



# NewSpace Market Trends: From Hypes to Sustainable Industries

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Space Tech Expo Europe

2024-11-19

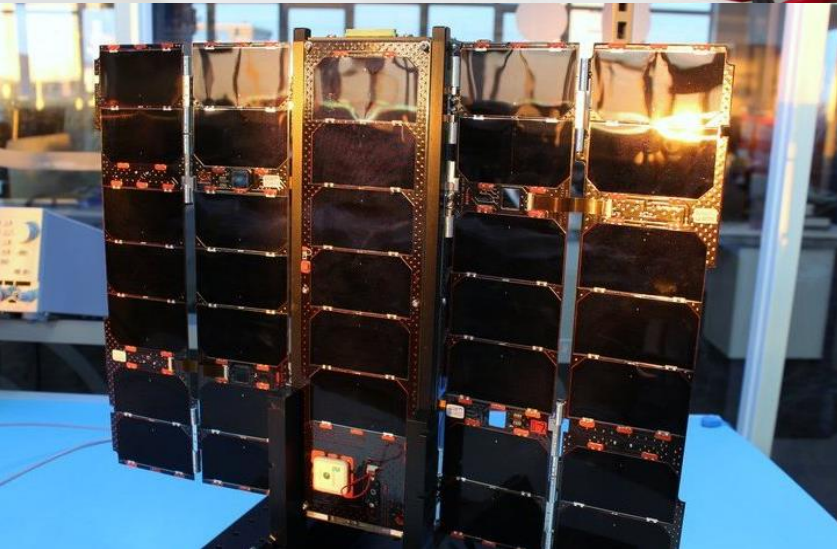
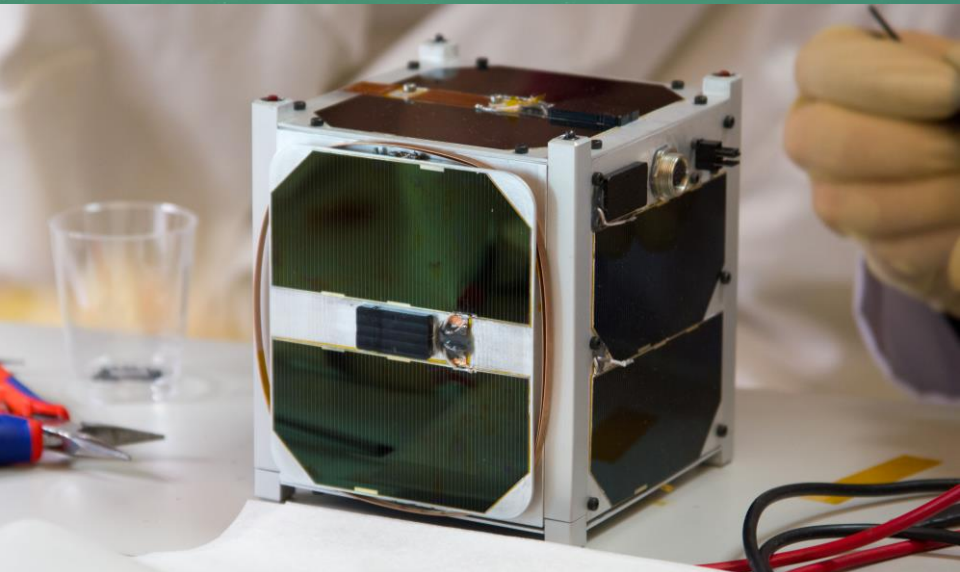
 **Nanosats Database**

**Factories in Space**

**NewSpace Index**



# Introduction







# Nanosats Database

- Since 2013.
- Nanosatellite missions (4100+), companies (720+) and their products.



newspace.im

- Since 2016.
- Small launchers (210) and satellite constellations (411).



factoriesinspace.com

- Since 2018, 920+ entries.
- In-space economy (satellite servicing, space tugs, lunar landers, manufacturing etc.)



