

# → THE ESA EARTH OBSERVATION $\Phi$ -WEEK

## EO Open Science and FutureEO

12–16 November 2018 | ESA–ESRIN | Frascati (Rome), Italy

## The New Space Economy Powered By Venture Capitalists: An Italian VC Fund For Space

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15/11/2018

# Global Space Economy



Global Space Economy is expected to rise from \$348 bn in 2017 to \$ 2,7 tn in 2045

New space race with Chinese investments:

China will have its own Space Station by 2022

Dramatic reduction in launch cost (from \$10.000/kg in 1967 to \$ 2.600 €/kg in 2016).

Easier access to space for commercial industries

More and more we interact with space-related applications on an everyday basis (tv, mobile phones, weather forecasts, autonomous driving...)

Increasing trend to re-use rockets: further decrease in launch costs

Huge investments by tech billionaires (Jeff Bezos, Elon Musk, Richard Branson, Bill Gates ...)

*“We believe we are entering an exciting era in Space where we expect more advances in the next few decades than throughout human history”*

*(Global Space Primer - Bank of America)*

Sources: *Global Space Primer Bank of America; Seraphim Capital*



## Italy is one of the top contributors



€ 1,6 bn turnover  
250 companies  
6.000 people

One of the few countries with competences along the whole industrial chain

Third country in the world to launch his own satellite in orbit (1964)

Third contributor in Europe to ESA (European Space Agency)

Sixth country in the world for most quoted scientific articles in the space sciences field

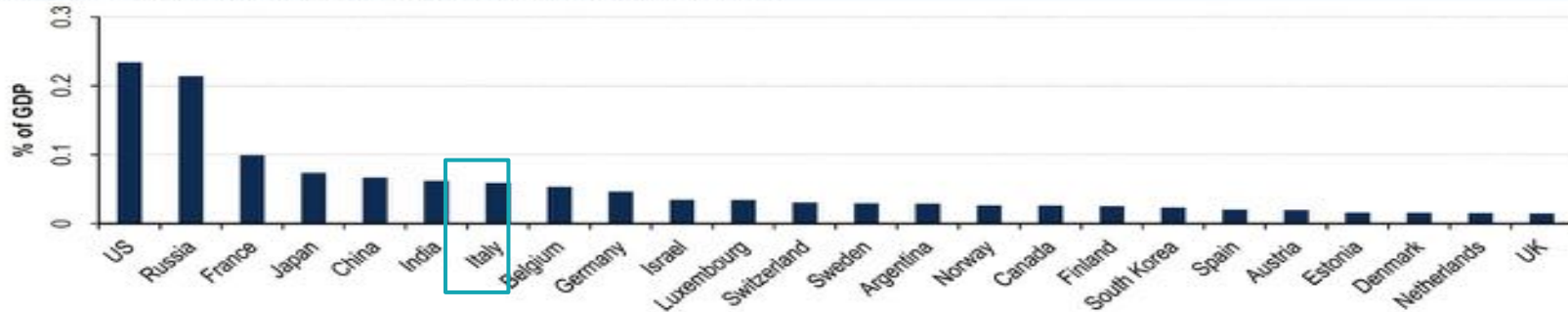
50% of the International Space Station's walkable environments have been built in Italy by Italian companies



