

QUARTERLY REVIEW OF GLOBAL PRIVATE INVESTMENT

# SERAPHIM SPACE INDEX

Q3 2022



SERAPHIM

The general economic pullback has affected the whole startup landscape. While SpaceTech investment has been impacted, there are signs of resilience. Deal volume remains high, particularly at the early stages, an indicator that investors still see potential for strong returns from the sector.

Despite the pullback, PE/VC dry powder remains near all time highs of \$290bn. As such, we expect strong capital deployment as economic uncertainty starts to clear.

While quarterly investment is down, overall TTM SpaceTech investment remains near all time highs with \$12.2bn invested over the past 12 months. This is the third highest level recorded to date.

Segments of the Space economy demonstrating resilience:

- While growth investing has experienced a pullback due to investor price sensitivity in valuations, and aversion to business with high burn rates, early stage deal making reached all time highs. We have recorded 74 Seed deals in Q3 (up 64% from Q2).

- US startups received 63% of all SpaceTech funding. Investment is greater in the US due to greater availability of venture capital, greater opportunity to access substantial government contracts, and having a generally more mature space economy.

Companies making up the Platform and launch category (Satellite Constellations & Rocket launchers) saw a YoY decrease in investment. These segments experienced significant funding through 2021 and many of the most mature companies in these categories have since gone public.

Intuitive machines announced in Q3 their intentions to go public via SPAC in 2023. We do not expect SPACs to return at scale, and view this transaction as an outlier, rather than an indication of a resurgence in the SPAC market. One example of the dramatic change in the SPAC market is SatixFy, whose valuation prior to the SPAC closing has halved.

## Highlights

**\$12.2BN**

invested in last 12 months

**\$1.2BN**

invested in Q3 (\$3.2bn in Q2 22)

**370**

on Seraphim Investment Index (370 in Q2)

**214**

on Seraphim #Deals Index (190 in Q2)

**\$250M**

biggest deal closed in Q3 (SpaceX)

**\$12.8M**

average deal size in Q3 (vs. \$46m Q2)

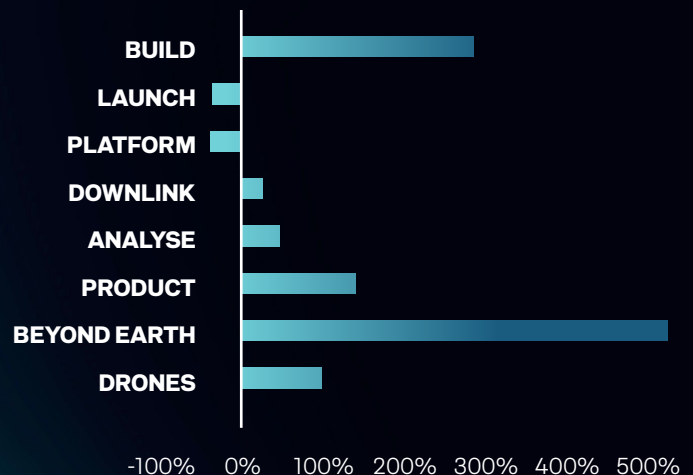
**\$4.6M**

median deal size in Q3 (vs. \$8m Q2)

**1**

space-related SPACS announced (vs 0 in Q2)

## Investment (\$), TTM to Q3 21 vs. Q3 22 (% Change)



TTM Investment saw particular growth in the Beyond Earth and Build Categories. Beyond Earth growth is driven by Sierra Space's \$1.4bn round in Q4 2021. Looking forward to Q4 22, when this outlier investment drops out of the TTM, we expect to show a significant reduction in investment for this category.

Build investment growth remains strong, in large part due to the category's top transactions, Ursa Major and Loft Orbital, who collectively raised \$225m.

# Q3 2022 DEALS ACTIVITY (# DEALS)



Q3 2022 experienced a record 27 companies within the Build category. Build encompasses companies manufacturing space hardware, robotics, propulsion systems, or software/engineering solutions for space systems.

This increase may indicate that investors now see the space market as sufficiently large to invest in companies that purely service space companies. This picks-and-shovels approach to the SpaceTech opportunity may be attractive, given the nearer term, and (often) more secure revenue generation of companies directly selling hardware and software. AEI's investment into York Space, and Lockheed Martin's recent \$100m investment into Terran Orbital may be indicators that demonstrate this general appetite.

Overall, the split of transactions in Q3 is largely in line with Q2 with 63% of the deals in the upstream with 37% in the downstream, where overall 79% of transactions were early stage and the remaining 21% being later stage transactions.

## Q3 2022 Top Deals

In Q3, the top 10 deals accounted for 52% of the total investment in the sector, a lower capital concentration than has been typically seen in recent quarters. Only one round in excess of \$100m was raised this quarter, once again showing the difficulty of raising growth funding rounds in the current economic environment.