# NewSpace Index

**Constellations**  
**Small Launchers**





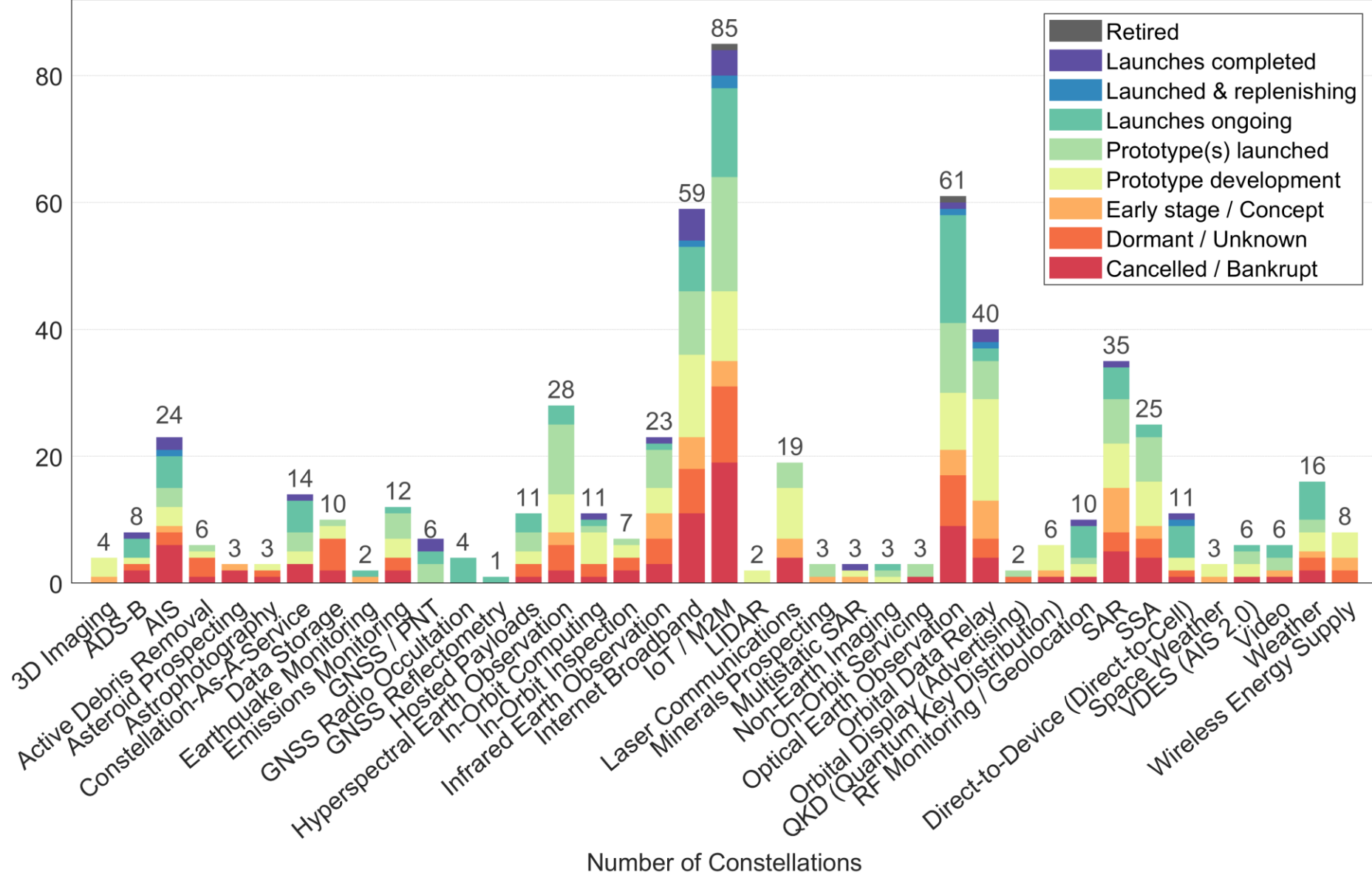
# Commercial Satellite Constellations

411 in database

# Constellations by Applications

2024/09/30

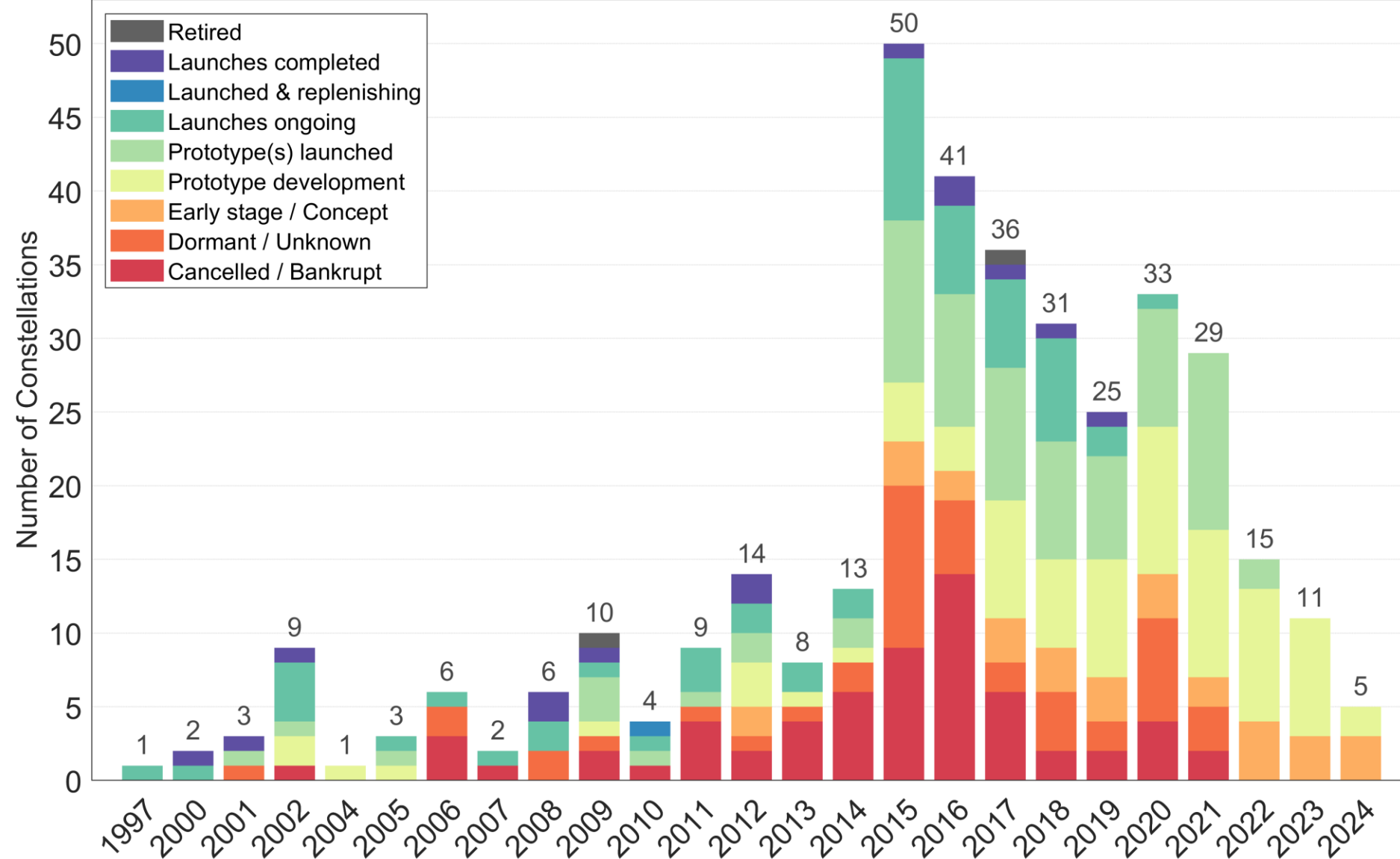
newspace.im



# Constellation Company Founding Years

2024/09/30

newspace.im



# Use Case: Satellite Broadband Internet

## Skepticism:

- Failures of constellations in 90s and early 2000s
- OneWeb going bankrupt in 2020 and still no global service

## Existing markets:

- Internet customers - billions
- Satellite internet customers - millions
- Starlink now:
  - Revenue – over \$6.6 billion in 2024 as per Quilty Space
  - Subscribers – over 4 million (Sept 2024), nearing 5 million
  - Achieved breakeven cash flow in Nov 2023

[1] <https://spacenews.com/starlink-soars-spacexs-satellite-internet-surprises-analysts-with-6-6-billion-revenue-projection/>

[2] <https://x.com/Starlink/status/1839424733198344617>

[3] <https://www.cnbc.com/2023/11/02/elon-musk-spacex-starlink-breakeven-cash-flow.html>



