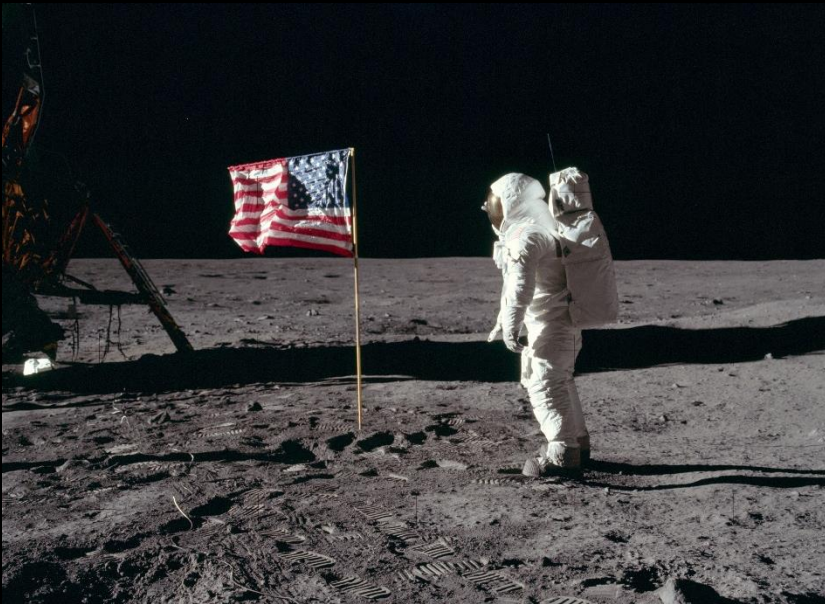




Is Space similar to :

- A vast ocean?
- Un extension of the sky?
- Something else?

International Treaties in the '60s... on the eve of the race to the Moon



- *Open access to space* by the national states
- *No appropriation of celestial bodies allowed*
- *Agreement on Rescue of astronauts*

There are «territorial waters» in space.. so far.

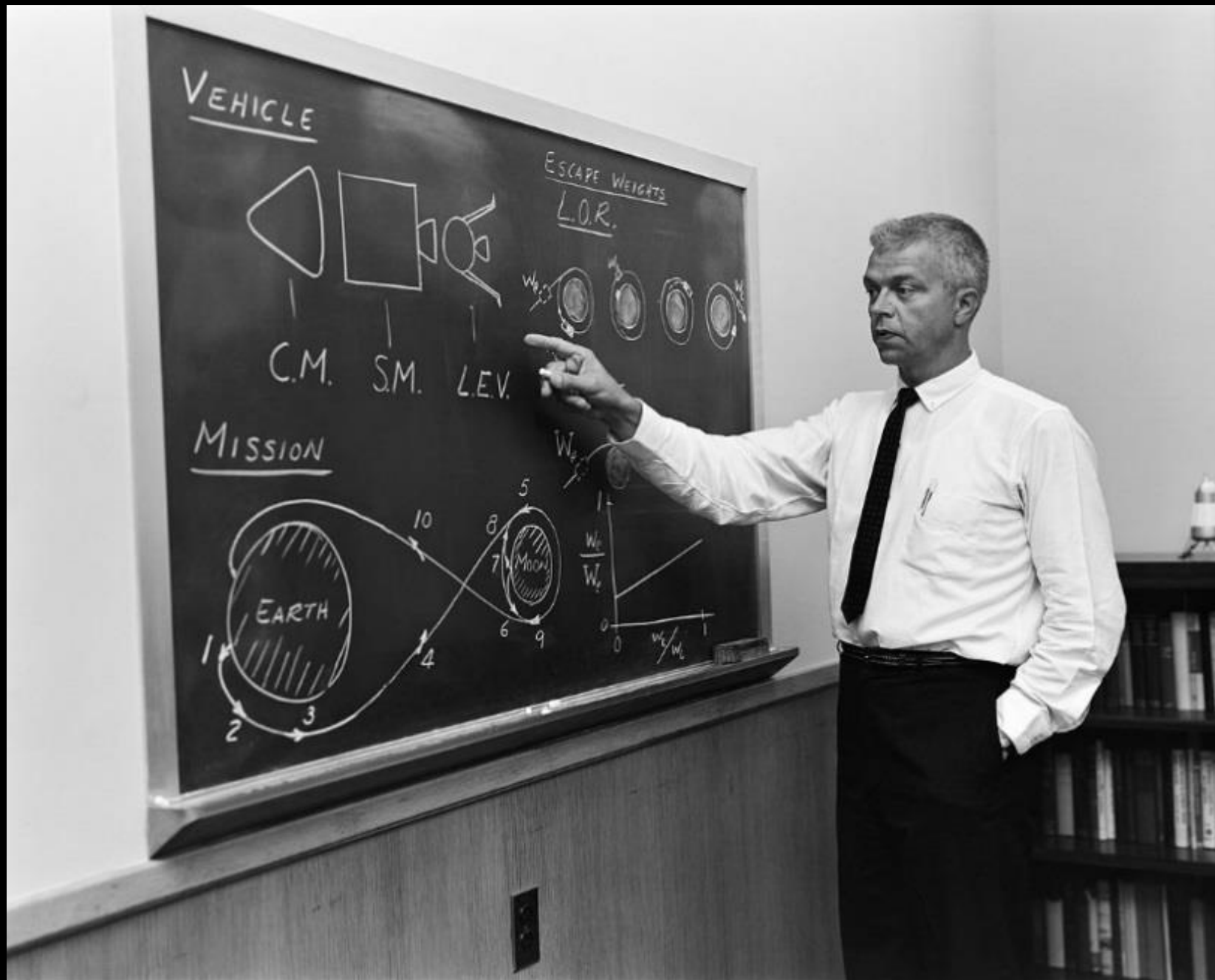


50 years ago:
first Moon Landing

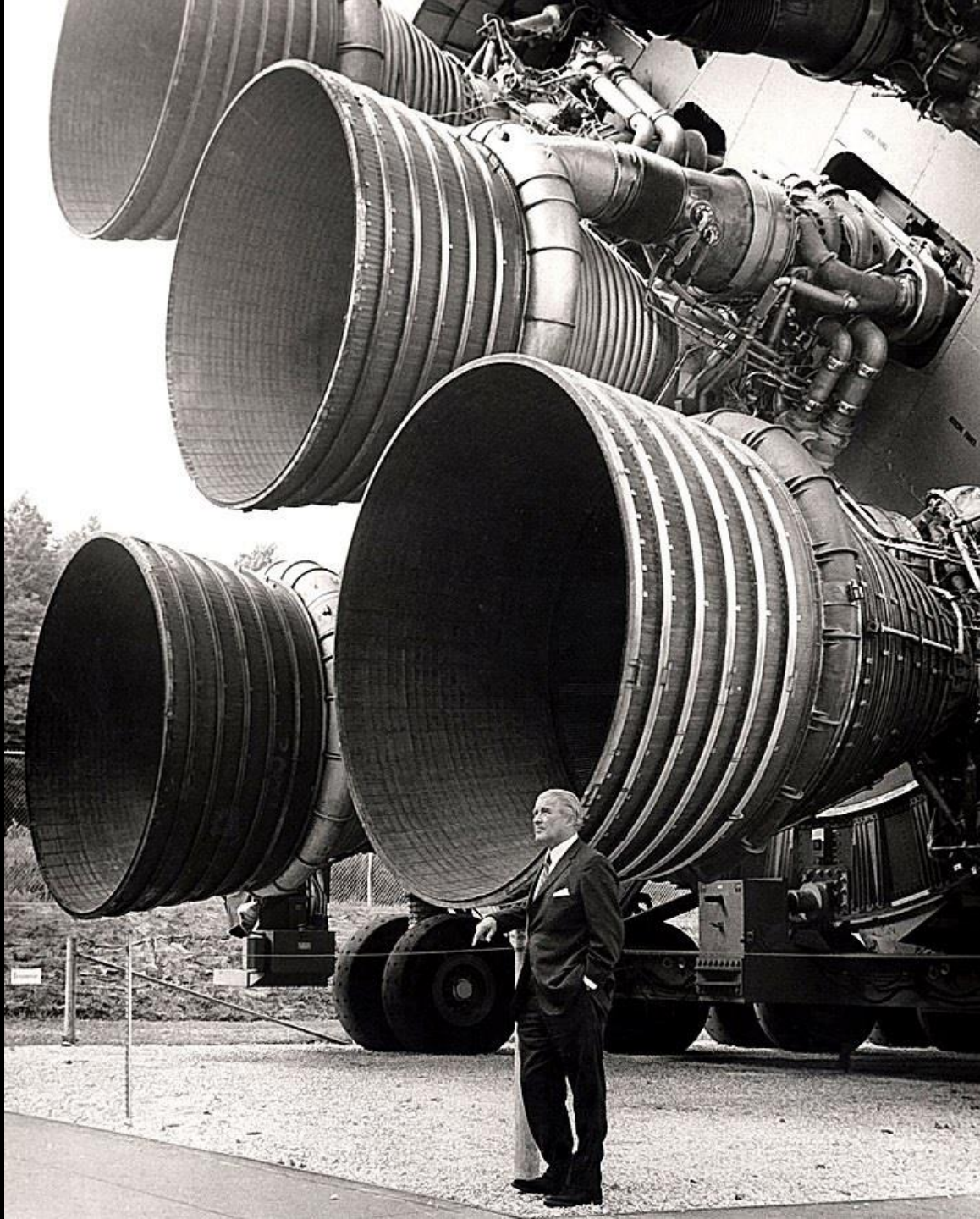




Lte Moon landing in «five moves»



