

A photograph of an astronaut in a white space suit floating in space. The astronaut's helmet is prominent, reflecting light. The background shows the Earth's blue and white clouds. The text 'Exploració espacial' is overlaid in white, centered on the image.

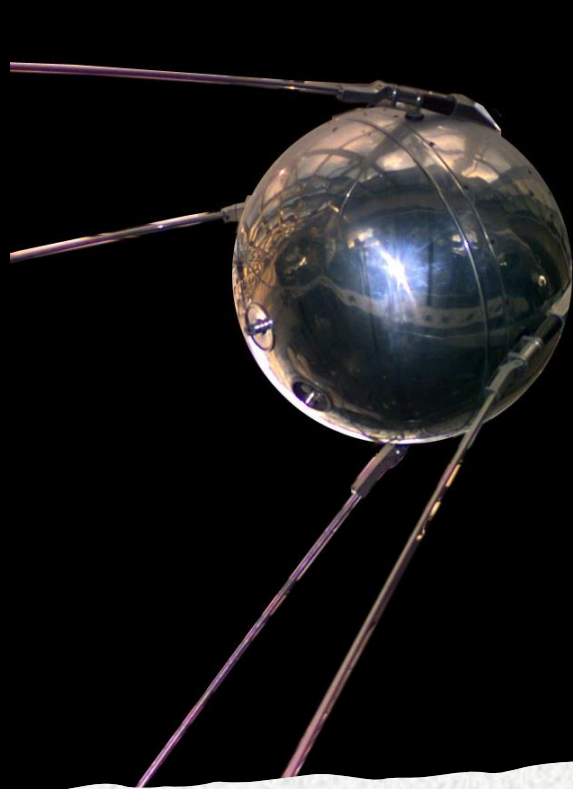
# Exploració espacial

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Joan Alcaide Núñez – 20 d'Octubre de 2023

En què penseu  
quan escolteu  
la paraula  
ESPAI?