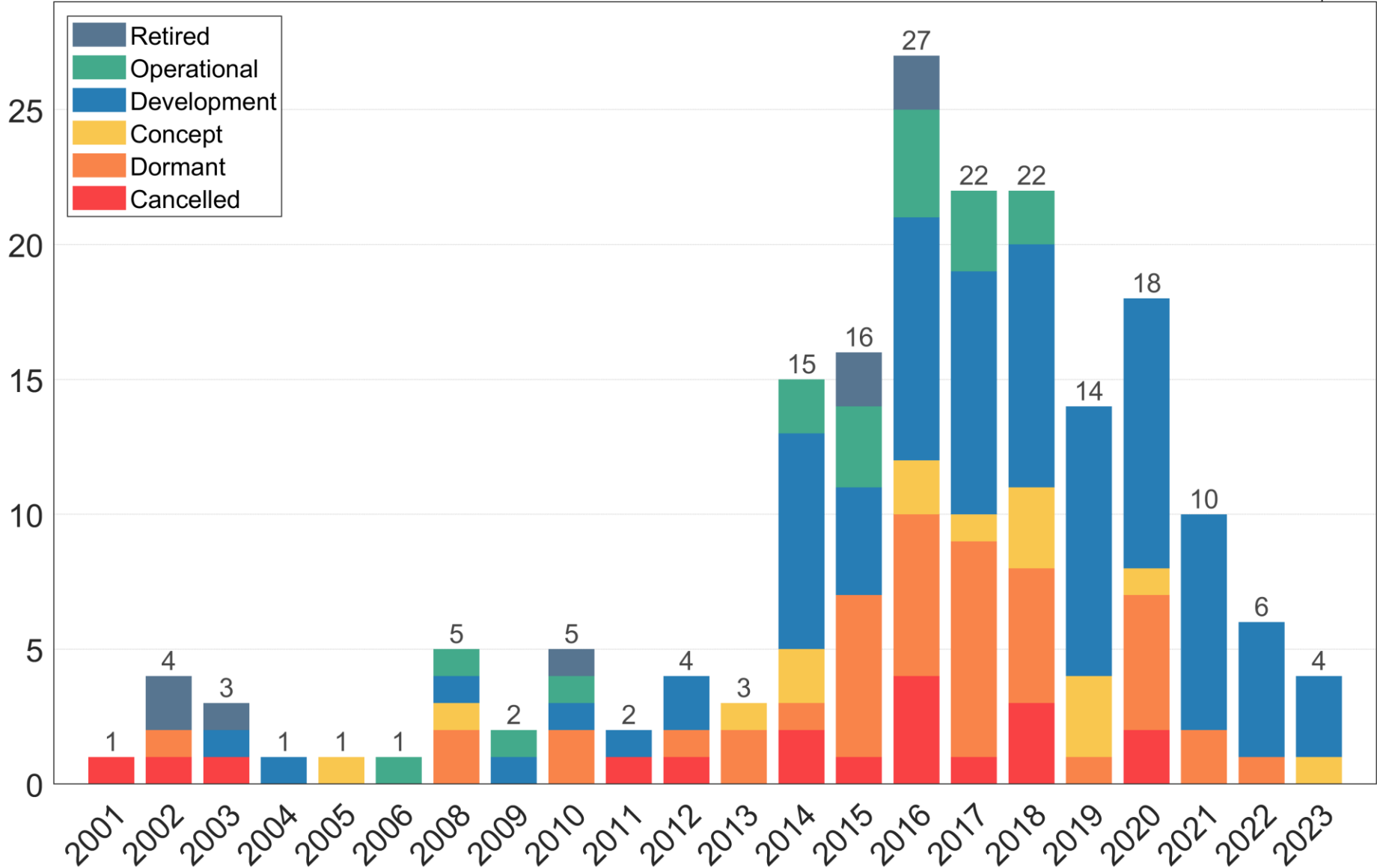
# Small Launch Vehicles

210 in database

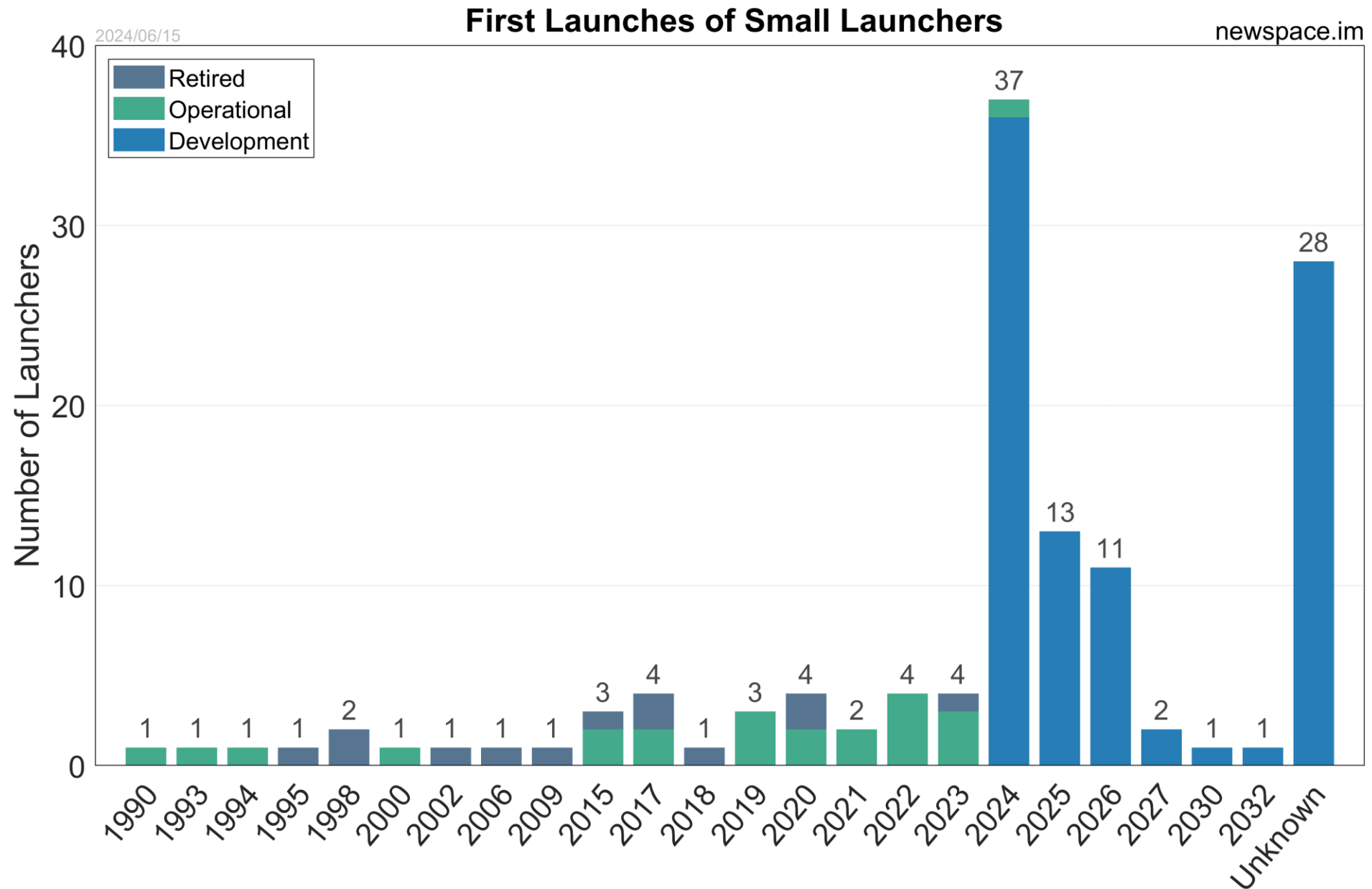
# Founding Years of Small Launcher Organisations

2024/06/15

newspace.im







# Small Launchers Hype

- Astra went public in 2021 at \$2.1B valuation.
  - Forecast 165 launches and \$619M revenue for 2024.
  - Taken private for at ~\$10M in 2024.
- Virgin Orbit went public in early 2022 at ~\$3B valuation.
  - Forecast \$914M launch revenues for 2024.
  - Bankrupt in early 2023.
- Relativity Space has raised over \$1.34 billion (\$650M in 2021 at \$4.2B valuation).
  - Claimed big backlog for Terran-1 in 2021: “most pre-sold rocket in history before launch.”
  - Terran-1 was cancelled after the partially failed first launch in 2023 after 7-8 years of development.
  - 3D printing was sold as an advantage but then shifted focus away for Terran-R in 2023.
  - Now reportedly in financial trouble.
- ABL has raised >\$500M, 1 failed launch in 2023 & 2024 fire, and pivoting to missiles.
- At least 64, maybe ~100, launch companies have received more than \$1M in funding.

[1] <https://www.cnbc.com/2023/05/23/virgin-orbit-bankruptcy-sale-rocket-lab-stratolaunch-vasts-launcher.html>

[2] <https://arstechnica.com/space/2024/03/after-astra-loses-99-percent-of-its-value-founders-take-rocket-firm-private/>

[3] <https://www.bloomberg.com/news/articles/2024-11-01/relativity-space-is-said-to-face-cash-drain-exploring-options>

[4] <https://www.cnbc.com/2021/06/08/relativity-space-raises-650-million-for-3d-printed-spacex-competitor.html>

[5] <https://www.reuters.com/business/aerospace-defense/bransons-virgin-orbit-files-bankruptcy-2023-04-04/>



# Positive Example: Rocket Lab

- Rocket Lab went public in 2021 at \$4.8B valuation.
  - Forecast \$232M launch revenues for 2024 (31 launches at \$7.5M).
  - Current valuation is \$9.5B (\$19) – stock started increasing in Aug 2024.
- Achieved economic sustainability in launch services since 2023?

Year	2021	2022	2023	2024
<b>Launches</b>	6	9	9	8 by Q2, 12 now, 14-15 planned
<b>Launch revenue</b>	\$39M	\$60.7M	\$72M	\$62.1M (6 months)
<b>Launch expenses</b>	\$54M	\$67.7M	\$64M	\$45.9M (6 months)
<b>Launch profit/losses</b>	-\$14.9M	-\$7M	+\$8M	+\$16.1M (6 months)
<b>Revenue per launch</b>	\$8.1M	\$6.7M	\$7.1M	\$7.7M (6 months)
<b>Cost per launch</b>	\$9.2M	\$7.6M	\$7.0M	\$5.7M (6 months)

[1] <https://d18rn0p25nwr6d.cloudfront.net/CIK-0001819994/5a46629e-a1b8-4f89-87f1-387596a65008.pdf>

[2] <https://investors.rocketlabusa.com/financials/quarterly-results/default.aspx>

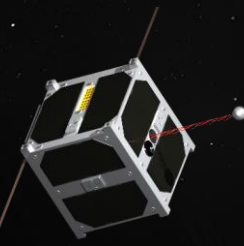
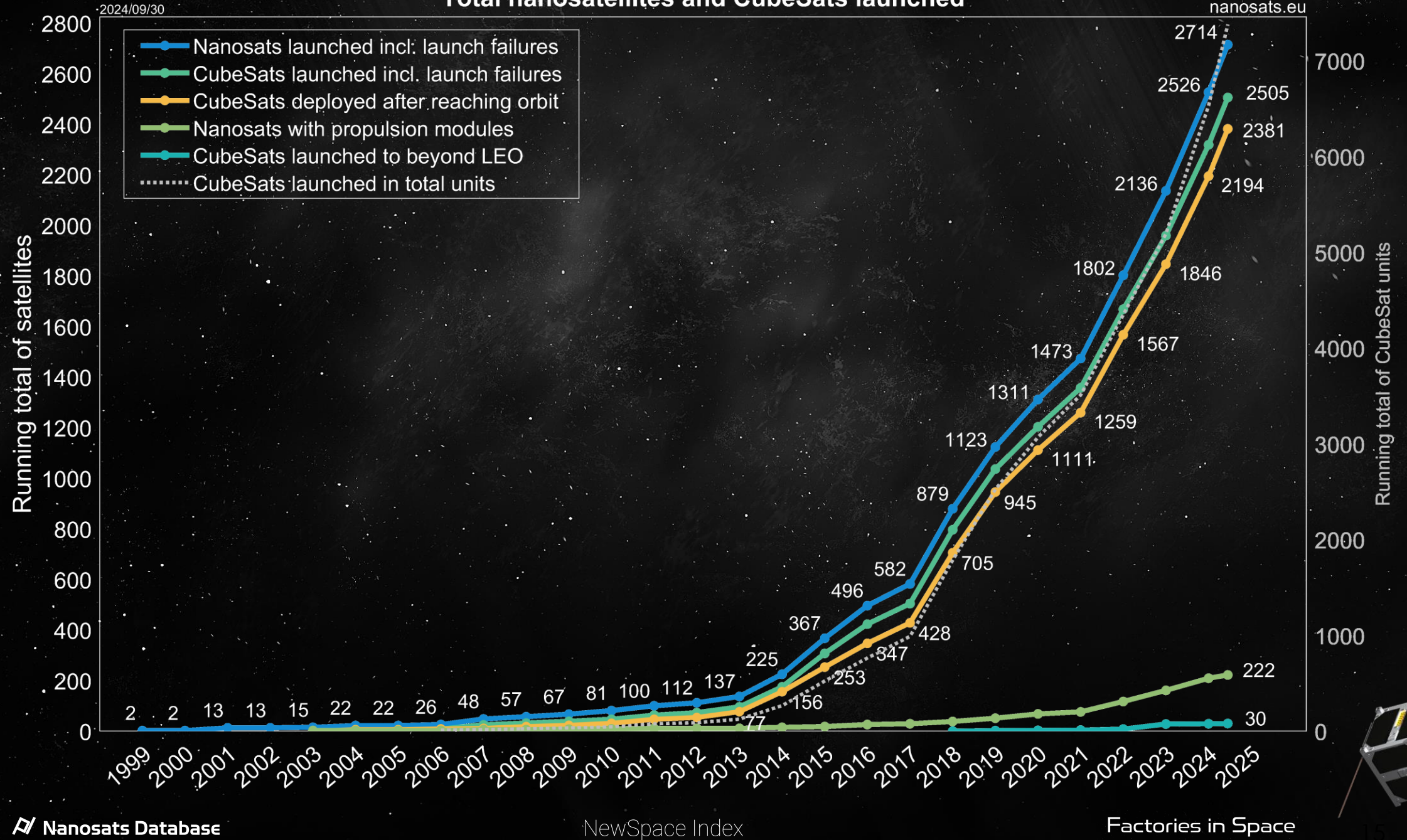