John Hubolt,
the architect of
the *Lunar Orbit
Rendez-vous*
mission



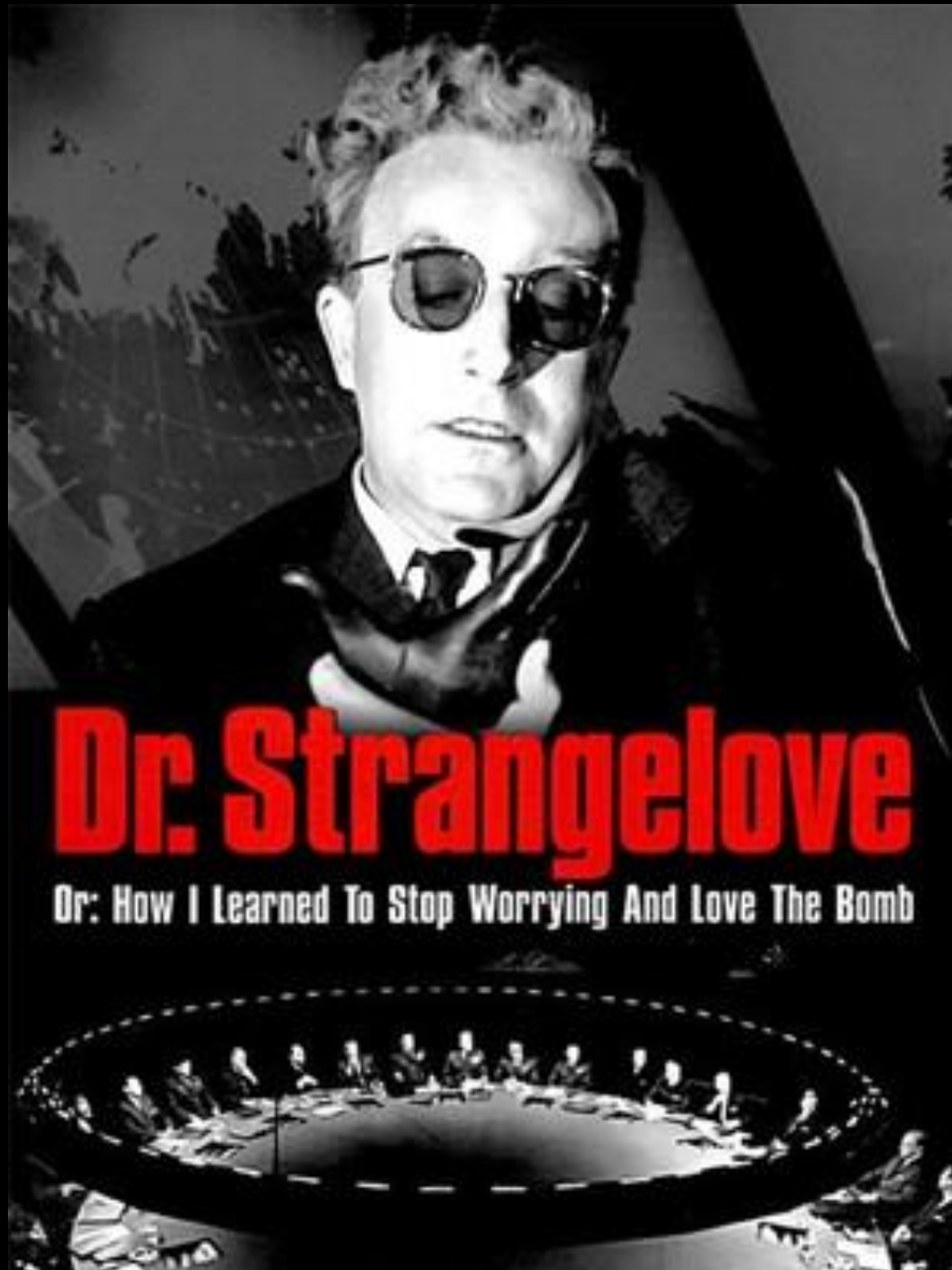
Werner von Braun,
The rocket designer
of the Saturn V



The courageous Apollo XI crew



The Space race taught us to look at planet Earth differently.



In the '60s EO satellites helped a lot preserving mankind from the Mutual Assured Destruction (MAD)

Stanley Kubrick



Sustainability

Geopolitics

Science

Economy

Scientist or Engineer for Spacelab Flight

The European Space Agency (ESA) requires a qualified Scientist or Engineer to become Europe's first man or woman in space, as a member of the first Spacelab mission in 1980.

Spacelab is a laboratory which will provide the means of performing scientific experiments under 'weightless' conditions during a seven-day mission in orbital flight. It will be carried into orbit round the earth aboard the "Shuttle" Orbiter - part of NASA's Space Transportation System.

The European crew-member will be expected to fly with an American colleague, taking turns to supervise experiments involving the following disciplines: materials science; atmospheric physics; life sciences; earth observations; astronomy; solar physics and technology.

Candidates must have a degree in science or engineering, and at least five years' active experience in one or more of the disciplines involved with this flight.

They must also be able to work in the remaining

disciplines, as they may be in charge of experiments in those fields during the mission. Candidates must be physically fit, currently under 47 years of age, and between 153cm and 190cm in height. They will be subject to stringent medical and psychological tests.

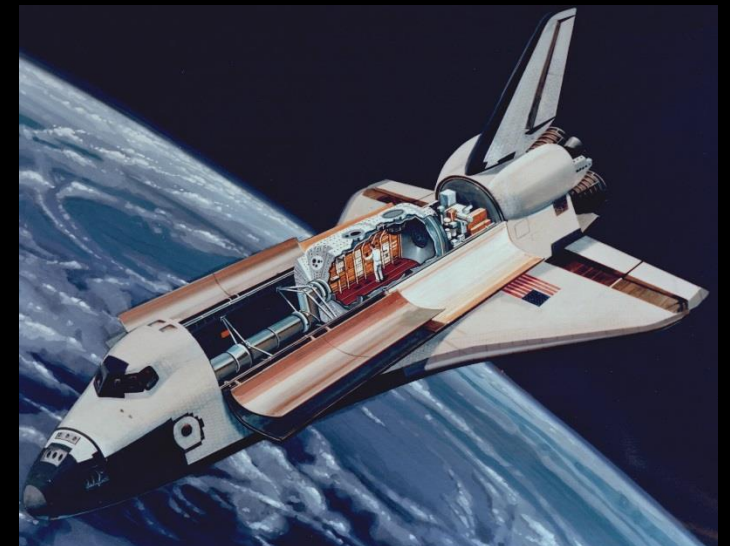
The successful candidate will be selected for the first mission from a maximum of four Europeans who will be given ESA employment contracts. The contracts will run from about the end of this year until the completion of the flight, to cover an extensive training period.

British nationals should submit their applications stating in the first instance: (i) name and address (ii) age (iii) height (iv) scientific or engineering qualifications with date and place of award (v) brief curriculum vitae, highlighting relevant scientific experience.

Applications must be received by June 29th 1977. (Candidates already aware of this opportunity should note the extended closing date).

Please forward to: Department of Industry,
SAR Division 2, Monsanto House,
10/18 Victoria Street, London SW1H 0NQ
(marking envelope "Payload Specialist").

