QUARTERLY REVIEW OF GLOBAL PRIVATE INVESTMENT

GENERATION SPACE INDEX

Q4 2023

GENERATION SPACE

WELCOME

Investment in NewSpace remained resilient despite economic uncertainty. While the general VC investment saw a 35% drop in investment between 2022 and 2023, SpaceTech substantially outperformed. Despite a slow start to 2023, the year culminated with a total annual investment of $6.8bn, effectively in line with 2022!

Q4 was the most active quarter of the year, with a $2bn invested across 127 deals, marking the highest number of recorded deals in a single quarter. These transactions signify an all-time high in activity for both late-stage investing, with the resurgence of growth rounds, and early-stage, indicating a substantial pipeline of new opportunities within NewSpace.

In 2023, the standout sectors for investment were "Platform", attracting $1.8bn of investment, with SpaceX as the major contributor. Additionally, "Beyond Earth" raised $1.6bn, attracting significant investments into businesses advancing the next generation of space infrastructure.

All the largest rounds for the quarter were concentrated in capital intensive businesses, which own or operate assets in space. Businesses with capital-light models have in many cases strategically avoided seeking growth capital on less favorable terms, while capital-intensive ventures are returning to the capital markets since they more immediately require funding to achieve scale.

Firefly Aerospace raised the largest round for the quarter, at $300m. The round demonstrated that strong businesses raising from a position of strength continue to succeed in raising large investment rounds.

Many of the largest rounds saw significant participation from Japanese corporate investors. We attribute this to cash rich, and long-term minded businesses, investing in space to secure a portion of this growing market.

In terms of M&A, well financed NewSpace businesses have been the most prolific acquirers by number of deals throughout 2023. However, all the largest transactions were conducted by either Private Equity or Corporates. 2023 saw several large transactions including L3 Harris' completion of the Aerojet Acquisition, BAE's acquisition of Ball Aerospace, KKR's OHB take-private, Advent's Maxar take-private and the Eutelsat and Oneweb merger.

The SPAC market remains turbulent in Q4. While Virgin Orbit remains the only recent SpaceTech SPAC to have declared bankruptcy, others like Astra and Momentus are experiencing difficulties and searching for solutions to shore up the business' financial position. Q4 saw the cancellation of WorldView's SPAC, while separately, Lynk has announced its own SPAC deal, which would finance their Direct-to-Cell broadband constellation.

Ultimately, 2023 has been an exciting year, with all time high levels of startup activity. We have been pleasantly surprised by the scale of the recovery through 2023 and are looking forward to seeing what 2024 may hold.

Highlights

$6.8BN
invested in 2023 ($6.9bn in 2022)

$2.04BN
invested in Q4 23 ($1.6bn in Q3 23)

267
on Seraphim Investment Index (220 in Q3 23)

303
on Seraphim #Deals Index (282 in Q3 23)

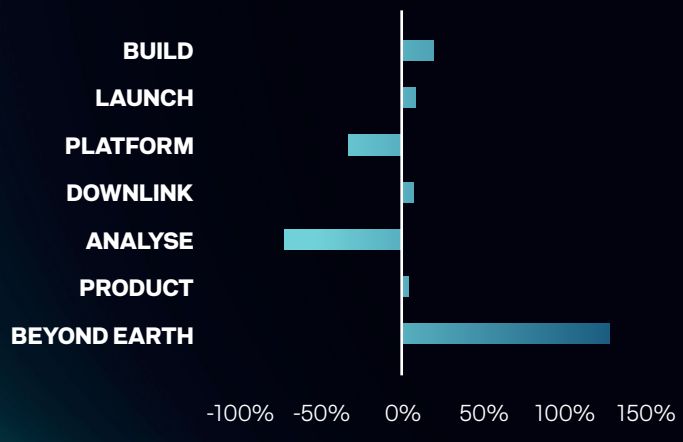
$300M
biggest deal closed in Q4 – Firefly

$22M
average deal size in Q4 ($24m in Q3 23)

$6.5M
median deal size in Q4 ($4.1m in Q3 23)

30
M&A transactions in 2023 (22 in 2022)

Investment ($), 2022 vs. 2023
(% Change)



In 2023, the Beyond Earth space sector saw a remarkable surge. The category now accounting for 24% of total investment, up from just 1.6% in 2020. This trend underscores the sector's rapid evolution and increasing importance.

The Analyse category saw a reduction in investment from previous years. We have witnessed a small number of recent high profile failures within this segment, including Descartes Labs and Cervest. It appears that Analyse may be a difficult market to service, with interest shifting towards businesses that provide productized offerings over analytics alone.

