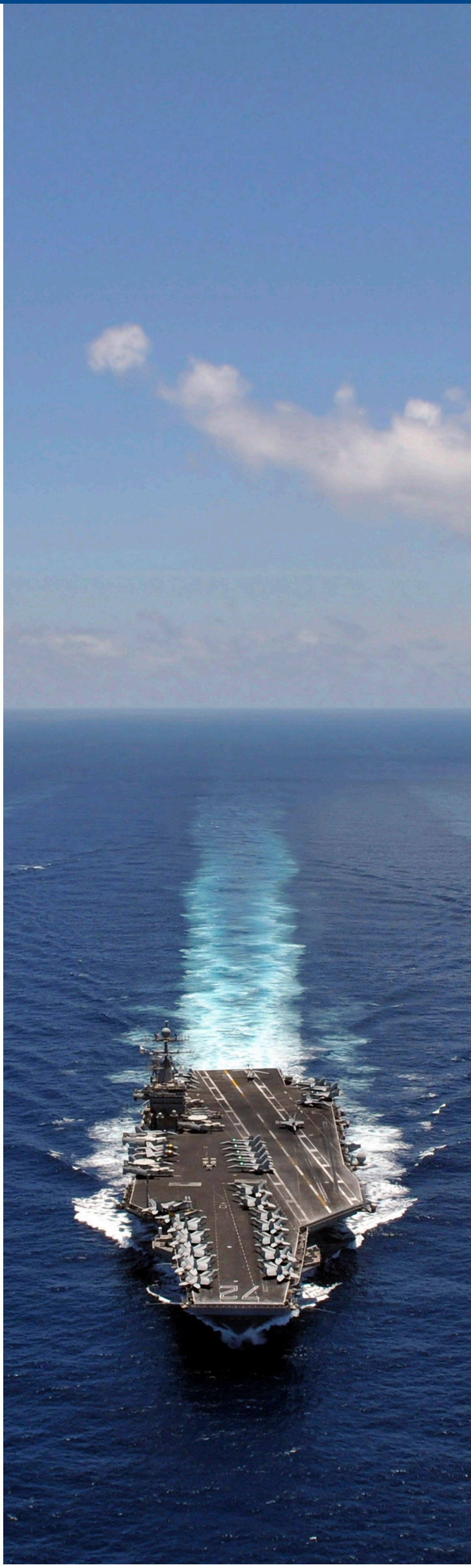
Perhaps most telling aspect of the current state of the defense industry is reflected in Germany. Recently, the German government approved (and will have Parliament vote in the coming months on) a 6% reduction to its 2024 budget as compared to 2023. To make this reduction possible to rein in government debt, the new budget slashes spending across the board and, in particular, on things like social benefits. Yet, the only industry to not see a reduction, and in fact was increased, was the military.

In the U.S., bipartisan support for military spending has helped send the defense budget to new heights. Indeed, last year Congress added $45 billion more than what the President or the Pentagon had asked for; this year, analysts are expecting the budget to exceed $1 trillion when accounting for national security spending outside of the Department of Defense.

Yet, despite the monetary resources being made available, supply is still not equaling demand. In response, oversight regulations have been stripped away to aide in securing needed supplies. For instance, new emergency munition provisions in the defense budget permit the military to buy ammunition on multi-year contracts to encourage manufacturers to invest in improving capacity. Moreover, accounting requirements that forced manufacturers to justify pricing have been scrapped. Nevertheless, these changes will take time to have an effect and so procurement of essential weapons, from munitions to missiles, will likely be constrained for the near future.

In addition to the restocking of supplies, the U.S. and its allies continue to invest in next-generation technologies, including hypersonic missiles and nuclear capabilities. For hypersonic missiles, many news outlets have reported an arms race between the U.S. and China for technology superiority with some U.S. defense firms warning that China is leading the race. Yet, the U.S. is certainly not surrendering, with the Department of Defense announcing recent contracts awarded to various private companies, both large and small, to develop hypersonic weapon systems. Similarly, with nuclear modernization, the U.S. also continues to invest heavily in its nuclear capabilities and related infrastructure. Recently, the Biden administration has requested almost $19 billion for nuclear weapons activities in 2024, a 10% increase from last year.

From an M&A perspective, those businesses that are embedded into multi-year contracts and are supplying governments with kits / restocking military supplies remain best positioned to transact at elevated valuations. Investors continue to seek out operations that support the U.S. military's strategic agenda. Despite general macroeconomic headwinds, Mesirow anticipates these deals to continue to garner significant attention and to transact at attractive multiples for would-be sellers.