# Space Economy in Italy



Chart 5: Space budget as percentage share (%) of GDP for selected countries

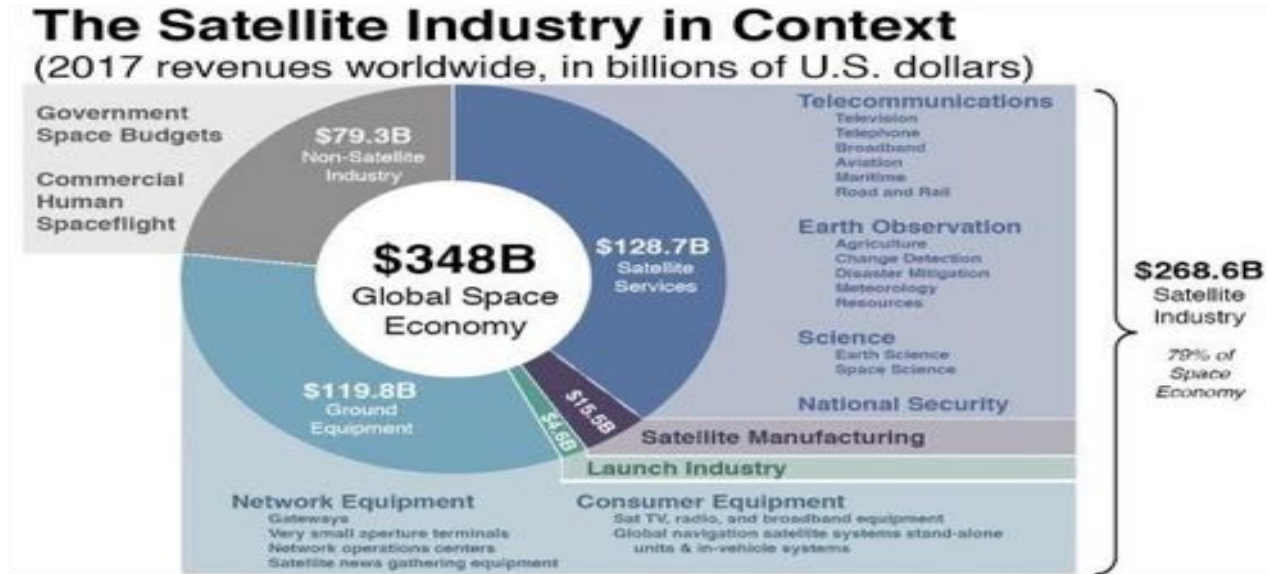


# Global Space Economy

## "Satellite is the new oil"

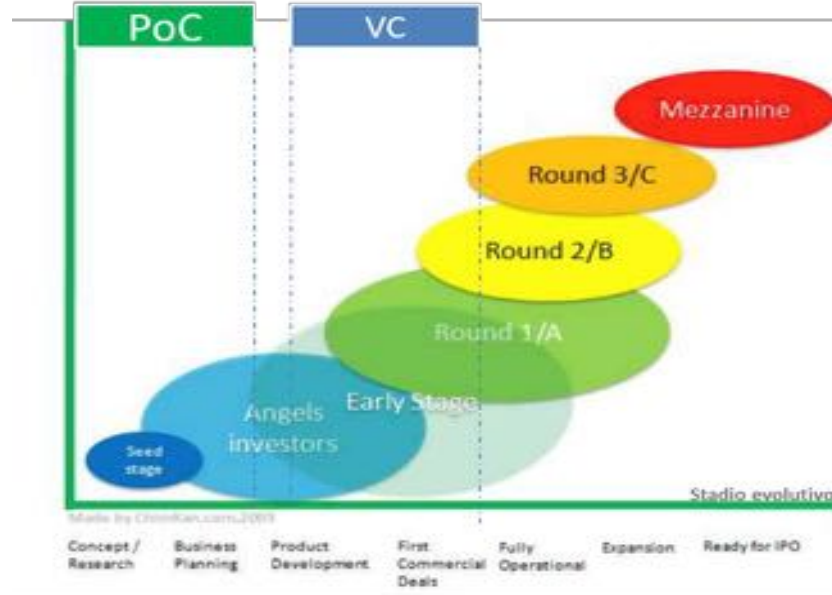


"In 20th century the oil and gas drilling sectors were the most valuable part of the global economy. Now, as we live in the digital era, the list of the biggest companies around the world is dominated by data driven technological giants like Apple, Alphabet, Microsoft or Amazon" (Satellite data is the new oil - Wojciech Drewczynsky)



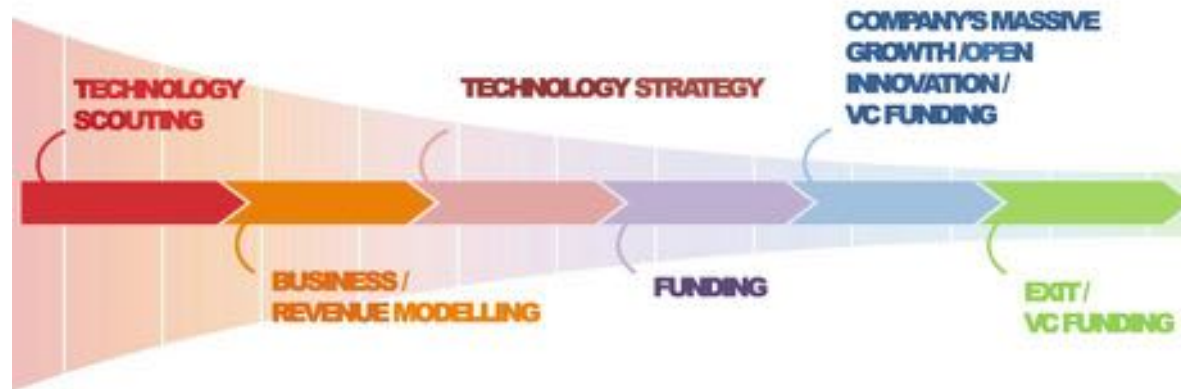
# Venture Capital

Venture capital is a type of investment prior to private equity, placed after the seed and development capital stage.