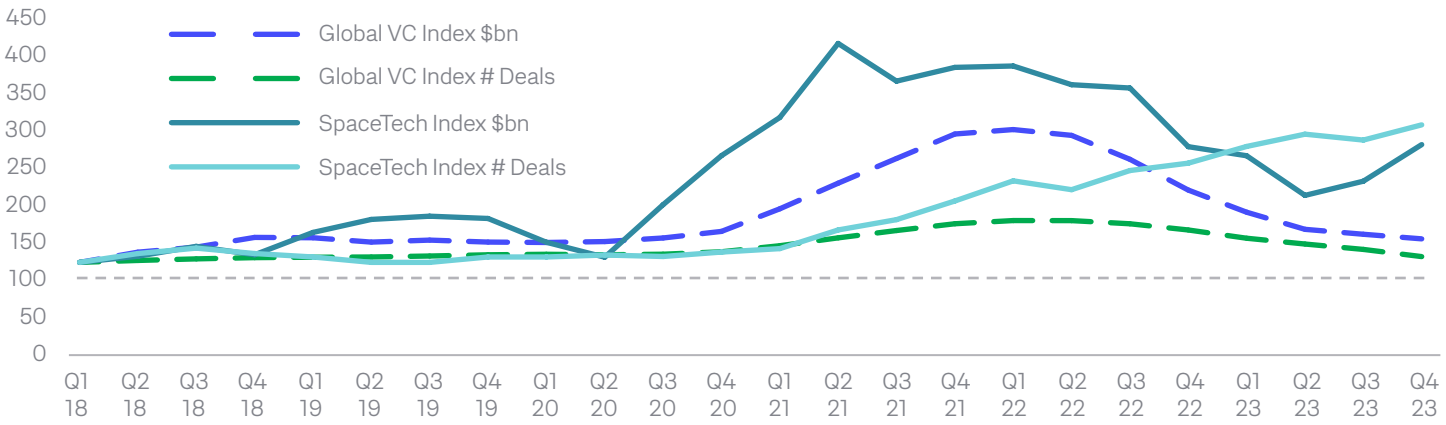
Q4 2023 TOP DEALS

Q4 saw the fundraising environment for SpaceTech business continue to improve from H2 2022. Q4 2023 saw the highest number of growth rounds any quarter since we started analysing the market in 2017. While the size of these rounds has reduced from the heights of 2021, it signals that quality SpaceTech companies are still able to access growth financing. The top deals of the quarter are highly concentrated in capex heavy businesses. While capital light businesses may be able to wait for fundraising conditions to further improve before raising large growth rounds, capital intensive businesses require funding more immediately to scale. The businesses listed here appear to have had success raising from a position of strength, carving out a specific niche where they can be a market leader providing highly specialised services.

Firefly raised the largest round of the quarter at $300m, following high value NASA lunar lander contracts, and the recent success of their rapid response launch for US Space Force. Japanese corporate investors have been very active within the largest deals in Q4 2023. Just within this quarter Mitsui backed Firefly and Toyota invested in Stoke. Throughout 2023, Japanese corporates have been very active within Space. This is because they often have significant cash reserves to deploy, and approach investing with a long-term mindset. They are well aligned with space given it is a long term, growing market, which they are seeking exposure to in its early stages of development. Furthermore, these companies are experts in hardware and manufacturing, increasing potential synergies.

COMPANY	COUNTRY	DATA LIFECYCLE	SUB CATEGORY	STAGE	AMOUNT ($m)
Firefly Aerospace	US	Launch	Rockets	Series C	$300m
Galactic Energy Aerospace Technology	China	Launch	Rockets	Series C	$154m
Mangata (Communications and Networking)	US	Platform	Satellites - Telecoms	Series B	$115m
Stoke Space	US	Launch	Rockets	Series B	$100m
Qosmosys	Singapore	Beyond Earth	Space Infrastructure	Seed	$100m
True Anomaly	US	Beyond Earth	Space Infrastructure	Series B	$100m
Ge Si Hang Tian	China	Build	Space Hardware	Series A	$83m
Skykraft	Australia	Platform	Satellites - Earth Observation	Series A	$67m
Pachama	US	Product	Data Platforms	Series B	$64m
Destinus	Switzerland	Launch	Rockets	Series B	$55m

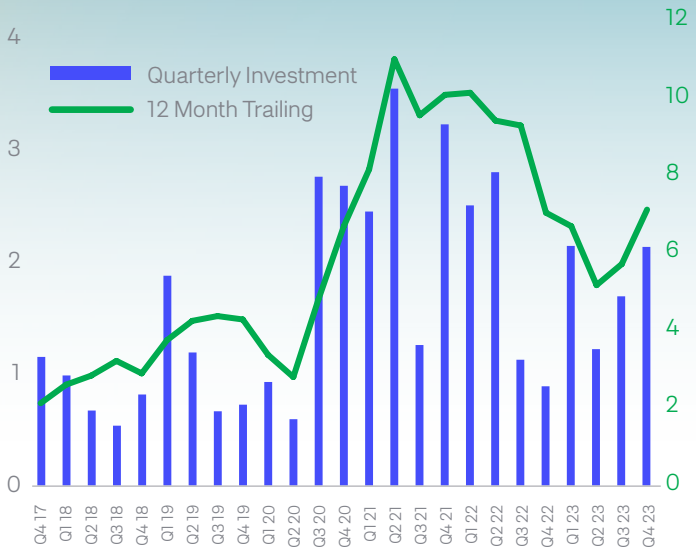
Seraphim Trailing 12 Months (TTM) Investment Activity Index (Q1 2018 = 100)



While General VC investment experienced a significant reduction of 35% against 2022, SpaceTech has proven very resilient. Investment in 2023 was in line with 2022, with total deal volumes continuing to grow, signalling an active and healthy space economy. Space is in many ways insulated from the economic cycles affecting the broader VC landscape, as it holds long term strategic importance. There are strategic imperatives that must be met through space for PNT, communications, intelligence and R&D, which provide a stable foundation for sustained investment through a downturn. Additionally, the space sector is currently experiencing a wave of rapid technological innovation and disruption. Advancements in technology, coupled with a significant reduction in the costs associated with accessing space, continue to fuel this growing industry. This combination of factors makes Space an enticing and dynamic sector for investors, offering many opportunities for new sector leaders to emerge in various expanding markets.