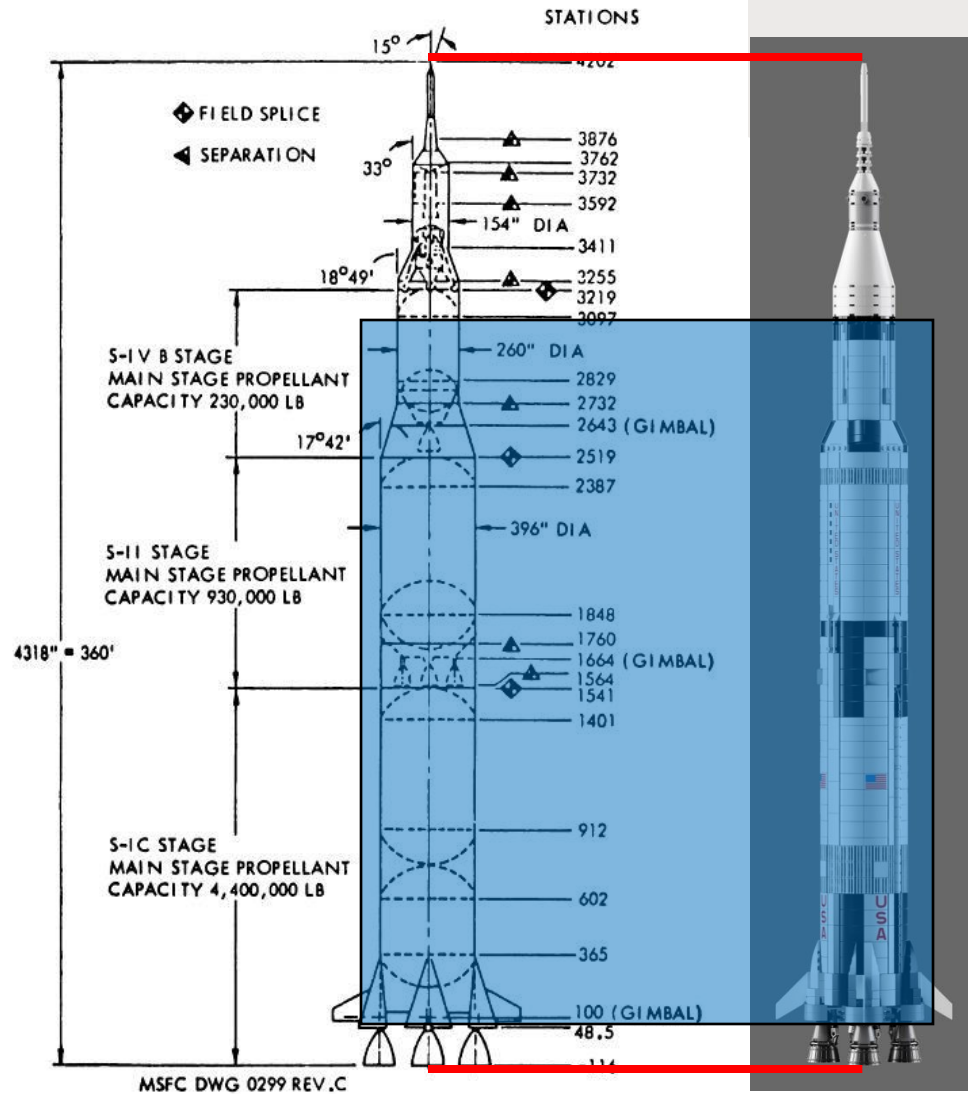


Exploració de l'espai: la  
carrera espacial

# Missions Apollo | Objectiu: arribar a la Lluna

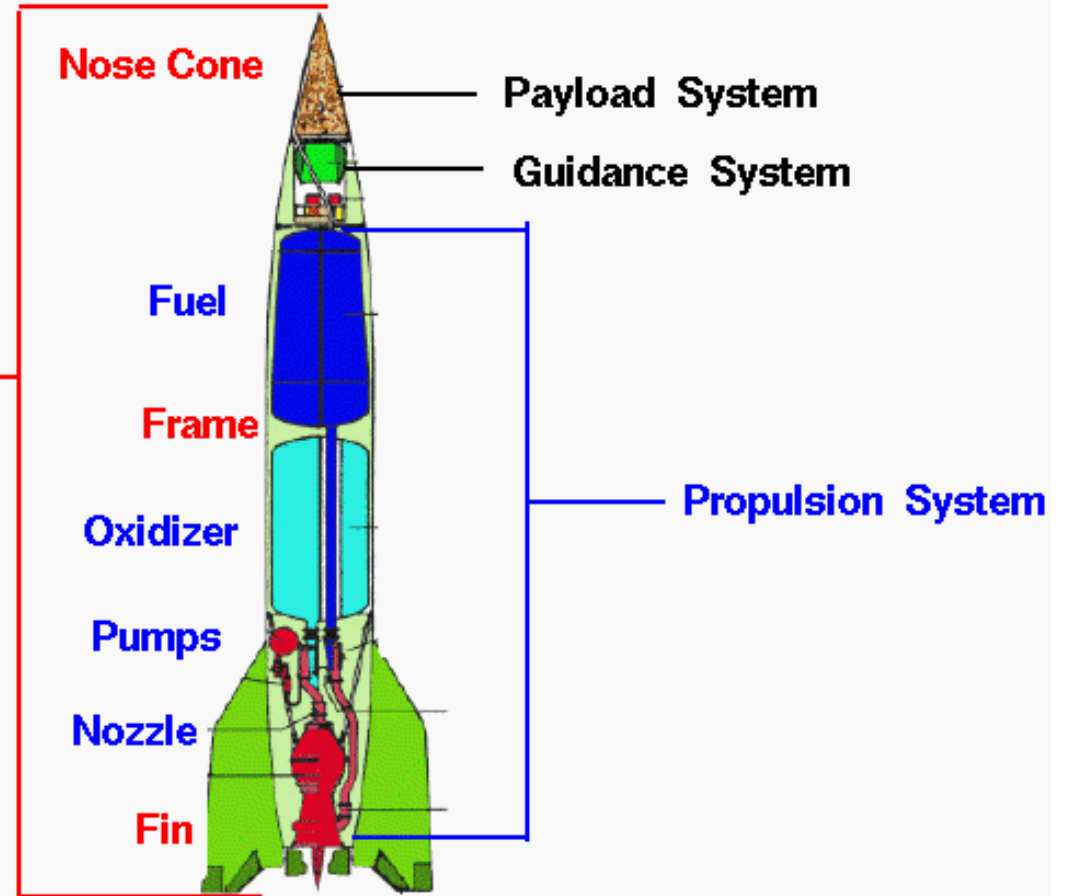