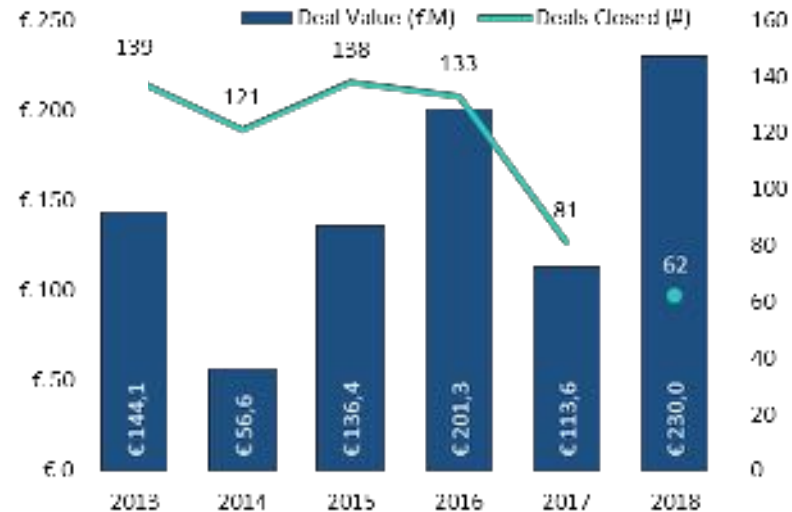
# Venture Capital

Venture capital differs from private equity because it is riskier. Minority stake, high financial risk, high operational risk, investment target make it a sector with high-potential but at the same time extremely fallible. However Venture Capital is a key player in the value chain for technology growth.



Credits: Digital magics

VC in Italy did not spread because there are few operators, few operations and limited amounts of money invested. However, as showed in the chart, the situation is slightly changing.

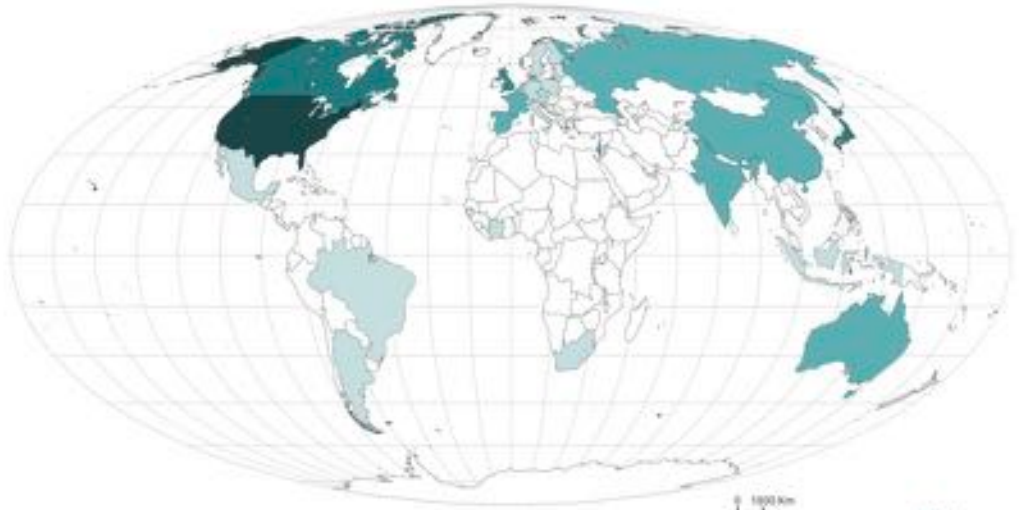


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The introduction of VC in Italy in the space sector will surf on the global growth of VC operations.



Investors in start-up space ventures are headquartered in the U.S. and 36 other countries.