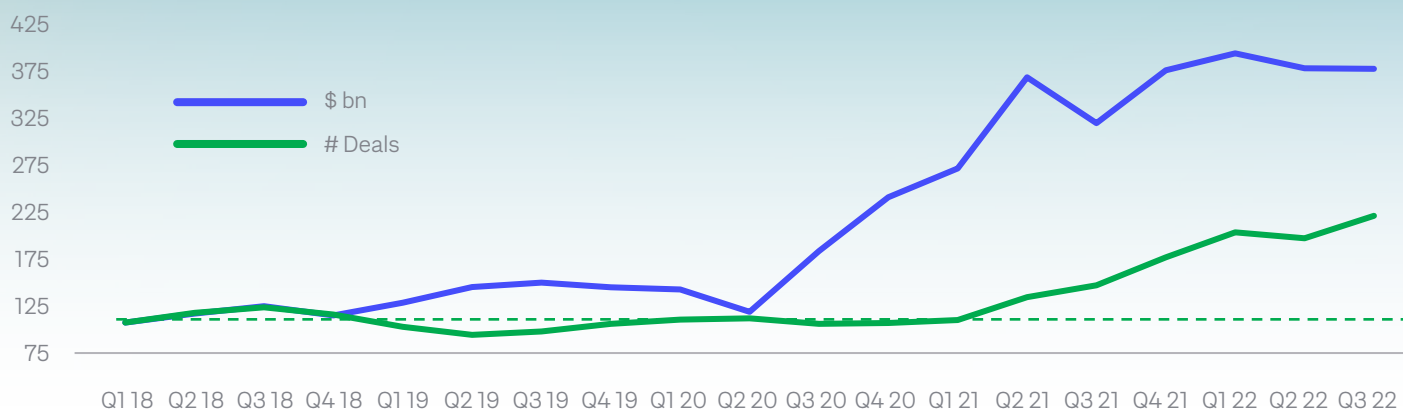
As is usual, the top 10 transactions are largely centred around CapEx heavy businesses: constellations like SpaceX and Albedo, or Rocket Launch systems like Spinlaunch, Skyroot and Agnikul.

While the US remains the primary driver of large SpaceTech rounds, Q3 sees representation from India, Israel and China. In recent quarters, China has increasingly become responsible for large investment rounds. These have been particularly prevalent for companies building rockets and satellites. Space is of high strategic importance to China, and significant funding is being deployed to develop these capabilities.

COMPANY	COUNTRY	DATA LIFECYCLE	SUB CATEGORY	STAGE	AMOUNT (\$m)
SpaceX	US	Platform	Satellites - Telecoms	Series D+	250
SpinLaunch	US	Launch	Launchers	Series B	71
Skyroot Aerospace	India	Launch	Launchers	Series B	51
Albedo	US	Platforms	Satellites - Earth Observation	Series A	48
Istar Space Technology	China	Build	Space Hardware	Series B	44
Agnikul	India	Launch	Launchers	Series B	40
Taranis	US	Analyse	Drones & UAV	Series D	40
Slingshot Aerospace	US	Product	Data Platforms	Series A	34
Zesty.ai	US	Analyse	Satellites - Earth Observation	Series B	33
4M Analytics	Israel	Product	Data Platforms	Series A	30



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



The Seraphim Space index provides the barometer for investment activity within the NewSpace Ecosystem. It shows global volume and value of venture capital deals within the Space sector on a 12 month trailing basis, normalised against Q1 2018.

The index remains near all time highs at 369.8, given strong TTM investment. We may anticipate some retraction over the coming quarters as the economic slowdown persists.

Q3 has posted a record 129 deals. This is reflected by the number of deals index reaching new highs of 213.5.

While investment has decreased by 62% from last quarter, the number of deals in Q3 is up by 43%. This dynamic is the result of record early stage deal-making (57% of deals were Seed stage in Q3) and few significant growth stage deals.

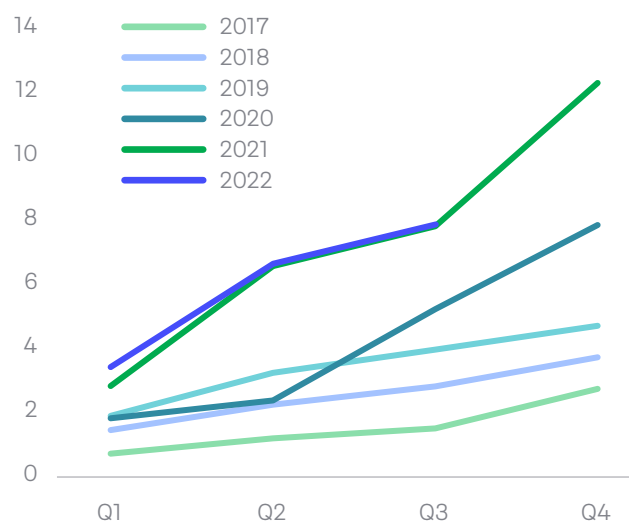
## Seraphim Quarterly Investment Tracker (\$bn Invested)



The quarterly investment tracker shows 3 quarters of continuous retraction of investment since the highs of Q4 2021.

However since Q3 22 Investment was largely in line with Q3 21 investment, the TTM investment figure has remained largely consistent into this quarter.