4. U.S. shows increased focus on naval assets

China has spent the past 20 years building the largest navy in the world, going from operating 37 vessels in the Western Pacific during the early 2000s to 350 vessels today. With that growth, China's actions have also become bolder, including threatening an invasion of Taiwan.

As China's rhetoric and actions heat up, so too have the mobilization and renewed focus on the assets of the U.S. Navy. Over the years, President Biden has repeatedly said that the U.S. would defend Taiwan against any aggressor. Yet, despite what China has built up in numbers, it still is attempting to close the gap in technology. For instance, China currently has two diesel-powered aircraft carriers operational, whereas the U.S. has 11 nuclear-powered ones. Those 11 aircraft carriers combine to carry 1,000 attack aircraft, which is more than the navies of every other nation on earth, combined.

Despite the technology gap, the actions of China have left some worried. In response, Japan and the Philippines have forged closer ties to the U.S. military while also investing in their own defense capabilities. Additionally, the U.S., Britain, and Australia signed a landmark deal to jointly develop nuclear-powered attack submarines to patrol the Pacific.

Over the past two decades, U.S. investment in Zumwalt Destroyers and Littoral Combat Ships have both been largely unsuccessful due to engineering challenges and cost overruns. Moreover, with only seven shipyards in service, the U.S. Navy's ability to build new ships or service existing ones is limited. To combat these challenges, the U.S. Navy has been investing heavily in alternatives, including unmanned vessels like the ORCA. As in the last section, the U.S. Navy is benefiting from robust capital support, including a budget request for fiscal year 2024 of $250 billion.

Yet, despite recent struggles, the Navy and the U.S. government also continue to invest in traditional naval assets broadly. Carlos Del Toro, United States Secretary of the Navy, said that 54 ships are in construction now, "and more importantly than just the number of ships under construction, they're the right ships under construction. So, we're building DDG Flight IIIs. We're building aircraft carriers... We're building logistics ships, oilers that are incredibly important. So, all these are really, really significant ships, and I'm proud of the investment that both President Biden and Secretary Austin have made in our shipbuilding accounts."

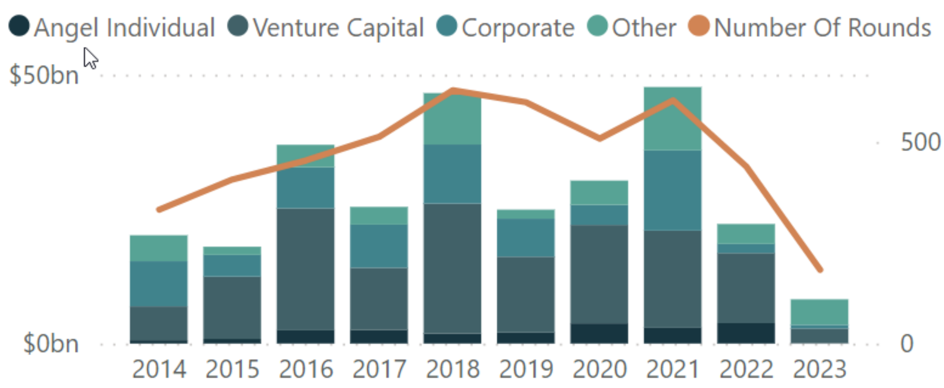
5. Venture funding for space companies remains tight

2021 was a historic year for space startups raising capital, but 2022 and the first half of 2023 have seen continued decline for would-be space entrepreneurs seeking funding. As reported by Space Capital, quarter-over-quarter investment in space startups is down 53% through Q1 2023. That's the lowest quarterly investment figure since 2015.

Space investment has been hit with a tidal wave of headwinds, including the collapse of Silicon Valley Bank and other regional banks, the fastest central bank rate hike since 1988 and a general investor tendency to flock to safety. Given these challenges, investment dollars that continue to flow to the space sector are focused on proven business models and revenue-generating firms, seemingly a longhand way of saying companies that have government contracts. This equates to the success of firms like SpaceX, which continues to attract investors despite a ceiling-high valuation, most recently north of $150 billion. Yet, outside of outlier companies like SpaceX, many space startups are facing a cash constraint as funding received two-plus years ago dries up.

