LA NUOVA REGALDI
Laboratorio Scienza & Etica

Novara, 16 novembre 2011

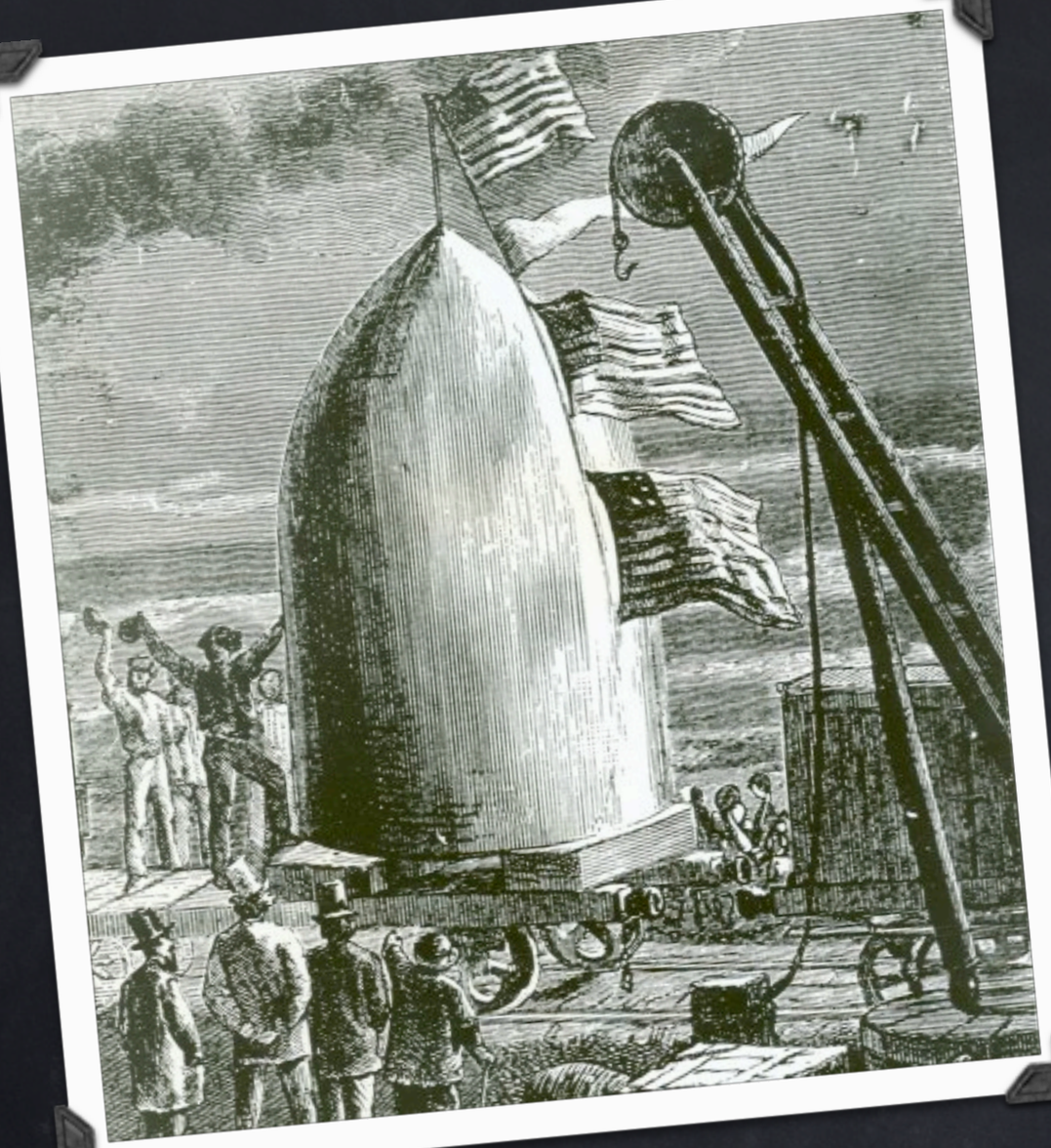
Volare tra le stelle

L'avventura dell'esplorazione spaziale

Diego Santimone

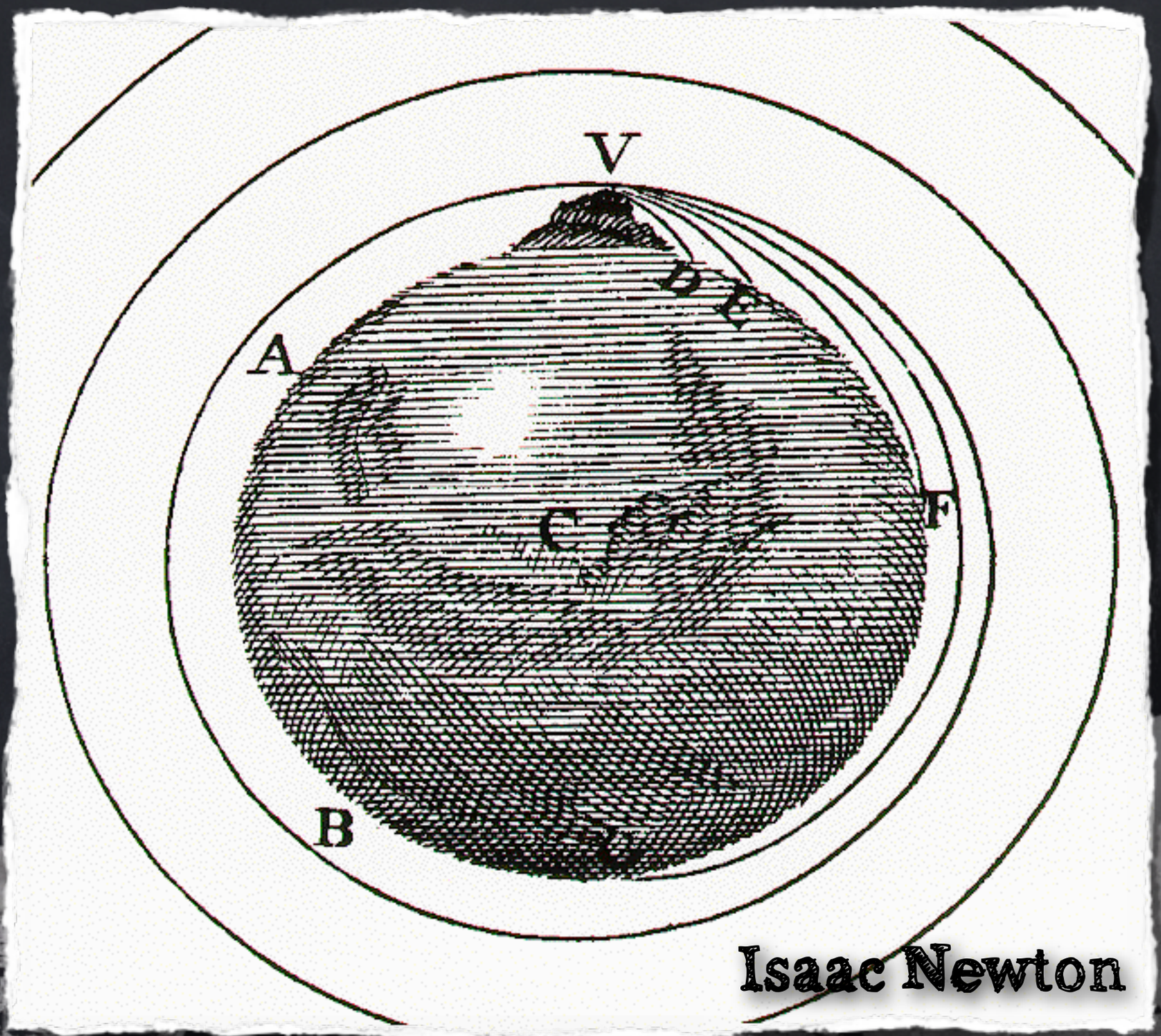
Alzare lo sguardo

Sguardo profetico

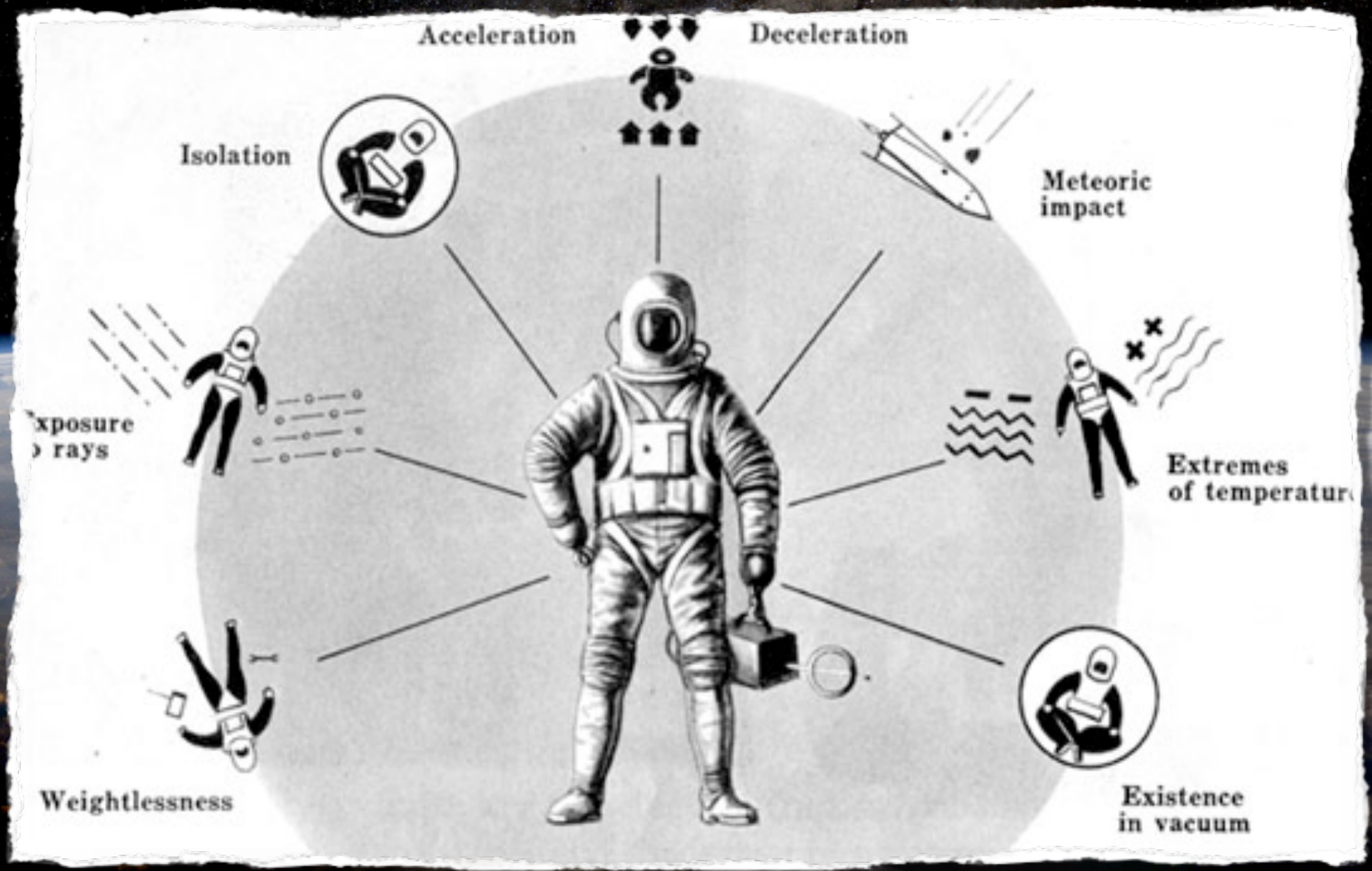


Lasciare la Terra...

6,8 km/s
11,2 km/s

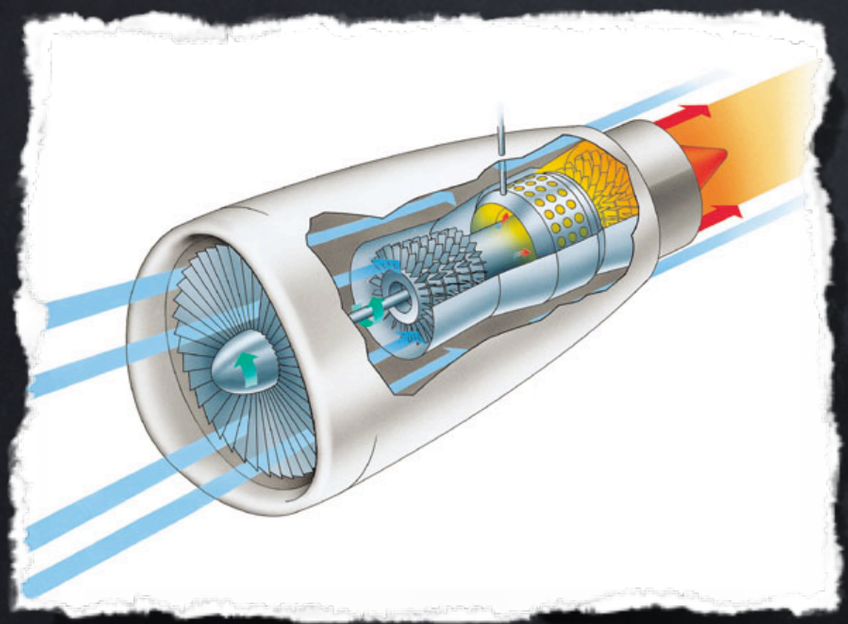


L'ambiente spaziale

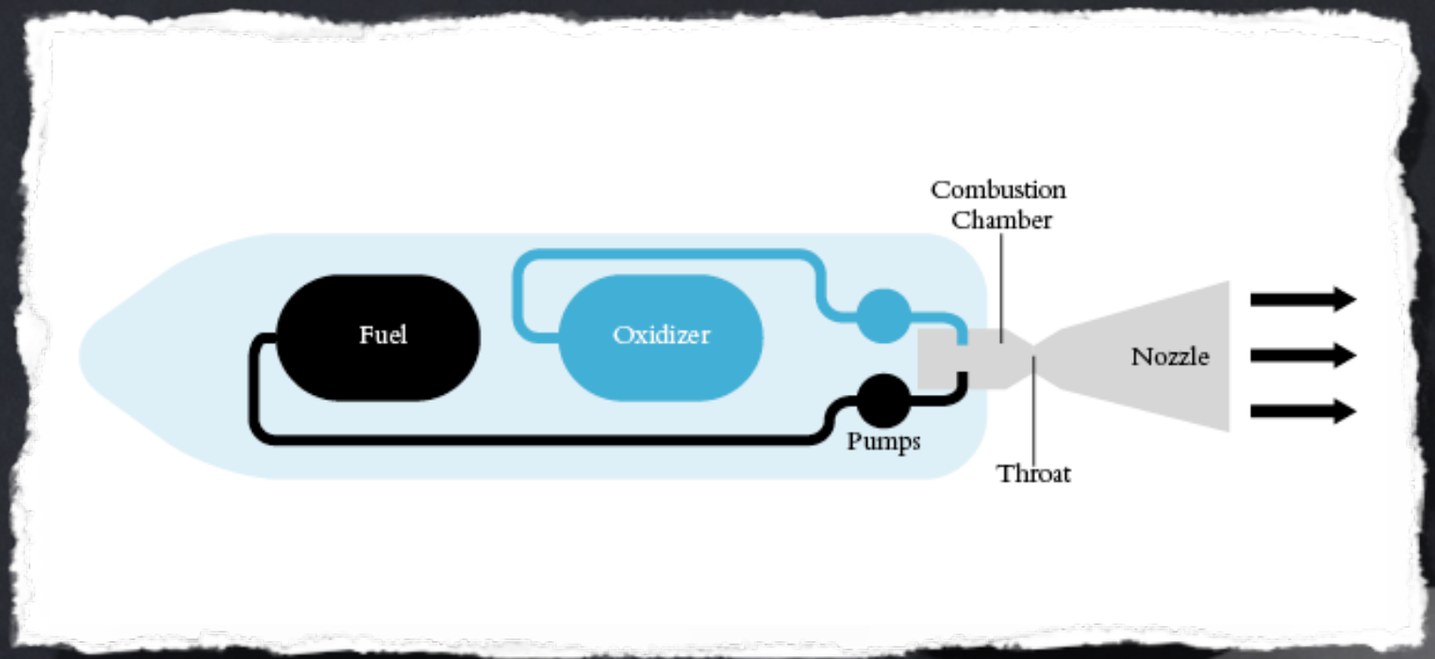


La terza legge della dinamica

"Ad ogni azione corrisponde una reazione uguale e contraria"



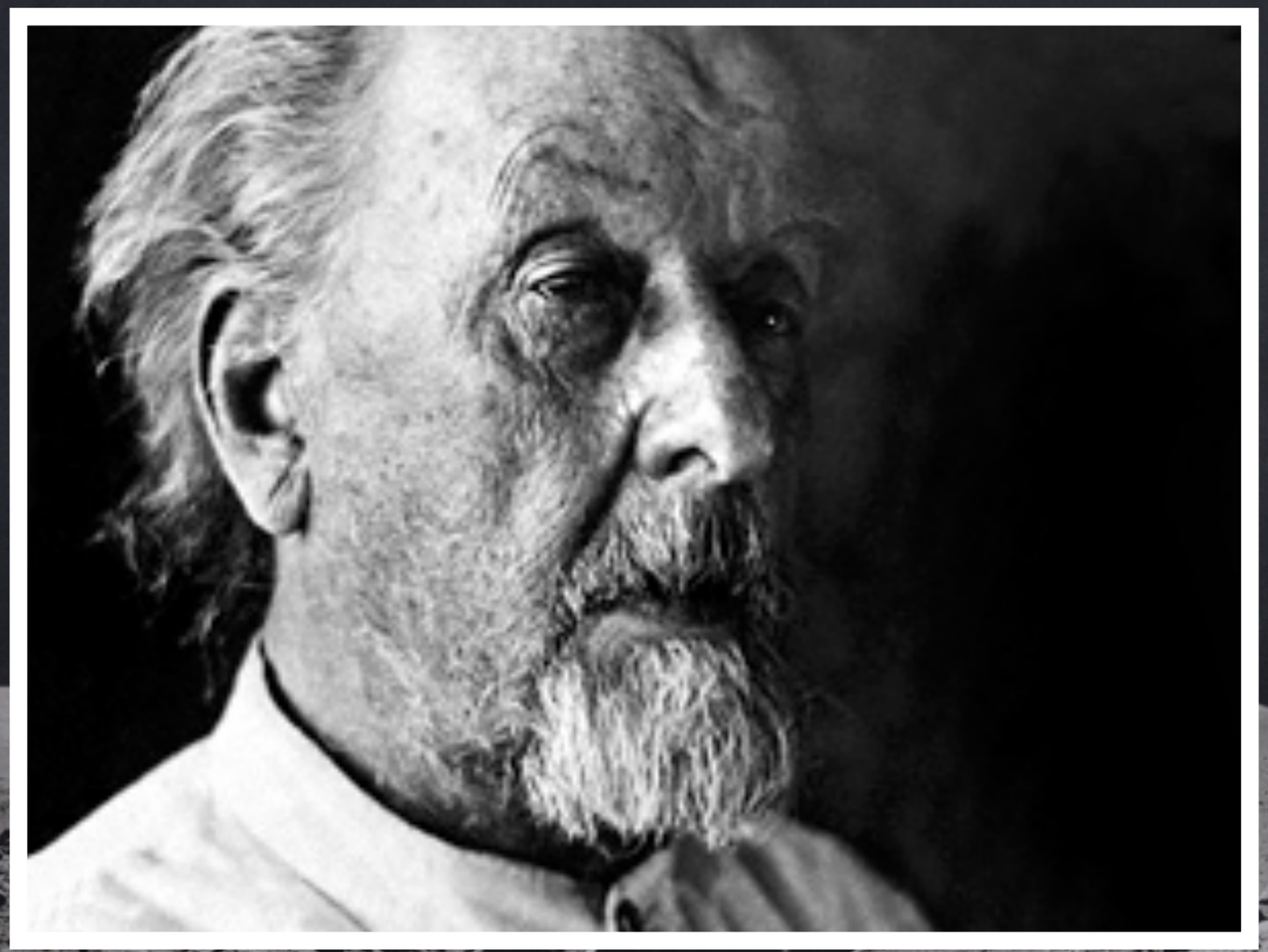
Turbogetto (velivolo)



Motore a razzo

Il padre dell'astronautica (teorica)

K. E. Tsiolkowskij



1857-1935


Земля
Атмосфера
Н
Жидкий водород
Человек
Жидкий кислород
О
Д
Поглотители углекислоты и миазмов
1903 г.
1914 г.
Жидкий, свободно испаряющийся кислород при очень низкой температуре
К
Г
А
С
Люди, аппараты для дыхания и др.
Жидкий углеводород
Р
1915

I pionieri della missilistica (pratica!)