# Nanosats Database

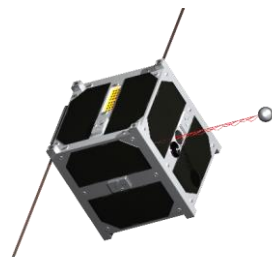
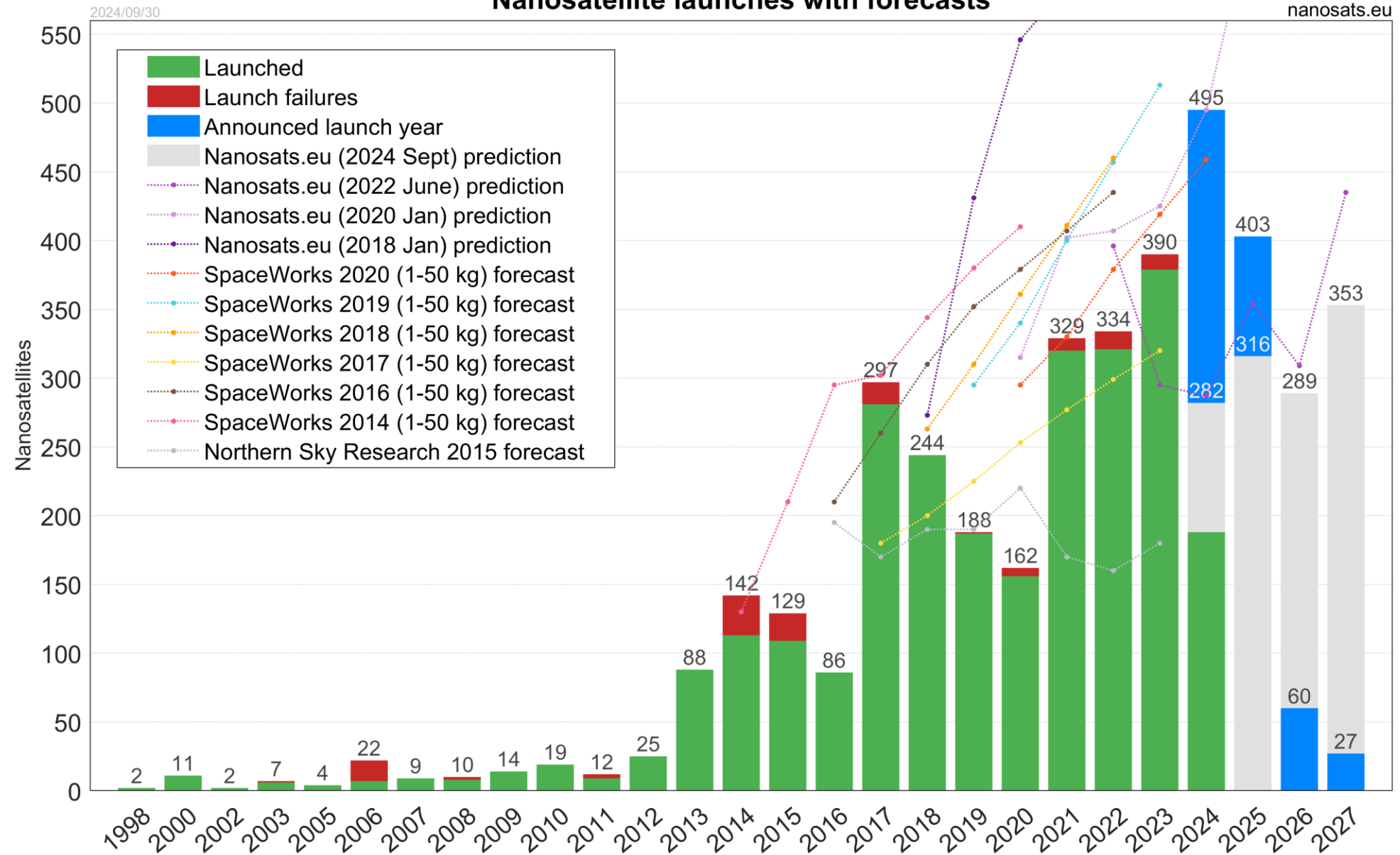
Nanosatellites  
CubeSats



# Total nanosatellites and CubeSats launched

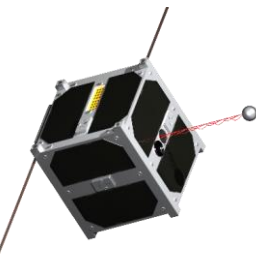
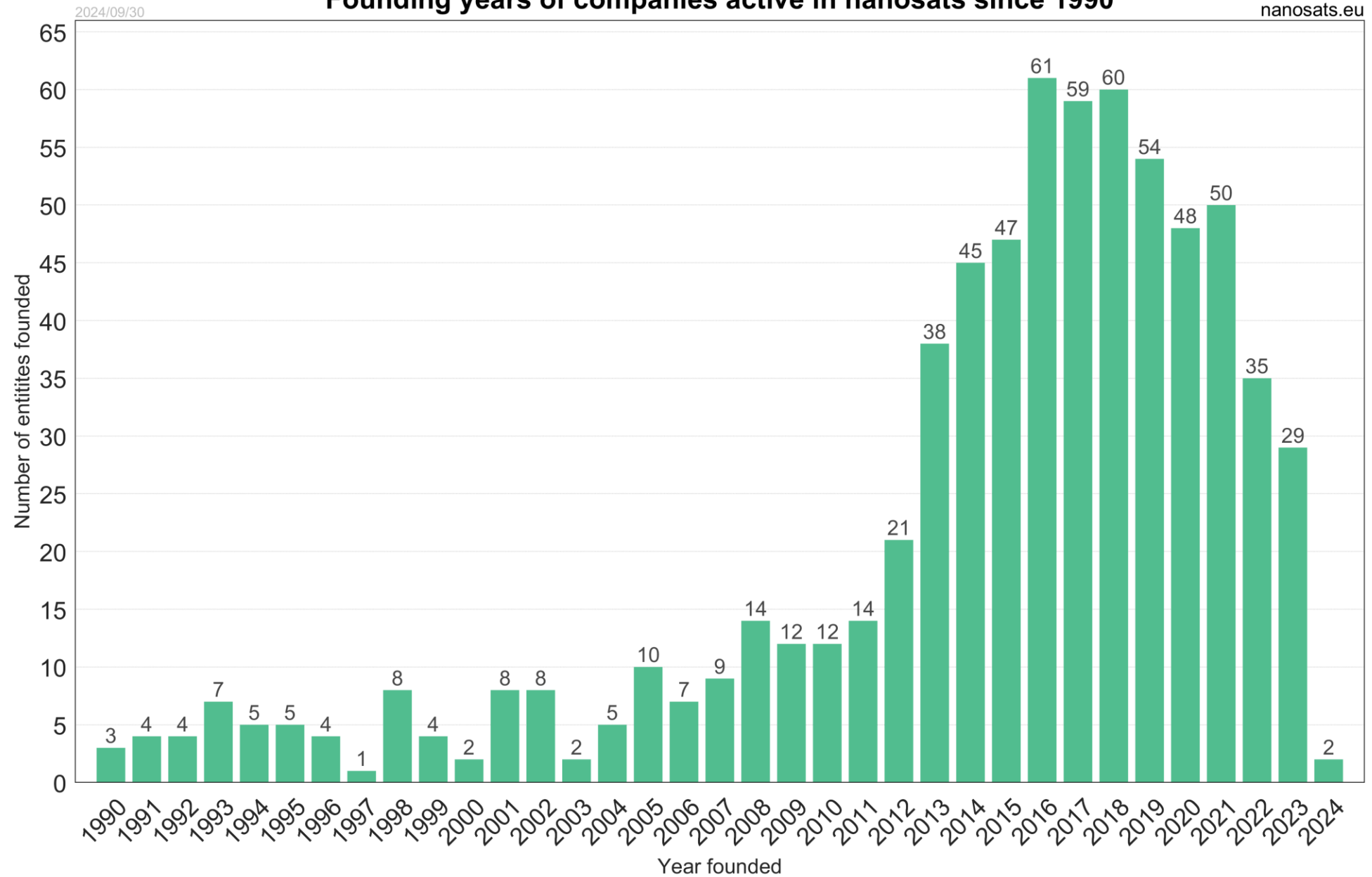