OVERALL INVESTMENT ACTIVITY

Seraphim Quarterly Investment Tracker ($bn Invested)



Investment shows positive signs of recovery following the pullback in H2 2022. The return of growth deals has in large part spurred investment totals. As such, we have now experienced 2 quarters of TTM investment recovery, despite the uncertain economic environment.

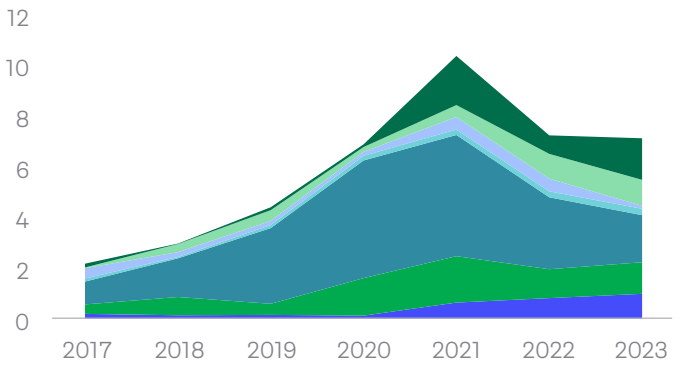
Seraphim Annual Investment Tracker ($bn Invested)

Despite a relatively slow start to the year, 2023 investment ultimately was in line with 2022. If the quarterly trajectory continues, 2024 should be a healthy year for investment in space.

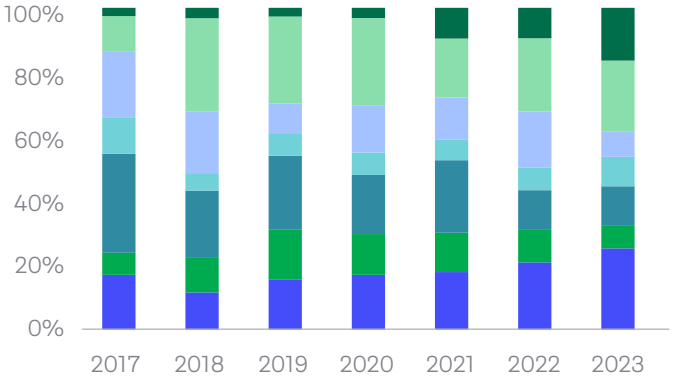
DATA LIFECYLE

Beyond Earth | Product | Analyse | Downlink | Platform | Launch | Build

Annual Investment ($bn)



Number of Deals

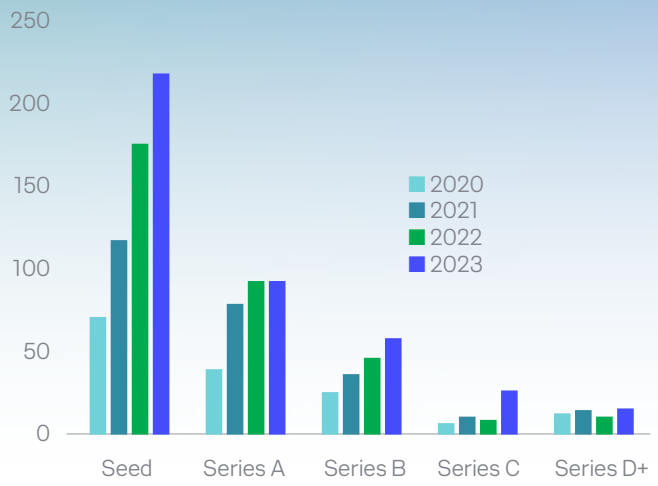


Beyond Earth and Platform were the two largest categories for investment in 2023, receiving $1.6bn and $1.8bn in investment. Despite raising approximately the same level of funding, the dynamics at play for each are quite different. Platform has been the dominant sector for investment in space since 2017, as various capex intensive constellations were launched for communications and earth observation. Many of the businesses in this segment matured or listed, and as such, today require less access to private capital. This has led to a reduction in the proportion of overall investment into the Platform category.

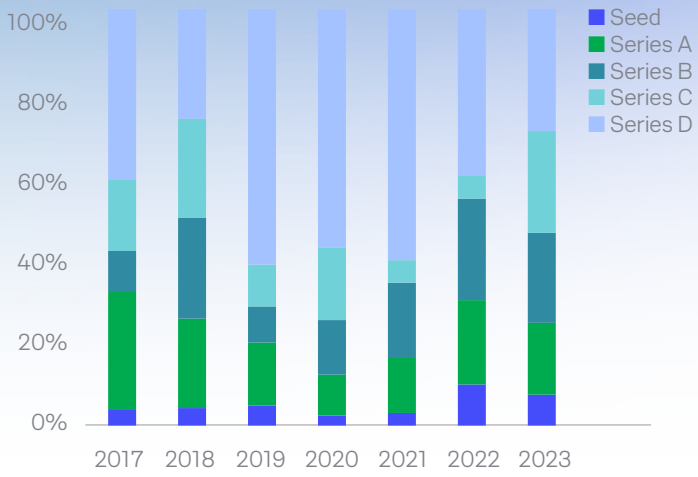
Conversely, Beyond Earth was a nascent segment until 2021. There is now an imperative to replace the International Space Station, maintain access to in-space R&D facilities, and maintain a continuous presence in Low Earth Orbit for Western interests. NASA's strategy of acting as a customer and key partner of commercial providers, rather than owner/operator, has proliferated many startups to service these needs following the ISS's decommissioning. Axiom's Series C was the standout transaction for the category in 2023, raising $350m.