(1)

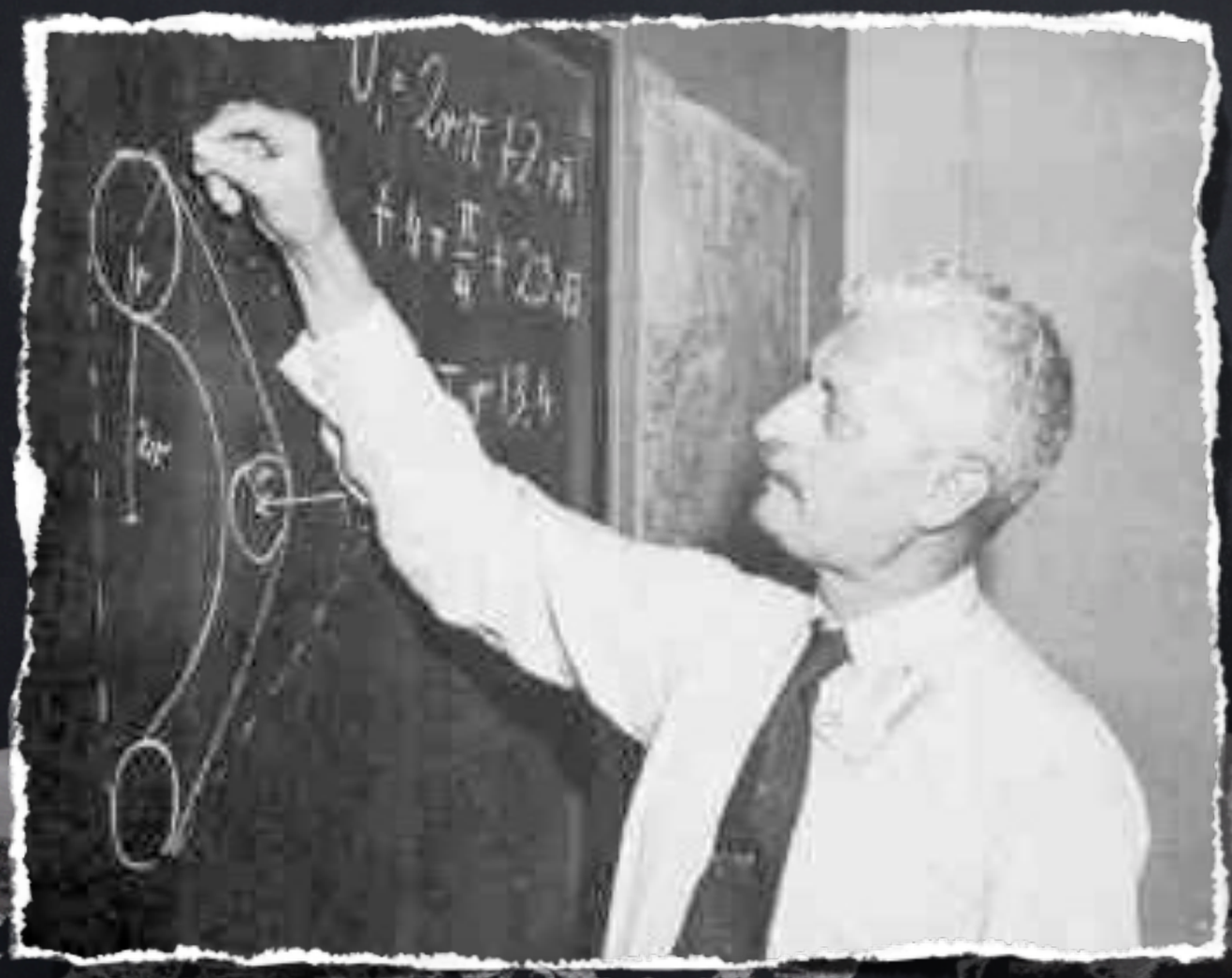
R. H. Goddard

1882-1945

16 marzo 1926

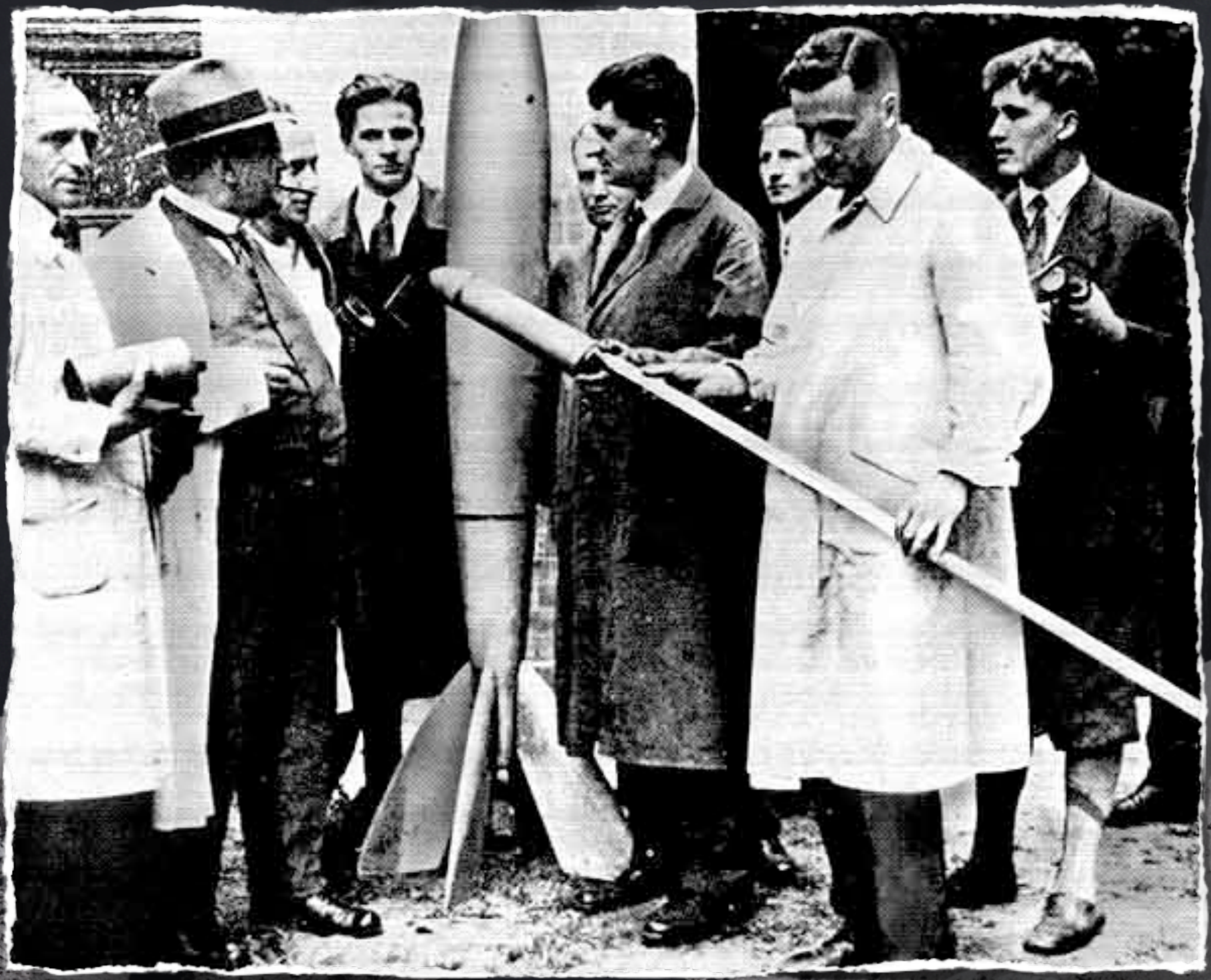
I pionieri della missilistica (pratica!)

(2) Hermann Obert



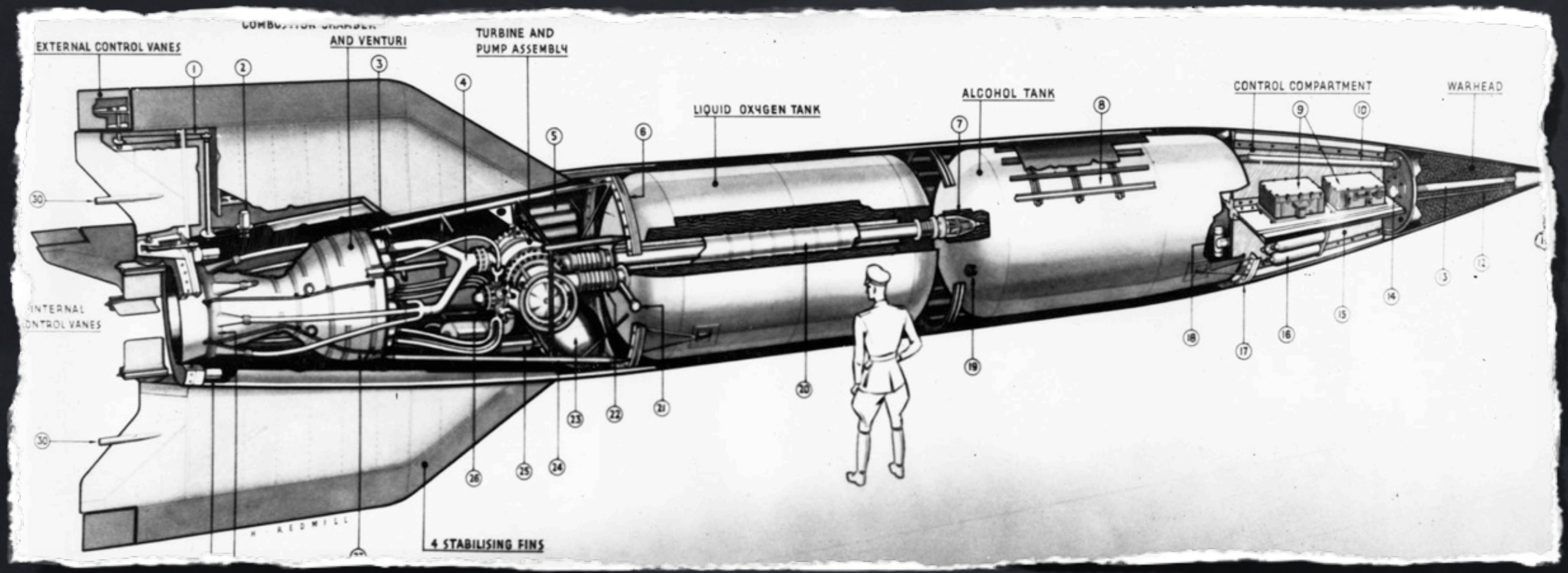
1894-1989

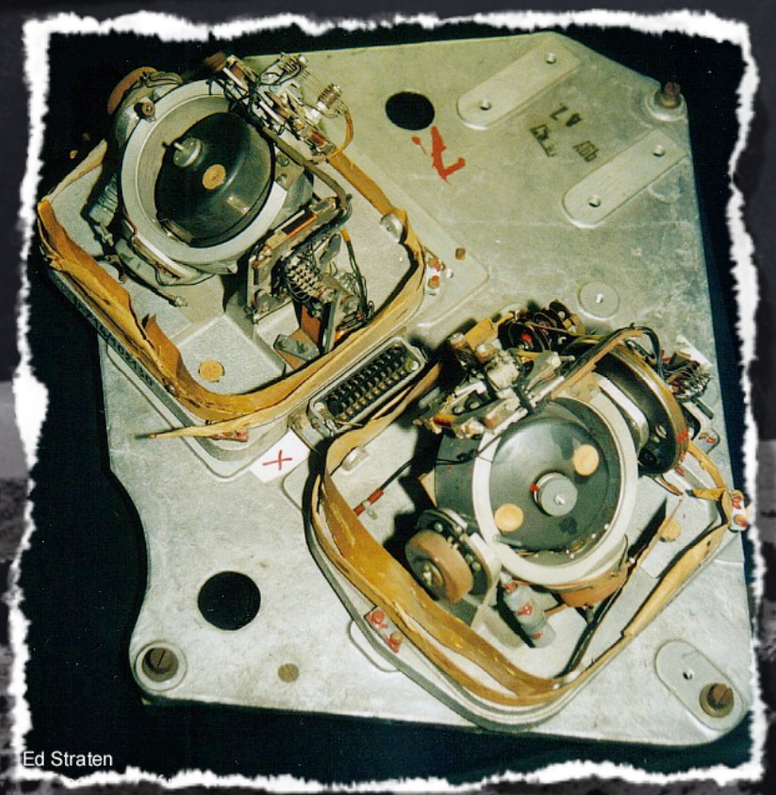
La società per i viaggi nello spazio (1927-1934)



Wernher von Braun

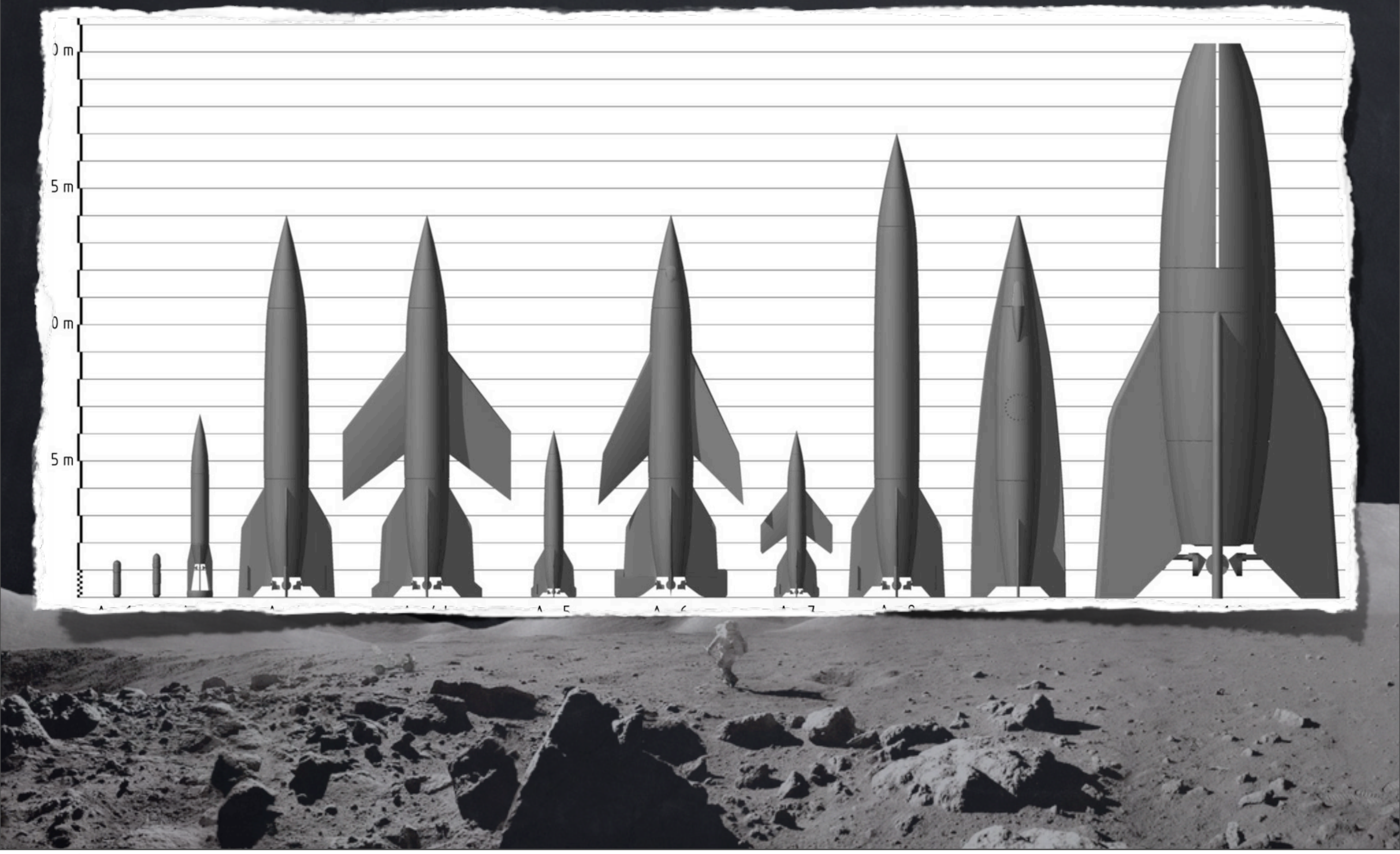
A4/V2


EXTERNAL CONTROL VANES
AND VENTURI
TURBINE AND
PUMP ASSEMBLY
LIQUID OXYGEN TANK
ALCOHOL TANK
CONTROL COMPARTMENT
WARHEAD
INTERNAL
CONTROL VANES
4 STABILISING FINS