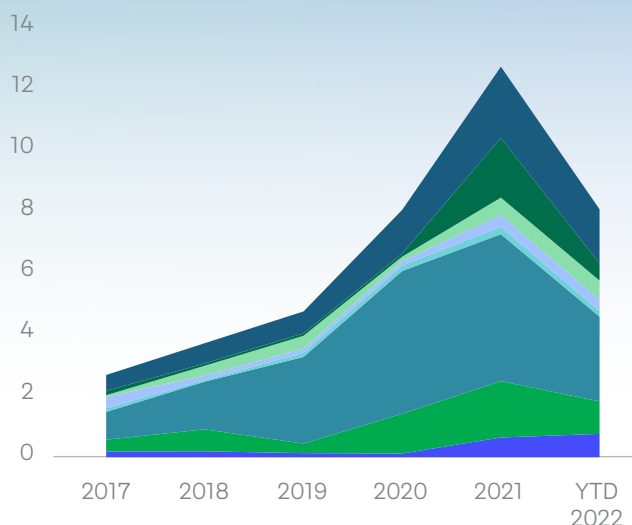
## Seraphim Annual Investment Tracker (\$bn Invested)



Cumulative investment through 2022 remains at the highest levels recorded, and appears to be tracking with 2021. Despite the economic slowdown, it is promising to see sustained levels of investment into space tech, in line with last year.

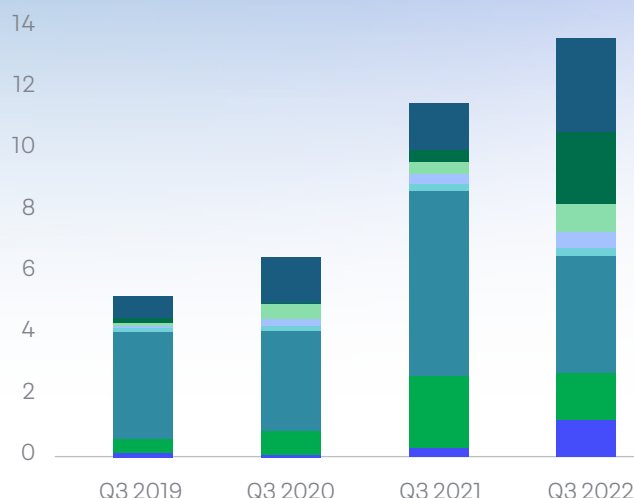
■ Drones
■ Beyond Earth
■ Product
■ Analyse  
■ Downlink
■ Platform
■ Launch
■ Build

## Annual Investment (\$bn)



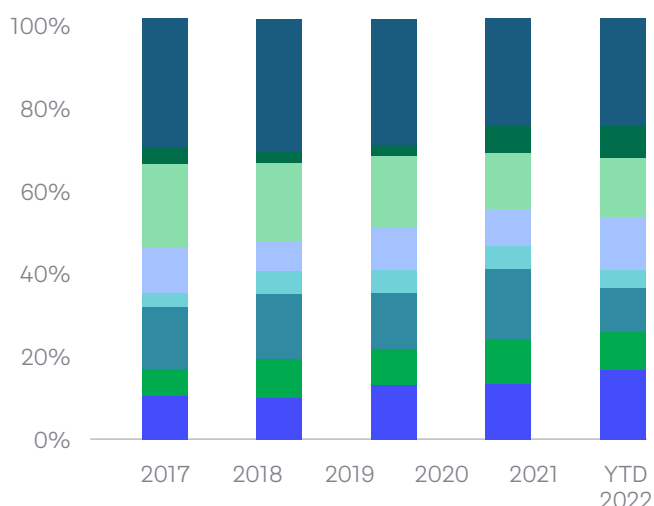
The different sectors have shown widely varying performances YTD. Build and Product have both already surpassed their 2021 levels despite only being nine months in to 2022. They may be seen as areas with more immediate-term revenues, encompassing space hardware, and software applications. On the other hand, Platforms and Beyond Earth have seen a significant contraction versus 2021 levels, likely as there were many late stage businesses raising large rounds last year.

## Last 12 Months Investment (\$bn)



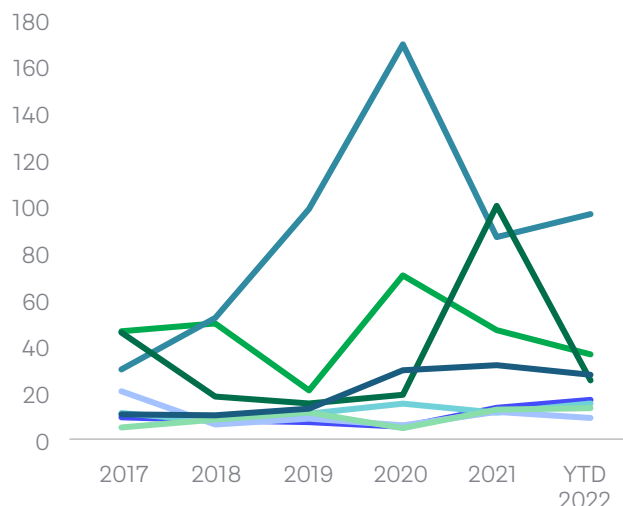
Despite a reduction in Beyond Earth funding in Q3 22, YoY growth remains high at 6X. Build has also seen a significant increase, up more than 3X YoY, while Platform and Launch have contracted. Both categories involve much longer term views and hence may have seen capital retreat.