# Com funciona un coet?



Saturn V Reference Dimensions

# Rocket Parts

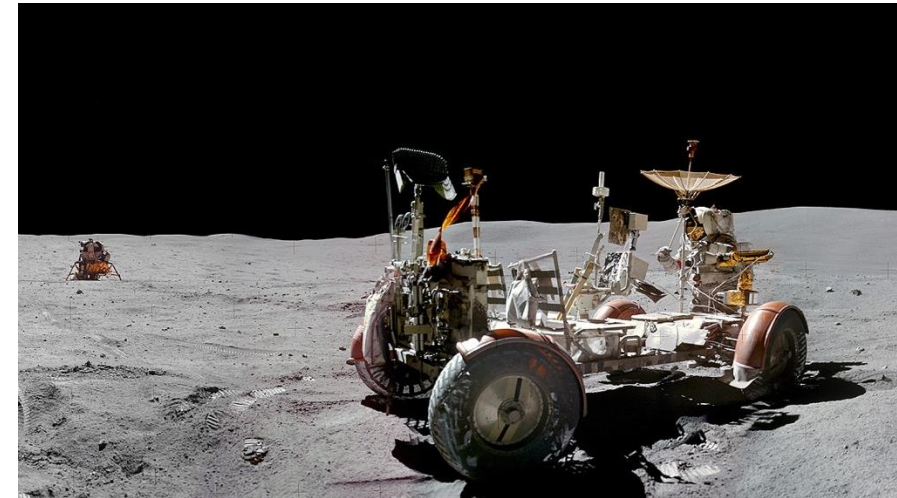
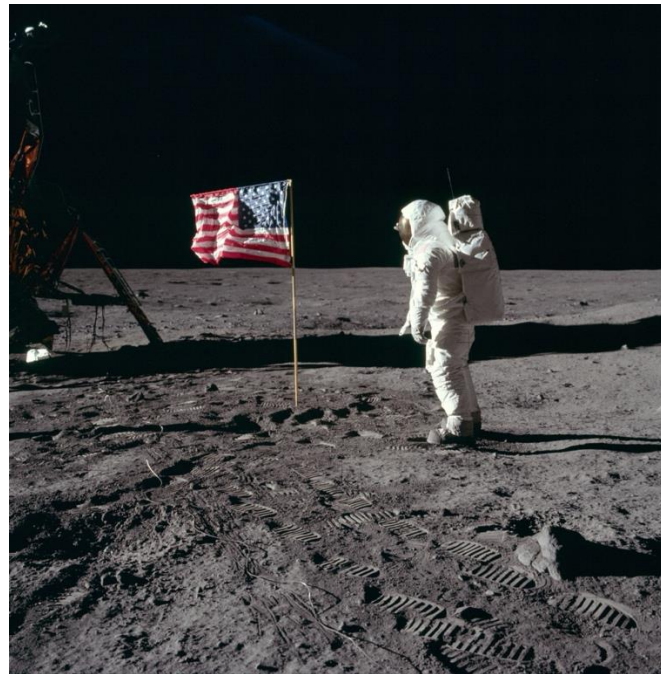