Lo Space Shuttle
e la scienza nello
spazio





Flashback

22 dic 1977: quattro finalisti presentati alla stampa



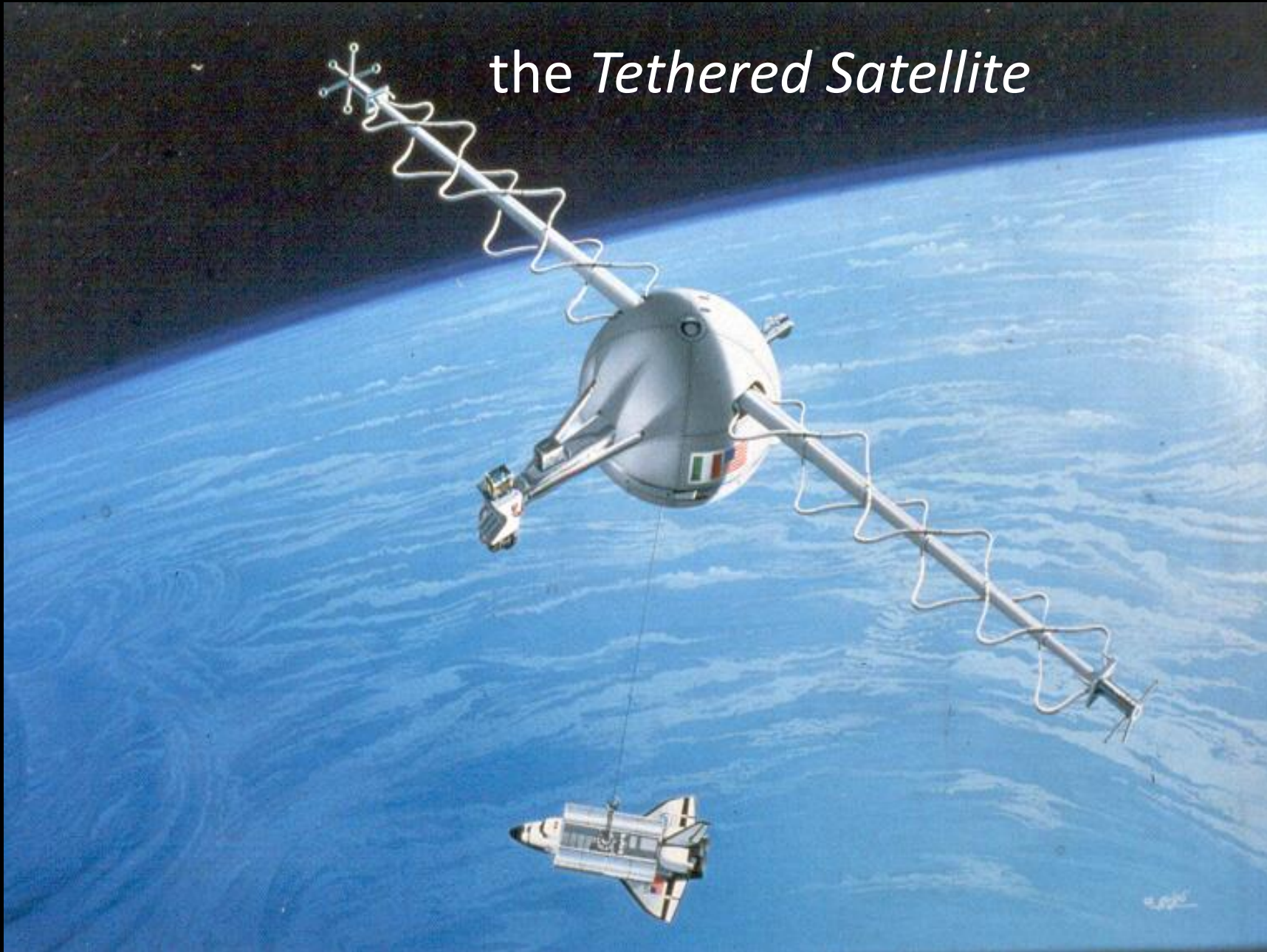


31 July 1992:
Atlantis lift off



The Crew

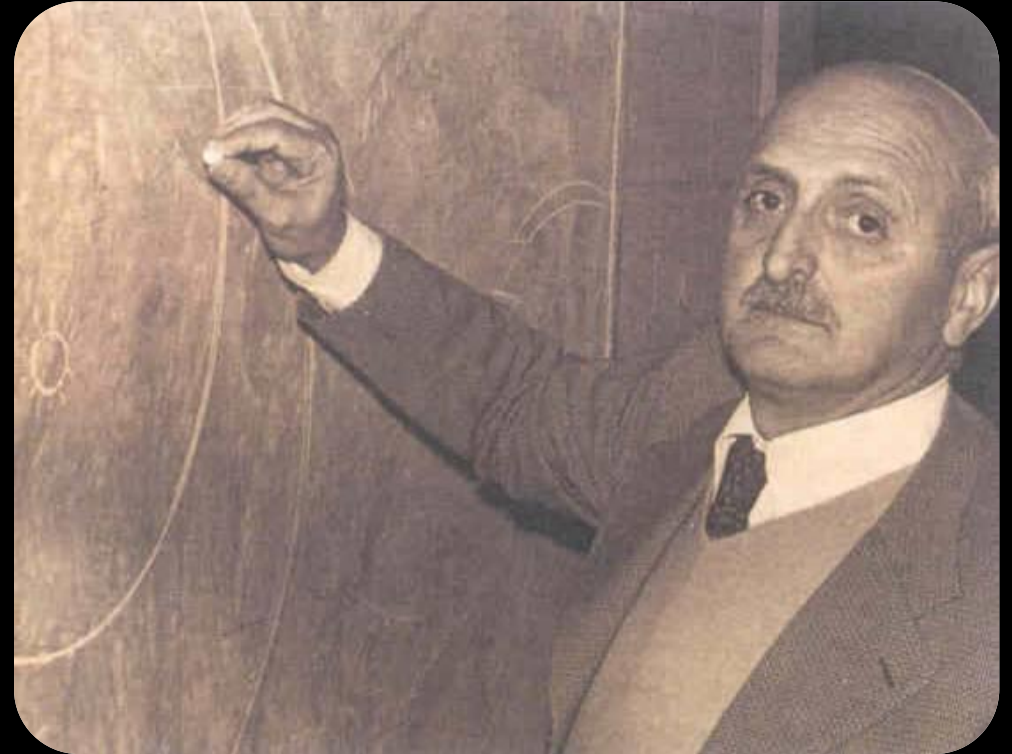
the *Tethered Satellite*



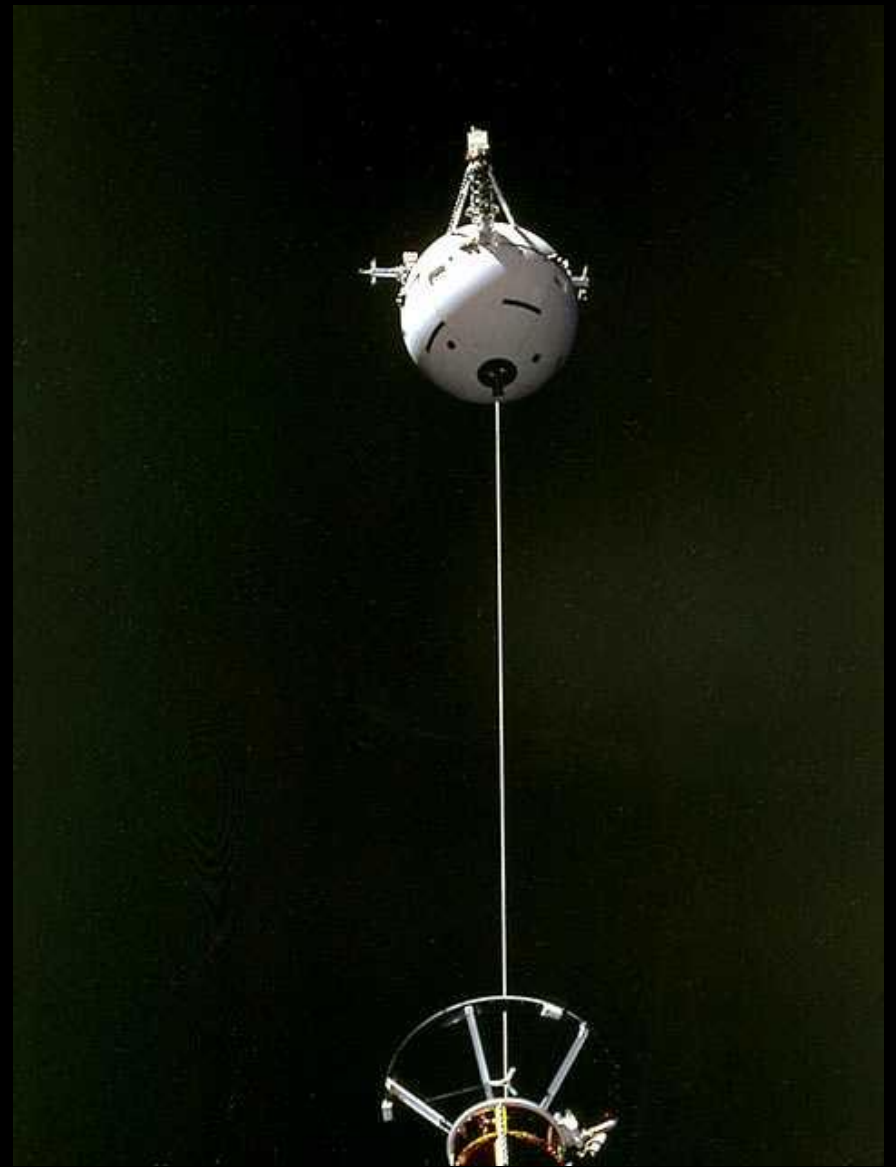
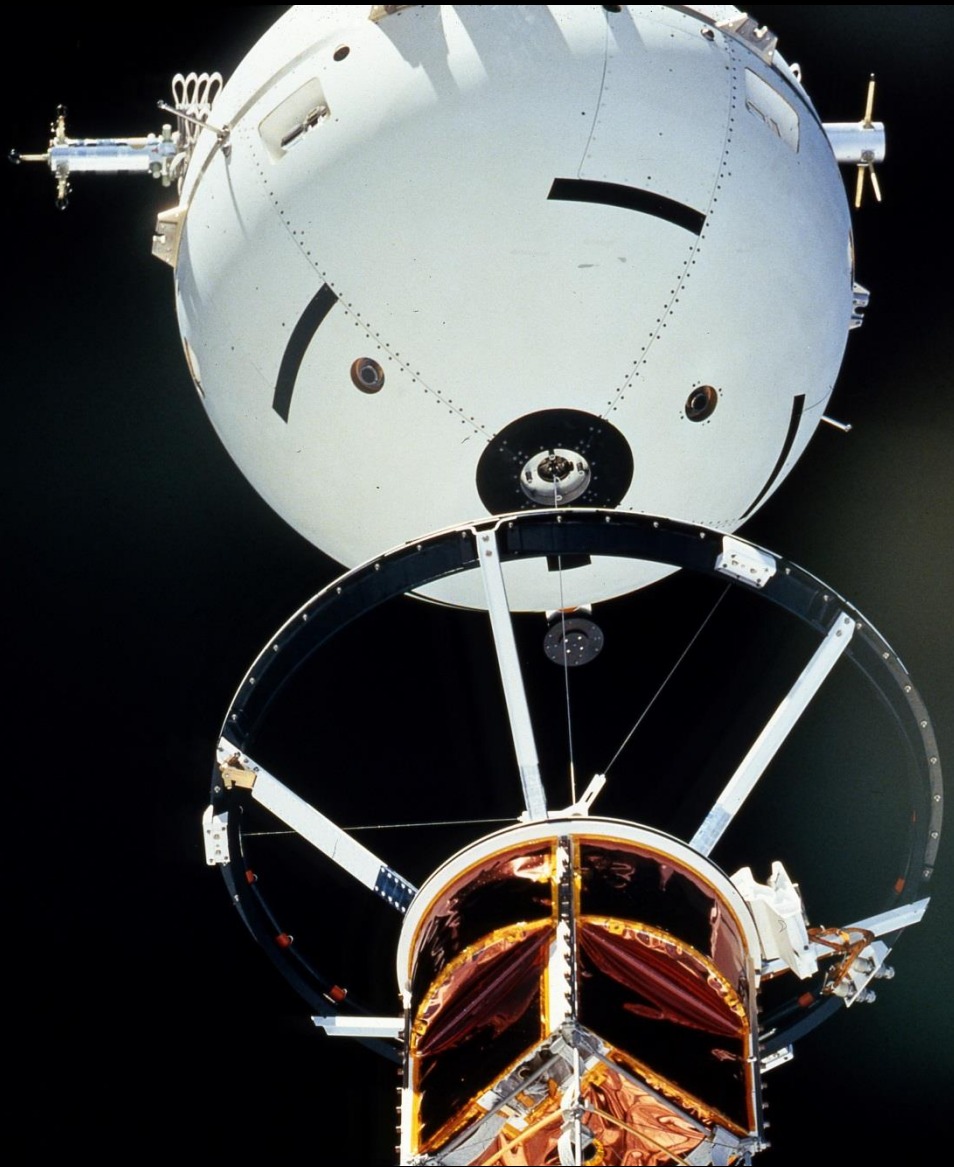
A strong scientific and technological program for *Tethered*

