Gierth Olsson
CEO

OHB SWEDEN

SPACE SYSTEMS

Swedish space systems in a changing and globalized world

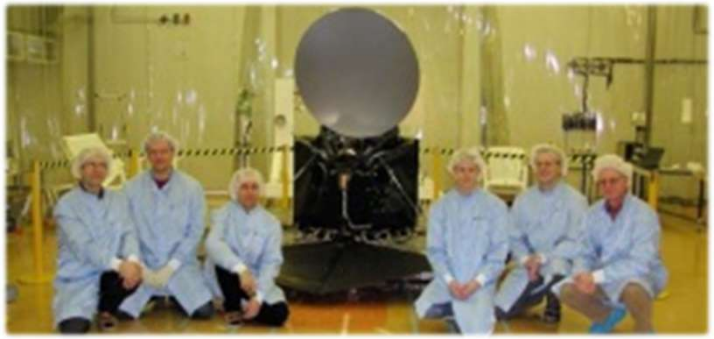
Aerospace Technology Congress in Solna, Stockholm Oct 12, 2016

OHB Sweden – Company Overview

- Former division of SSC with 35 years of heritage
- Since 5 years a part of the pan-European OHB Group
- Small Satellite Prime and System Integrator
- Subsystem supplier to larger satellites
- Core Competence areas:
  - Mission Architecture and Analysis
  - Spacecraft System Engineering, Integration and Operations
  - Attitude and Orbit Control subsystems
  - Propulsion subsystems
  - Check-Out and Ground Control Systems
- Currently +70 employees, 85% with academic degree and with an average of 13 years experience of space systems
- Since two years in new facilities in Kista, Stockholm







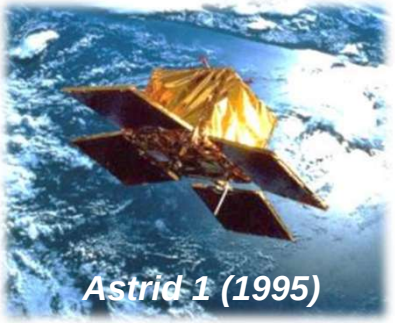

Heritage and achievements

EARLY SATELLITES

Spin stabilized attitude control


Viking (1986)


Freja (1992)


Astrid 1 (1995)


Astrid 2 (1998)

HIGH-PRECISION

Precise 3-axis attitude control for astronomy and Earth observation Still operated by OHB Sweden.

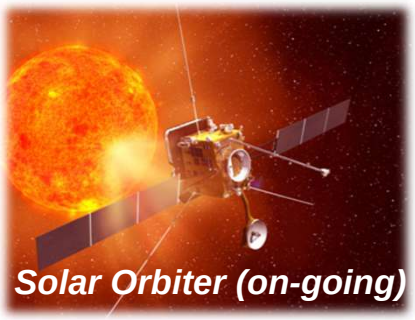

Odin (2001 still in ops.)

INTERPLANETARY

First ESA Lunar mission. Weak-thrust transfer to lunar orbit

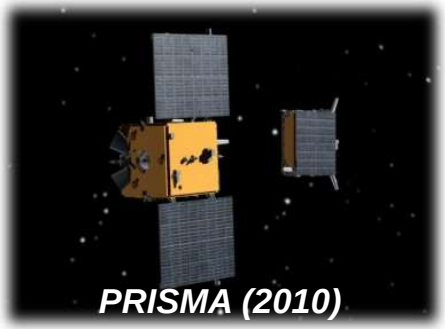

SMART-1 (2003)

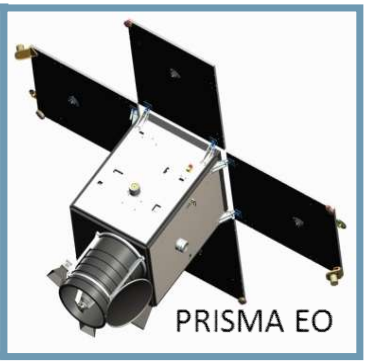
ESA mission to study the Sun. Complex series of gravitational-assist fly-bys


Solar Orbiter (on-going)

FORMATION-FLYING

Demonstration of Formation-Flying & Rendezvous using GPS, Vision-Based, and RF-navigation Still in operations.