## Number of Deals



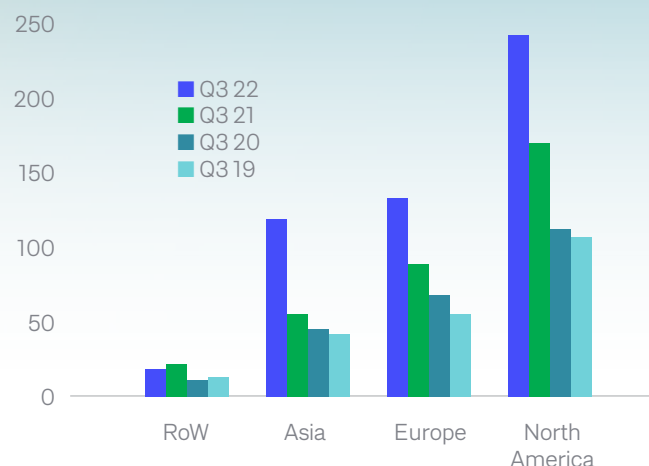
While we are seeing a more challenging fundraising environment, investors are looking more to seed deals where they are seeing more sensible pricing, less impacted by inflated later stage deals in the past 1-2 years. As the space market grows, Build and Beyond Earth investment is being driven by increasing validation of these technologies. There has been a slow down in Platform deals, but an expansion in Analyse, as satellite constellations collecting novel datasets mature, and the downstream applications of this data start to take off.

## Average Deal Size (\$m)



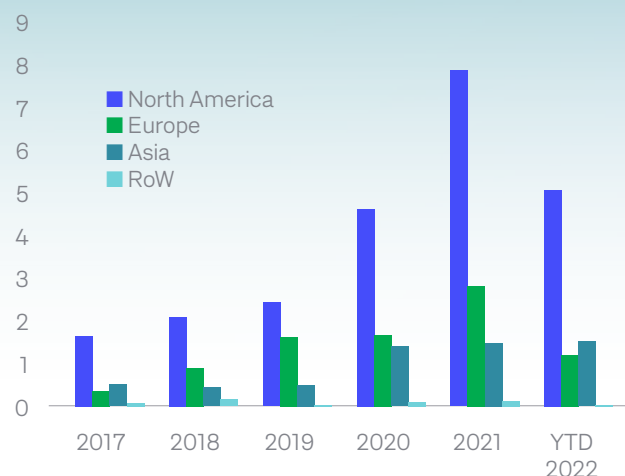
Average deal size for Beyond Earth dropped to \$25m from a high of \$97m in 2021, although much of 2021's activity can be attributed to Sierra Space's outlier \$1.4bn round. The current YTD figure better reflects the typical round size for the category. 2020 saw a peak in funding for constellations, with investment now shifting to Analyse and Product categories. Analyse has the smallest average size as these are typically earlier stage and less capital intensive businesses.

## No. Deals Last 12 Months Investment



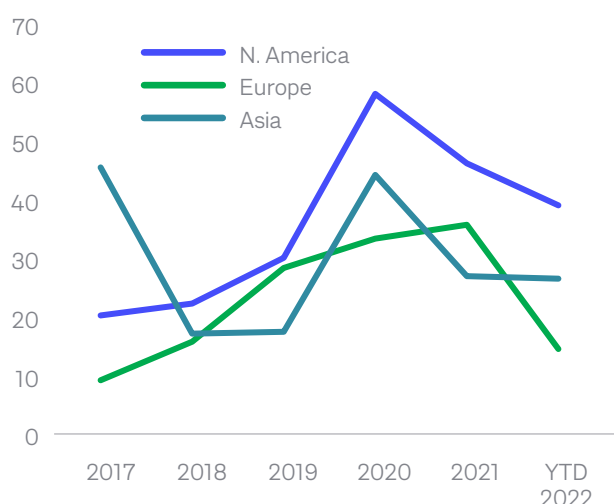
The number of deals in the last 12 month period is up by 53% in the LTM to Q3 22, versus LTM to Q2 22. Despite the economic downturn, TTM deal volume in Asia, Europe and North America continues to exceed all previous 12 month periods, while ROW continues to see a reduction in number of deals. This suggests that retraction in investment during an economic downturn may first affect companies with a more nascent space economy.

## Investment By Region (\$bn)



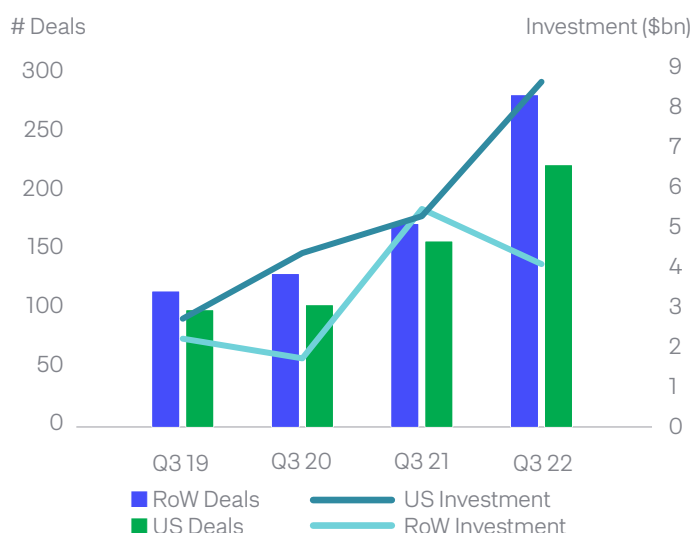
North America continues to attract the vast majority of investment. The total amount of investment for YTD22 is nearly on par with that seen during all of FY20, although lower than FY21. Notably, Asia investment YTD22 has already surpassed its FY21 levels. Investment in Asia was primarily driven by India rather than China as seen in previous periods, with 43% of Asian investment from India and 28% from China. India saw two large launch deals, Skyroot and Agnikul, potentially driven by talent fostered through ISRO.