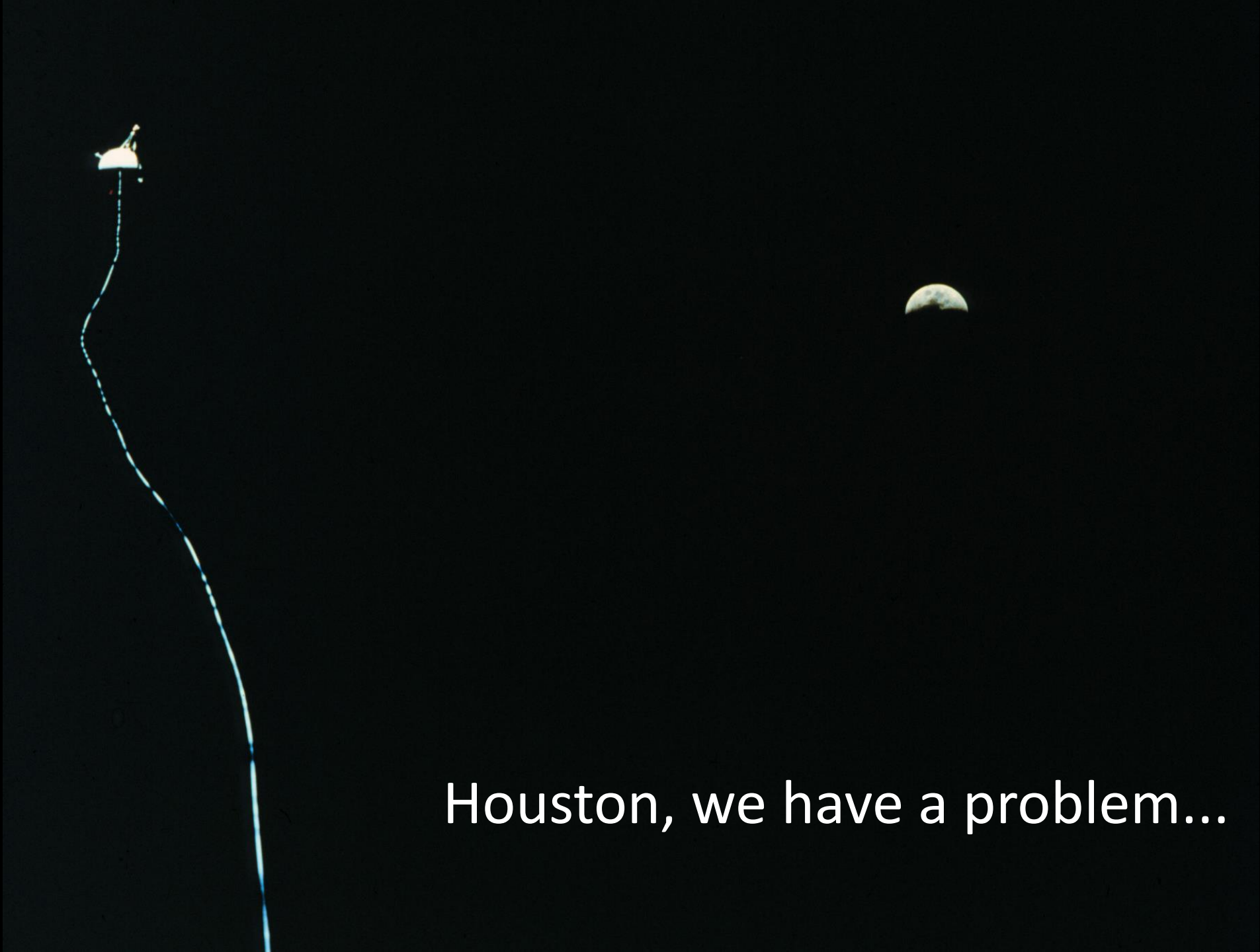


Mario Grossi

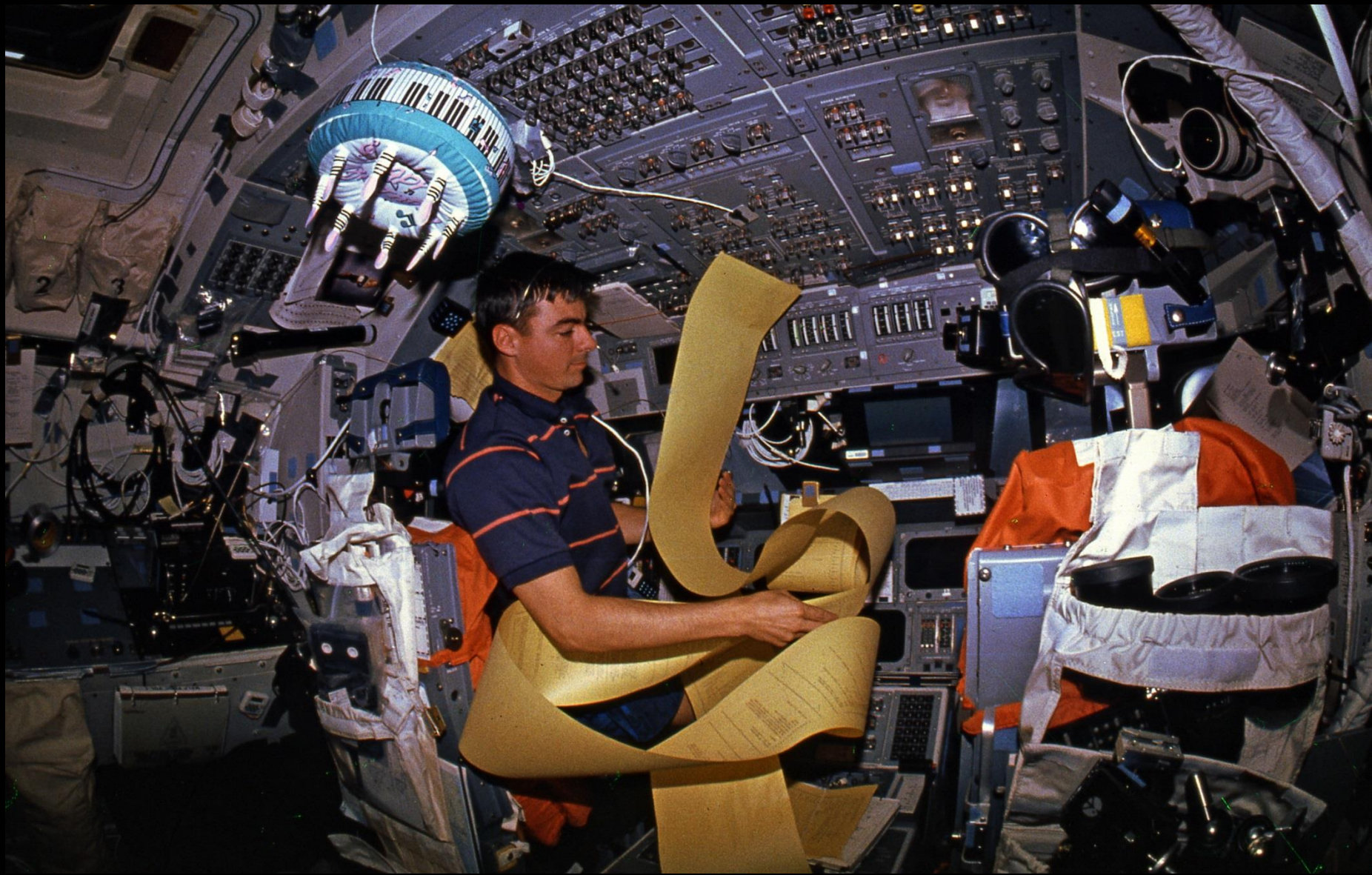


Bepi Colombo

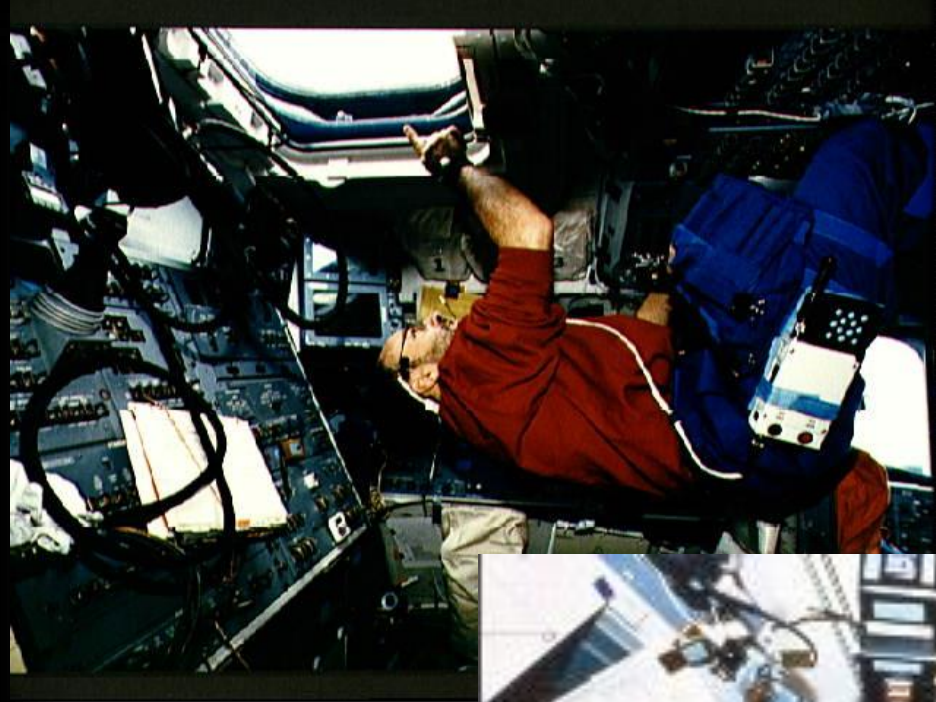




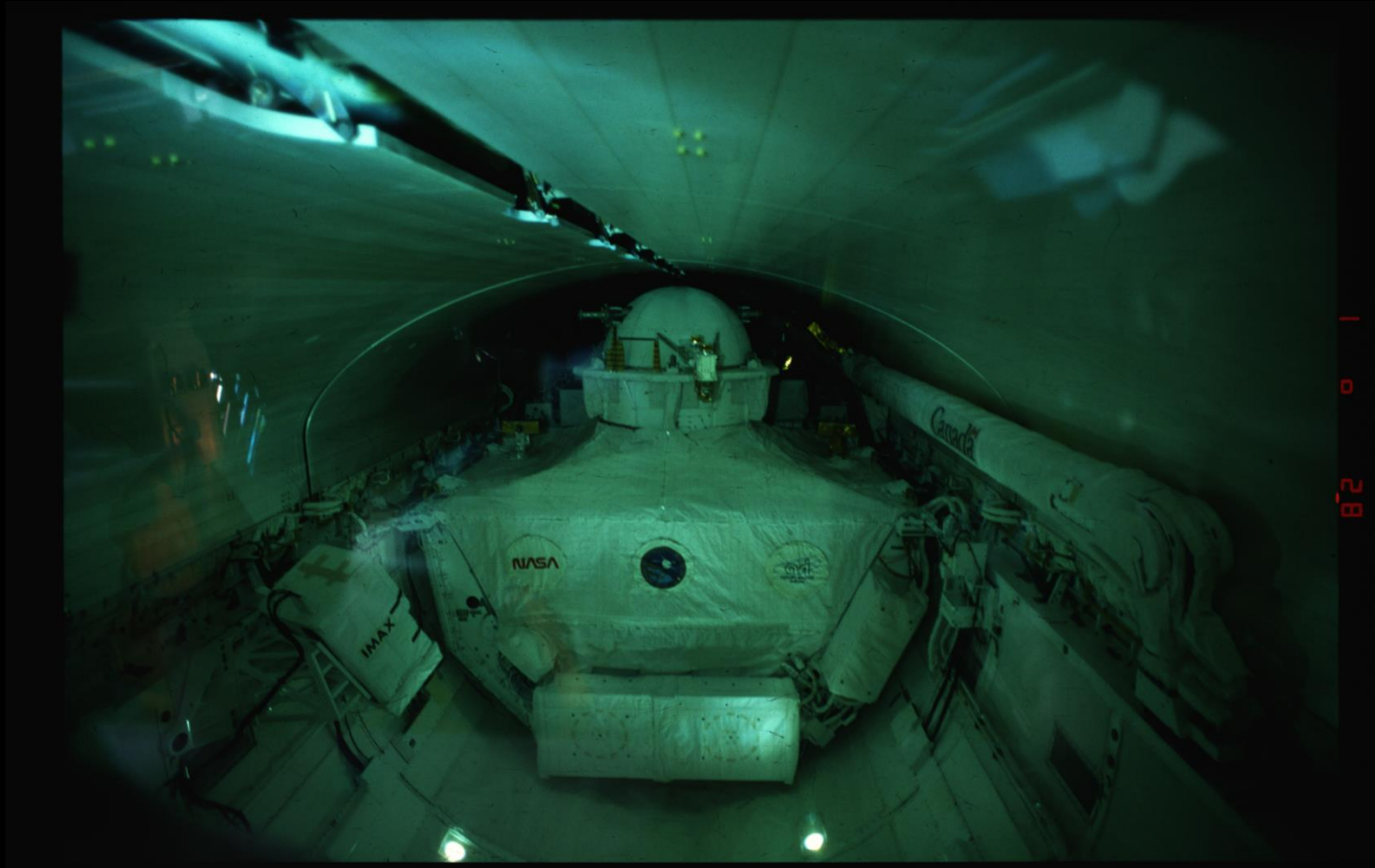