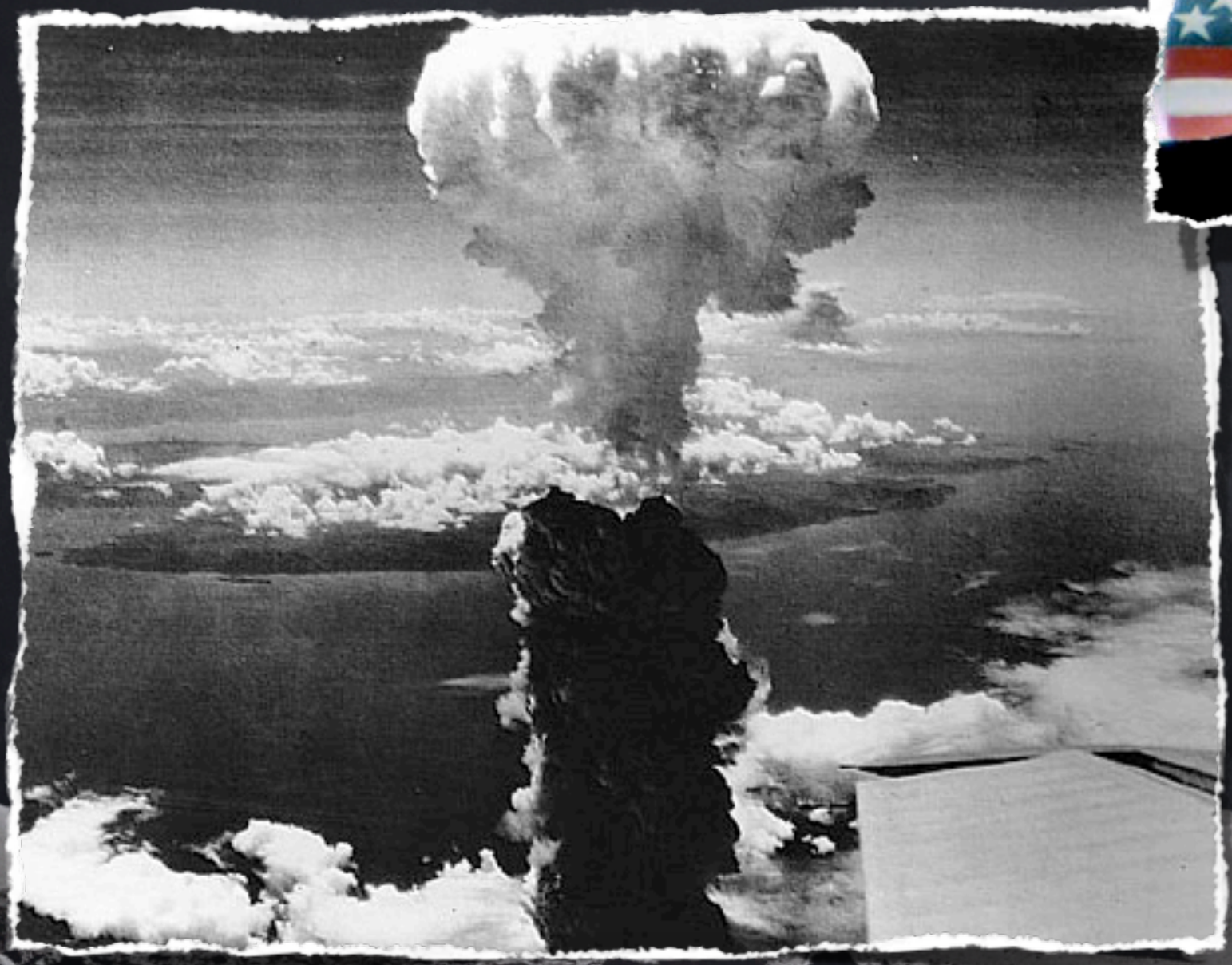

Ed Straten

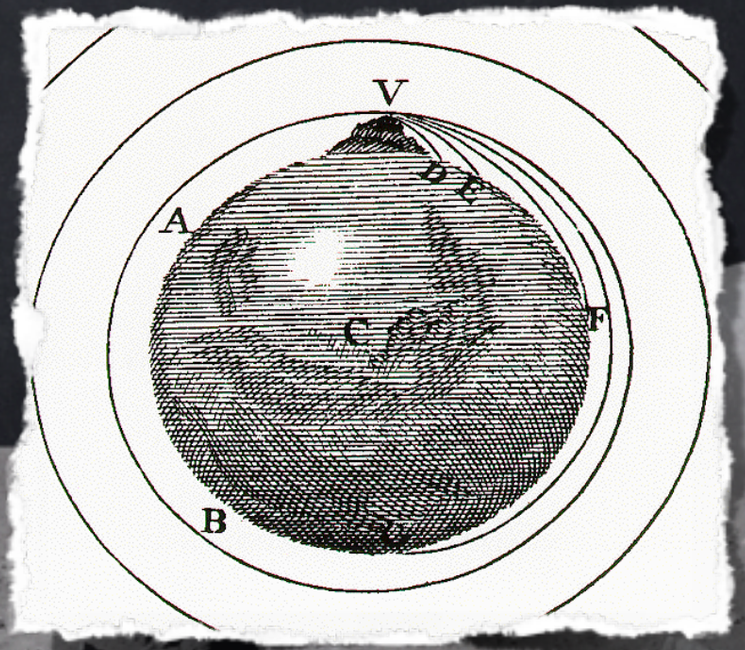

North Sea
NETHERLANDS
Norwich
Ipswich
London
Middleburg
Antwerp
Lille
Maastricht
Liége
GERMANY
English Channel
Ommen
Archem
Burgsteinfurt
Rijs
Dalfsen
Hellendoom
Wassenaar
The Hague
Hoek van Holland
Serooskerke
Darfield
Heek
Haaksbergen
Kleve
Nikverdal
Headquarters
V-2 launch Sites
Targeted Cities
Distance: 247km
Altitude: 80km

La famiglia degli Aggregat



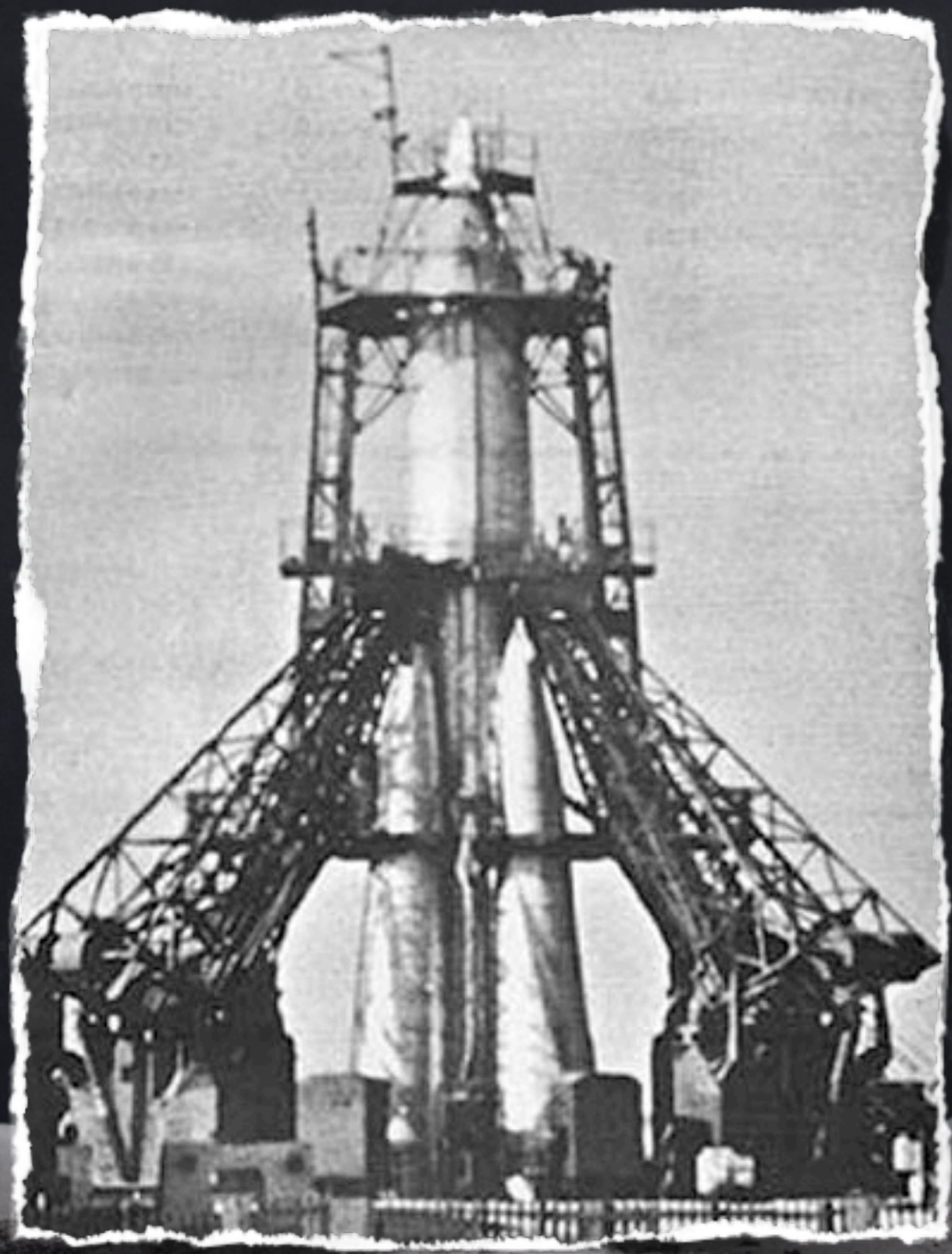
La "cortina di ferro"

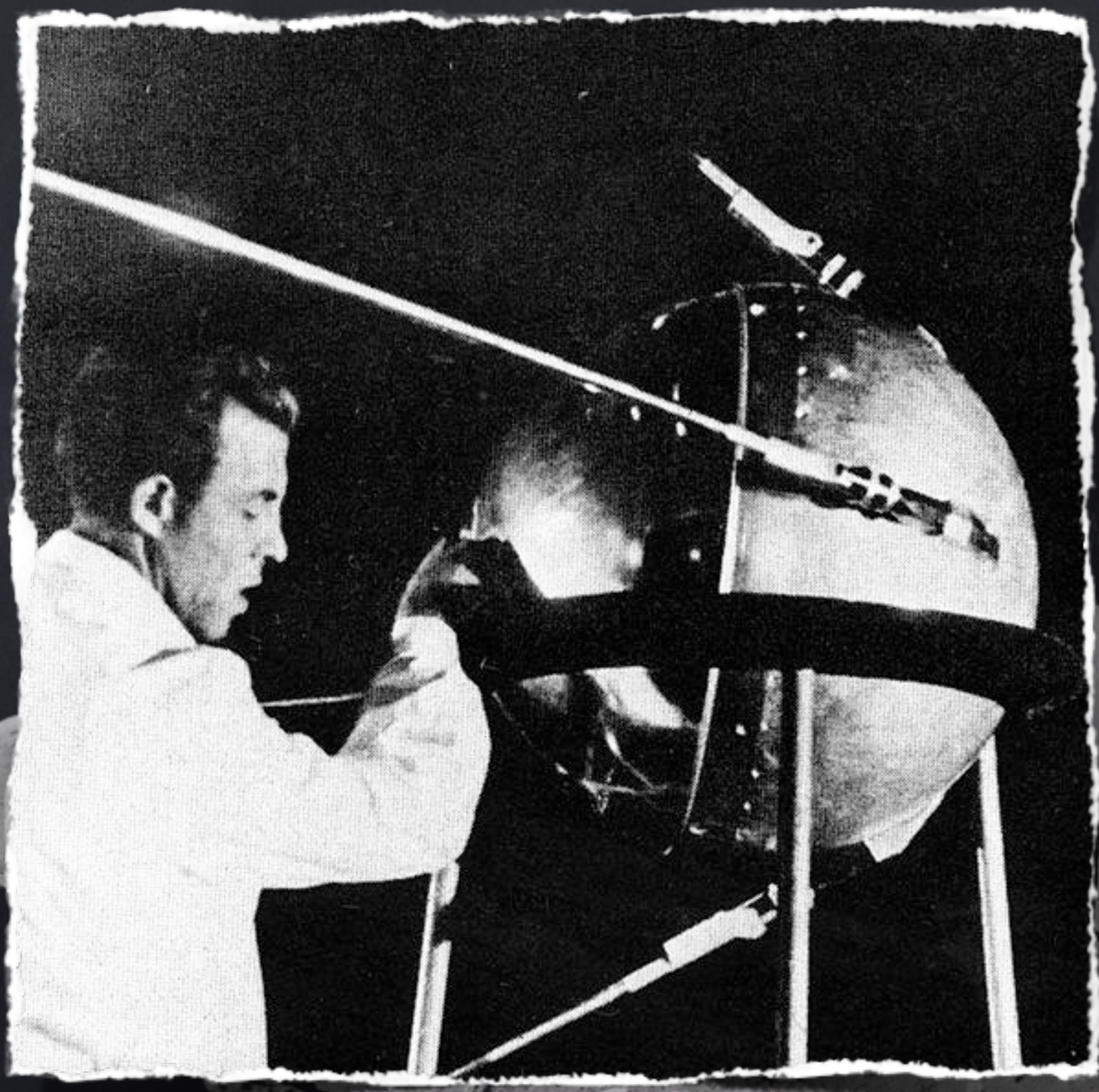




SPUTNIK 1

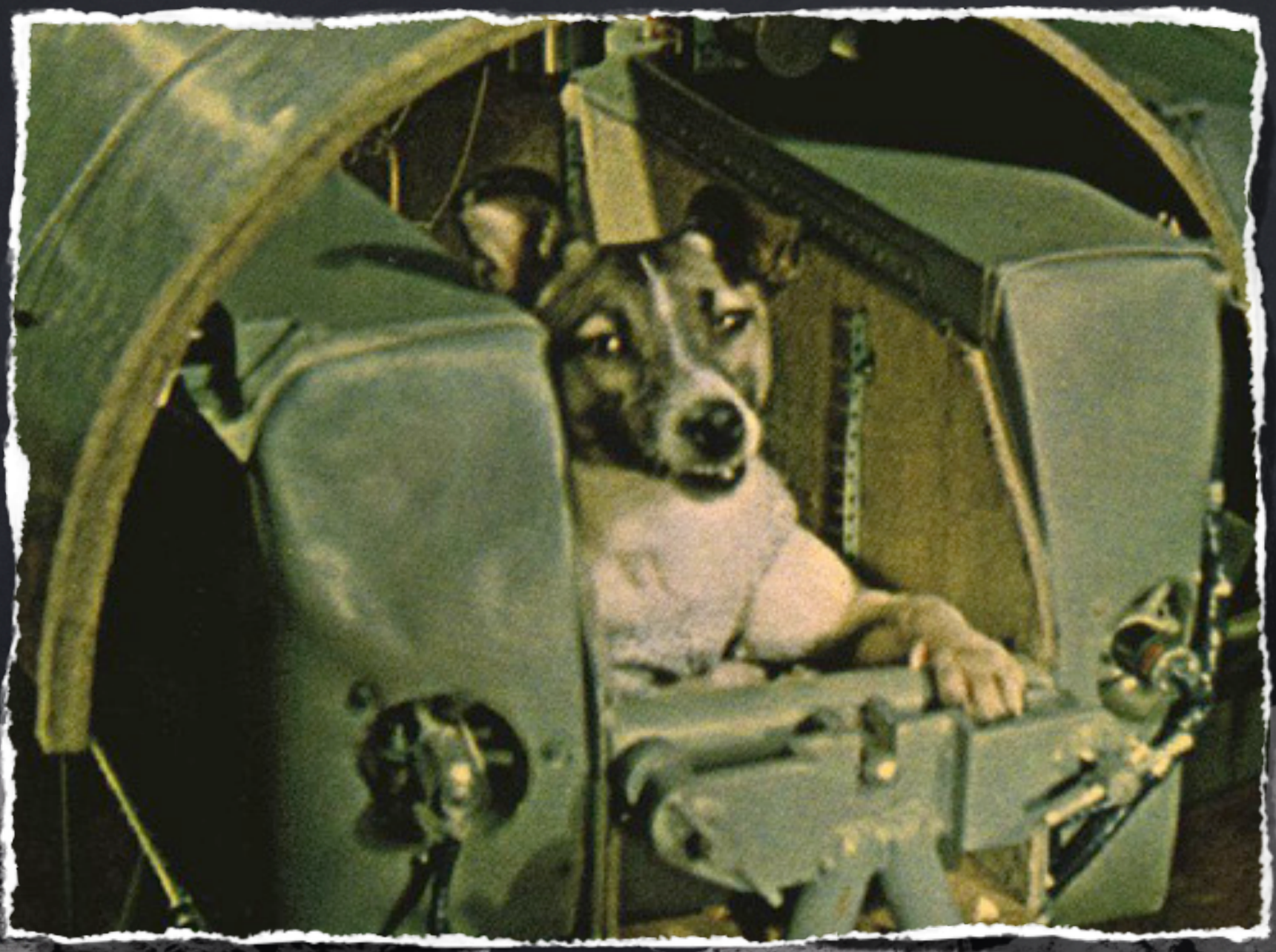
4 ottobre 1957





SPUTNIK 2 (Laika)

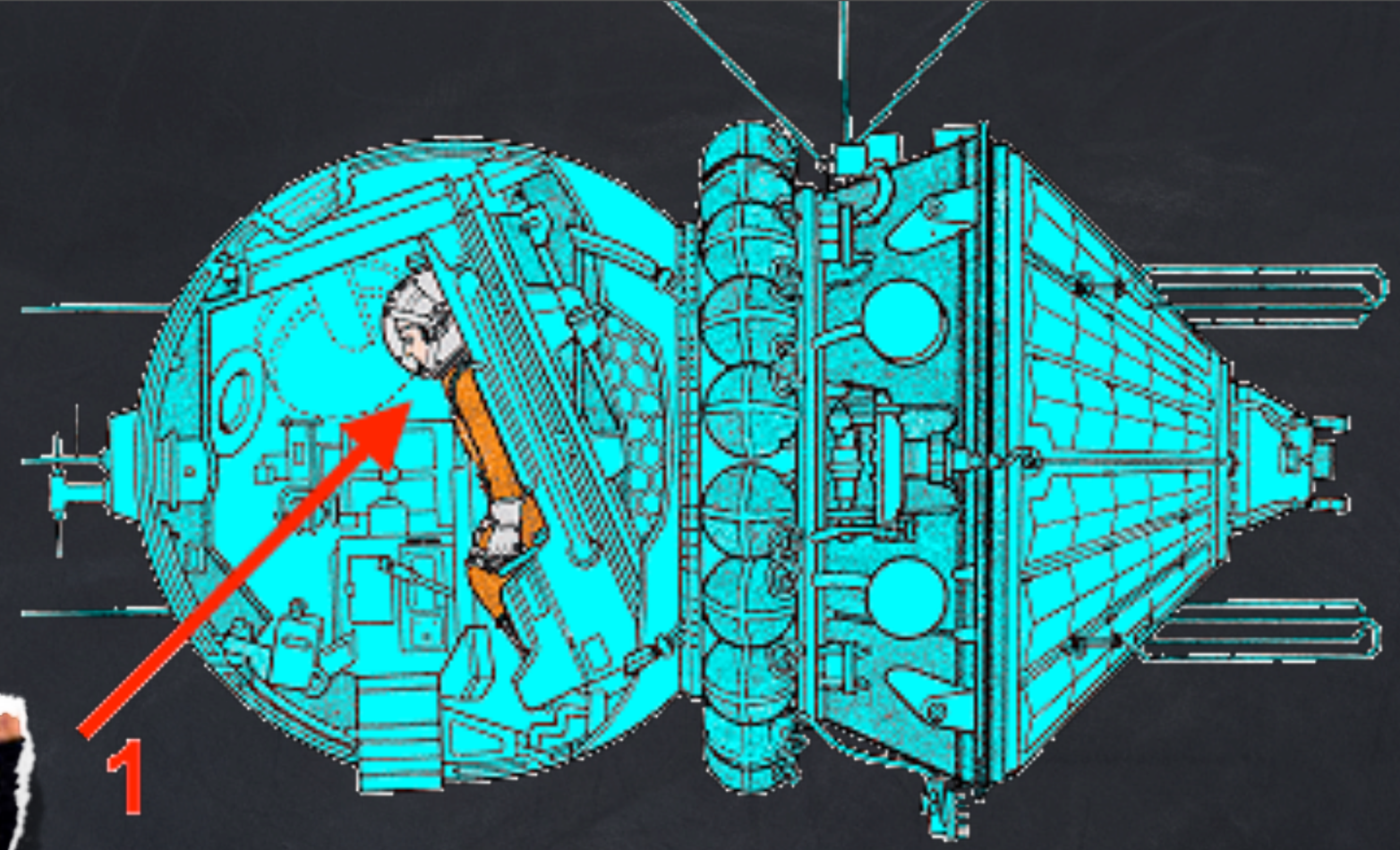
3 novembre 1957



Nasce la NASA (29 luglio1958)