INVESTMENT STAGE

Number of deals



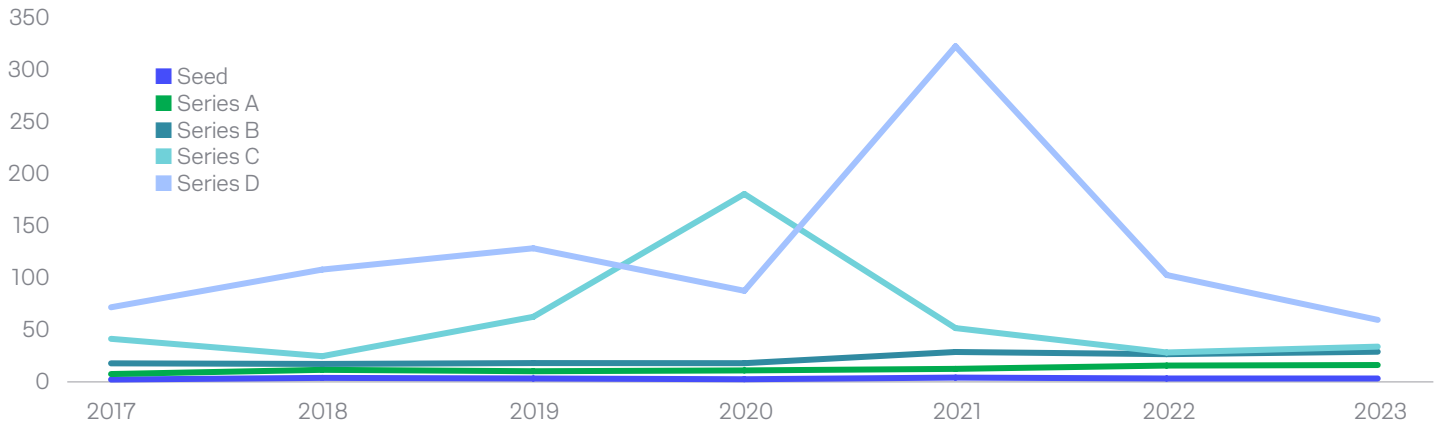
$ Invested By Stage (%)



There was an increase in the number of deals across every stage except Series A, which remained the same as in 2022. The Seed stage continues to show strong and continuous year-over-year growth, which is a very positive sign when compared to significantly reduced fundraising in general VC. It is promising to see early-stage SpaceTech businesses continue to emerge and secure funding despite high interest rates and a general VC pullback.
Series C deals have tripled in the last year, showing the high increase by stage. The number of Series C and D deals were down in 2022, and it is expected that several businesses returned to the market after holding off on fundraises in the past two years.

In 2023, a record $1.6bn was invested in Series C. Notable rounds included investments in three launch businesses: Firefly Aerospace ($350m), Isar Aerospace ($165m), and Galactic Energy Aerospace Technology ($154m). The largest Series C round was Axiom Space's $350m raise. These rounds demonstrate the significant amount of capital available to late-stage businesses. They also indicate that investors still have a strong appetite for capital-intensive businesses, despite the fundraising environment. Series D+ rounds have continued to decrease annually since 2021. However, the increase in Series C could be the start of a return to growth, which may extend to Series D+ in the near future. SpaceX's $750m raise at the beginning of 2023 was the most significant contributor, several other major Series D+ rounds included Sierra Space ($290m), Mapbox ($280m) and Astranis ($200m).

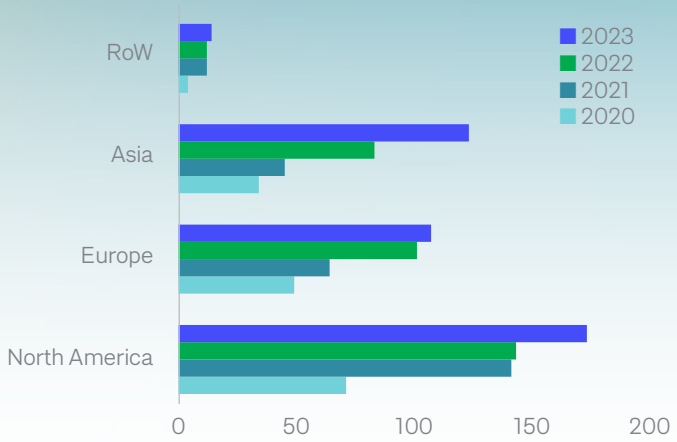
Median Deal Size ($m)



Median deal sizes in 2023 have remained relatively consistent compared to 2022 at the early stage. Seed rounds have shown the most consistency since 2017, maintaining a median deal size of around $2m. Series A median deal sizes have also remained relatively stable over the past two years. However, there have been significant changes in later stage deal sizes in the past year. Median Series D+ deal sizes have almost halved and are currently at their lowest point ever, indicating that late-stage mega rounds are now the exception rather than the norm. The median deal size of Series C rounds has slightly recovered after a decline in 2022. It is not surprising that capital-intensive sectors dominated the later stage deals. The large proportion of Series C rounds came from launch businesses, while Platform and Beyond Earth were well represented in the majority of Series D+ deals.