Houston, we have a problem...



A new flight plan : bring back *Tethered*



Science has the priority for a while



Tethered is retrieved safely ... we are heading home

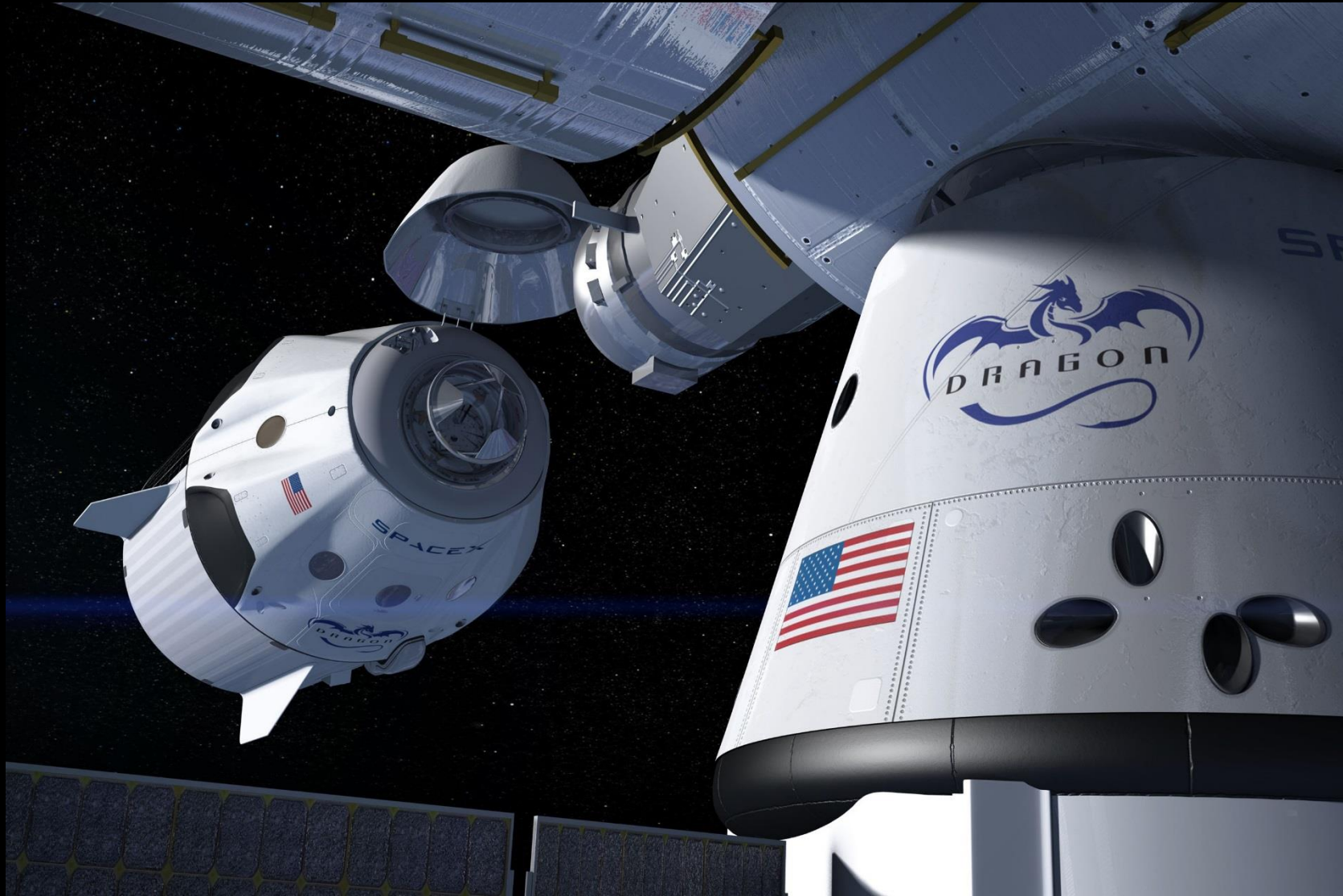


Back home!