As we have written previously, the government remains a critical customer for space companies and now more than ever, the young space industry needs its government customers. In perhaps a telling sign of the times, Space Force's budget for 2023 is $26 billion, which is higher than NASA's budget of $25 billion. While investors continue to believe in the medium- and long-term opportunities of space, in the short-term, Mesirow foresees a continuation of the current challenging funding environment for most space startups and especially for those without proven revenue-models or those without connective tissue linked to government contracts.

CHART 5: **EQUITY INVESTMENT BY INVESTOR TYPE**



Source: Space Capital.

6. Space data is a prioritization for national security

Since the inception of our space section within our reports, we've highlighted the growing importance of data from space. The companies that operate here have all the hallmarks of providing a critical service that investors desire, from critical applications not easily replicated to recurring revenues from large government contracts. Yet, as funding for space startups declines, this sub-industry has continued to attract substantial investment from both the public and private sector.

In a recent wargame exercise, a U.S. think tank predicted that if the U.S. and China went to war, one of the first actions taken by both states would be to attack their respective foes' satellites in orbit. From the Department of Defense utilizing imagery to aid military actions to the U.S. Agency for International Development leveraging satellites to tackle food shortages by monitoring crop conditions, the use cases of satellite connectivity have become essential to national security.

As the Assistant Secretary of Defense for Space Policy puts it, "For the Department of Defense space is essential to how we compete and fight in every domain. It provides us with a missile warning and missile tracking critical to defending our homeland. It provides position navigation and timing to strike targets with precision. And it provides communication in austere environments to support global command and control. To put it simply, space-based missions are essential to the U.S. way of war."

One example of the success of satellite-imaging companies is Maxar Technologies, which was recently acquired by private equity firm Advent International in a take-private transaction. Maxar is a satellite-imaging firm that produces imagery and data for a variety of purposes, including the U.S. government through agencies like the U.S. National Geospatial-Intelligence Agency.

Over the rest of the year, there is likely to be continued interest and advancement in space data and its technological infrastructure, especially around cutting-edge technologies like radio-frequency mapping and hyperspectral imaging. In particular, the U.S. government is seeking to invest further in these capabilities to provide real-time insights to its soldiers and allies. This includes money earmarked for missile warning and tracking systems as well as next-generation general position, navigation, and timing ("PNT") technologies, all space data technologies.

M&A Outlook

As we reported in our last update, the A&D M&A market slowed during the first half of 2023, largely driven by uncertainty around macroeconomic trends and tightening capital markets. Yet, investors are continuing to seek opportunities to bolster their capabilities and technology. This has helped create an environment for a stronger A&D M&A market with some recent critical transactions. For instance, within the engine component supply chain, CD&R and Greenbriar acquired Whitcraft Group and Paradigm Precision in February to form Pursuit Aerospace. Further still, recently, there have been a few large pending A&D M&A transactions announced that would likely beget more deal activity on the horizon.

Beyond these large, public transactions, the lower and middle market is also garnering recent attention from investors. In particular, businesses with stable operations tied to long-term agreements and contracts are still getting lots of investor interest. Accordingly, Mesirow anticipates that middle market A&D activity is likely to see its own increase in activity as investors seek to unlock value from strategically important assets.

For commercial aviation, we anticipate an investor bias skewed towards maintenance, repair, and overhaul businesses (MRO). The industry continues to grapple with lagging new jet supply along with long delays for upkeep on current fleets due to supply chain and worker shortages. MRO businesses, and those servicing these businesses, are well-positioned to capitalize on a growing backlog and increased focus from key airline executives on securing more airplanes.

In the defense industry, we expect investor interest to continue to remain high as geopolitical events persist. As mentioned above, the need to restock dwindling supplies has prompted the U.S. government, and its allies, to extend multiyear contracts to many suppliers. Although the Pentagon has postured a negative stance on further consolidation in the defense industry, these comments are directed at large-scale players. Accordingly, there remains significant value and interest in low and middle-market companies servicing these government contracts.

As for the space industry, we believe that tighter capital funding conditions will continue throughout the rest of the year. As such, many startups may find themselves with a limited runway to continue operations. For those businesses with positive cash flow or excess cash on the balance sheet, there is substantial opportunity to acquire key intellectual property and talent as competitors' funding runs dry. Therefore, we foresee a lull in investments followed by a period of rapid consolidation.

Dedicated advisor to the Aerospace & Defense sector

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