GEOGRAPHIC ANALYSIS

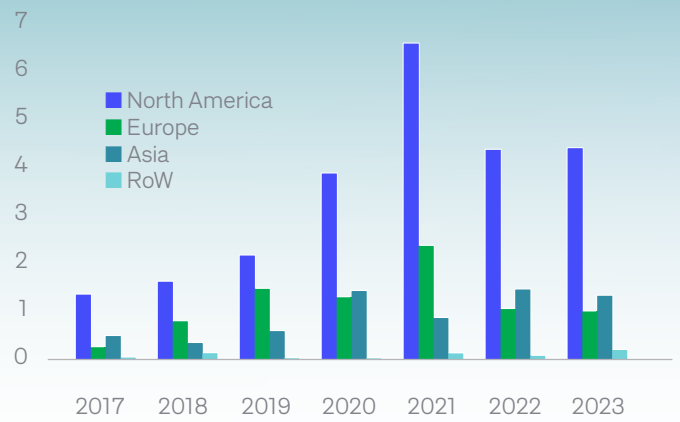
Number of deals



Deal activity has seen a worldwide increase, with North America and Asia charting the most significant growth. Following a more sluggish growth period in 2022, North America has returned to its usual upward progression in 2023. Some notable deals in Asia included launch company Asia Galactic Energy Aerospace Technology (China), raising $154m Series C and Qosmosys's $100m Seed.

Although the US remains the preferred choice for investment, regions like Asia are showing steady and robust growth in maintaining second place. While European deals are increasing, they are not experiencing the same level of acceleration as in 2022.

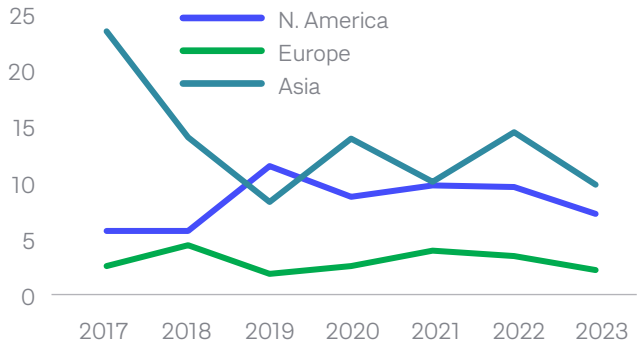
Investment By Region ($bn)



Most investment continues to flow into North America, with more than three times the funding going into Asia, the next largest region. Although Asia is catching up to the US in terms of deal volumes, the overall investment figures still lags far behind with a slight decrease compared to 2022.

As Asia is a relatively new market for SpaceTech, about 40% of the investment was primarily focused on early-stage companies with smaller funding rounds. On the later stage, the largest funding round in Asia was $154m, compared to $750m in the US (SpaceX). Europe remains in third place, like 2022, with the largest funding round attributed to Isar Aerospace raising $165m in Series C.

Median Deal Size By Region ($m)

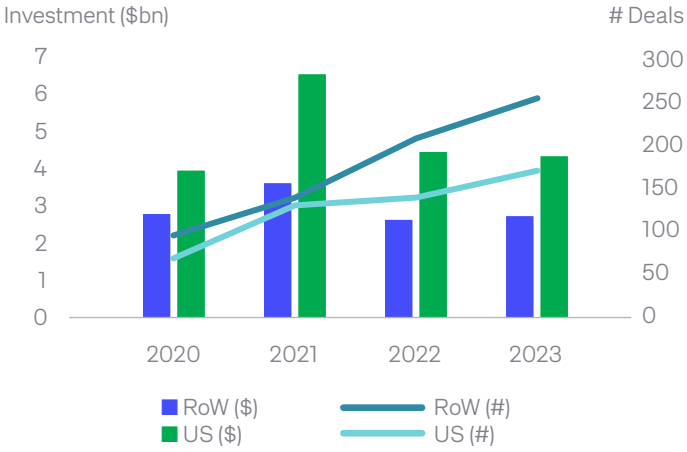


There has been a decrease in the median deal size worldwide in the past year, which is not surprising considering the fundraising environment.

Median deal sizes in Asia have seen a significant decrease, along with a trend towards smaller Seed stage rounds and overall lower capital investment in the region. European median deal sizes remain more than 50% lower than those in North America and Asia.

In North America, median deal sizes have been declining since 2022, but overall investment levels remain high.

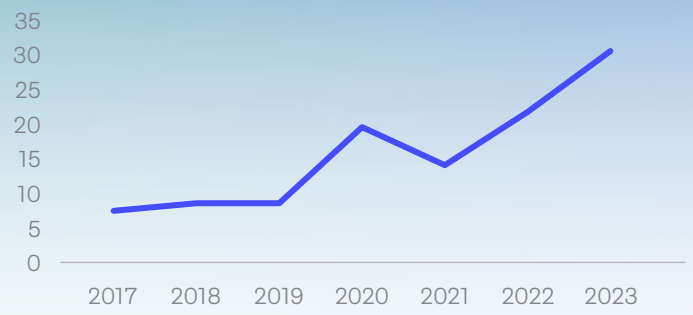
US vs. RoW Investment Activity (LTM)