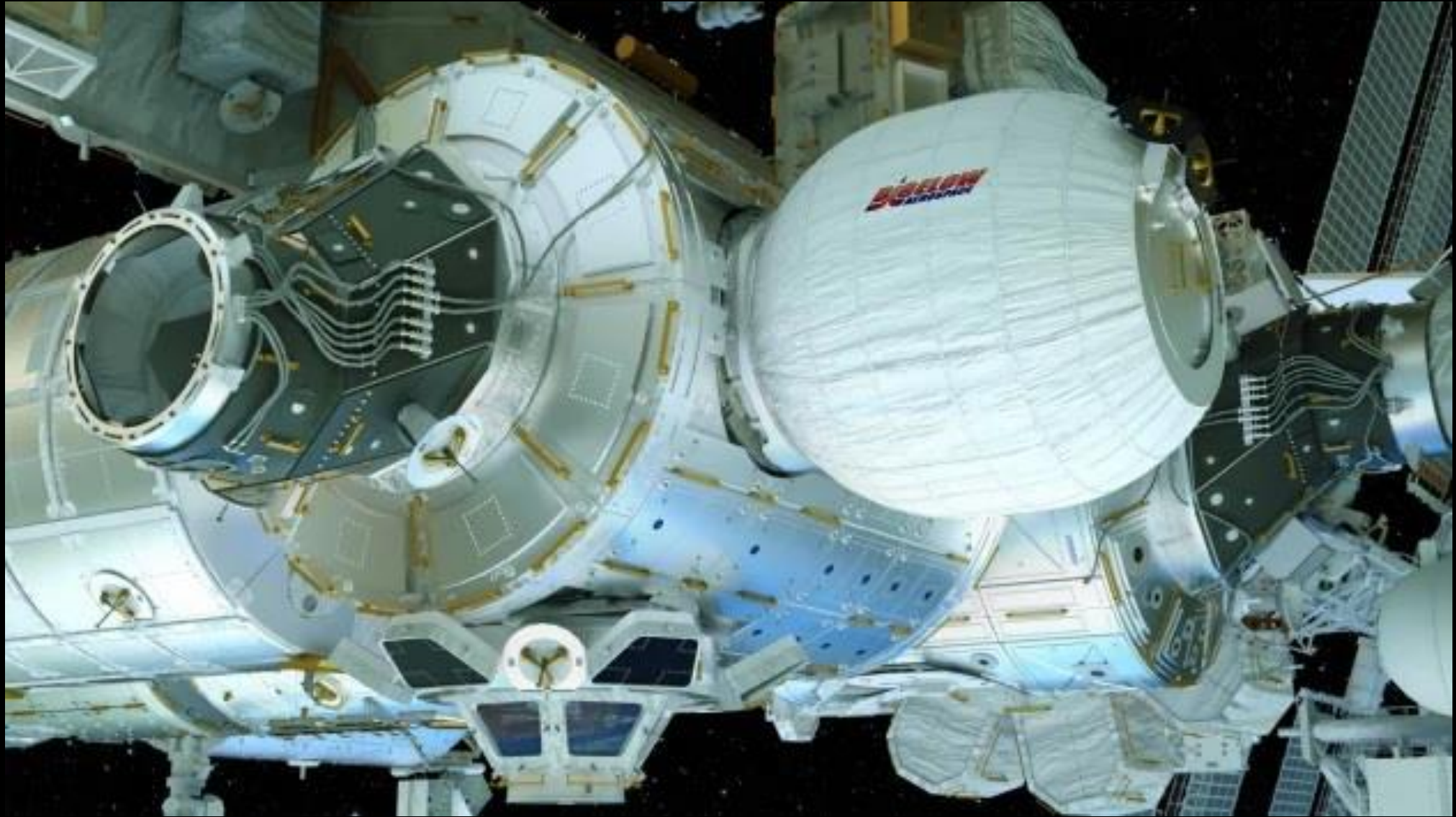


Today the international
Space Station

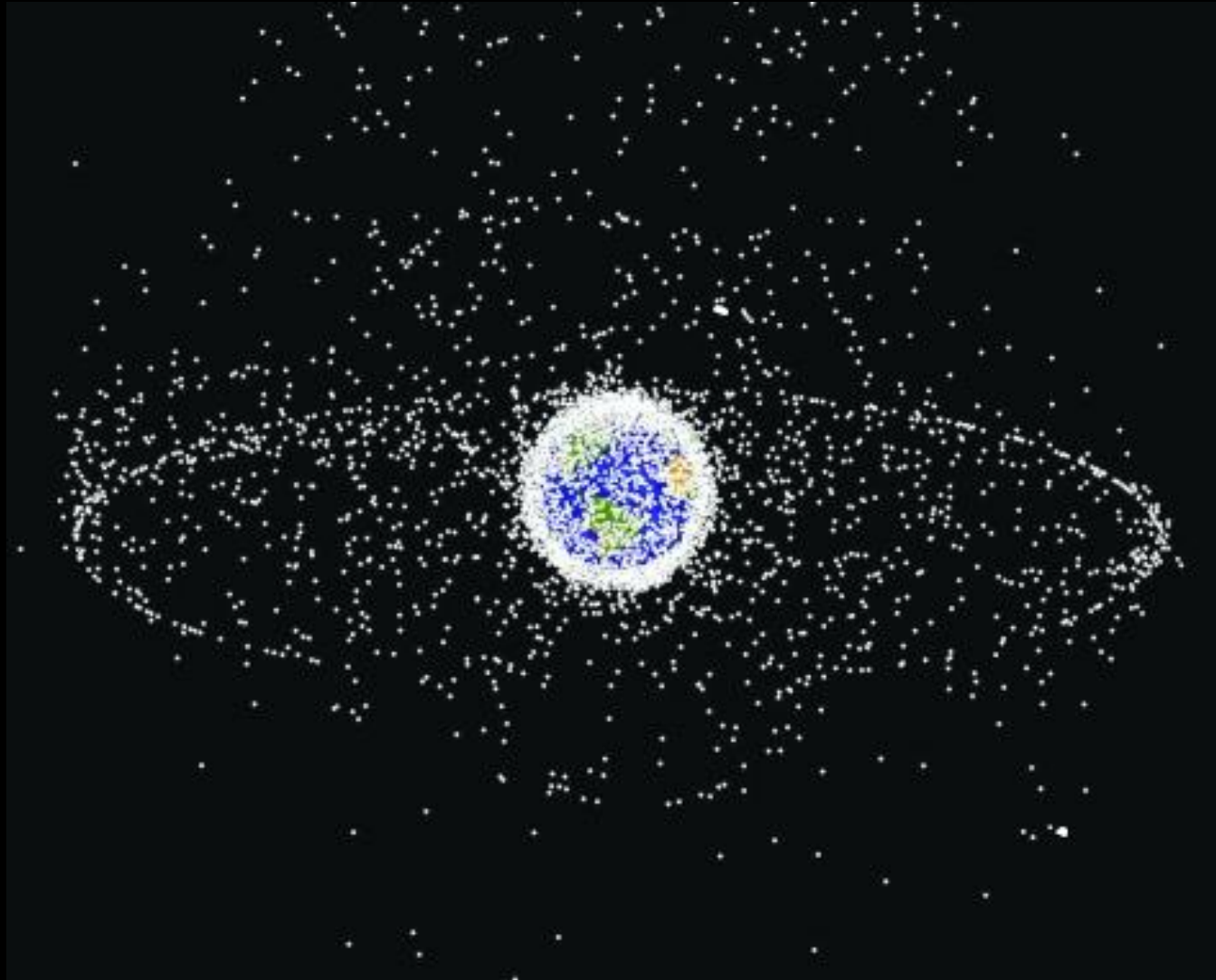
An extraordinary collaborative project



Commercial services to Low Earth Orbit assert themselves

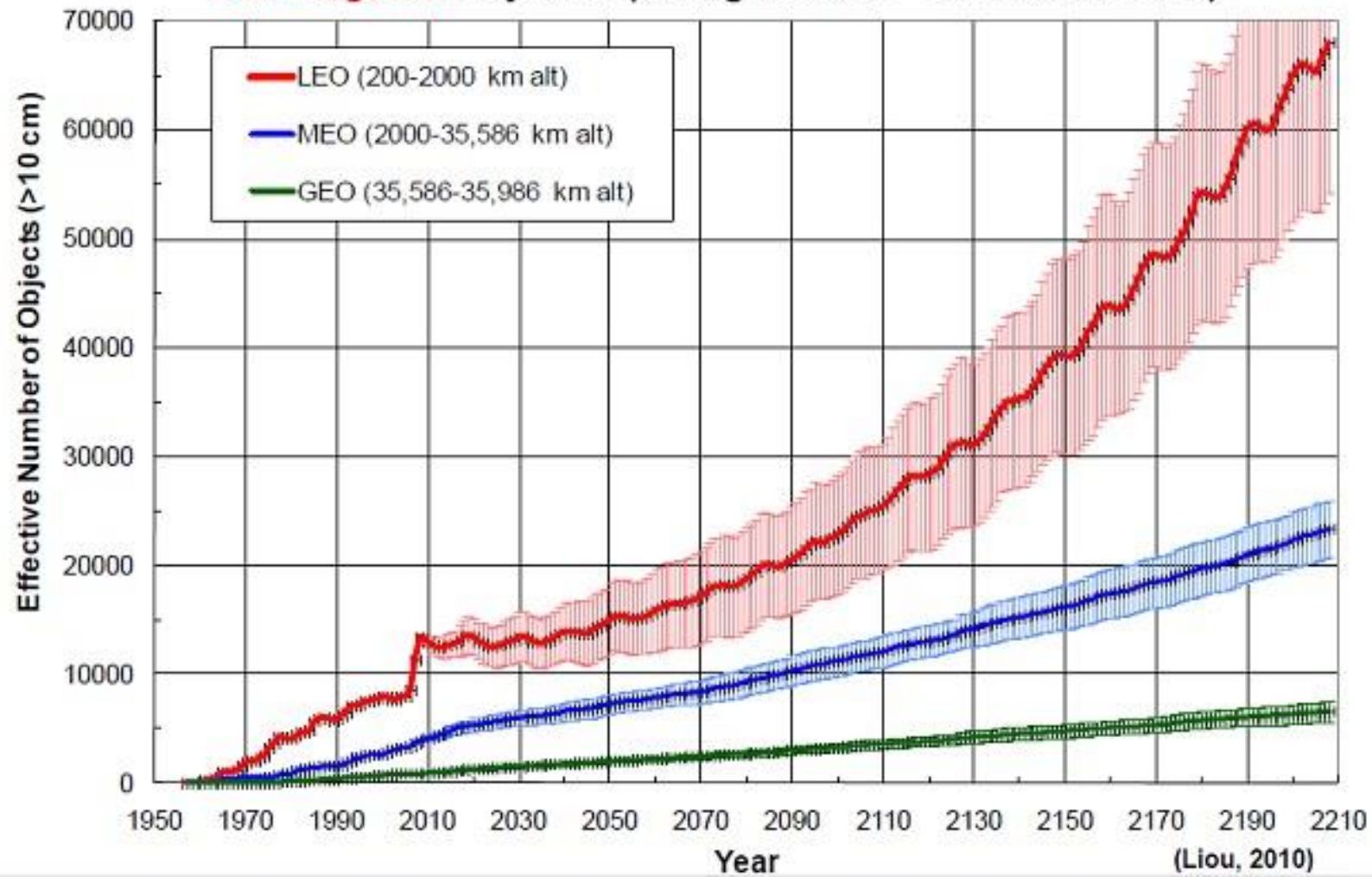


Hotels in LEO may become a reality sooner or later



The space debris issue is a real concern

Non-Mitigation Projection (averages and 1- from 100 MC runs)





Clean Space policies maturing but
Active Debris Removal remains a problem



Sustainability

Geopolitics

Science

Economy

SPACE ECONOMY

Micro Lanciatori

Investimenti privati

«Big Data»