EXPLORER 1
31 gennaio 1958

12 aprile 1961



YURI GAGARIN

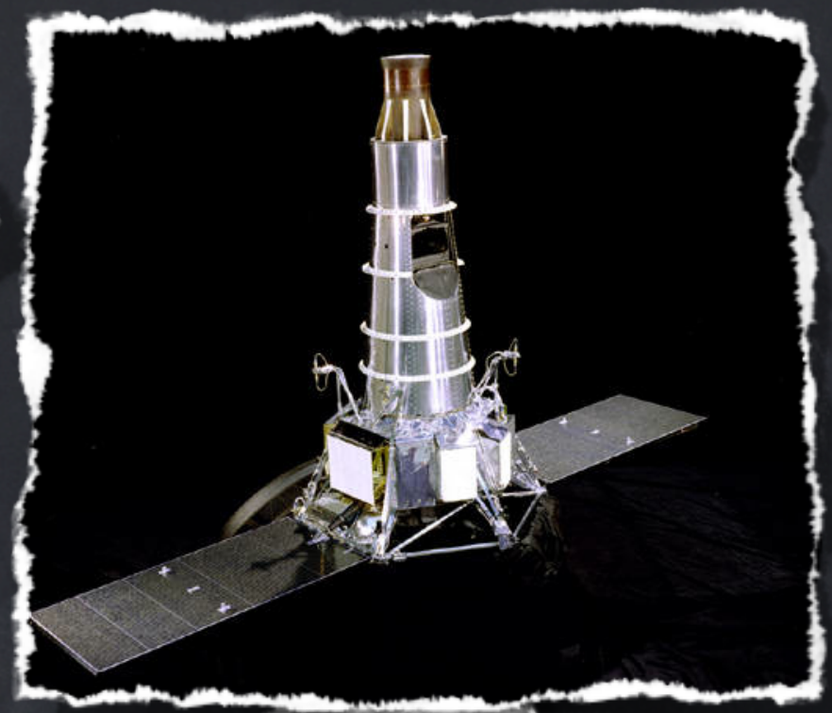
Il primo uomo nello spazio

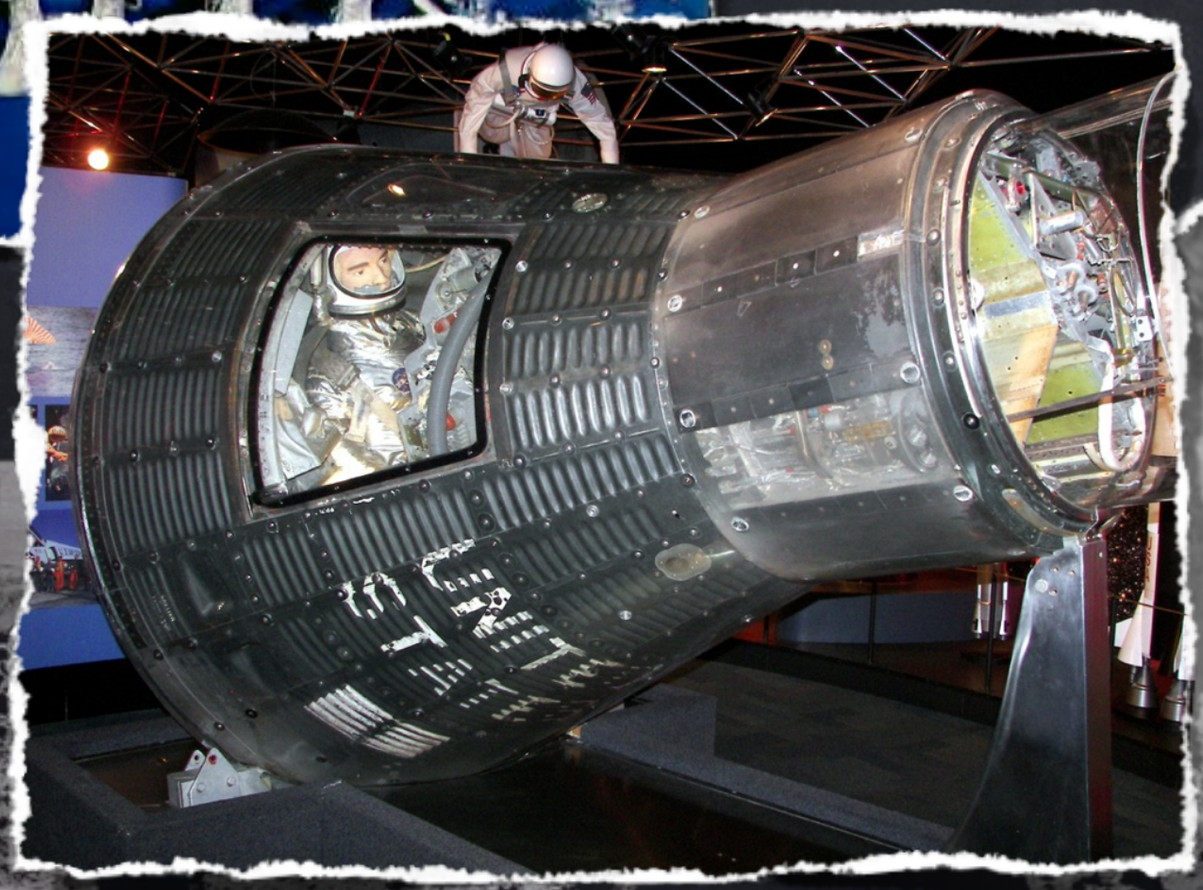
"I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to the earth. No single space project in this period will be more impressive to mankind, or more important for the long-range exploration of space; and none will be so difficult or expensive to accomplish"

J. F. KENNEDY

12 aprile 1961

La corsa accelera!



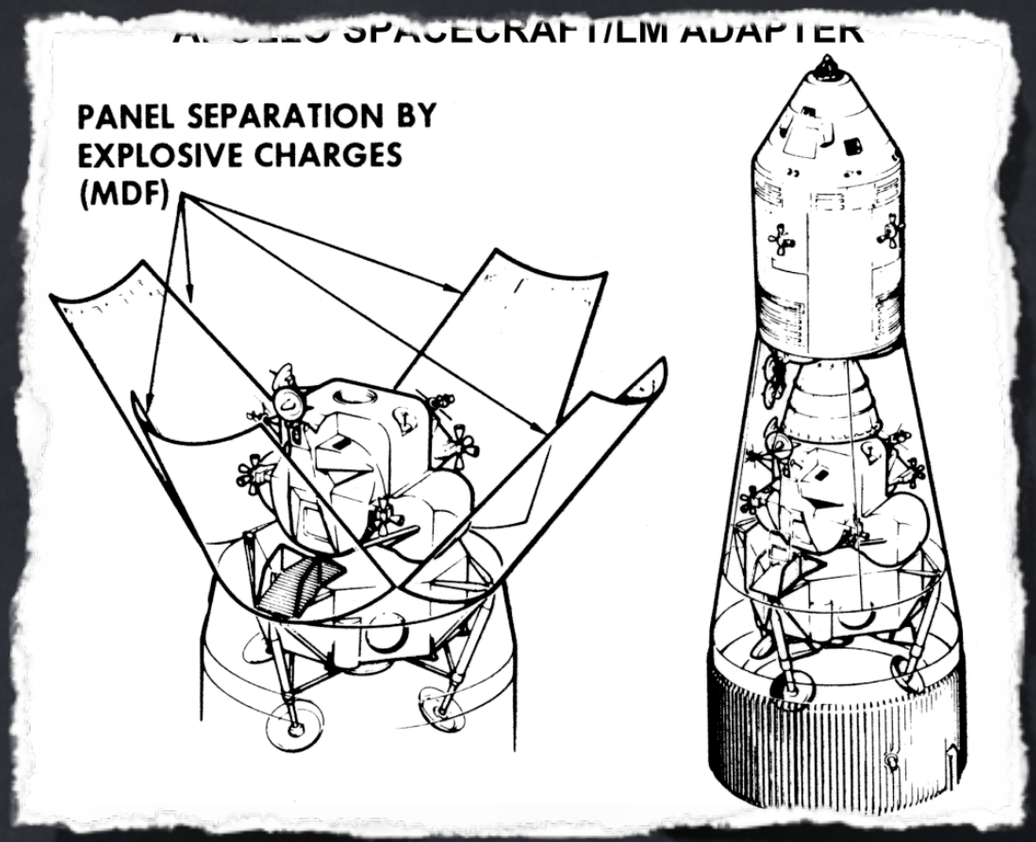


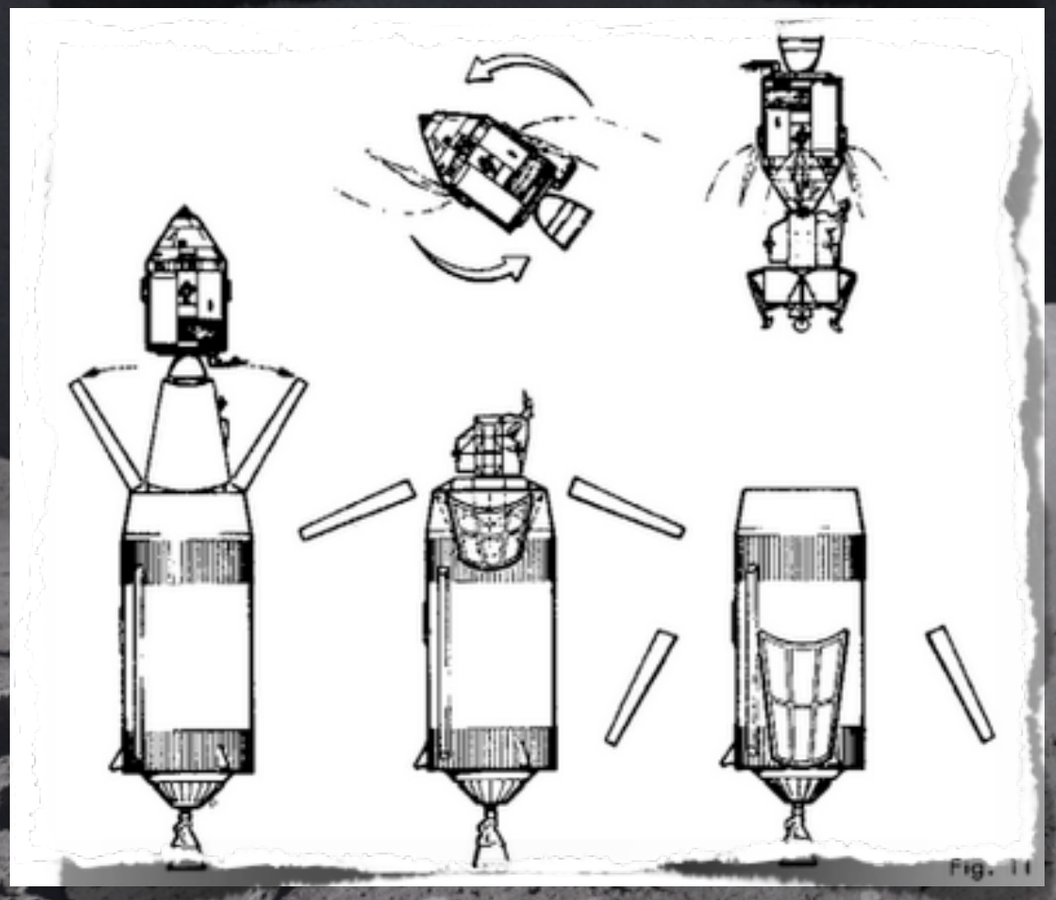
Gli anni '60...VIVERE IN ORBITA

1961: Progetto SATURN

Un passaggio fino alla Luna

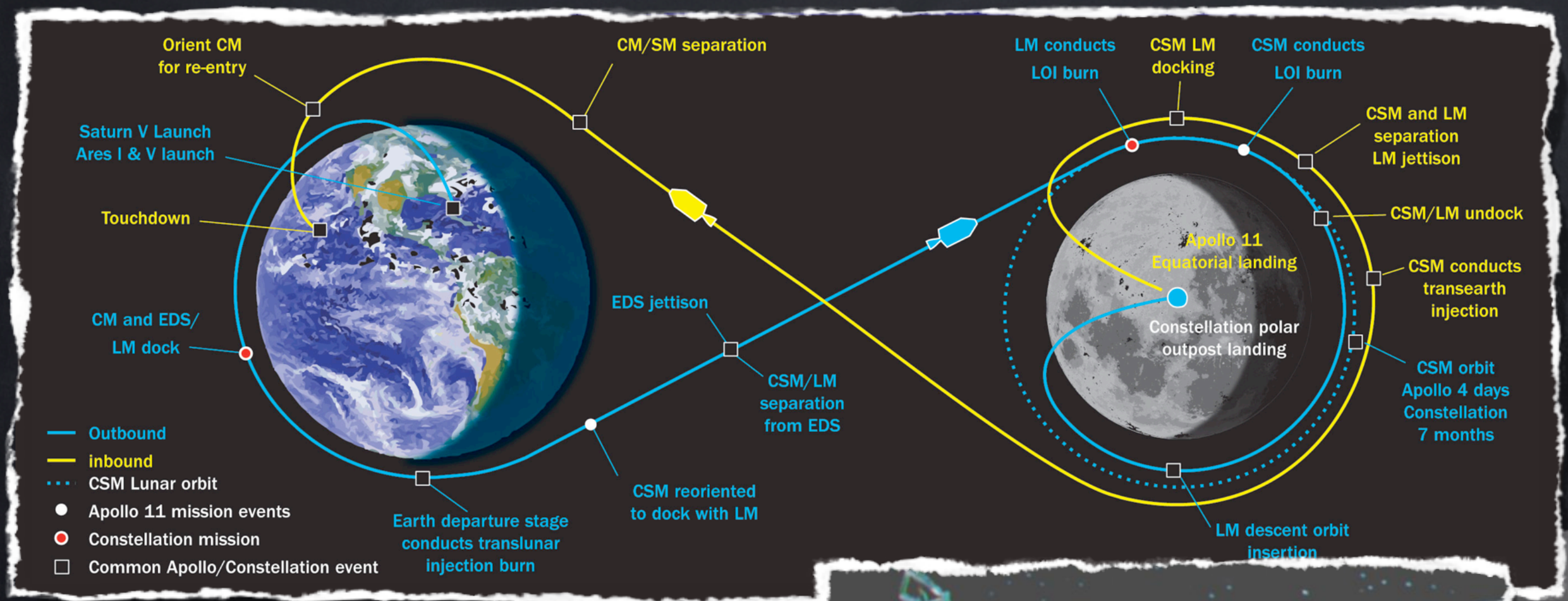
Saturn - Apollo





Un vettore sfortunato...

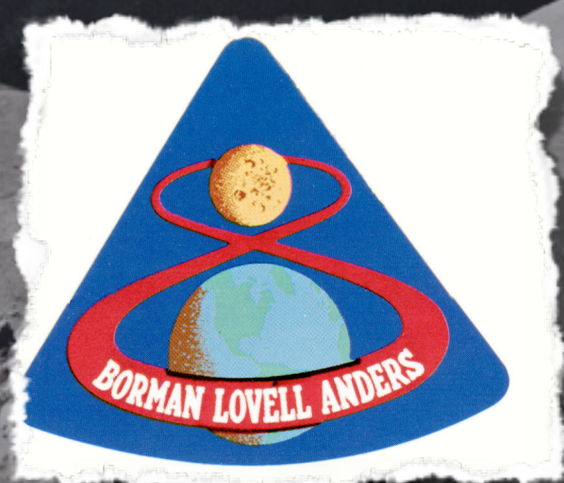
Le missioni Apollo



Apollo 8

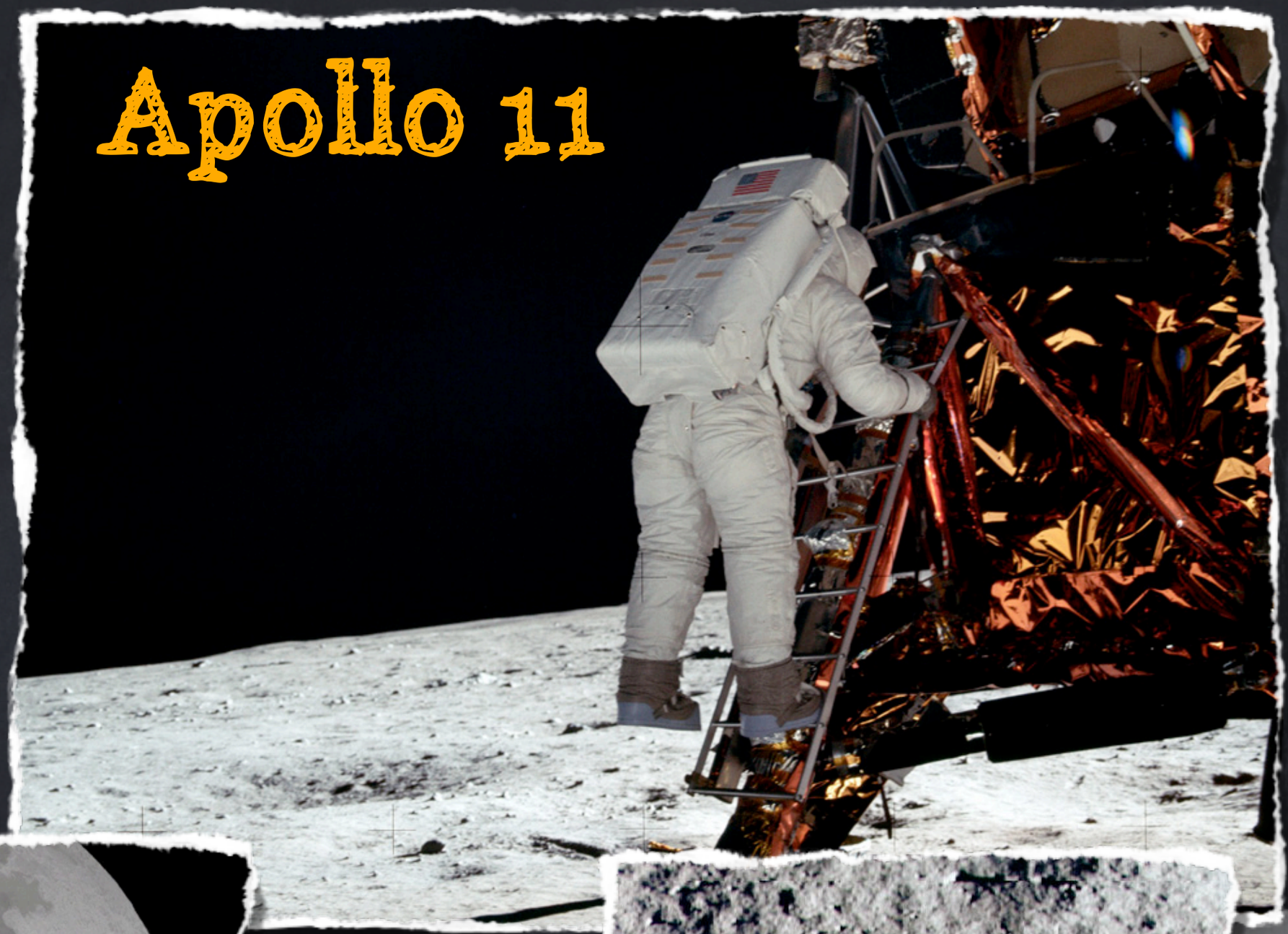
Natale 1968

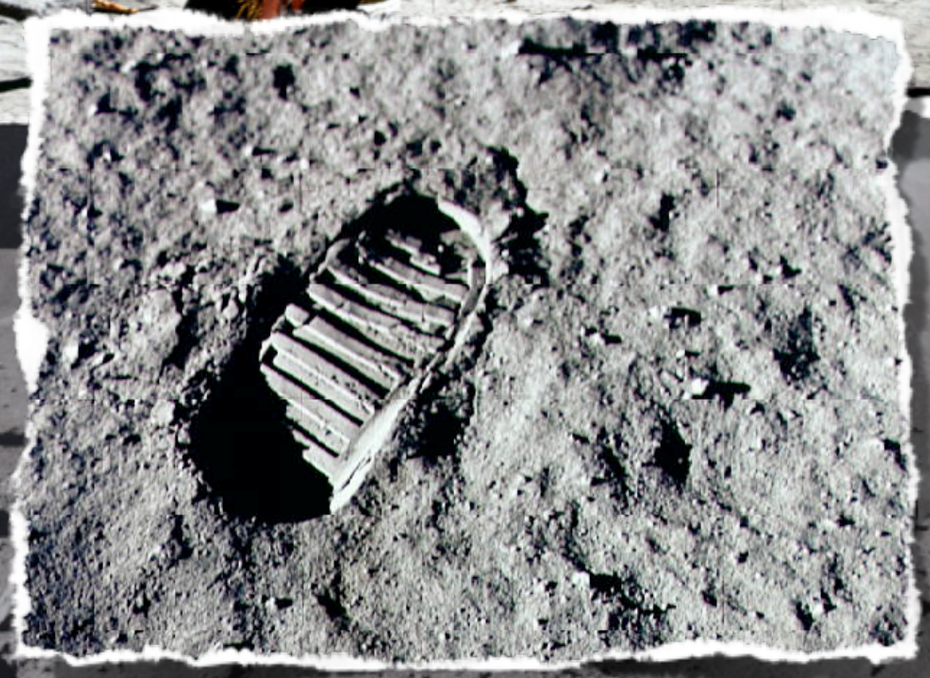
"In the beginning...