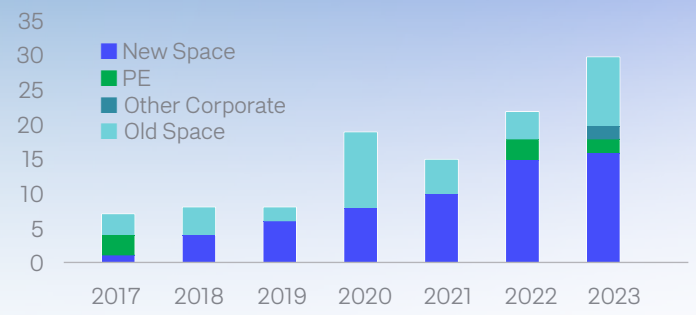
In line with historical trends, the amount of capital invested in the US in 2023 surpasses all other geographies combined. Over the past year, there has been a slight decrease in US investment, while investment levels in the rest of the world (RoW) have shown a modest increase. The number of deals in the US is indicating signs of recovery, with both the US and RoW experiencing a 22% increase in the number of deals. This is a positive sign for overall investor sentiment, as funding levels globally remain relatively stable while the number of deals is on the rise.

M&A ACTIVITY

Annual M&A deals (#)



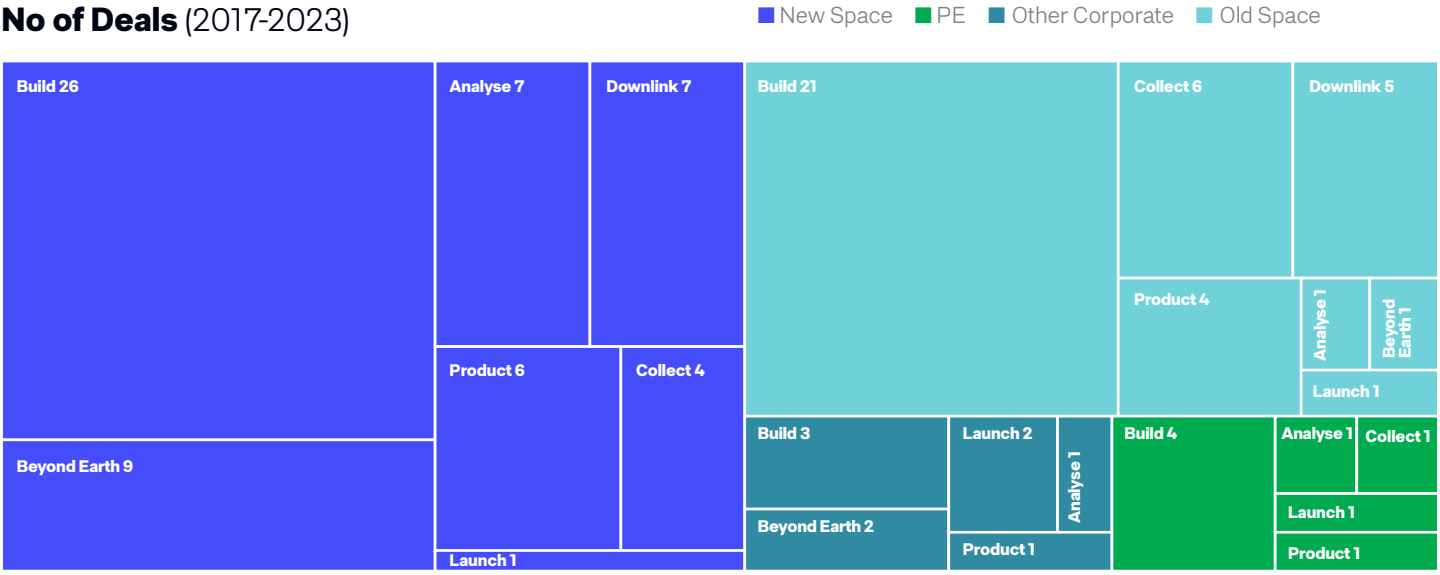
No. Deals by type of acquirer



This year was a record-breaking year for SpaceTech M&A with 30 transactions completed versus 22 last year. This year saw several strategic moves made by larger players in private equity such as Advent's acquisition of Maxar and KKR's take private of satellite manufacturer OHB. BAE acquiring Ball Aerospace was a major acquisition which saw further consolidation across industry. Some notable acquisitions over the past quarter were Seraphim portfolio company Hawkeye360 acquiring RF Solutions from Maxar Intelligence to expand their spectrum scanning capabilities. Also, the Chinese company, CNH Industrials acquisition of Hemisphere GNSS for $175 million - their proprietary Global Navigation Satellite System (GNSS) further advanced CNH's automated applications in Agriculture and Construction. In the Telecoms sector, Space Norway (Norwegian Government) acquired Telenor Satellite for $228m. This could be seen as a strategic move to safeguard Norway's sovereignty and critical services, especially in times of geopolitical unrest. Last quarter also saw a rare acquisition by SpaceX, acquiring Pioneer Space, a parachute manufacturer, protecting supply chains for their Dragon capsules.

Overall M&A activity increased by 2023 also saw the introduction of Non-Space corporates (CNH Industrial) into broader SpaceTech activity. NewSpace acquisitions remained at similar levels to last year. However, there were over double the number of acquisitions by Old Space (or Heritage Space) versus 2022. Further industry consolidation means Old Space businesses are looking to solidify in-house capabilities and stay competitively positioned against newer, innovative SpaceTech businesses. Some recent examples of Old Space companies further vertically integrating are MDA acquiring SatixFy's digital payload division and UK subsidiary; Arcfield (Defence contractor) acquiring Orion Space Solutions (small satellite manufacturer). Telespazio UK acquired e2e (space systems engineering and consultancy group) to strengthen their deep satellite communications capabilities. Eutelsat's merger with OneWeb was also one of the major news stories of the year.