# Nanosatellite launches with forecasts



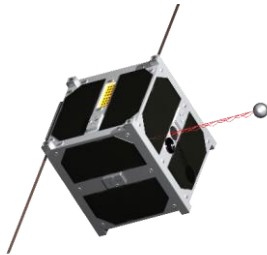
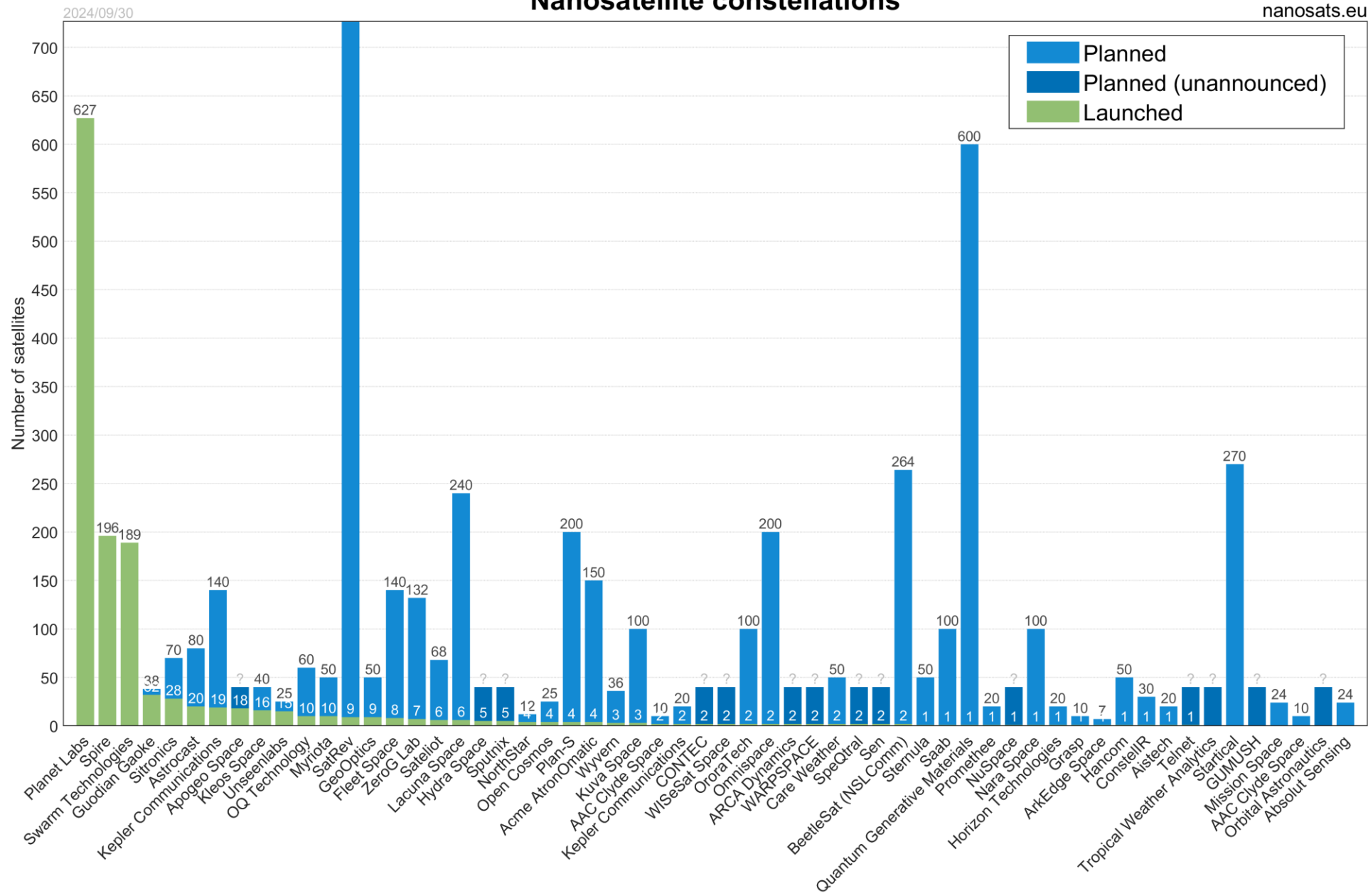


## Founding years of companies active in nanosats since 1990



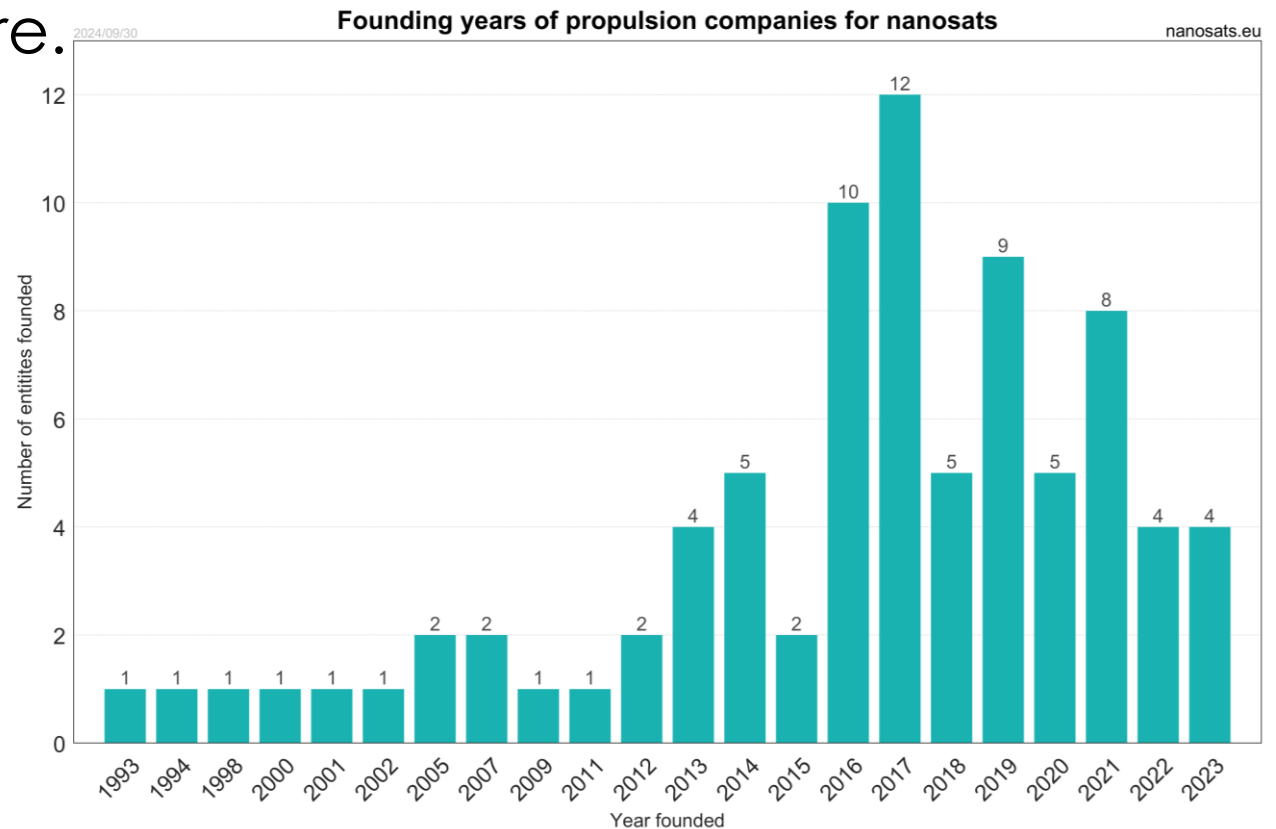
Nanosatellite constellations

nanosats.eu



# Example: Propulsion Companies

- Nanosats Database only covers propulsion modules suitable for nanosatellites. Many companies with larger units not listed.
- 82 companies on the figure.
- Now:
  - Most constellations are not happening at announced scales.
  - Only <10% of launched CubeSats have propulsion units but slowly growing.