Apollo 11

21 luglio 1969



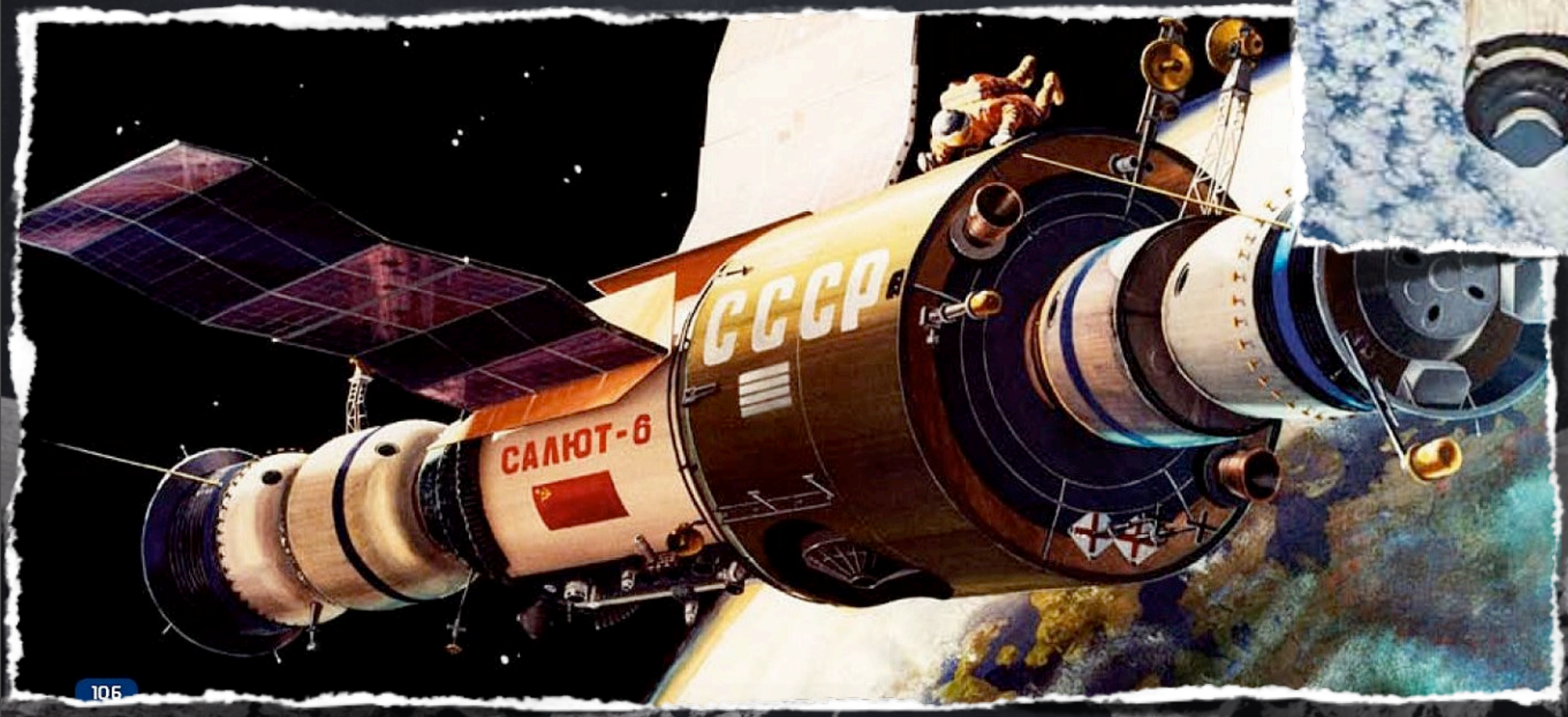


Apollo 12-17 (1972)

Case in orbita!

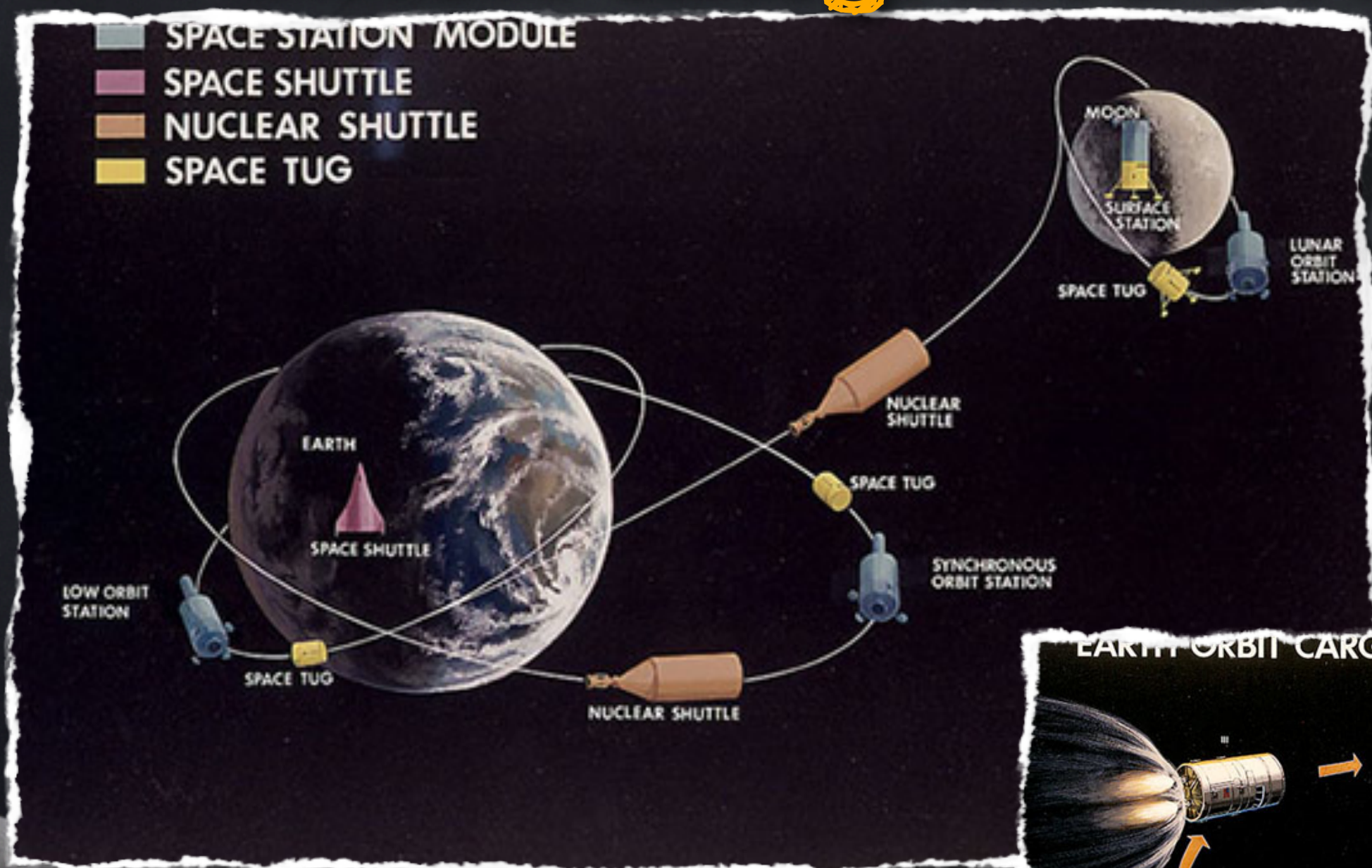
USA Skylab (1973-1979)

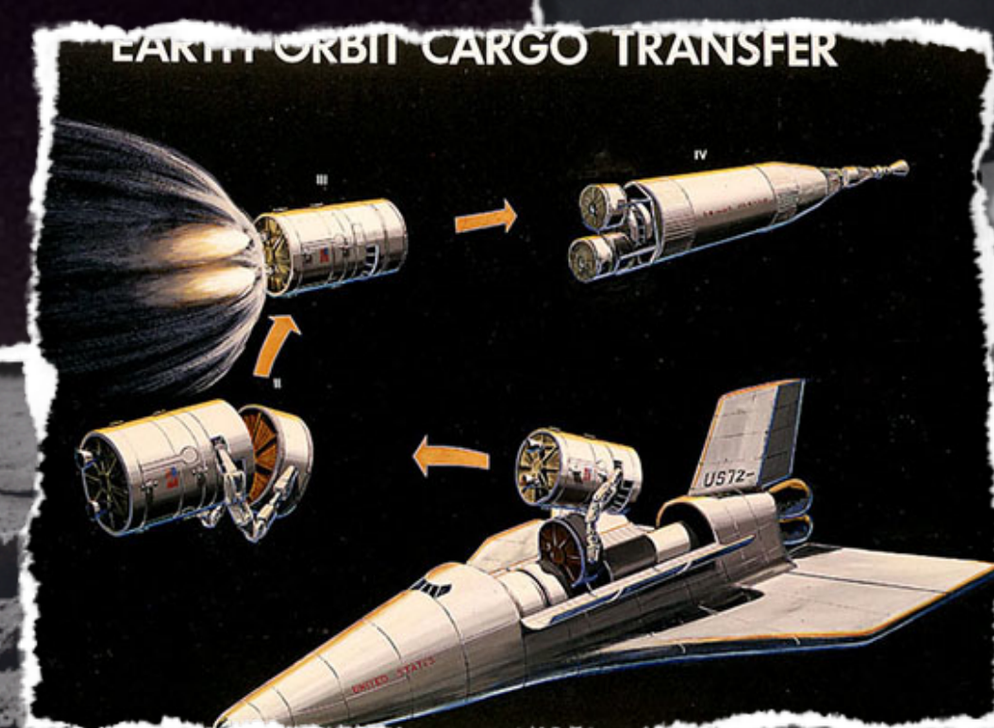
URSS Salyut (1971-1982)



Dopo l'Apollo...

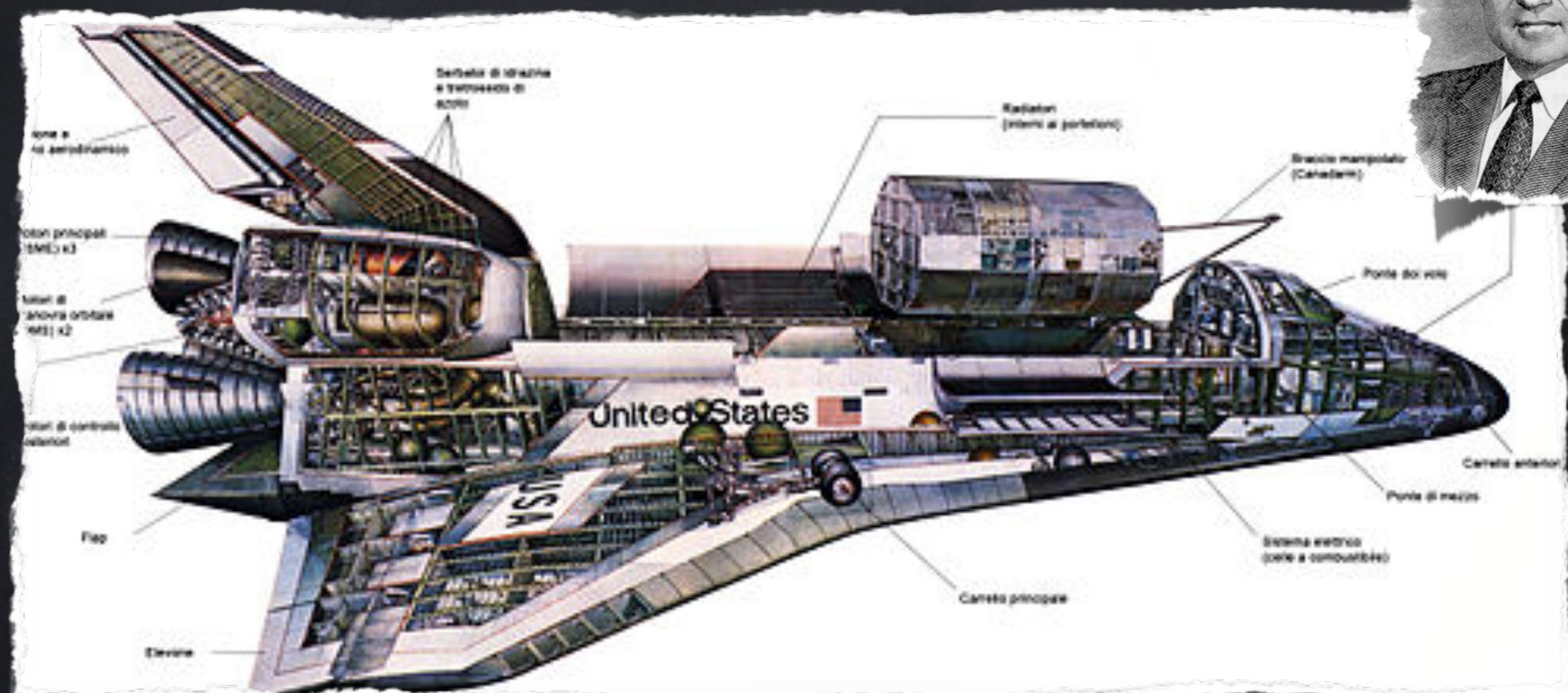
NASA Integrated Program



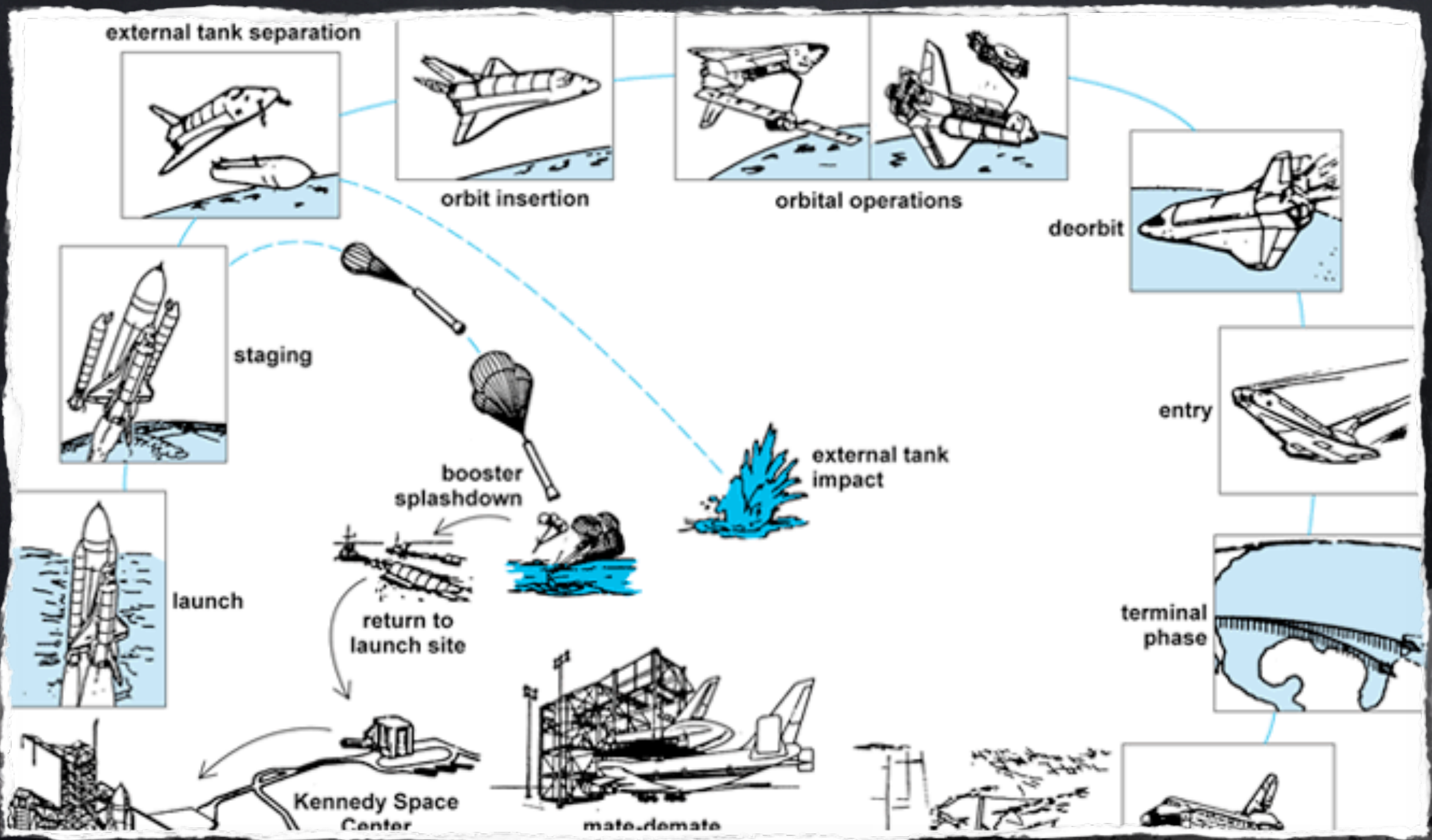


Space Transportation System

Space Shuttle (1970-2011)



Economico, riutilizzabile, sicuro... (????)

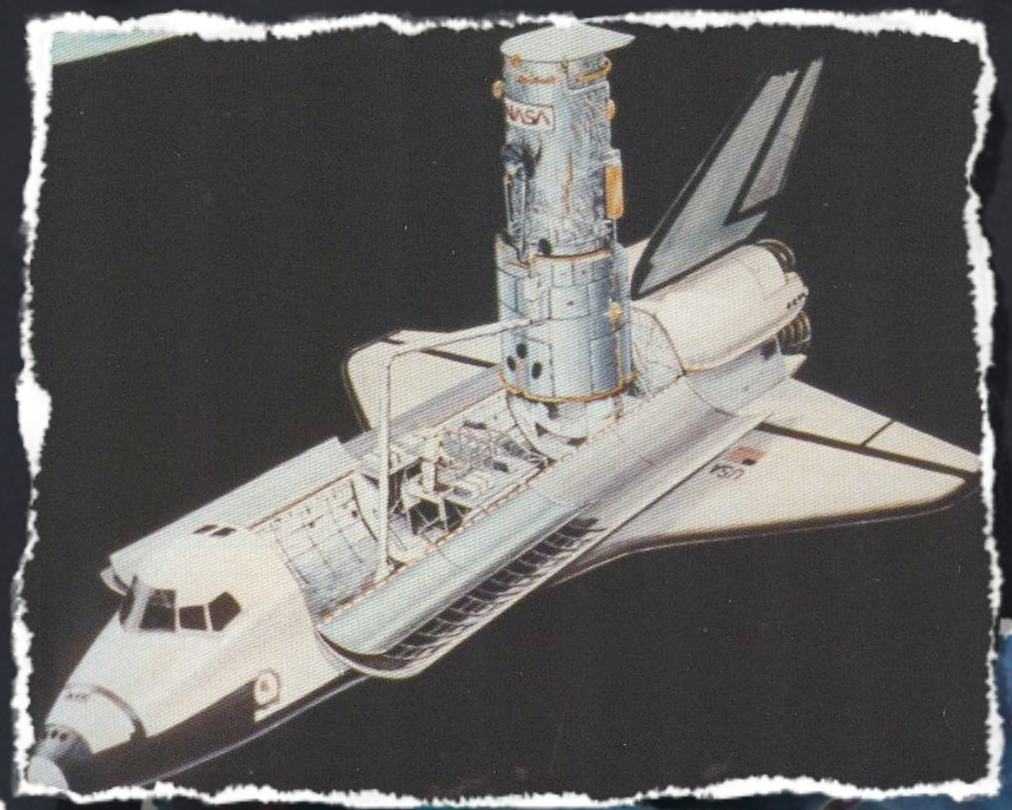



USA

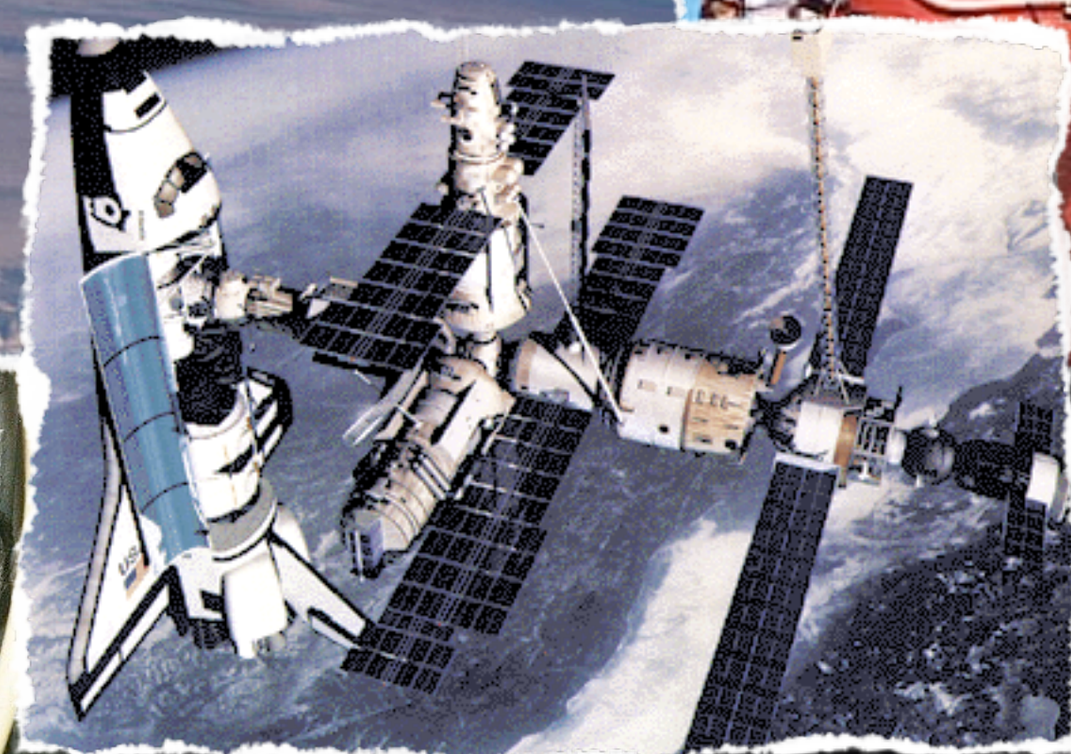
Lutti e conquiste

Challanger (1986)