“Un petit pas per a l’home, un gran salt per la humanitat”



# Resultats de les missions APOLLO

Humans a la lluna	12 astronautes
Duració de les caminades lunars	80 h i 25 min
Roques recollides	2 200 roques (11 000 mostres), 382 kg



# Exploració de l'òrbita de la terra

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Transbordador espacial





# Llançament



Total: 135 missions

COLUMBIA



CHALLENGER



DISCOVERY



ATLANTIS

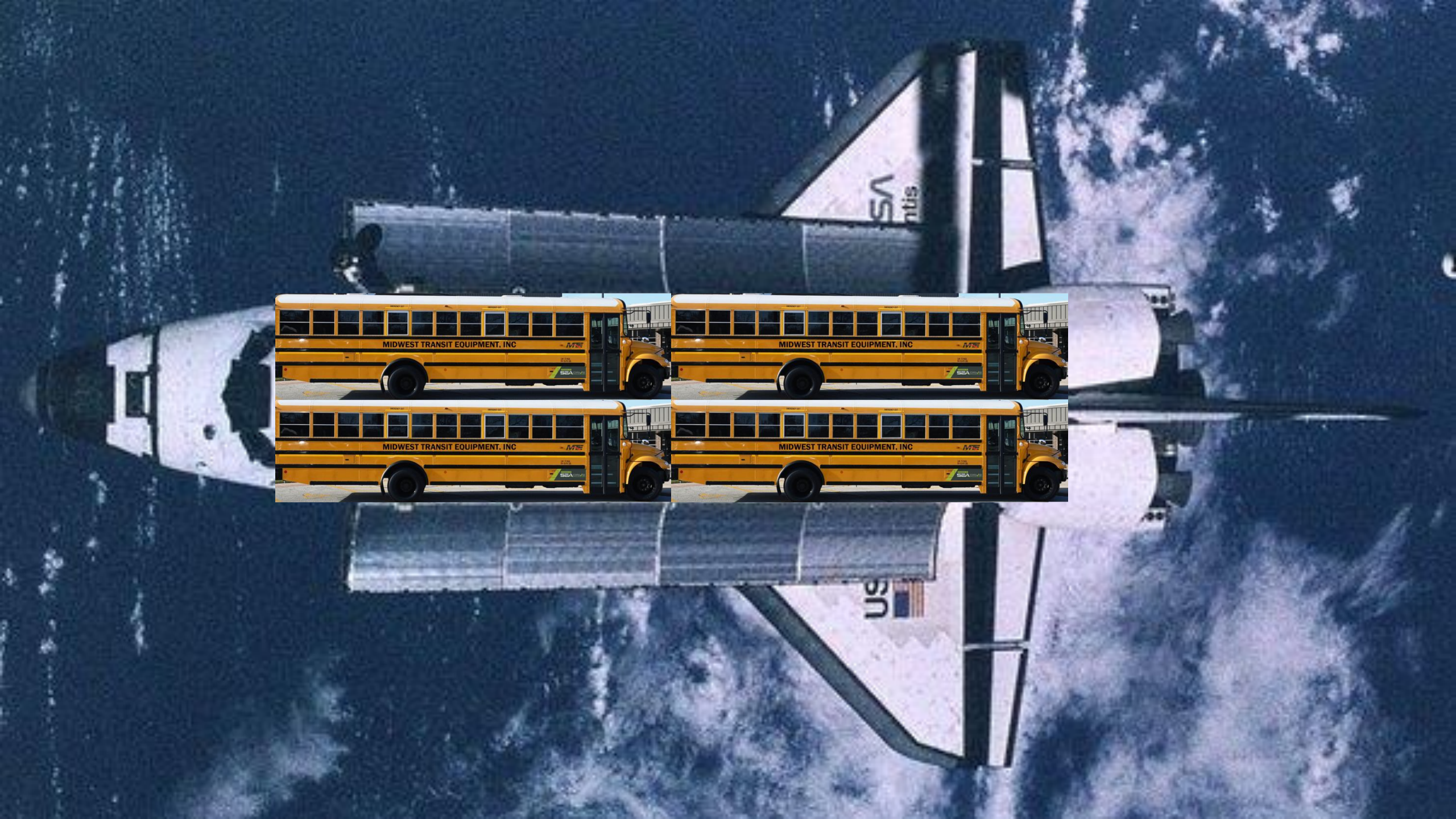


ENDEAVOUR

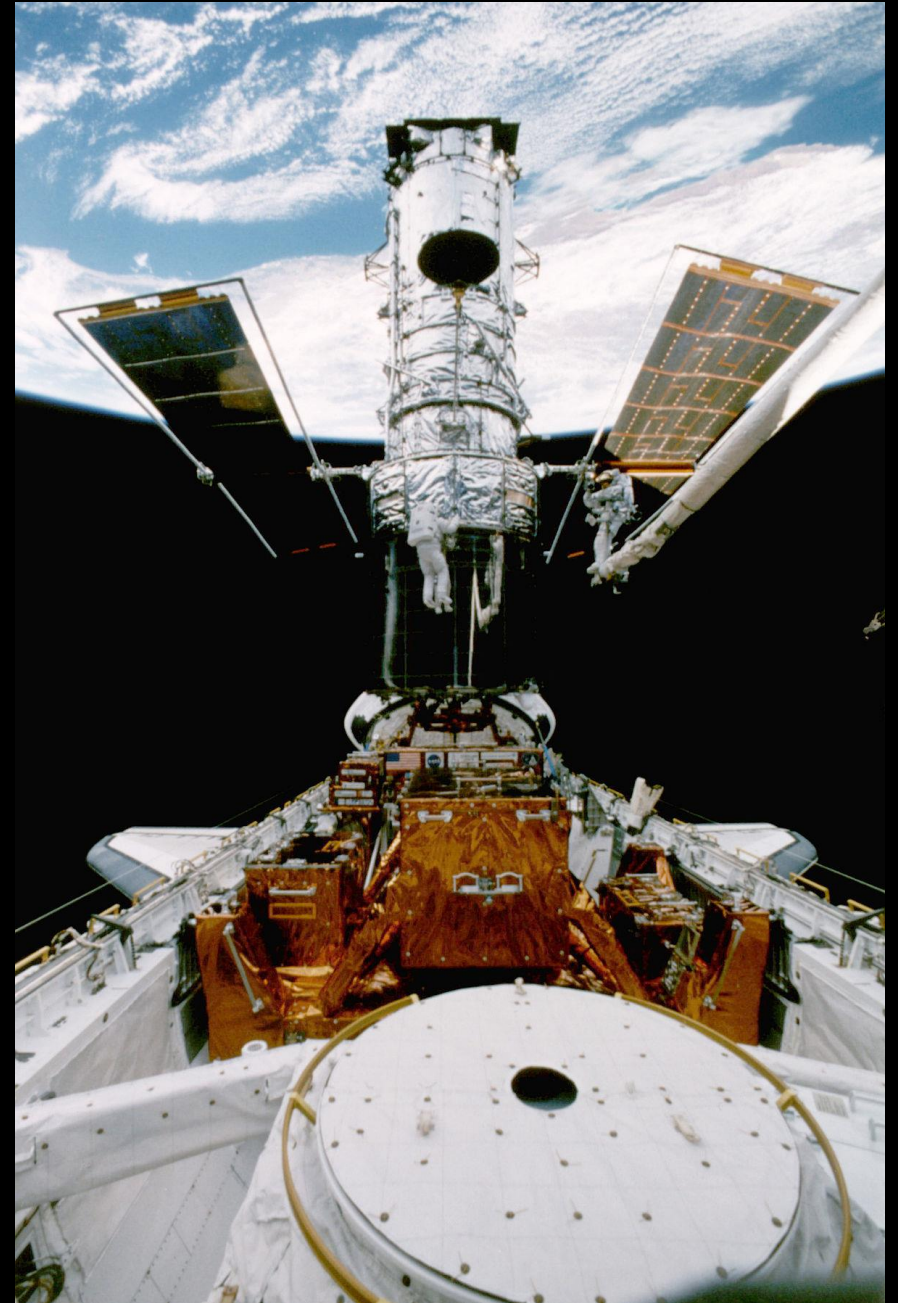




Enterprise