Navigazione satellitare

Generation 5

smartphone

Auto autonoma

Cubesat

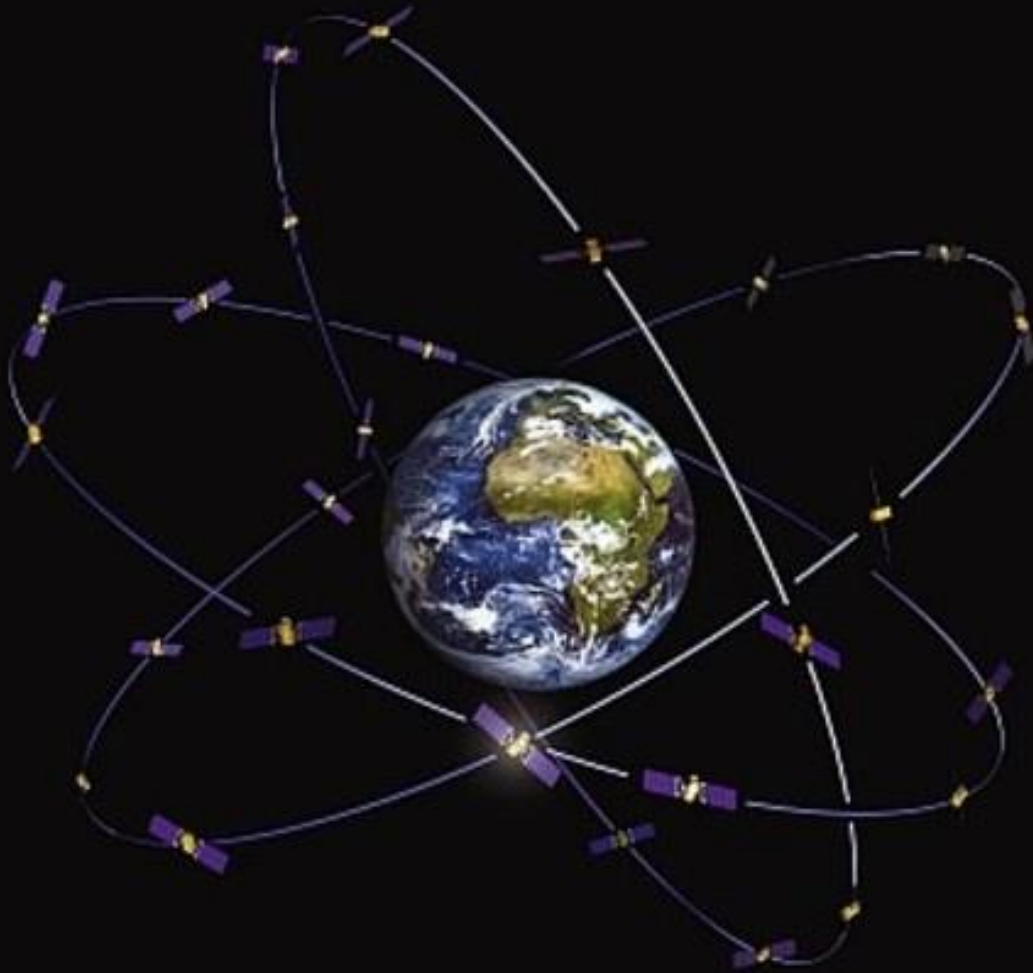
Costellazioni LEO

Intelligenza artificiale

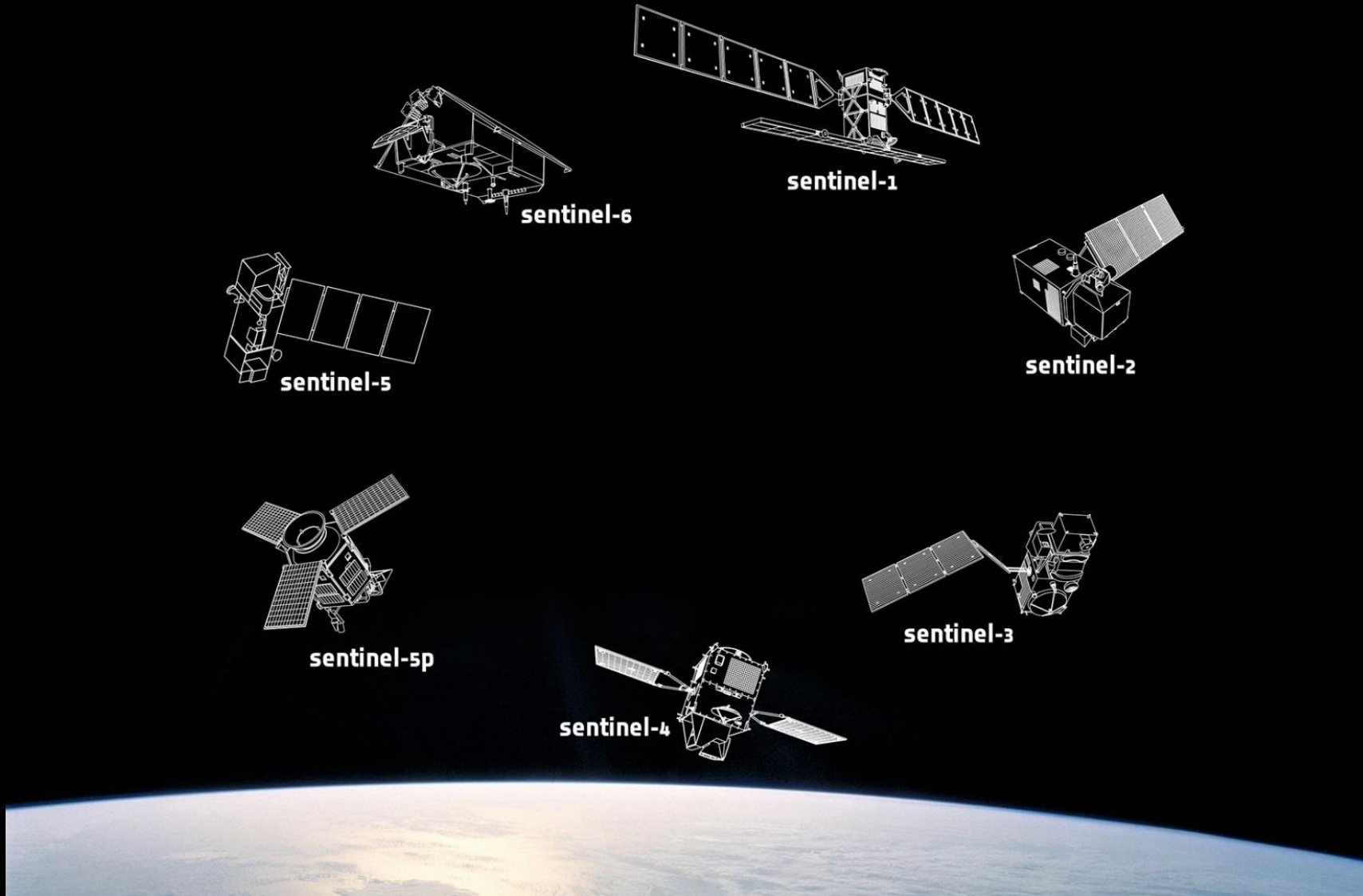


SMARTPHONE: the world in ... your pocket

Galileo: the European global navigation system



Copernicus: the European infrastructure for Earth Observation



New software paltorms, new Apps, new services

«5G» is coming of age.

Mozilla

UBER

Google

Paypal

Garmin

FOREX

YOUTUBE

TRIVAGO

TomTom

AMAZON

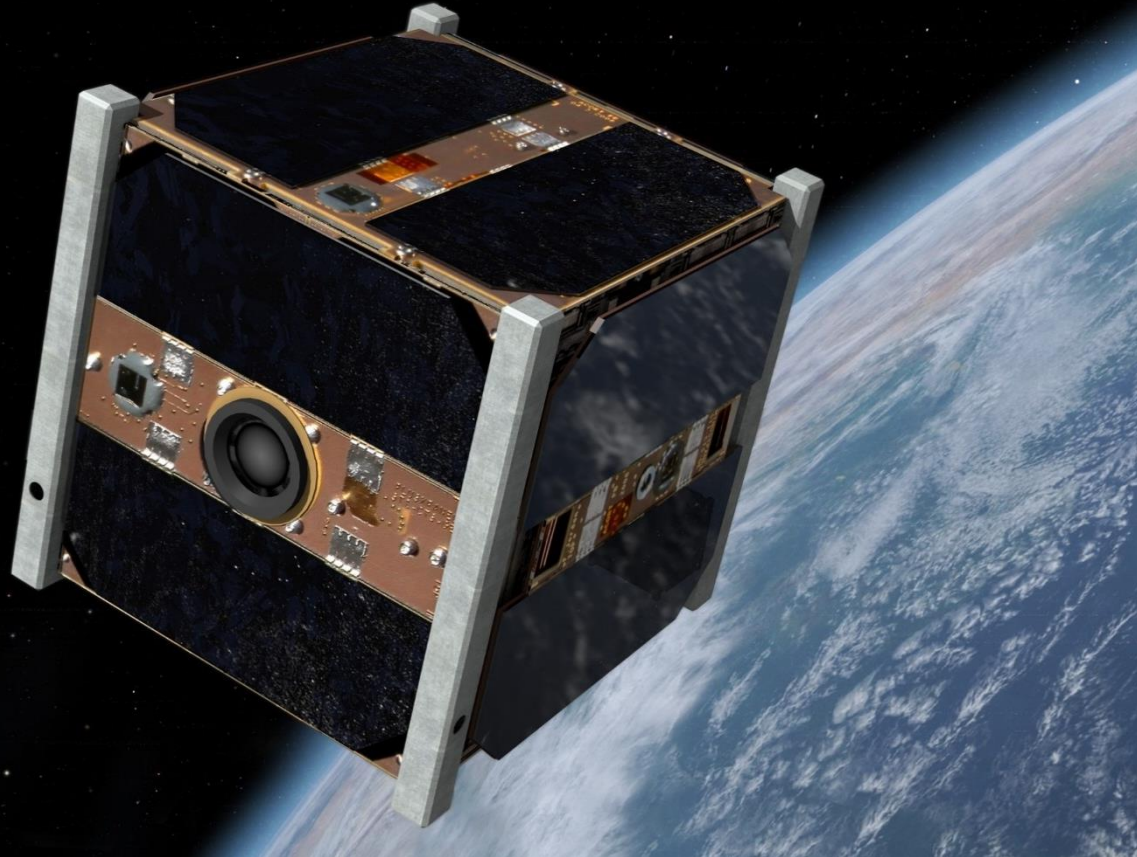


Cloud computing - Cisco

Greg Wyler and the One Web challenge



The smartphone technologies migrate into space design.