HST (1991)

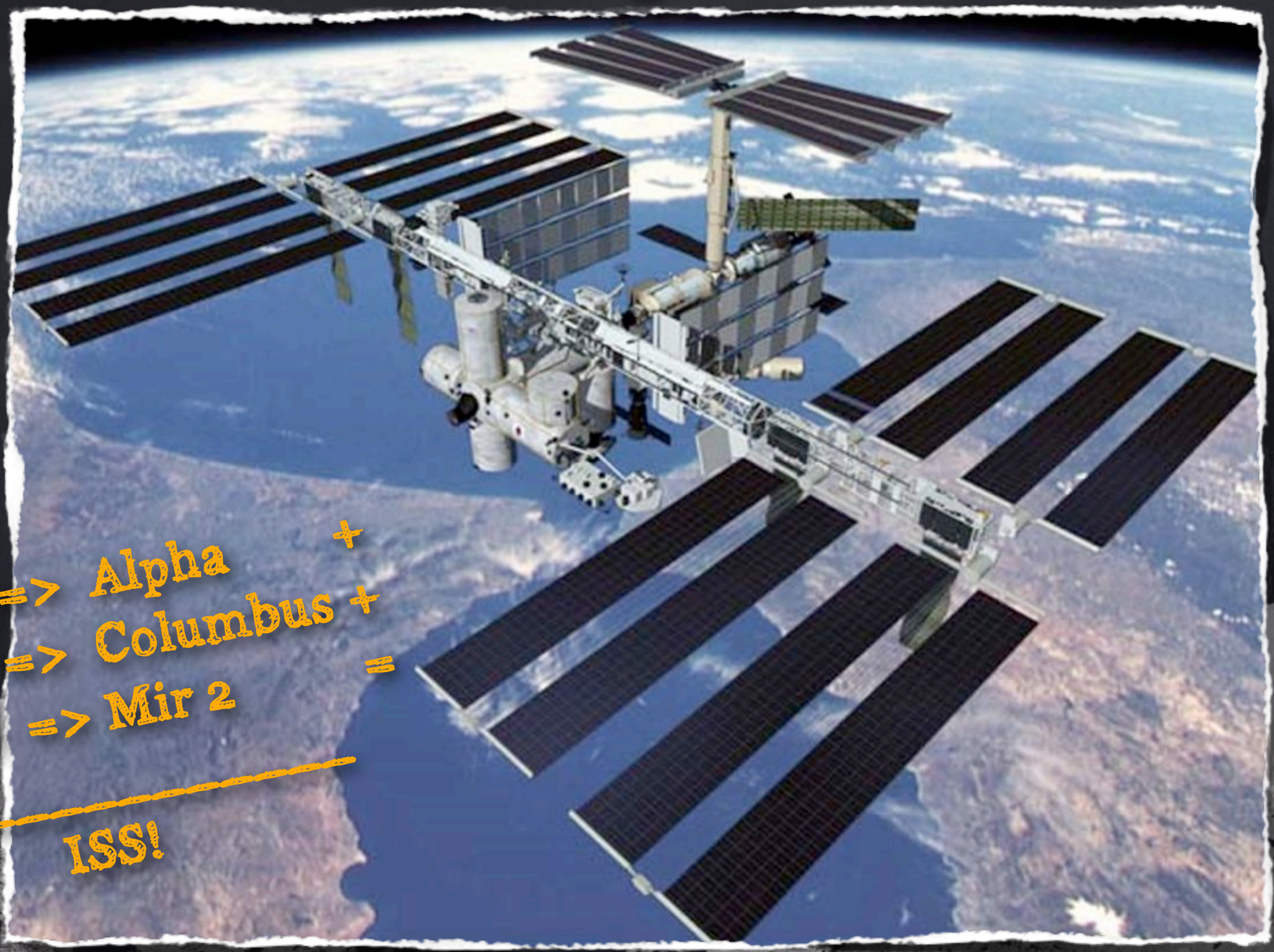


La Mir
(1986-2001)



L'International Space Station

(1998)

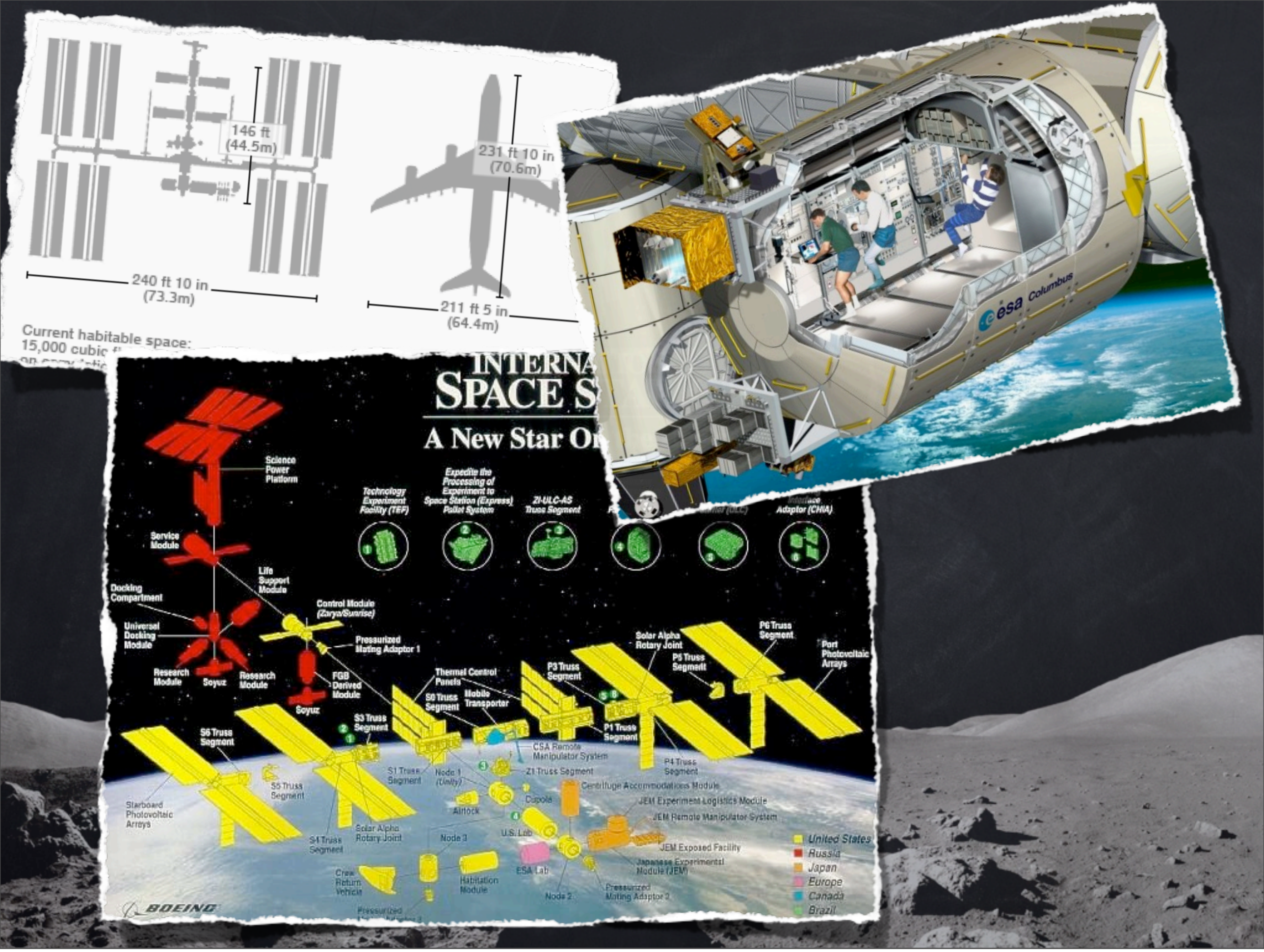


USA => Alpha +

ESA => Columbus +

URSS => Mir 2 =

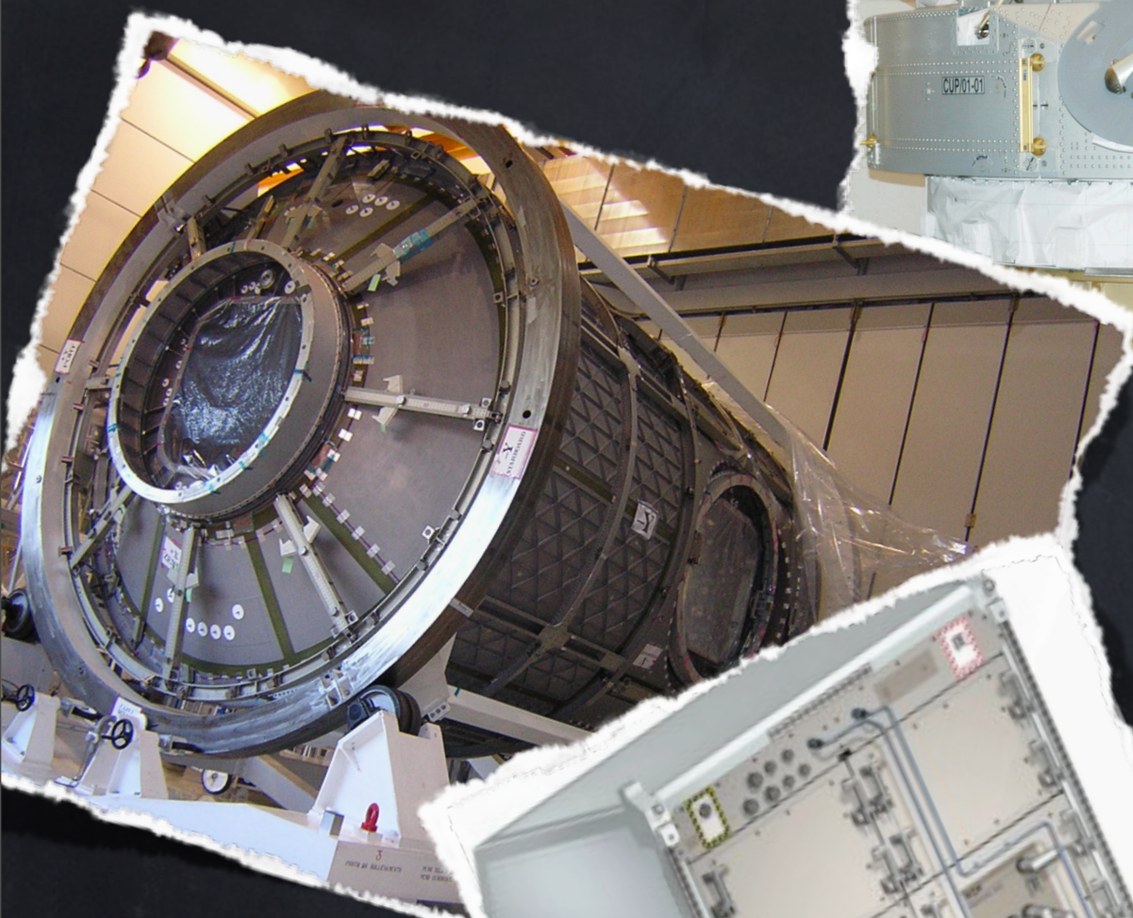
ISS!


146 ft
(44.5m)
240 ft 10 in
(73.3m)
231 ft 10 in
(70.6m)
211 ft 5 in
(64.4m)
Current habitable space:
15,000 cubic
esa Columbus
INTERNA
SPACE S
A New Star O
Science Power Platform
Service Module
Life Support Module
Docking Compartment
Universal Docking Module
Control Module (Zarya/Sunrise)
Pressurized Mating Adaptor 1
Research Module
Soyuz
Research Module
FGB Derived Module
Soyuz
S3 Truss Segment
S6 Truss Segment
S0 Truss Segment
Thermal Control Panels
Mobile Transporter
P3 Truss Segment
Solar Alpha Rotary Joint
P5 Truss Segment
P6 Truss Segment
Port Photovoltaic Arrays
P1 Truss Segment
P4 Truss Segment
CSA Remote Manipulator System
Z1 Truss Segment
S1 Truss Segment
Node 1 (Unity)
Centrifuge Accommodations Module
JEM Experiment Logistics Module
JEM Remote Manipulator System
Cupola
Airlock
S5 Truss Segment
Starboard Photovoltaic Arrays
S4 Truss Segment
Solar Alpha Rotary Joint
Node 3
U.S. Lab
JEM Exposed Facility
Japanese Experimental Module (JEM)
ESA Lab
Crew Return Vehicle
Habitation Module
Node 2
Pressurized Mating Adaptor 2
BOEING
United States
Russia
Japan
Europe
Canada
Brazil


EXIT
DECK
TO NOD 1

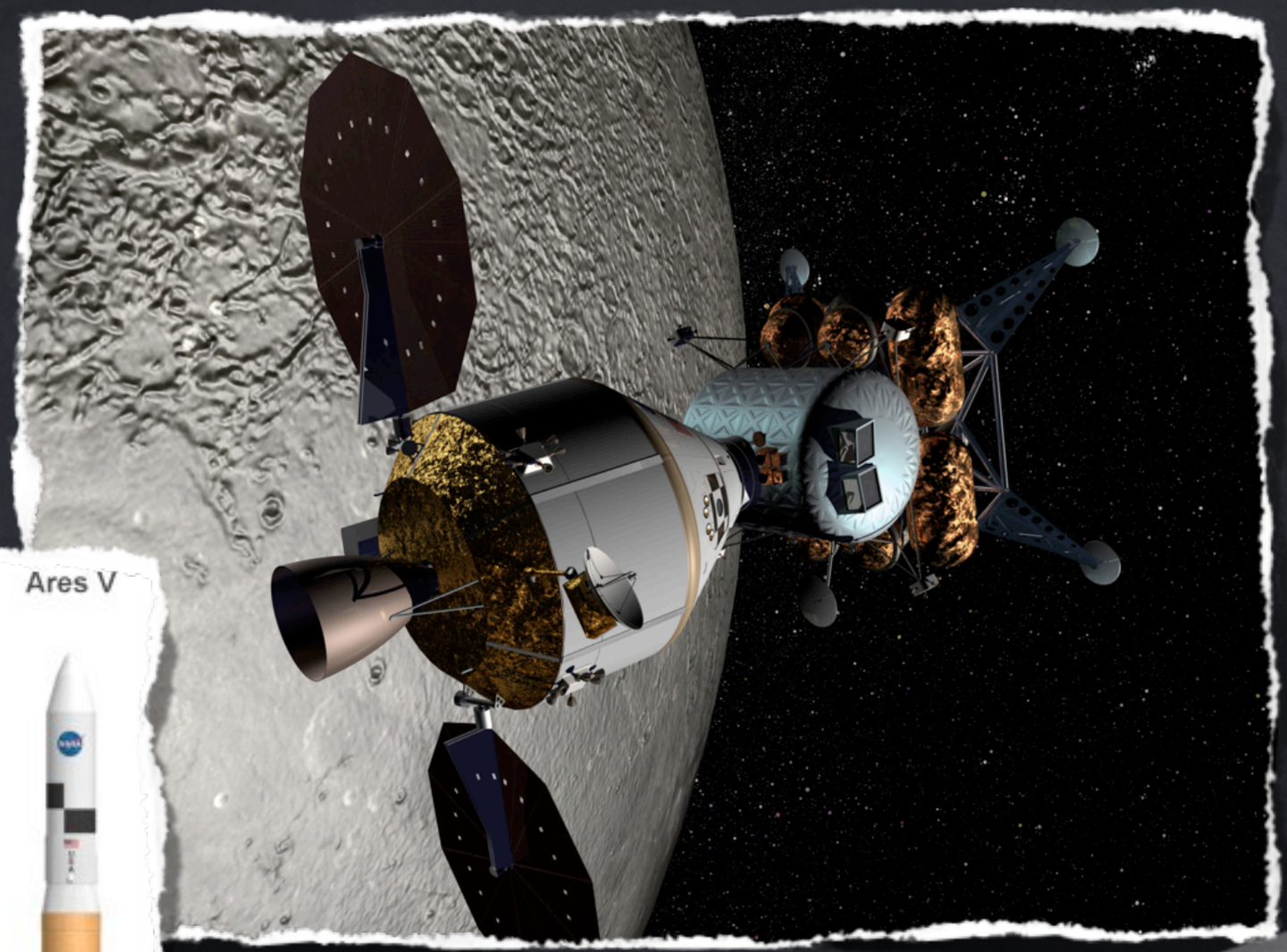
Space Italy!