Bycespace and Technologies



# Space Economy and Venture Capital



## EUROPEAN SPACETECH FUNDING OPPORTUNITIES



1

• **The new Space Economy (for VC)**

2

• Governance

3

• Investment strategy

4

• Dealflow

# Fund size (mln)



*First  
Closing*

**40**

*Closing*

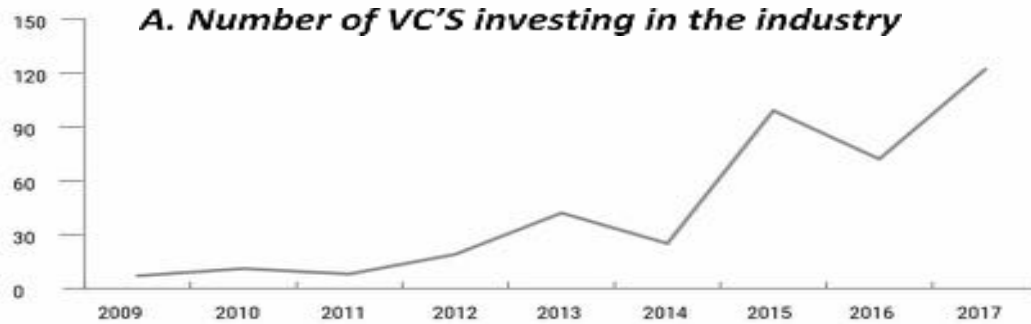
**80**

*Hard Cap*

**100**



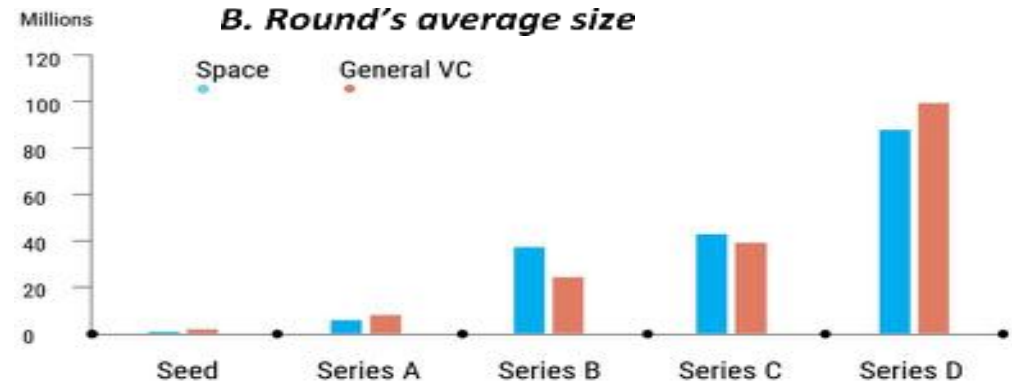
# Space Economy and Venture Capital



**2017 marked a record year, with over 88 venture capital firms investing in the space industry (43 of them never invested before in Space)**

**Since 2000 \$ 6.3 bn has been invested in the industry, 80% of which in the last 3 years.**

*(Bryce Start up Space 2018)*



1

- The new Space Economy (for VC)

2

- **Governance**

3

- Investment strategy

4

- Dealflow



Fondazione E. Amaldi (FEA) is a research foundation created by the Italian Space Agency and Hypatia (a consortium of space related SMEs).

The primary objective of FEA is to promote and support scientific research aimed at technology transfer in the space sector.

FEA has developed a substantial number of collaborations with several academic, industrial and research institutions and is developing a network of KET LABS throughout Italy.

FEA will act as exclusive advisor to Astra Ventures, providing:

- access to network (KET LABS and extensive space technology network)
- access to technical facilities and testing laboratories
- scouting and dealflow opportunities
- due diligence capabilities on technology, space market assessments and financial feasibility

# The FEA KET-Labs network



FEA is developing a network of 'KET Labs', throughout Italy, by partnering with leading research, SMEs and academic institutions in specific development areas of the new space economy applications:

ART (Area Ricerca Tuscolana, Rome). The Tor Vergata area has the largest concentration of space related research institutions (INFN, Enea, ESA, ESRIN, INAF, CNR). Three vertical focus areas: Advanced Manufacturing, Bioengineering, Advanced Materials

IOR (Rizzoli Institute and Alma Mater, Bologna) active in regenerative medicine, microgravity, 3D printing

IIT (IIT, Lecce) focused on microelectronics for space applications

PROM (Prom and Trentino Sviluppo) in advanced space materials

XLAB (Chivasso), active in MEMS technologies





# Partner lead investor



- Sponsor of the initiative and cornerstone investor: soft commitment of 10 mln €
- Access to the huge national and international network
- Supporting the technical due diligence activity through its research foundation

Born in 1988 to coordinate national Investments in Space (around € 1 bn yearly budget)

Approximately 300 people with offices in Rome, Matera, Kenya.