# Llançament del HST





# Construcció de l'ISS



Mòduls

4B IROSA



NASA Elements



ROSCOSMOS Elements



JAXA Elements



CSA Elements

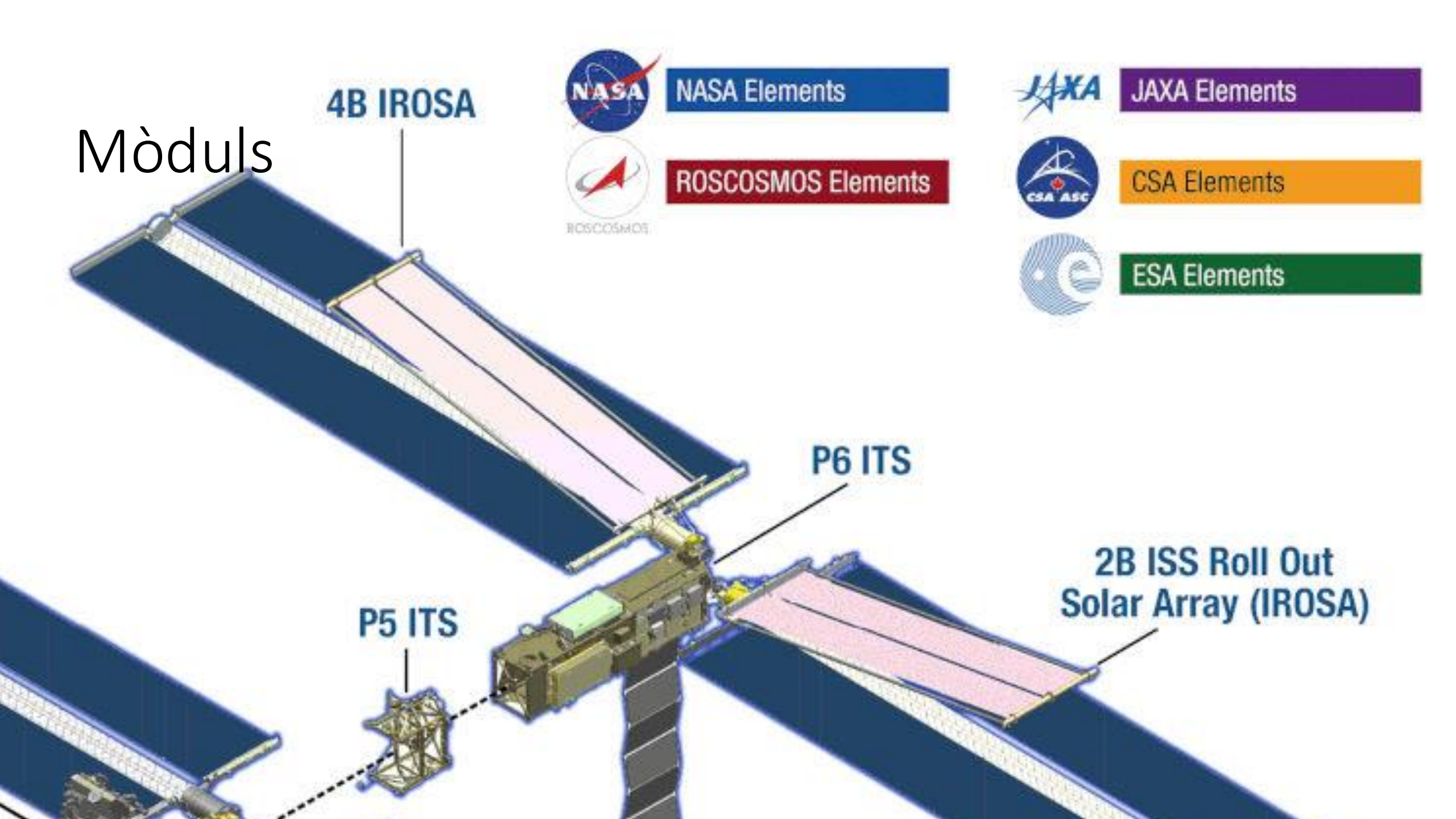


ESA Elements

P6 ITS

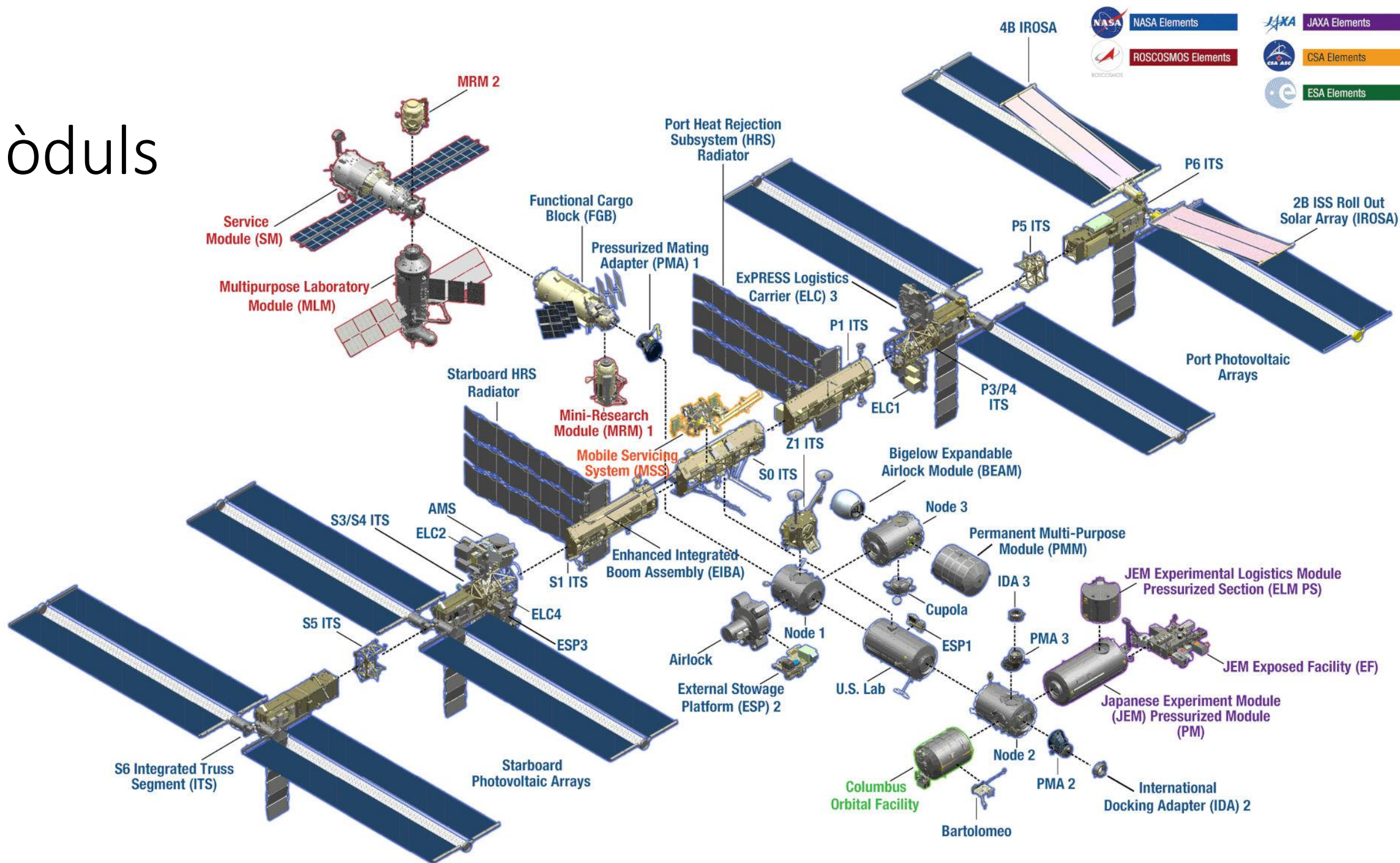
2B ISS Roll Out Solar Array (IROSA)