## Average Deal Size By Region (\$m)



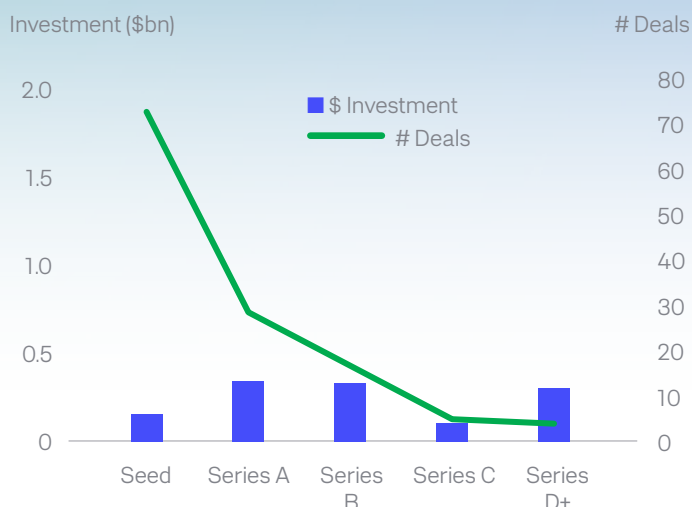
Average investment size in Asia has grown due to a higher proportion of later stage deals which typically see much more capital raised per round, but still a relatively low number of deals. While capital overall has retreated from Asia, a few large deals especially in India drove higher average deal size, indicating that capital is still flowing into mature companies in these economies. Conversely, the average deal size has reduced in Europe, where there were many more deals but mostly at Pre-Seed, Seed, and Series A.

## US vs. RoW Investment Activity (LTM)



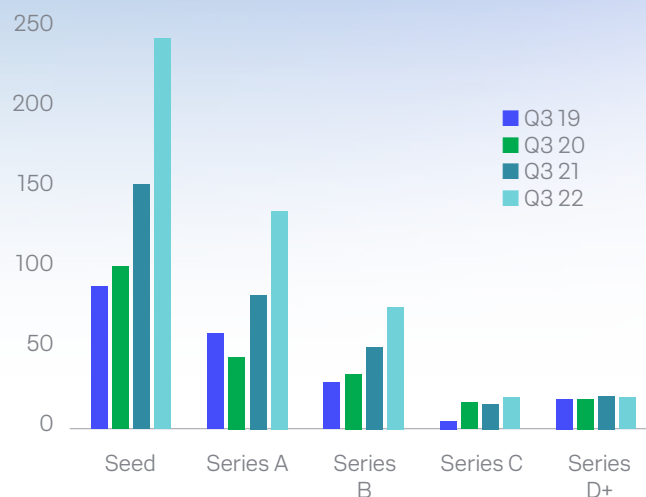
In the LTM to Q3 22, investment in the US has diverged significantly from the investment in ROW. LTM US investment currently accounts for 68% of global Space Tech investment whereas in the previous period it was less than half, at 49%. The market has always been stronger in US but this effect seems to have increased in the last 12 months. RoW investors are typically more conservative so this might be an indicator that they are slowing down more than the US market.

## Deals in Q3 2022



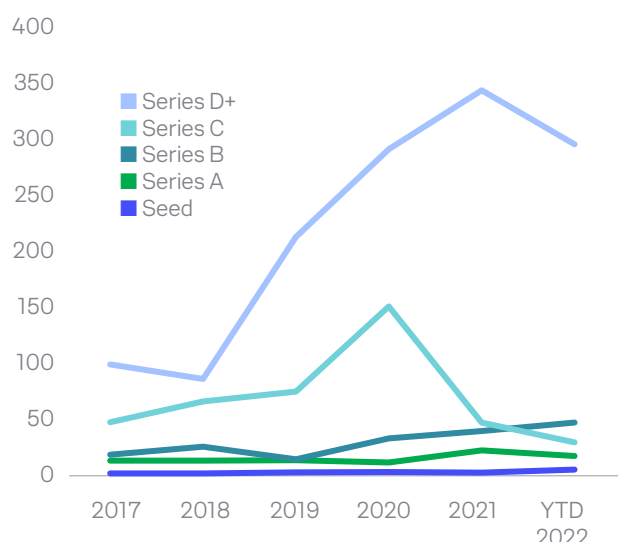
The proportion of Seed and Series A deals marginally fell this quarter, accounting for 85% of deals in Q2 but only 79% in Q3. There were 9 Series C+ deals, up from 2 in the previous quarter, primarily in drone-related businesses (Taranis, Aerodyne Group, Dedrone, and Flyability, all of which raised more than \$15m each).