No of Deals (2017-2023)



The makeup of M&A activity varies by strategic interests and financial considerations. With over 100 acquisitions in the NewSpace ecosystem since 2017, it's interesting to see which segments of the SpaceTech value chain are attractive acquisition targets to different investors. Across the board, the most acquisitions are made into "Build" businesses as expected. "Build" businesses are often component or hardware manufacturers who have access to early revenues; however, lack a major a venture scale market. The "Platform" segment has been attractive for Legacy Space companies primarily for vertical integration of novel satellites. Interestingly, New Space acquirers have made the most acquisitions after Build into Beyond Earth, showing New Space's appetite for novel, innovative SpaceTech to stay at the forefront of advanced technologies.

ABOUT SERAPHIM

ANGEL PLATFORM + ACCELERATOR + VC FUNDS + RESEARCH

Our Model: Inception to exit support powered by smart capital

Seraphim is the world's leading specialist investor in SpaceTech.

Powered by smart capital from leading Space companies and government agencies, we have a unique model combining investment funds, accelerators, and an angel investor platform.

We use our panoptic view of the SpaceTech ecosystem to provide inception to exit support to the sector's most ambitious and fearless entrepreneurs as they aspire to harness the infinite potential of Space to help push the boundaries of what is currently possible by turning science fiction into science fact.

Seraphim Space Investment Trust Plc is listed on the London Stock Exchange (Ticker: SSIT)

Our focus: Businesses collecting & communicating data from above

We are focused exclusively on the multi $trillion SpaceTech investment market.

We believe SpaceTech is at the nexus of mega-trends that will define societal change over forthcoming decades and has a unique role to play in addressing the world's most pressing problems.

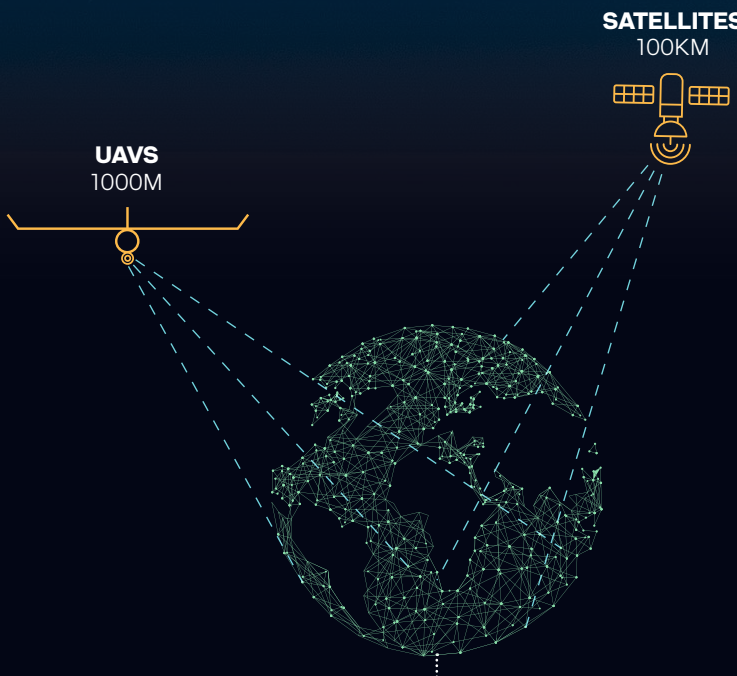
Radical advances in the Space sector mean a data and connectivity tsunami is about to transform the world as we know it, driving the next major paradigm shift in the global economy.

We invest in companies that are enabling, generating and exploiting data being collected and communicated from above.

Mark Boggett
CEO

James Bruegger
CIO

Rob Desborough
Accelerator & Early Stage



BUILD | LAUNCH | PLATFORM | DOWNLINK | ANALYZE | PRODUCT

Current Portfolio

We are the most prolific investor in SpaceTech globally. Across our different activities, we currently have a portfolio of more than 100 of the world's leading SpaceTech start-ups.

Fund

ALL.SPACE, ALTITUDE ANGEL, ARQIT, ARRAY LABS, AST, Astroscale, ATMOS, AURIGA, ChAI, constellr, D-ORBIT, Delos, EDGYBEES, HawkEye 360, hubble NETWORK, ICEYE, LEOLABS, NIGHTINGALE SECURITY, nu QUANTUM, Opteran, pixxel, Planet Watchers, PRIVATEER, QuadSAT, RENOSTER, SATELLITEVU, spire, TARANIS, tomorrow.io, UBOTICA, VOYAGER SPACE, xona space systems