P5 ITS

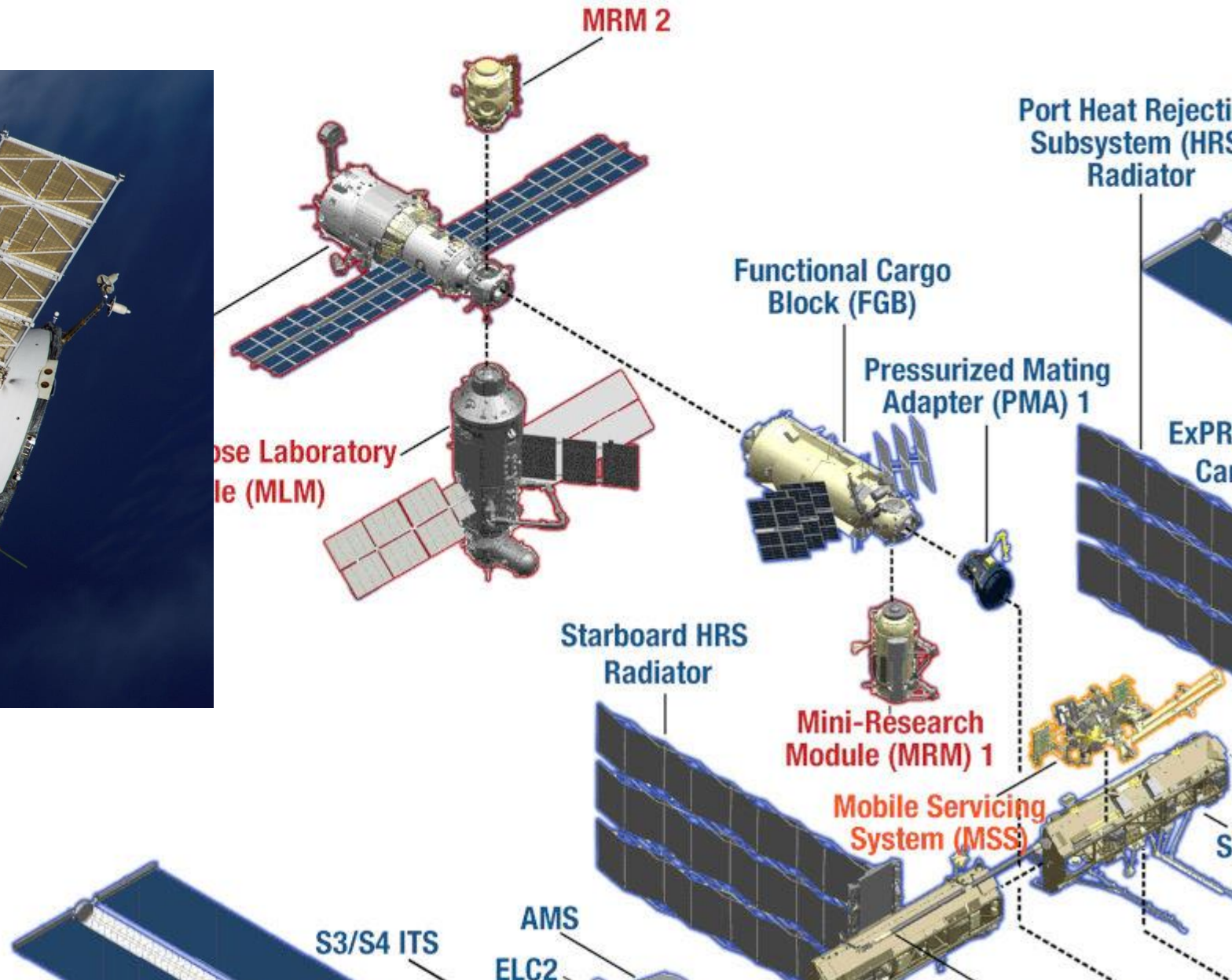




# Mòduls



# Mòduls





Columbus  
Orbital Facility

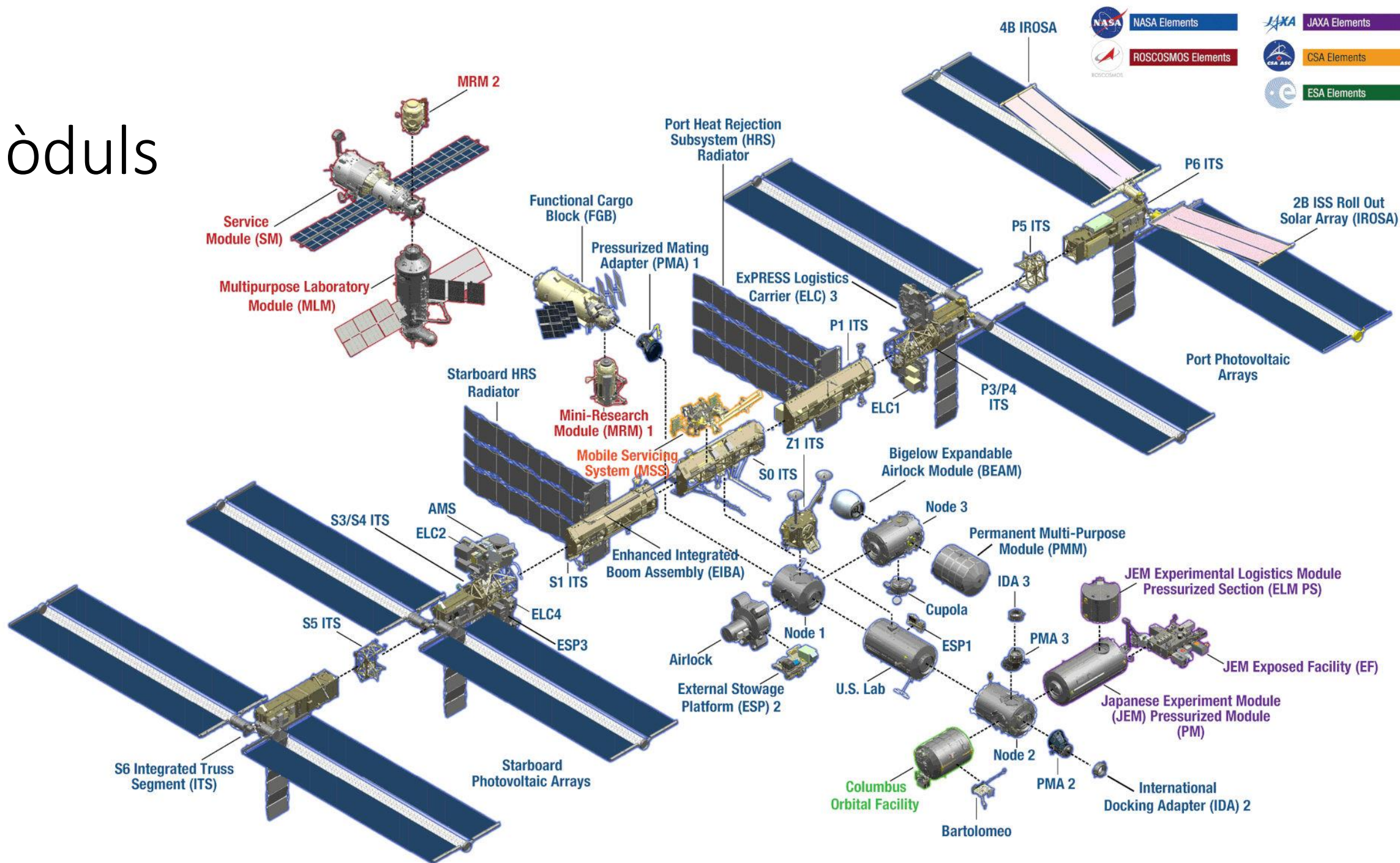
Bartolomeo

International  
Docking Adapter (IDA)

Mòduls



# Mòduls















# THE EFFECTS OF SPACE TRAVEL ON ASTRONAUTS

Astronauts are actually **TALLER** in space. Lack of gravity causes vertebrae to expand, which lengthens the spine.

Space travel gradually flattens back of the eyeball. **49%** of astronauts report vision problems that can persist for years after returning to Earth.

An astronaut loses the same amount of **bone mass** in a month that a woman with menopausal osteoporosis loses in one year.

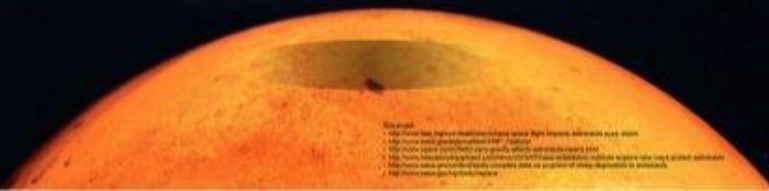
Loss of cardiac muscle leads to **reshaping of the heart**, which can become more spherical. Irregular heartbeats and heart hardening have also been reported.

Due to high stress and circadian rhythm disruption in low gravity, astronauts only **sleep 5-6 hours** per night.

Exposure to microgravity causes muscle **atrophy** and **shrink** almost immediately.