## No. Deals YTD (Q3 2022)



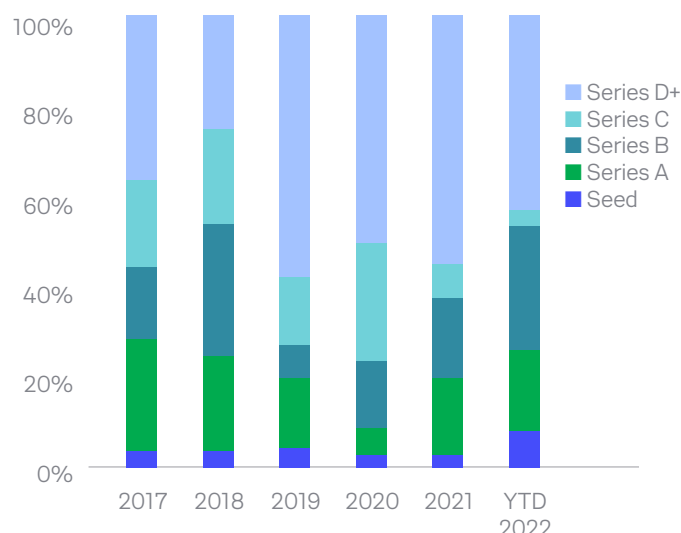
The number of deals in the LTM to Q3 22 remain at record highs for all deal stages. Series A deals experienced the greatest increase over the previous 12 month period, growing by 63% from 80 in year to Q3'21, to 130 in year to Q3 22. Notably, the number of deals across all stages has generally increased over all periods, indicating continued interest in the space sector.

## Average Deal Size (\$m)



Overall average deal sizes fell across most stages, with the exception of Seed and Series B rounds. Average Seed round size rose to \$5.1m in YTD22, more than double its 2021 level, driven by unusually large seed deals in 2022: Celestia Aerospace \$105m, E-Space \$50m, and Radian Aerospace \$27.5m.

## \$ Invested By Stage (\$bn)



Seed funding in YTD22 is almost double that of the FY21 level, at \$660m YTD versus \$335m in the previous year. This is likely driven by investors focusing on more early stage opportunities, where valuations might be more sensible. Series C investment accounts for less than one-third of its 2021 levels, while SpaceX (Series R) is the primary Series D+ investment and continues to dominate late stage investment.



## Announced & Completed Space SPAC Deals

Following recent unfavourable market conditions, and considerable share price underperformance of SPACs, there has been minimal SPAC activity in the first three quarters 2022. Towards the end of Q3 2022, a SPAC was announced for Intuitive Machines, a lunar lander company. This is the first company in the "Beyond Earth" category to announce a SPAC since Redwire 18 months prior, and is likely an outlier rather than indicating a resurgence in interest for space

companies on the public markets. Furthermore, SatixFy suffered from a halving of their valuation in the lead-up to their SPAC. With Intuitive Machines being the only SPAC announced in almost 6 months, and Astra, who went public by SPAC almost 18 months ago, receiving a delisting warning from Nasdaq, we anticipate a quiet period in SPACs to continue and expect limited SPAC/IPO activity for the remainder of the year.