Accelerator

114ai, 3IPK, 4pi Lab, AIRMO, amini, ANGOKA, anisoprint, ansur, APPLIED ATOMICS, AQUARK TECHNOLOGIES, AQUARIAN SPACE, AQUASCOPE, ARRAY LABS, Astrogate LABS, astrolight, AURIGA, aXenic, BioOrbit, BIRDSEYEVIEW, CELESTIAL EYE, CISLUNAR INDUSTRIES, CLUTCH SPACE SYSTEMS, constellr, CSC, CYSTEJLAN, deepplanet, EARTHEYE SPACE, EarthLab, EARTH ROVER, ELEVATION SPACE, entopy, espace, eVince technology, EVOLVE DYNAMICS, FOUR POINT, FREEFALL AEROSPACE, GALAXEYE, gsi global surface intelligence, G SPACE, HawaDawa, HELIX TECHNOLOGIES, HRF HOOLEY RF, IKETS, kinnami, Kisan Hub, KLEPSYDRA, KMI, KUMI ANALYTICS, orbital CURS, leanspace, LIFT ME OFF, LUNASA, LUNASONDE, METHERA, MISSION SPACE, NEWORBIT, NTENTION, nu QUANTUM, ODIN SPACE, Opteran, optimal cities., ORBITAL COMPOSITES, POWER MARKET, QuadSAT, QLM, Reconfigure.io, reorbit, RHEA SPACE ACTIVITY, SATELIOT, SATELLITEVU, SKYFI, SKYRORA, SmartIR, sofant technologies, Space DOTS, SPACEIUM, STARFISH SPACE, sust, TERRIS EARTH INTELLIGENCE, TESSERACT, Transitry, TRIK, UBOTICA, VECTOR PHOTONICS, VEO WARE, VIDRONA, VIRTUS SOLIS, WYVERN, xona space systems

METHODOLOGY / FURTHER RESEARCH

GENERATION SPACE

Methodology & Taxonomy

We use a wide range of different data sources to compile our investment tracker. This includes proprietary, off-market information from our deal flow and network, deal databases such as Crunchbase, industry news sources such as SpaceNews and TechCrunch, and public announcements from companies themselves. We only include third party capital invested on an arm's length basis and therefore do no include personal investment that the likes of Jeff Bezos may make in their own space initiatives.

BUILD

- Building & selling satellites, autonomous systems
- Components, sub-systems, complete systems
- Hardware (sensors), software (i.e. control system), hybrid (i.e. machine vision)

LAUNCH

- Building & launching rockets
- Launch-related services

PLATFORM

- Any data collection / space platform (i.e. smallsat, HAPs)
- Multi-modal: look, listen, communicate

DOWNLINK

- Facilitate transmission of data from space / aerial platform back down to earth
- Satcoms & terrestrial comms networks
- Data storage, processing, security

ANALYZE

- Analysis of data from space / aerial platforms
- A.I / machine learning enabled analytics

PRODUCT

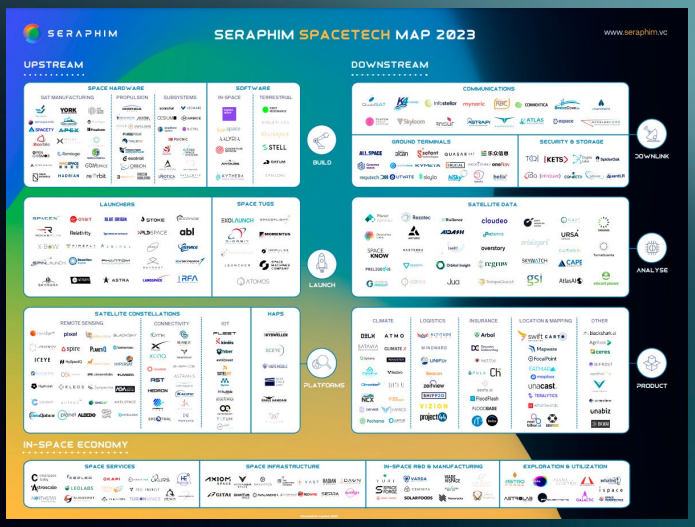
- Packaging of different data streams (space & non space)
- Tailored to specific use cases in specific verticals
- Location, monitoring, insight, mapping

BEYOND EARTH

- In-Space infrastructure (i.e. Space stations)
- In-Space services (i.e. Satellite refuelling, servicing and repair)
- Utilising the microgravity environment for R&D and manufacturing

Further Research

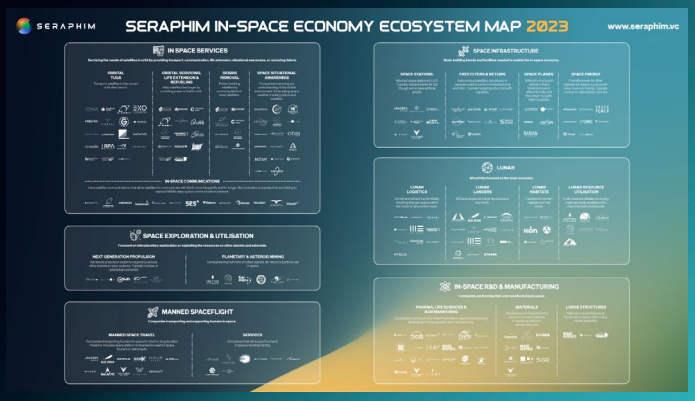
We routinely publish our own research and insights on our website with a view to helping other investors share our excitement for the multi-decade transformational potential of Spacetech. Key periodic research we publish includes our widely recognised SpaceTech Ecosystem and Smallsat Constellation market maps.



IN-SPACE ECONOMY ECOSYSTEM MAP

Global VC backed emerging leaders per category.

DOWNLOAD



IN-SPACE ECONOMY MAP

Global VC backed companies providing services in space.

DOWNLOAD

www.seraphim.vc/research