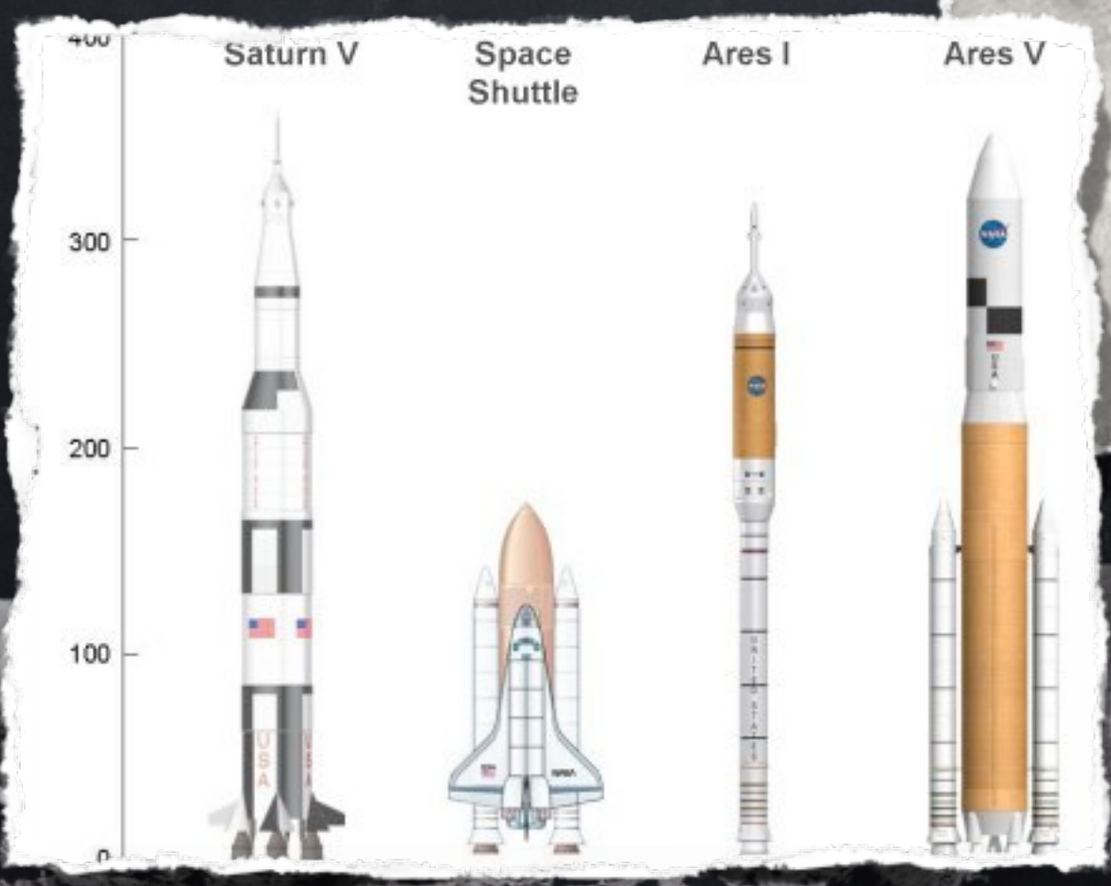
ThalesAlenia Space
A Thales / Finmeccanica Company



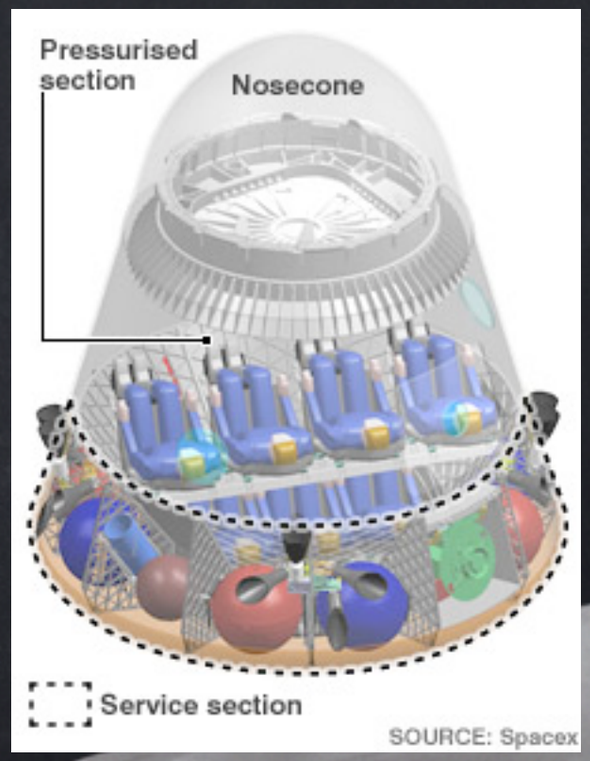
Columbia (1 feb 2003)

IL FUTURO? New Vision(s!)



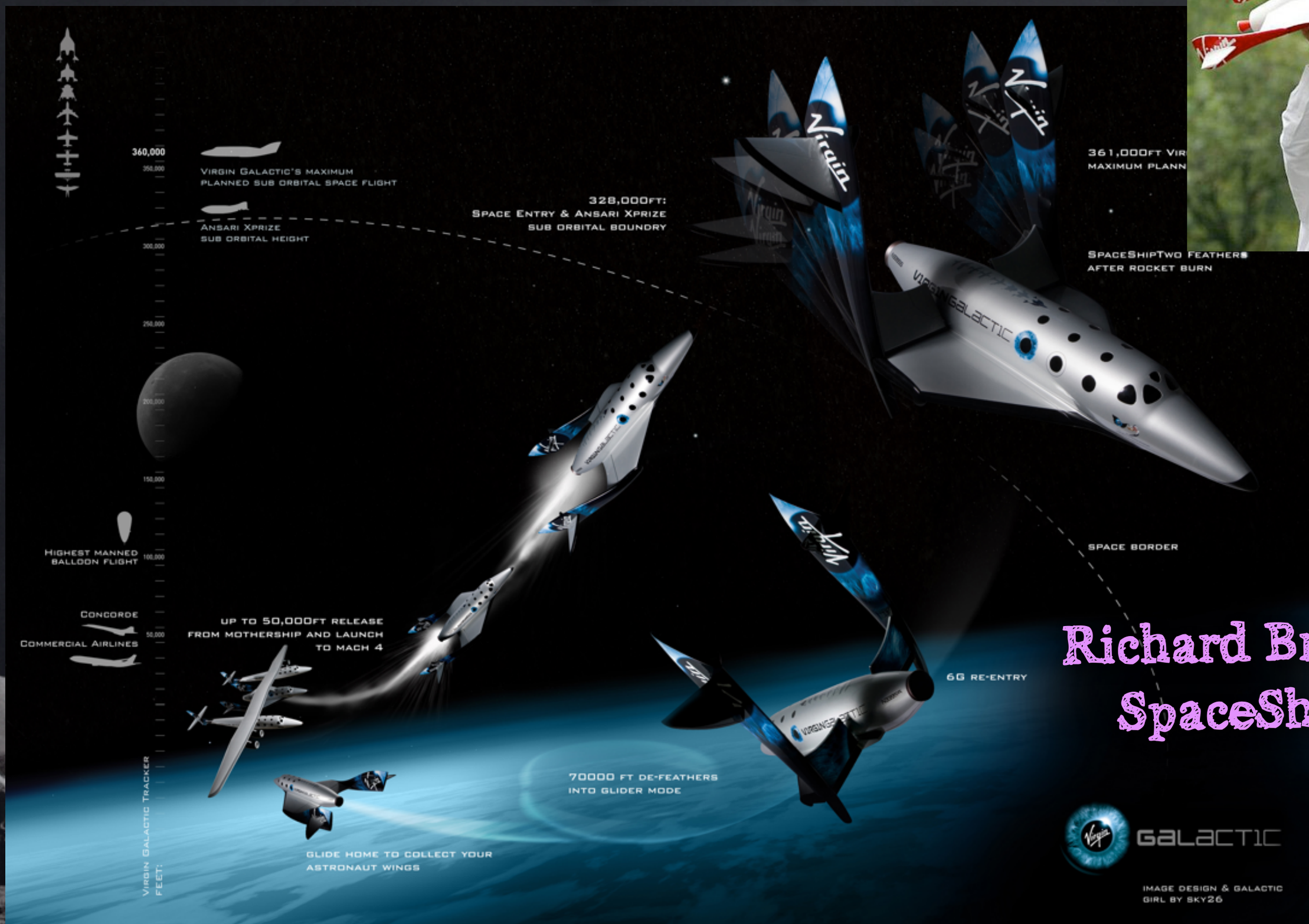


New Vision(ss!)



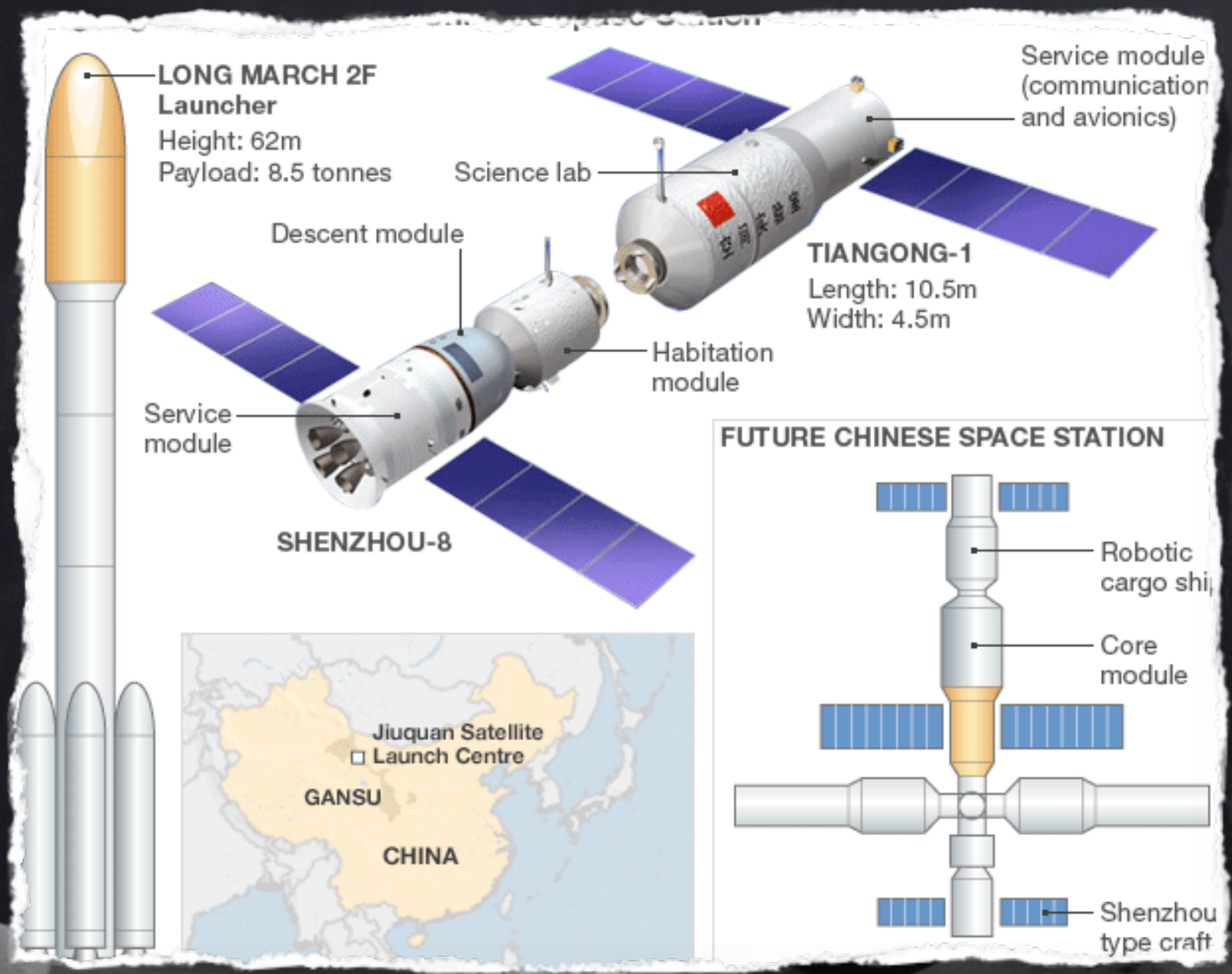
Commercial Orbital Transportation Service (COTS)

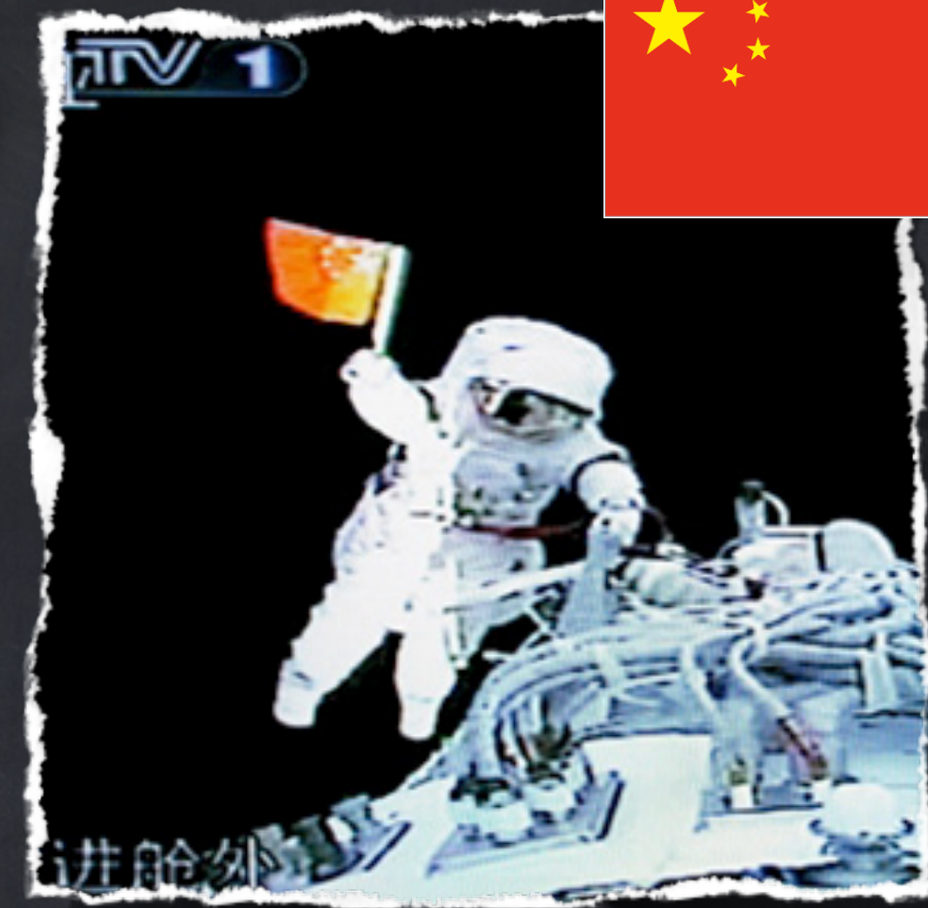
New Vision(sss!)

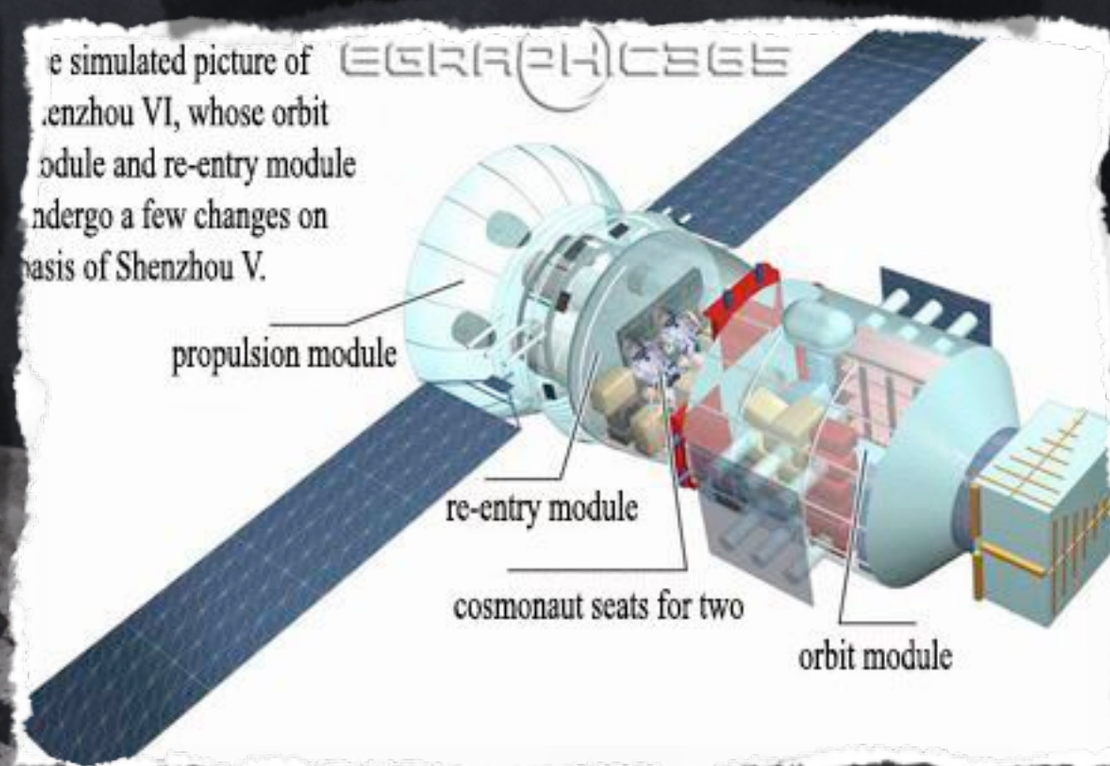


Richard Branson
SpaceShipTwo

New Vision(ssss!)