Cubesats, new promising space actors

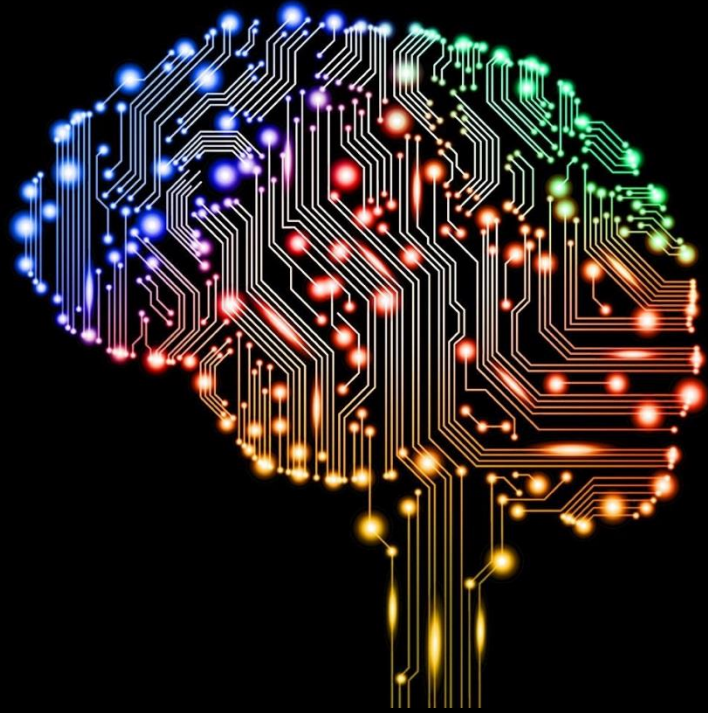
LEO constellations of small satellites



Remote sensing : a vast amount of data!

A typical case of «Big Data Analytics»

1Kbyte	1000 bytes	one thousand
1Mega	1 000 000 bytes	one million
1Giga	1 000 000 000 bytes	one billion
1Tera	1 000 000 000 000	one thousand billions
1Peta	1 000 000 000 000 000	un million billions
1Exabyte	1 000 000 000 000 000 000	one billion billions
1Zetabyte	1 000 000 000 000 000 000 000	?



Artificial Intelligence



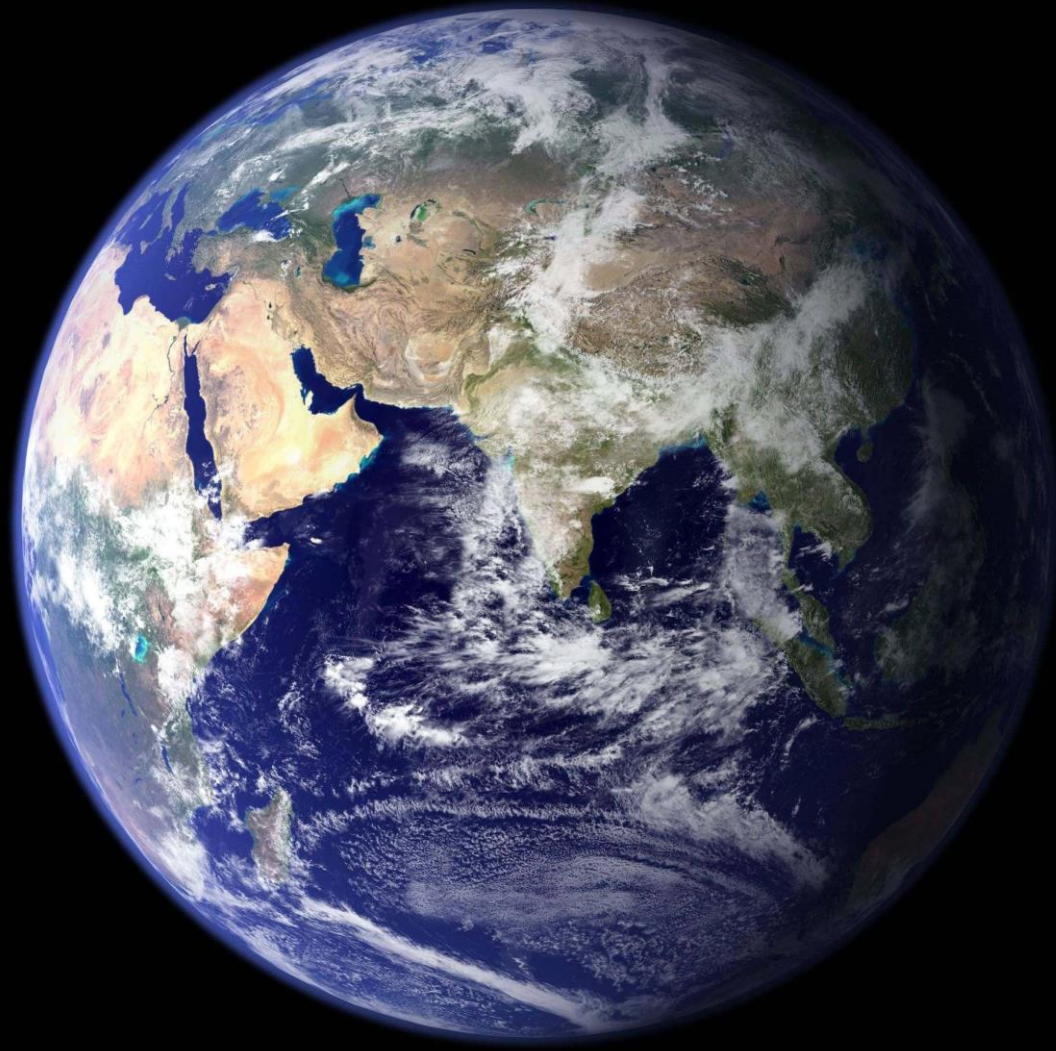
Machine learning



Autonomous car

Precision architecture



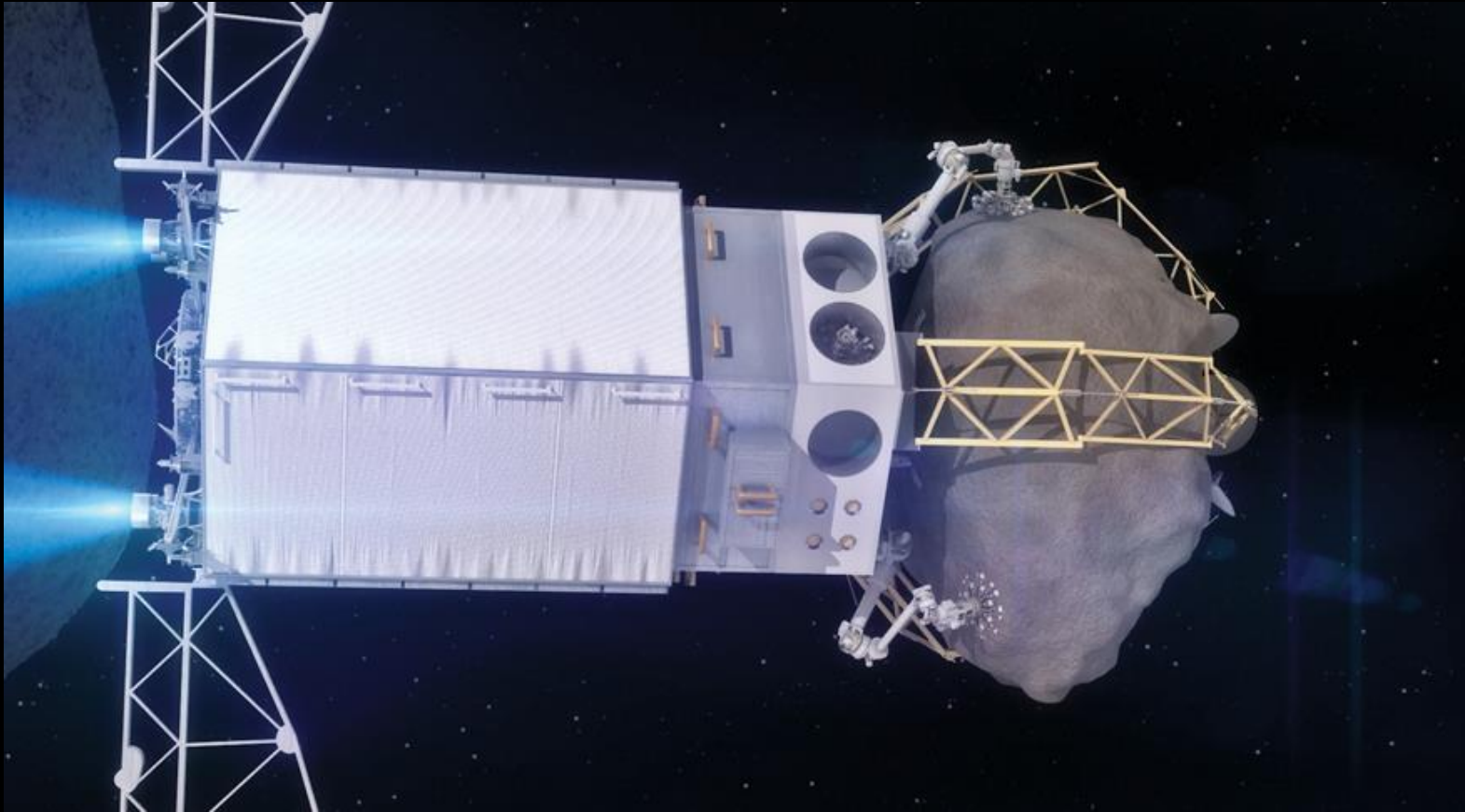


SOSTENIBILITA'

GEOPOLITICA

SCIENZA

ECONOMIA



Cosmic resources exploitation – Capture of asteroids.
Science fiction of real business?



Il Festival dello spazio
www.festivaldellospazio.com

Thank you !
for your attention



Genoa 5 luglio 2019