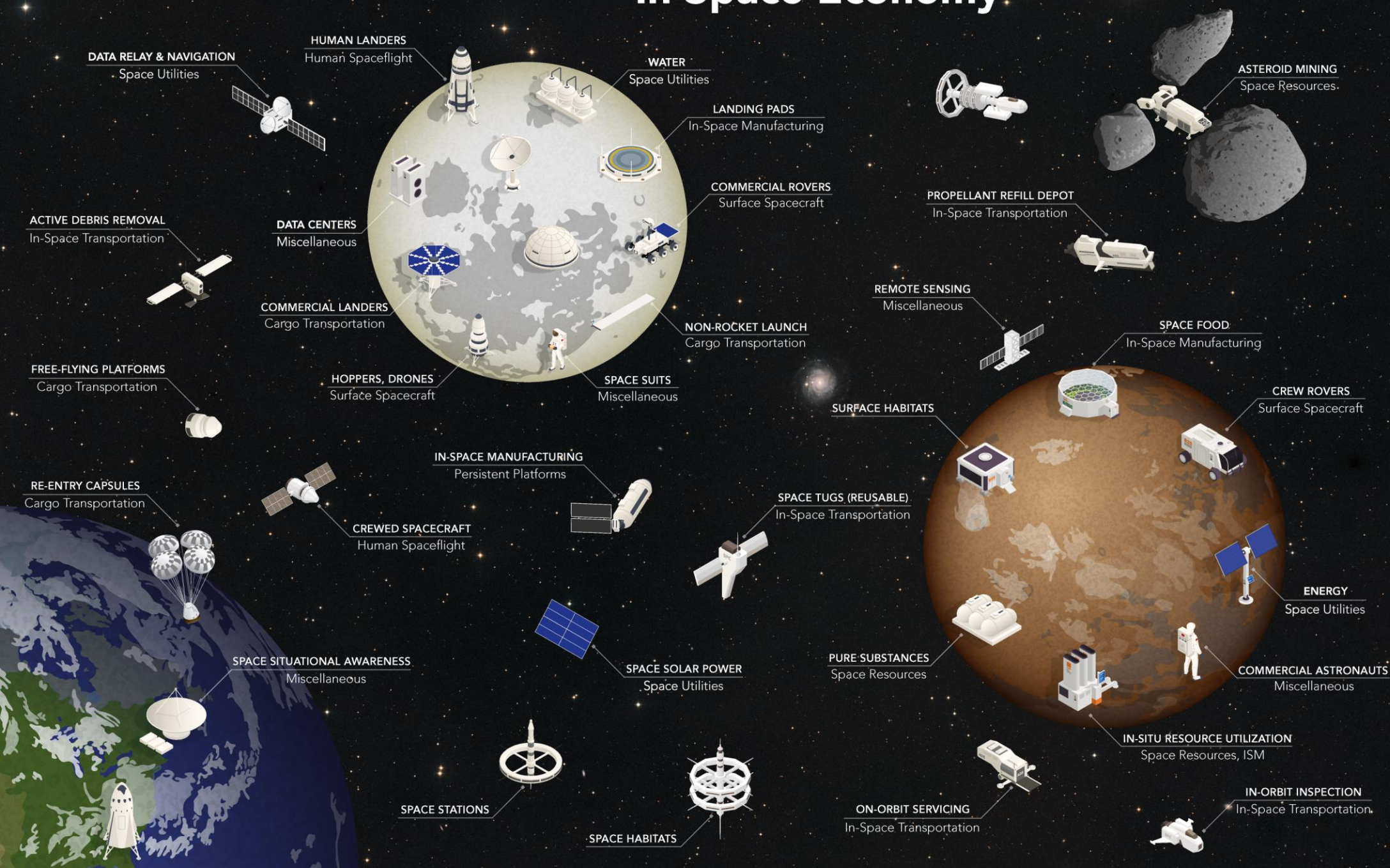


# Factories in Space

The new extraterrestrial space industries.



# In-Space Economy



## In-Space Economy Classification:

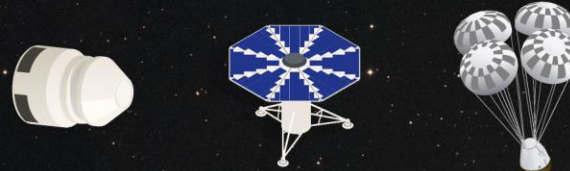
- 1) Human Spaceflight
  - Crewed Spaceships & Shuttles
  - Crewed Landers
- 2) Cargo Transportation & Landers
  - Robotic Landers (Moon, Mars)
  - Re-Entry Capsules (Earth, Mars)
  - Cargo Resupply
  - Reusable Satellites
- 3) Surface Spacecraft
  - Surface Mobility
  - Robotic Rovers
  - Drones, Hoppers
- 4) Space Stations & Habitats
  - Persistent Platforms
  - Robotic Space Stations
- 5) Surface Habitats & Structures
  - Surface Facilities, Infrastructure
- 6) In-Space Manufacturing (ISM)
  - In-Space Production
  - Space Food, Space Agriculture
  - Microgravity Manufacturing
  - Additive Manufacturing
  - In-Space Assembly & Construction
- 7) Space Resources
  - ISRU (In-Situ Resource Utilization)
  - Pure Substances (Ice, O<sub>2</sub>, Metals)
  - Space, Lunar & Asteroid Mining
  - Prospecting, Processing, Recycling
- 8) Space Utilities
  - Energy, Power Beaming
  - In-Space Internet, Data Relay
  - Navigation
  - Water, Propellant
- 9) In-Space Transportation
  - Space Tugs, Space Trucks
  - Orbital Transfer Vehicles (OTV)
  - On-Orbit Servicing
  - Propellant Refill Stations
  - Active Debris Removal
  - In-Orbit Inspection
  - Space Mobility, Space Logistics
- 10) Miscellaneous
  - Microgravity Services
  - In-Orbit Computing, Storage
  - Space-Flown Items
  - Space Suits & Garments
  - Commercial Astronauts
  - Space Entertainment, Advertising
  - Space Traffic Management
  - Space Tourism Support, etc.