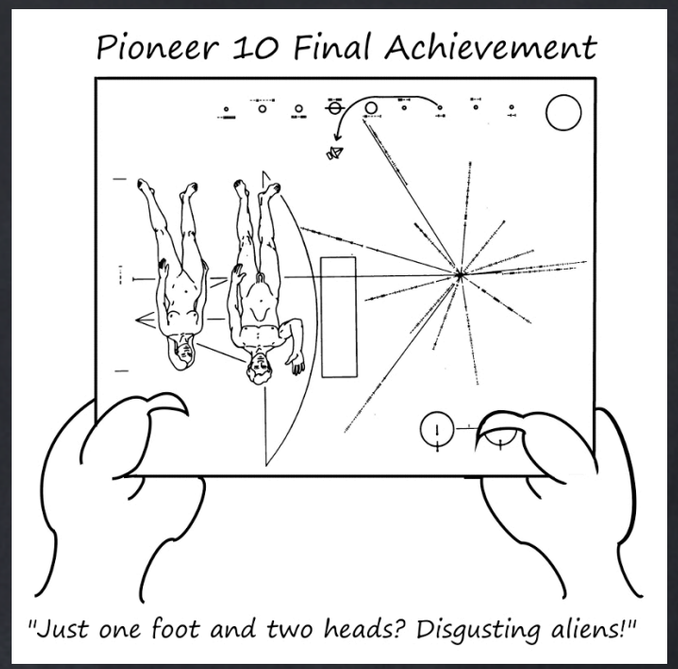
Shenzhou 1 - 5 (2003) - 8

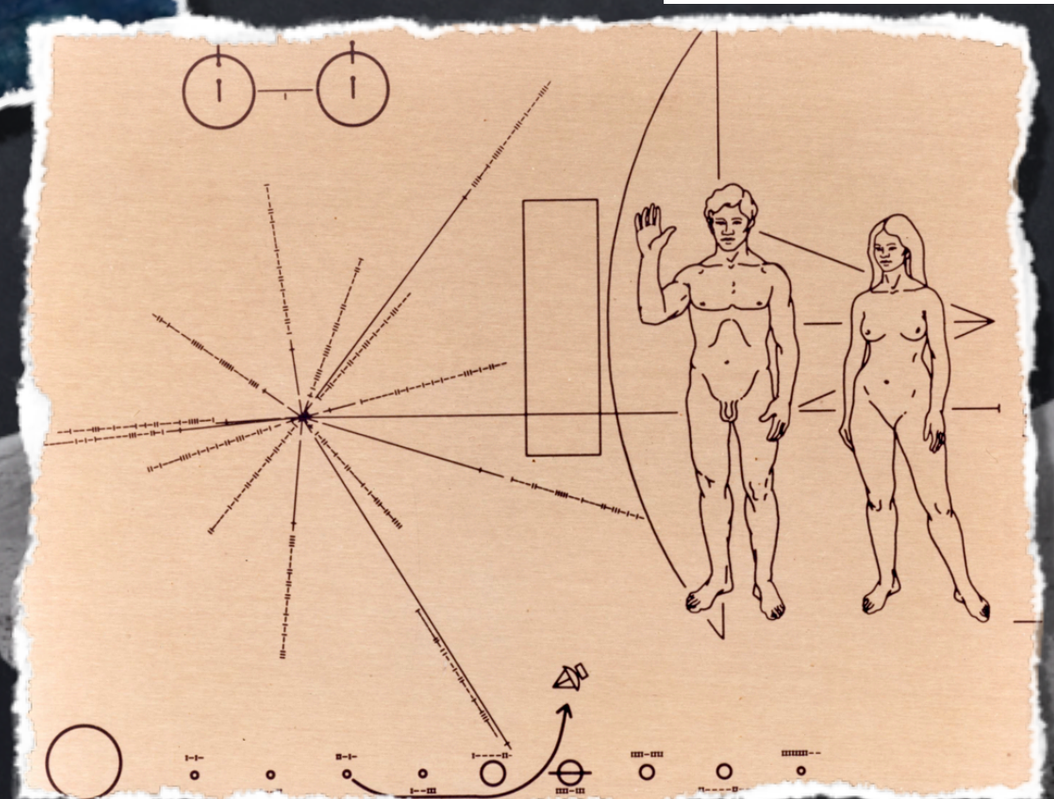
Tiangong 1


E loro??
SCIENCEphotoLIBRARY

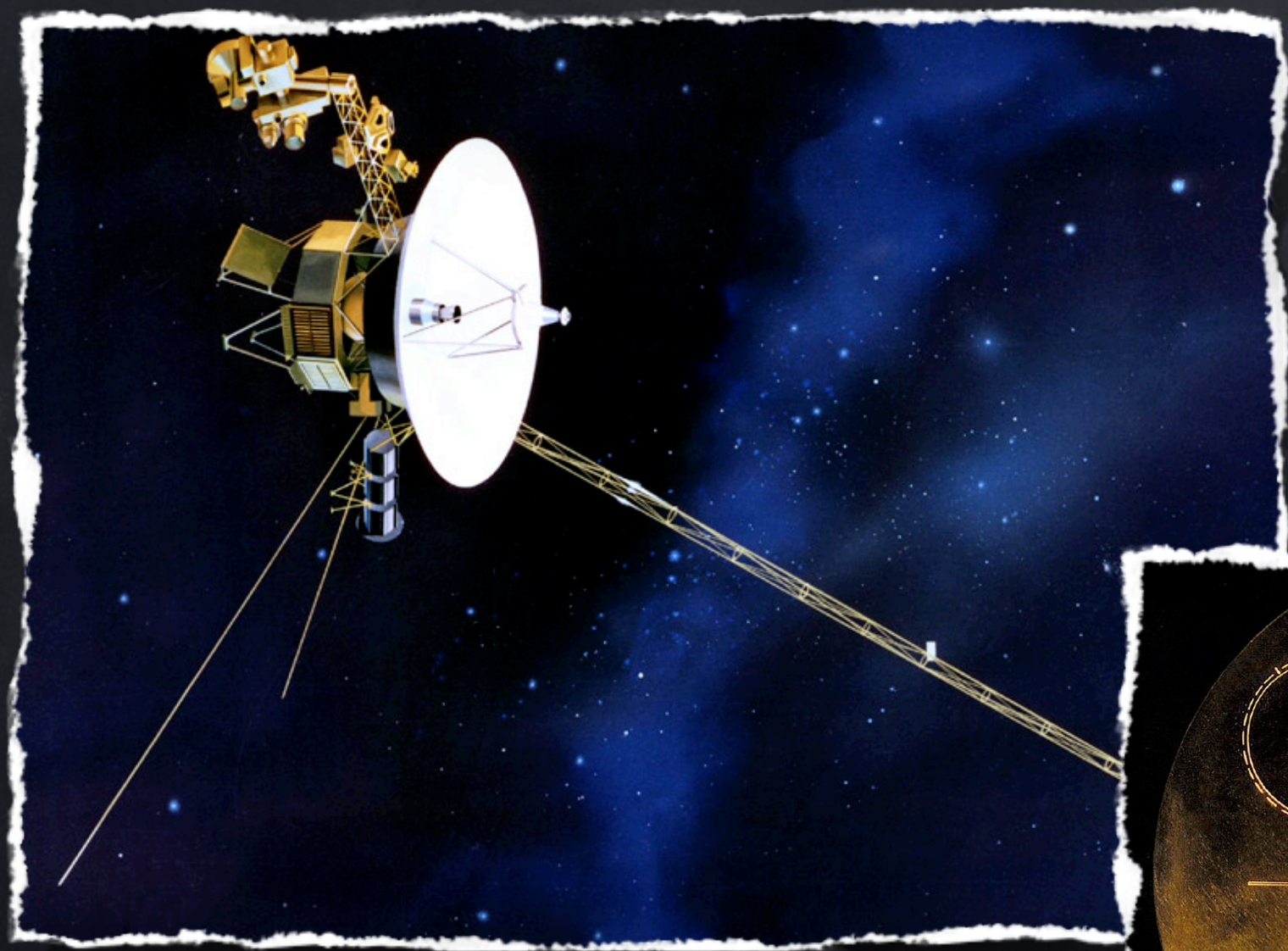
Pioneer 10 (1972-1997)

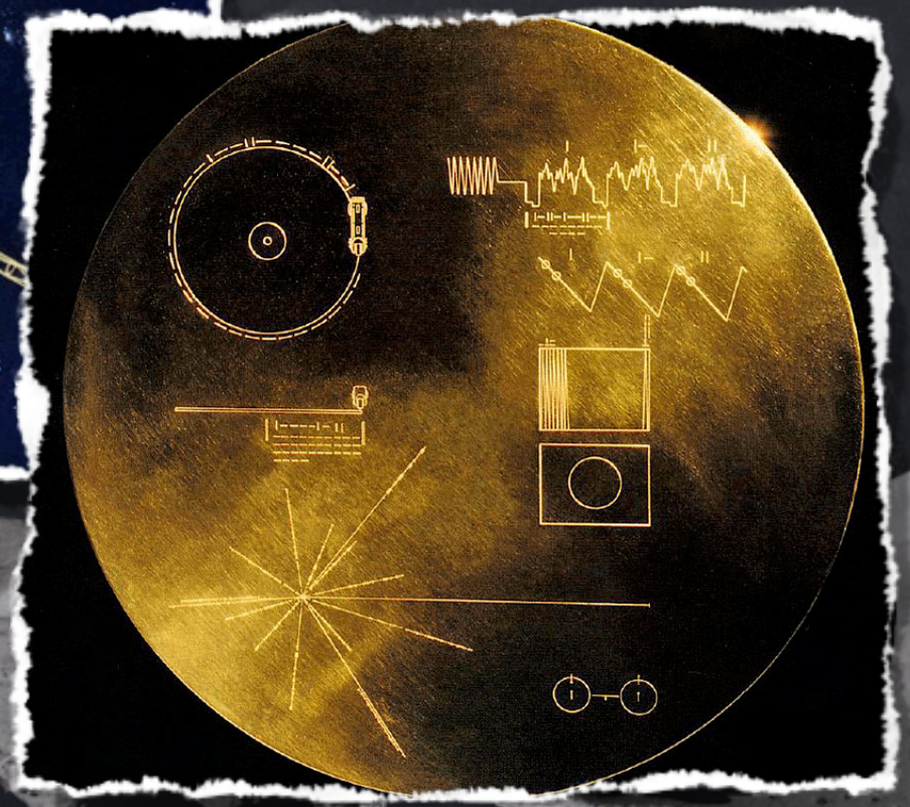
1983





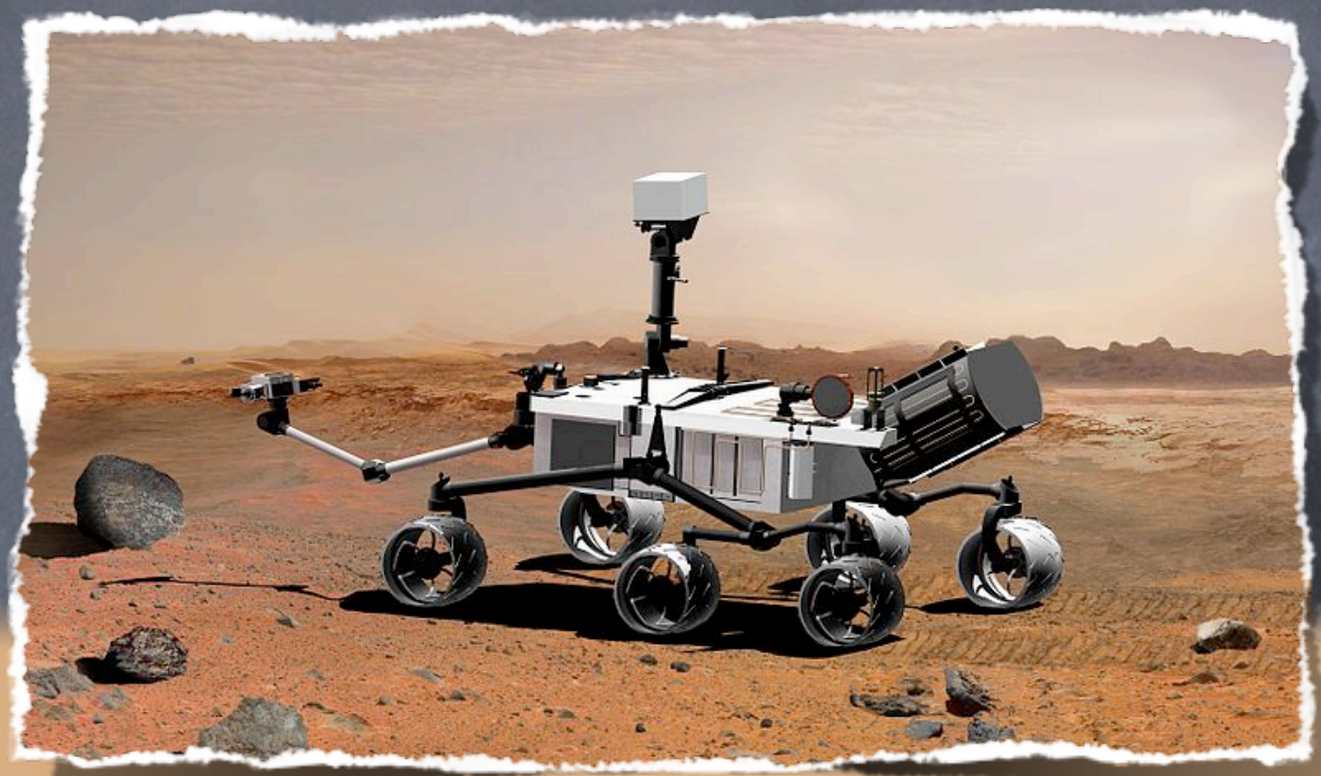
Voyager (1977)



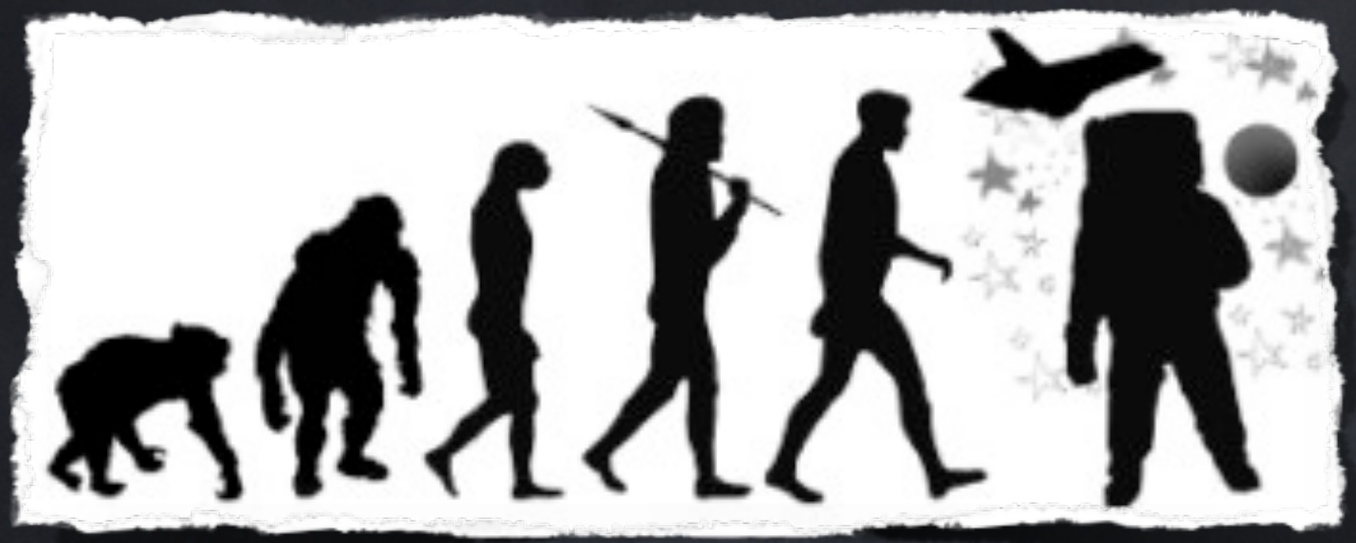


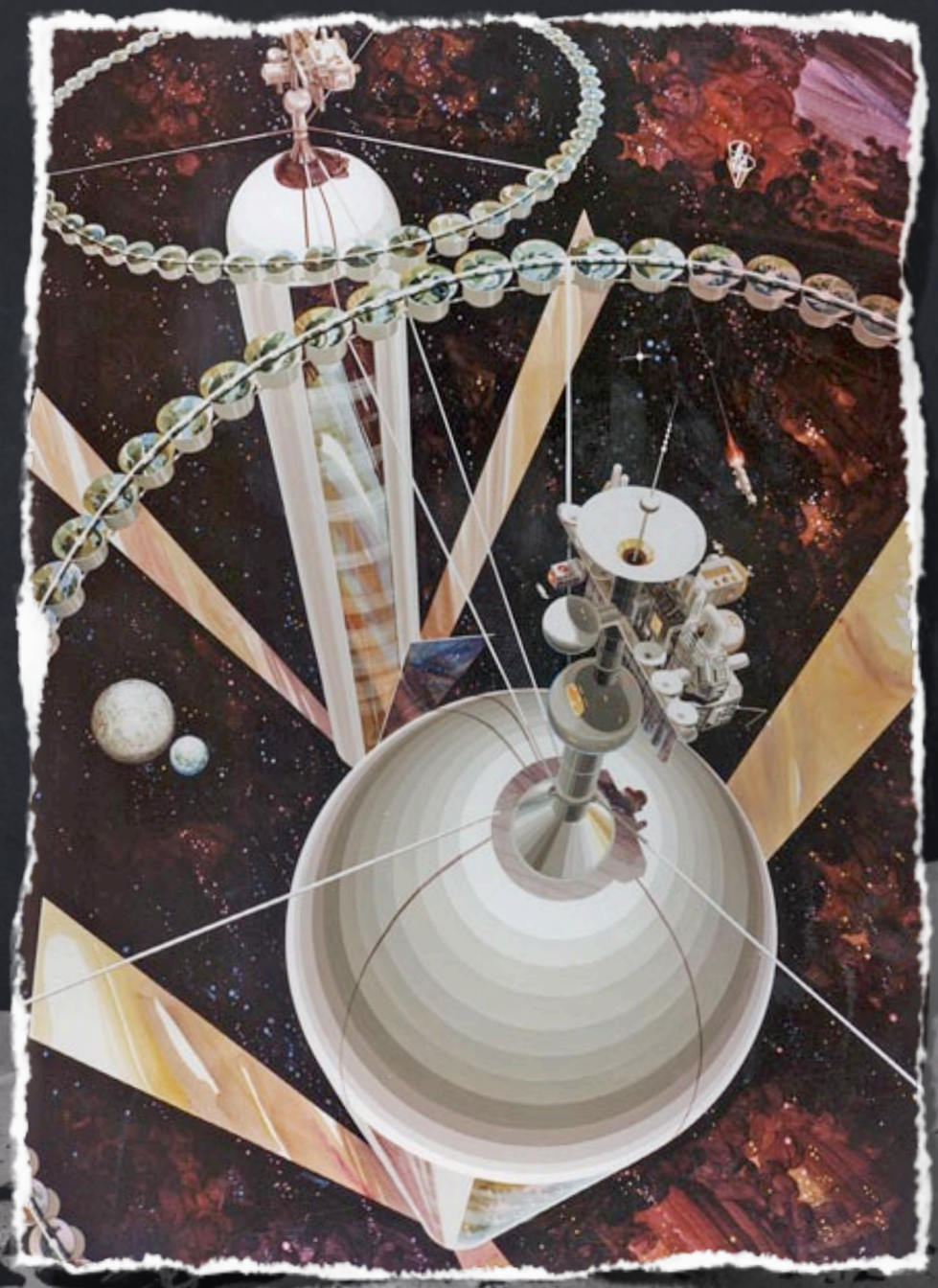
Quarantena Apollo

Mars Science Laboratory (nov 2011- 2013)

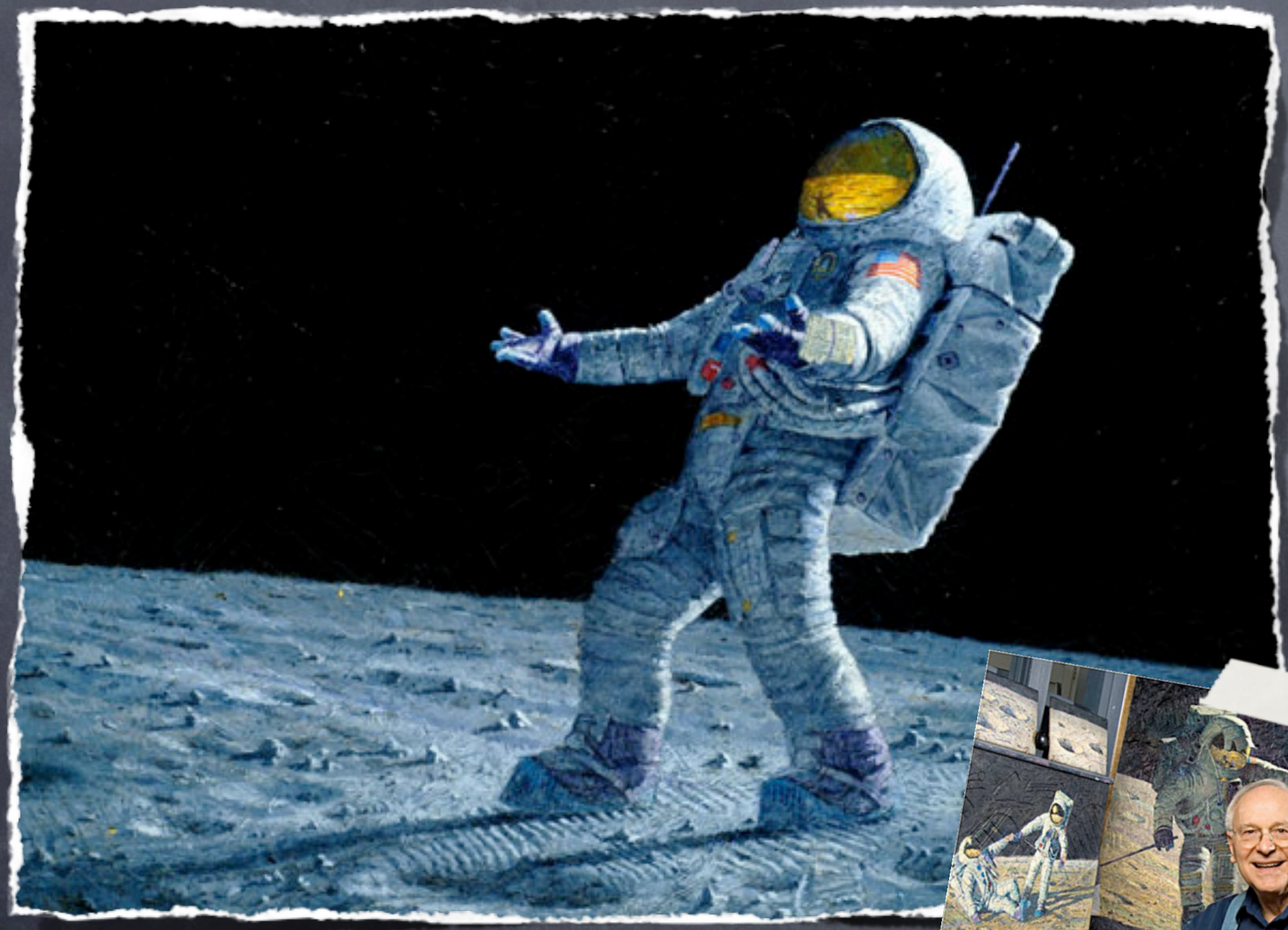


Imperativo e Opzione Spaziali






12
АПРЕЛЯ
1961



Alan Bean,
"Is Anyone Out There?"

“Noi non vogliamo affatto conquistare il cosmo.
Noi vogliamo allargare la Terra alle sue dimensioni.
Non abbiamo bisogno di altri mondi.
Abbiamo bisogno di uno specchio.
L’uomo ha bisgono solo dell’uomo.” (Lem, Solaris)