ANNOUNCED	COMPLETION	COMPANY	REGION	SPAC SPONSOR/ EXCHANGE	DATA LIFECYCLE / SUB CATEGORY	AMOUNT	PRO FORMA EV	MARKET CAP CAP 30/9/22
Oct-20	13-Aug-21	<b>Momentus</b>	US	\$SRAC / Nasdaq	Launch / Space Tugs	\$247m	\$567m	\$114.1m
Dec-20	07-Mar-21	<b>AST&amp;Science</b>	US	\$NPA / Nasdaq	Platform / Satcoms	\$462m	\$1.4bn	\$383.9m
Dec-20	10-May-21	<b>Blade Urban Air Mobility</b>	US	\$EXPC / Nasdaq	Launch / Flight & Delivery	\$365m	\$825m	\$290m
Feb-21	01-Jul-21	<b>Astra</b>	US	\$HOL / Nasdaq	Launch / Rockets	\$500m	\$2.1bn	\$160m
Feb-21	17-Aug-21	<b>Spire</b>	US	\$NSH / NYSE	Platform / Earth Observation	\$265m	\$1.6bn	\$151.1m
Feb-21	17-Sep-21	<b>Archer Aviation</b>	US	\$ACIC / NYSE	Launch / Flight & Delivery	\$857m	\$1.7bn	\$630.4m
Feb-21	11-Aug-21	<b>Joby Aviation</b>	US	\$RTP / NYSE	Launch / Flight & Delivery	\$1.6bn	\$4.5bn	\$2.6bn
Mar-21	10-Sep-21	<b>BlackSky</b>	US	\$SFTW / NYSE	Platform / Earth Observation	\$283m	\$1.1bn	\$181.4m
Mar-21	25-Aug-21	<b>Rocket Lab</b>	US	\$VACQ / Nasdaq	Launch / Rockets	\$777m	\$4.8bn	\$1.9bn
Mar-21	03-Sep-21	<b>Redwire</b>	US	\$GNPK / NYSE	Beyond Earth / Space Infrastructure	\$170m	\$0.62bn	\$150m
Mar-21	15-Sep-21	<b>Lilium</b>	Europe	\$QELL / Nasdaq	Launch / Flight & Delivery	\$584m	\$2.6bn	\$683.3m
May-21	07-Sep-21	<b>ArQit</b>	UK	\$CENH / Nasdaq	Platform / Satcoms	\$115m	\$1.1bn	\$686.4m
Jun-21	16-Dec-21	<b>Vertical</b>	UK	\$BSN / NYSE	Launch / Flight & Delivery	\$300m	\$2.1bn	\$2.1bn
Jul-21	08-Dec-21	<b>Planet</b>	US	\$DMYQ / NYSE	Platform / Earth Observation	\$590m	\$2.4bn	\$1.5bn
Jul-21	26-Jan-22	<b>Satelogic</b>	S. America	\$CFV / Nasdaq	Platform / Earth Observation	\$262m	\$780bn	\$420m
Aug-21	30-Dec-21	<b>Virgin Orbit</b>	UK	\$NGCA.O / Nasdaq	Launch / Rockets	\$228m	\$3bn	\$1.bn
Oct-21	28-Mar-22	<b>Terran Orbital</b>	US	\$TWNT / NYSE	Build / Satellite Manufacturers	\$255m	\$1.6bn	\$240m
Dec-21	Cancelled	<b>Tomorrow.io</b>	US	\$PTOC / Nasdaq	Product / Data Platforms	\$420m	\$1.2bn	-
Dec-21	10-May-22	<b>Eve</b>	S. America	\$ZNTA / Nasdaq	Launch / Flight & Delivery	\$377m	\$2.4bn	\$2.5bn
Jan-22	Cancelled	<b>D-Orbit</b>	Europe	\$BREZ / Nasdaq	Launch / Space Tugs	\$185m	\$1.3bn	-
Mar-22	28-Oct-22	<b>SatixFy</b>	Europe	\$EDNC / Nasdaq	Build / Space Hardware	\$229m	\$365m	-
Sep 22	Q1 23	<b>Intuitive Machines</b>	US	\$IPAXU / Nasdaq	Beyond Earth / Space Exploration	\$330m	\$815m	-