## HUMAN SPACEFLIGHT & LANDERS



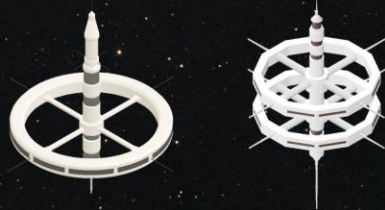
## CARGO TRANSPORTATION & LANDERS



## SURFACE SPACECRAFT & MOBILITY



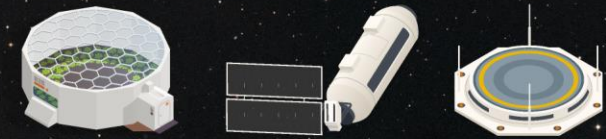
## SPACE STATIONS & HABITATS



## SURFACE HABITATS & STRUCTURES



## IN-SPACE MANUFACTURING



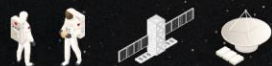
## SPACE RESOURCES



## SPACE UTILITIES



## IN-SPACE TRANSPORTATION

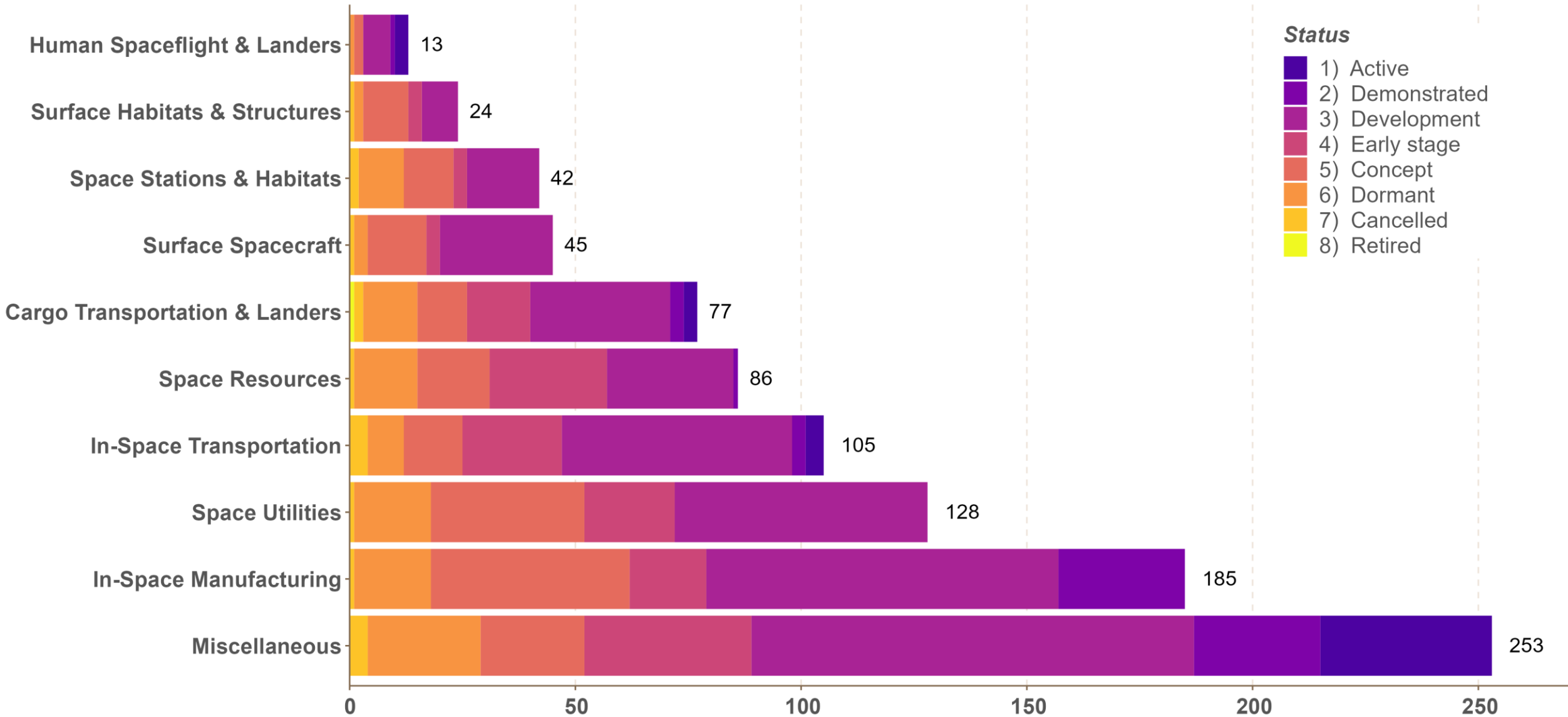


## MISCELLANEOUS



# Classification with Status of In-Space Economy Entities

Number of entries in the FactoriesInSpace.com database as of 2024-07-31



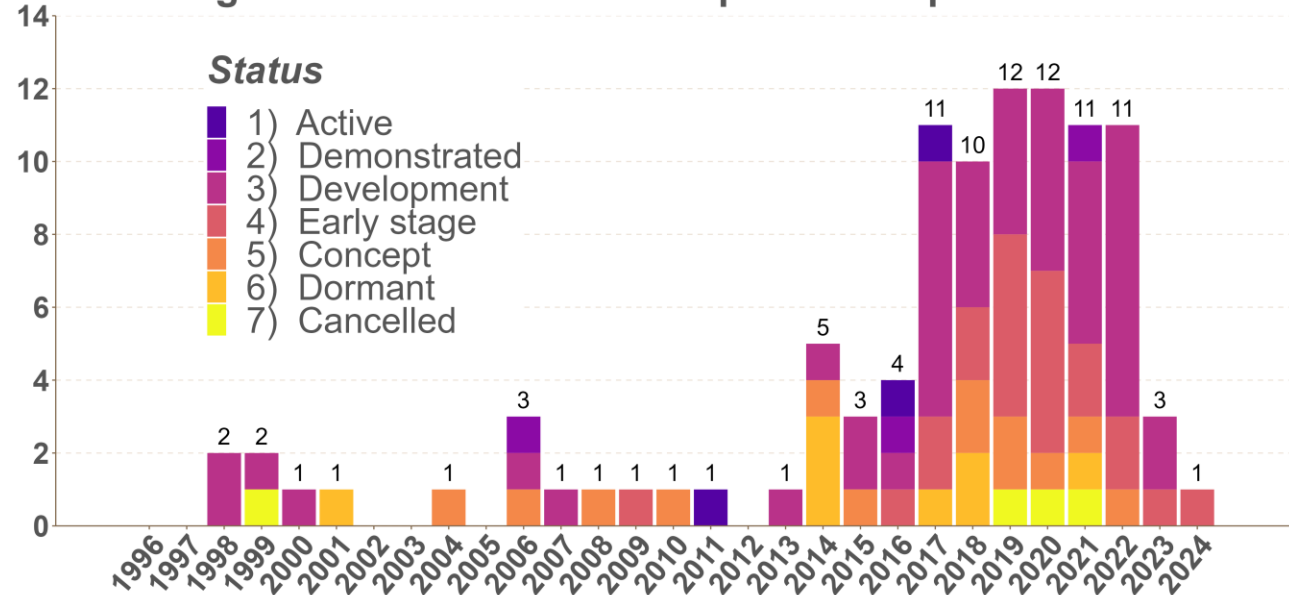
# Use Case: Space Tugs

- In-Space Transportation includes space tugs (OTVs), satellite servicing, propellant depots, etc because of overlap.
- 99 companies on the figure.

Momentum announced SPAC in 2020 at \$1.2B valuation.

- In 2021, the valuation was about halved.
- Now the valuation is about \$14M and close to delisting.

Founding Years with Status of In-Space Transportation Activities



[1] <https://spacenews.com/momentus-facing-nasdaq-delisting/>

[2] <https://payloadspace.com/how-momentum-became-the-latest-spac-on-the-rocks/>

# Challenges of NewSpace Economy



ERIK WERNQUIST  
DIGITAL ARTIST



# Space Economy Sizes Often Wrong

- Space has an optimistic forecast problem.
- Or alternatively very pessimistic, but rarely realistic.
- McKinsey estimates the global space economy was \$630 billion in 2023 and growing to \$1.8 trillion by 2035.
- However, “real space” of launch, satellite manufacturing, telecommunications and remote sensing etc., are only approximately tens of billions each.
- Emerging markets like satellite servicing, derbis removal, lunar landers, space mining etc., are a fraction of that.

[\*] <https://www.mckinsey.com/industries/aerospace-and-defense/our-insights/space-the-1-point-8-trillion-dollar-opportunity-for-global-economic-growth>

# Chicken-and-Egg Problem

- An example of space “chicken-and-egg” dilemma:
  1. Even if an asteroid mining startup raises billions, customers in space would take years to emerge.
  2. However, without availability of raw space resources, the industry and supply chain will not also develop.
  3. Financially stable customers are still missing for most.
- New markets usually grow (very) slowly and hard to predict. Multi-faceted competition too.
- Thus, more gradual approaches are required, often involving existing (large) markets, that could be serviced from space in new better ways.