Active in programs of: space robotics (Cassini, Mars Express, Rosetta, Venus Express, Dawn, Juno), launchers (Ariane 5), observation of earth, observation of the universe, navigation, telecommunication, human flight.

Founder and third contributor to ESA (European Space Agency); partner of leading public players (NASA, Israel, India, China), academics and research private institutions



## PRIMOMIGLIO SGR

Primomiglio SGR S.p.A. is a venture firm focused on technological seed to early stage Venture Capital. Currently Primomiglio SGR spa manages Barcamper Ventures, AIFM (Italian reserved FIA) born with the aim of investing in high-potential technology startups, selected through an acceleration process and investment that aims to industrialise seed capital.

1

- The new Space Economy (for VC)

2

- Governance

3

- **Investment strategy**

4

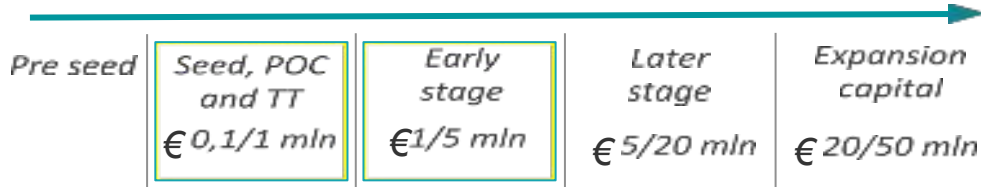
- Dealflow

# Technology transfer

## Seed, Early stage, Co-investments



### Investment stage



**Ventures' goal is to maximize the economic returns of innovative start-ups and innovative SMEs in the aerospace sector and promote technology transfer**

The Fund aims to invest in technology transfer, bringing to POC the technologies developed thanks to the Italian Space Agency, its network, affiliates and suppliers as well as in the university field. 15/25% of the fund allocation.

75/85% of the fund on Early stage investments and follow ons

Significant share of co-investments with other international market players (corporate and venture)