## 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.



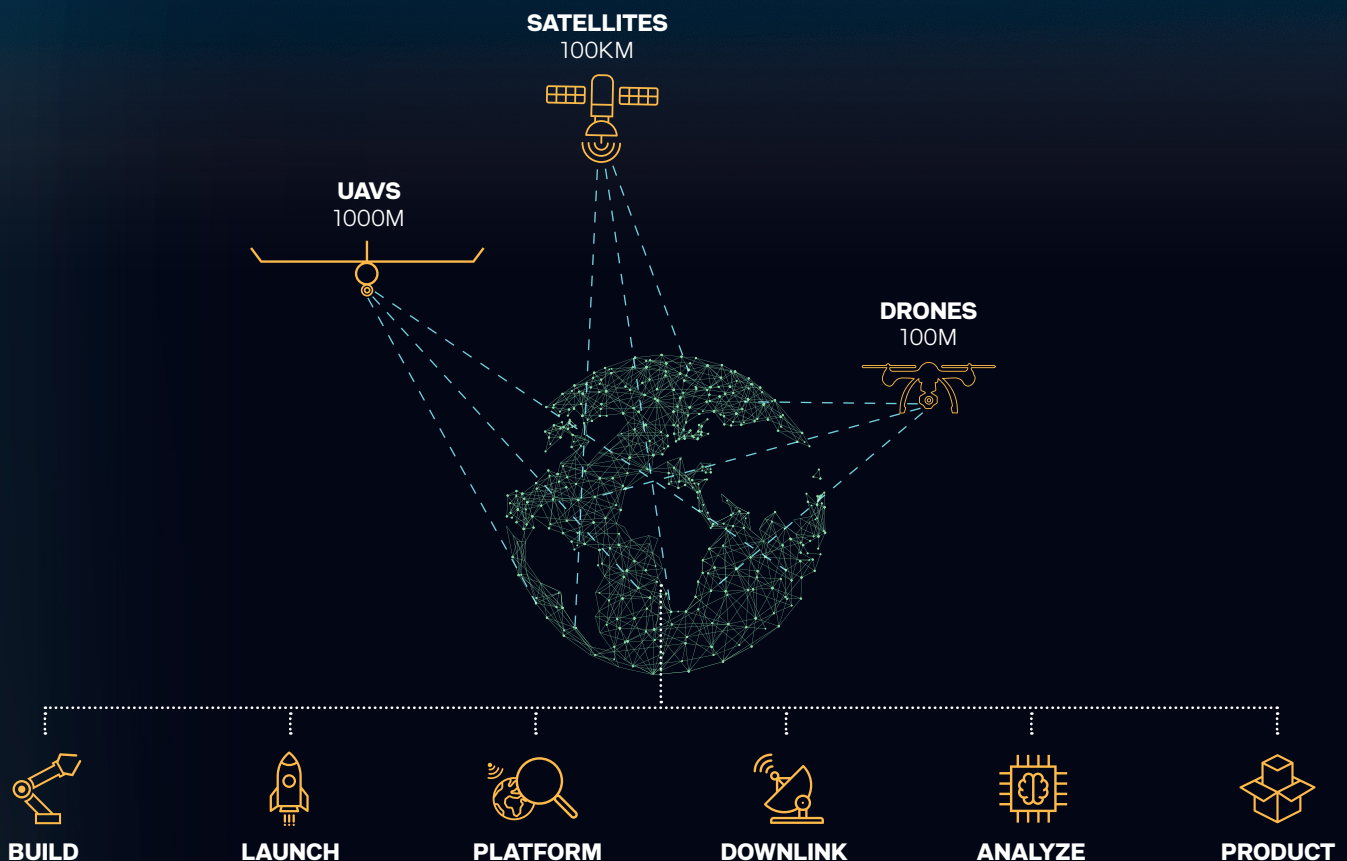
**Mark Boggett**  
CEO



**James Bruegger**  
CIO



**Rob Desborough**  
Accelerator & Early Stage



## Current Portfolio

We are the most prolific investor in SpaceTech globally. Across our different activities, we currently have a portfolio of more than 70 of the world's leading SpaceTech start-ups.

### Fund



### Accelerator



### Seraphim Space Accelerator Mission 10 Cohort



## Seraphim News

[Isotropic Systems has rebranded to ALL.SPACE](#)

[Xona Space Systems Successfully raised over \\$25m in funding to date – including funds from GPS satellite maker Lockheed Martin](#)

[Satellites will act as thermometers in the sky](#)

[UK government gives the green light for world's longest drone 'superhighway'](#)

[Portfolio company SatelliteVu strikes deal with landmark to provide climate change data to the Uk land & property market sectors](#)

[Portfolio company Opteran secures \\$12 million to create a new standard for autonomous machines](#)

[Astroscale announces arrival of Nick Shave as managing director](#)

[Seraphim Space Camp mission 8 alumni Ubotica technologies raised \\$4.2million seed round](#)

[Spacex successfully launches Falcon 9 including satellites from 5 Seraphim portfolio companies](#)

[Seraphim Space Camp launch Mission 9](#)

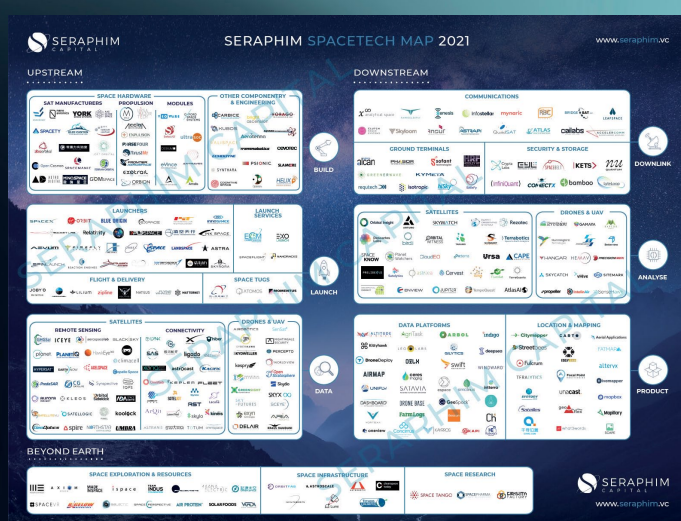


## Methodology & Taxonomy

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 not include personal investment that the likes of Jeff Bezos may make in their own space initiatives.

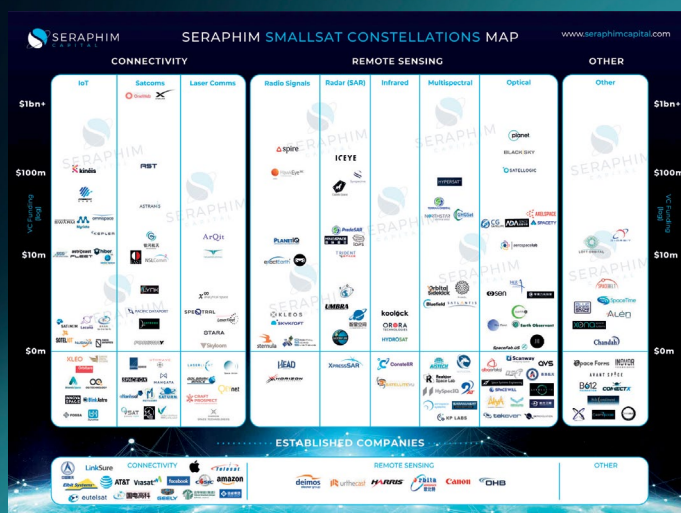
## Further Research

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 Spacetechnology. Key periodic research we publish includes our widely recognised SpaceTech Ecosystem and Smallsat Constellation market maps.



## SPACE TECH MAP

Global VC backed emerging leaders per category



## SMALLSAT CONSTELLATION MAP

Global VC backed companies across categories