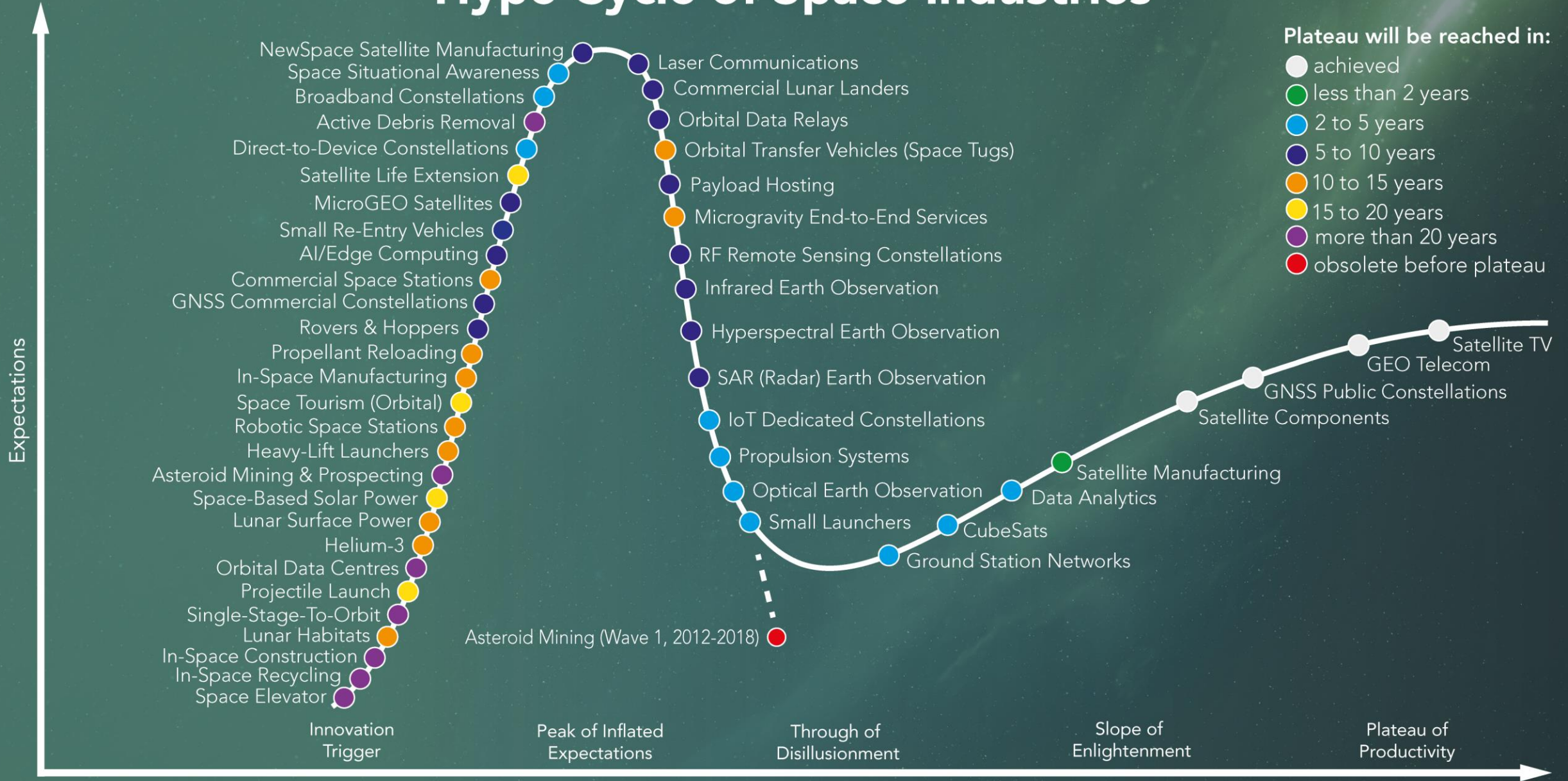


# First Steps

Space industries, which plausibly already are on a path to overcome these economic sustainability challenges.

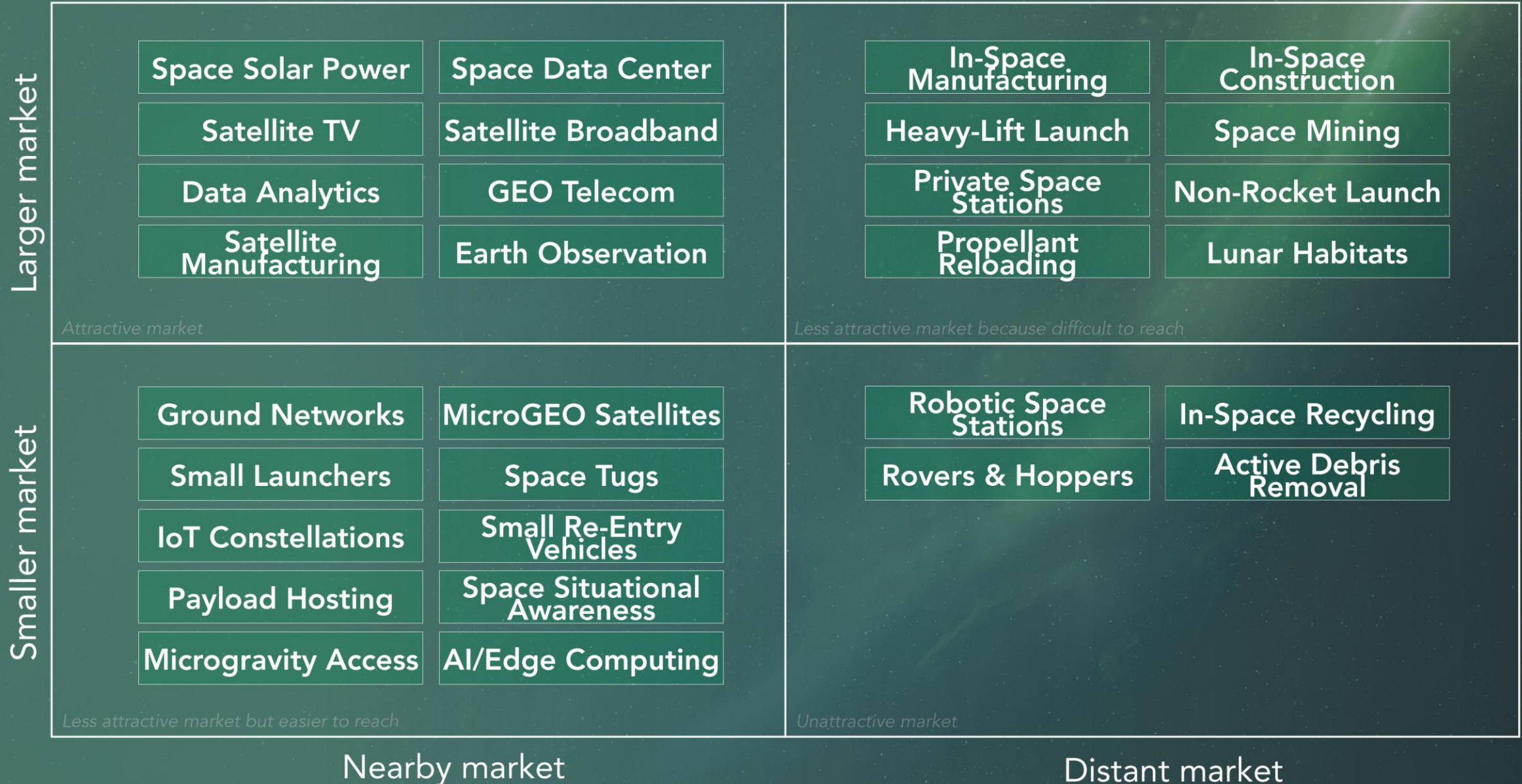


# Hype Cycle of Space Industries





# Space Industries: Market Size <> Timeline





# Need New Reasons For Space

- Need new economic drivers for spaceflight.
- This is the missing piece to speed up development.
- Not many “picks & shovels” will be sold until we find the “gold” in space or “killer app”.
- Railways were built where it made sense, because of activities & resources. Profit enables a lot of R&D.

**“If we can establish a Mars colony, we can almost certainly colonize the whole Solar System, because we'll have created a strong economic forcing function for the improvement of space travel.”**

*Elon Musk, Aeon, Sept 2014*





# Concluding Thoughts

A journey of many space startups:

- Raise funding in a hype field or small “new” niche.
- Discover that market is very small and increasing slowly.
- Some shutdown, but some raise enough to survive, to pivot or wait out market.
- Many pivot to a variation of satellite manufacturing, because it has real measurable revenue and customers.
- Sometimes the initial markets increase or emerge too.

Economic sustainability in space:

- New markets grow slowly and can lead to a chain-reaction of startup failures.
- Large existing markets, where a better product can capture market share and increase total addressable market quickly.
- Iterations are underestimated! Starlink modem \$2000 to <\$500, Starship, reusability

*"Many people focus on reasons why something can't be done. It's better to think about how maybe it could be possible."*



***AI* Nanosats Database**

[nanosats.eu](http://nanosats.eu)

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[newspace.im](http://newspace.im)

Factories in Space

[factoriesinspace.com](http://factoriesinspace.com)

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