Scouting of successful SMEs with little access to capital markets

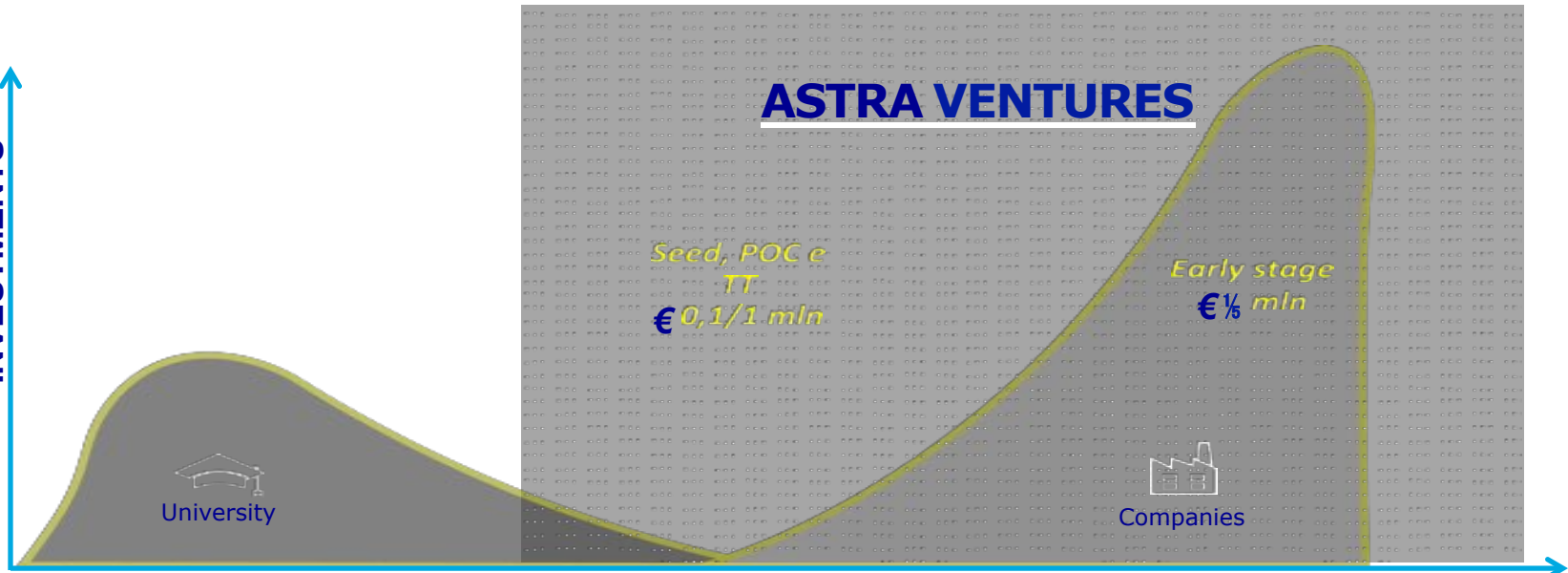


# Technology transfer

## Seed, Early stage, Co-investments



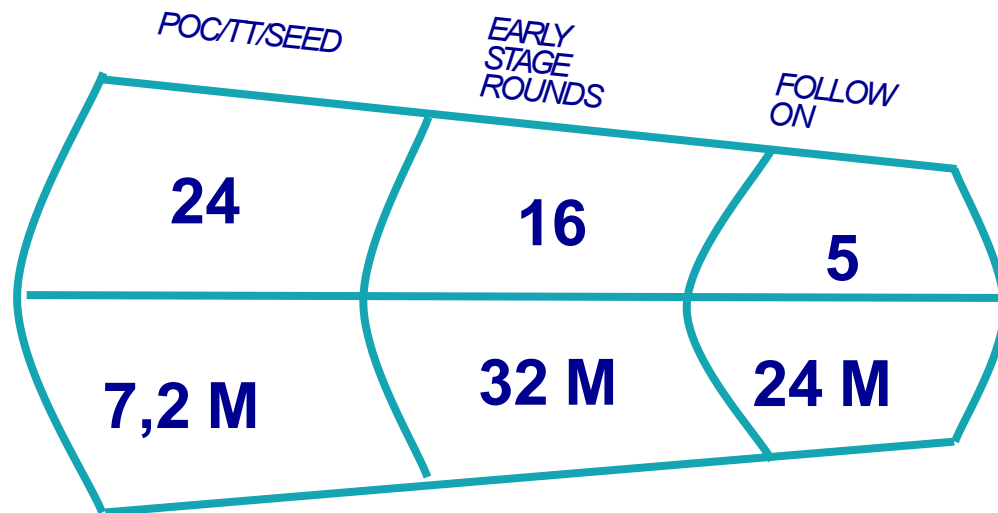
INVESTMENTS



TRL



# Fund model



Astra Ventures will invest a total of **23,2M Euro** as **initial investments** from three main sources:

- POC/TT/Seed deals originated in large part from academic and research institutions
- Early stage rounds in startups already in commercial phase in the space market
- Coinvestments with other international investors in early stage startups

A total amount of **40 M Euro** will be allocated in follow on investments as follows:

- Early stage rounds in portfolio companies
- Syndicated A/B rounds in portfolio companies
- Follow rounds and coinvestments on portfolio stars



## Investments areas

- 75% Italy
- 25% Rest of the world  
(mainly opportunistic  
coinvestments in Europe, US  
and Israel)

1

- The new Space Economy (for VC)

2

- Governance

3

- Investment strategy

4

- **Dealflow**



# Dealflow first month (1)



	SEGMENT	ONE LINE DESCRIPTION
1	Upstream	Nanosatellite constellation enabling companies to build an Iot Data network
2	Downstream	Communication systems for small satellite managers
3	Downstream	Data treatment and satellite georeferenced images
4	Upstream	Components for telecommunication pico-satellites
5	Downstream	Autonomous recharging infrastructure for drones
6	Upstream	Nanosatellites
7	Upstream	Low cost propulsion systems
8	Downstream	Antennas for satellite communications
9	Upstream	Design and production of high precision engines and positioning systems
10	Downstream	Plug and play satellite IoT



# Dealflow first month (2)



	SEGMENT	ONE LINE DESCRIPTION
11	Upstream	Small satellite operator
12	Upstream	Monitoring system of space debris generated by planned or accidental re-entry
13	Downstream	Autonomous drones ai driven
14	Downstream	Analysis of data coming from by satellite providers
15	Upstream	Professional drones construction and services
16	Downstream	opto-electronic spectral remote sensing in the UV-VIS-NIR band
17	Downstream	Geomatic monitoring, high precision measurement, 3d modeling, Modellazione 3d
18	Upstream	Solutions for inertial navigation, geo-reference and stabilization systems
19	Upstream	AI systems for autonomous driving based on visual inputs





Thank you!

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