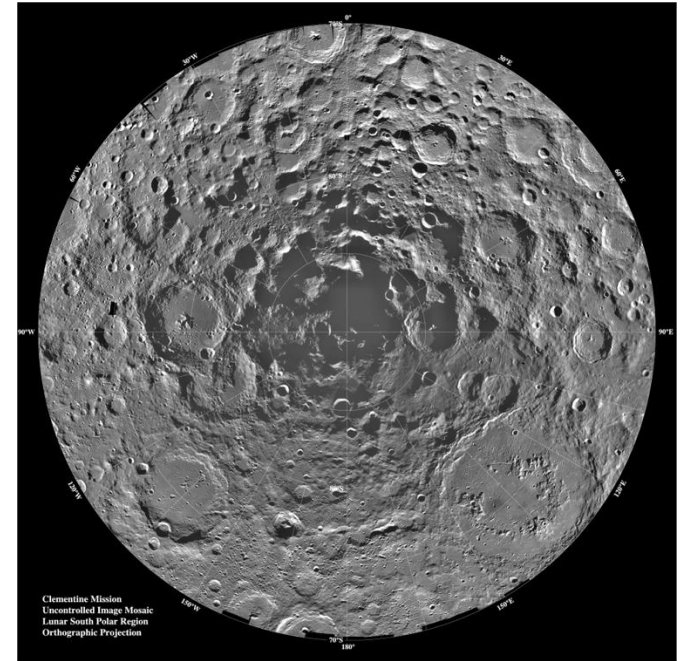
In space, astronauts are exposed to high levels of **radiation** which can lead to radiation sickness, cancer, central nervous system effects, and degenerative diseases.

Astronauts have been shown to lose **15-20%** of aerobic capacity in just two weeks.



1. NASA.gov  
 2. NASA.gov  
 3. NASA.gov  
 4. NASA.gov  
 5. NASA.gov  
 6. NASA.gov  
 7. NASA.gov  
 8. NASA.gov  
 9. NASA.gov  
 10. NASA.gov

# Missions ARTEMIS: retorn a la lluna





# HUMANITY'S RETURN TO THE MOON

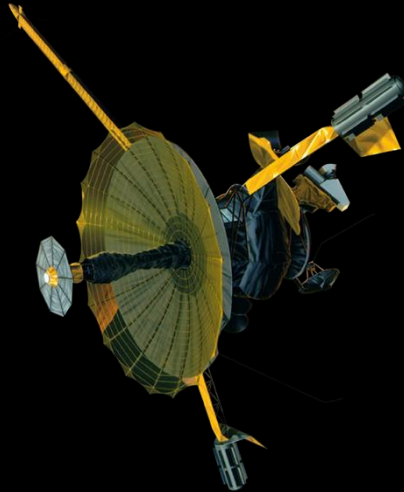
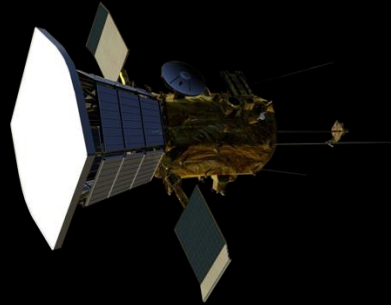


Moon to mars

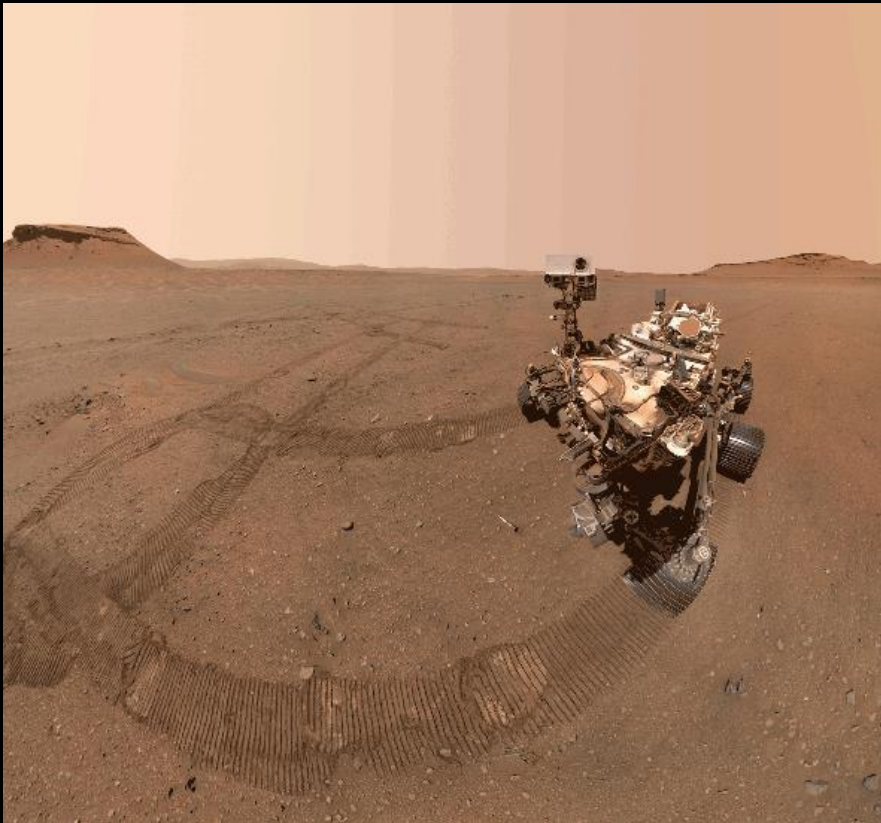
Size to Scale  
(distance not to scale)



Exploració del sistema solar



# Exploració robòtica





Moltes gràcies per la vostra atenció!