PRISMA (2010)


PRISMA EO

GEOSTATIONARY

Small GEO Product Line with Electric Propulsion for station-keeping and orbit transfer


Small GEO (on-going)

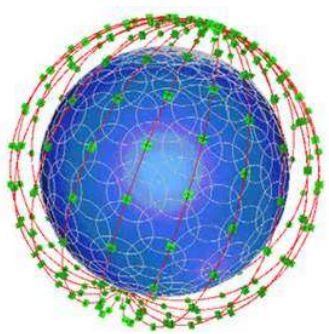
GOMSPACE

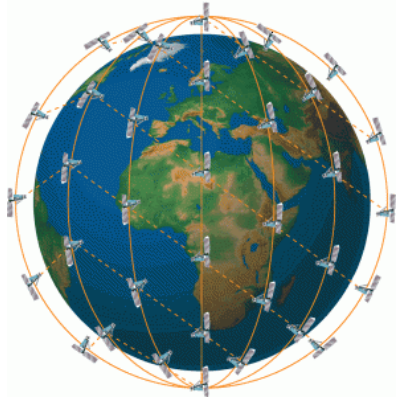
PLANET LABS

OneWeb
ACCESS FOR EVERYONE

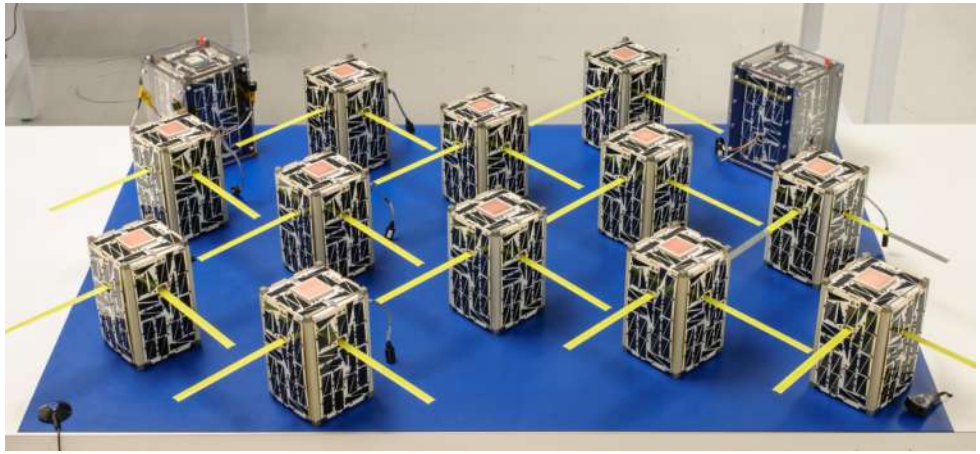
SPACEX

New actors with new business models





Mega constellations



Courtesy of NASA / Ames Research Center

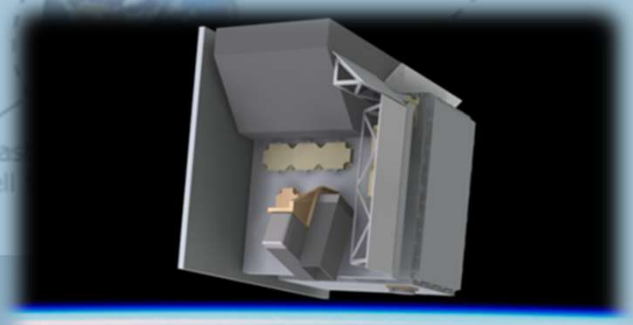
Smaller and more capable satellites

Global data services

Odin (2001 and in ops)

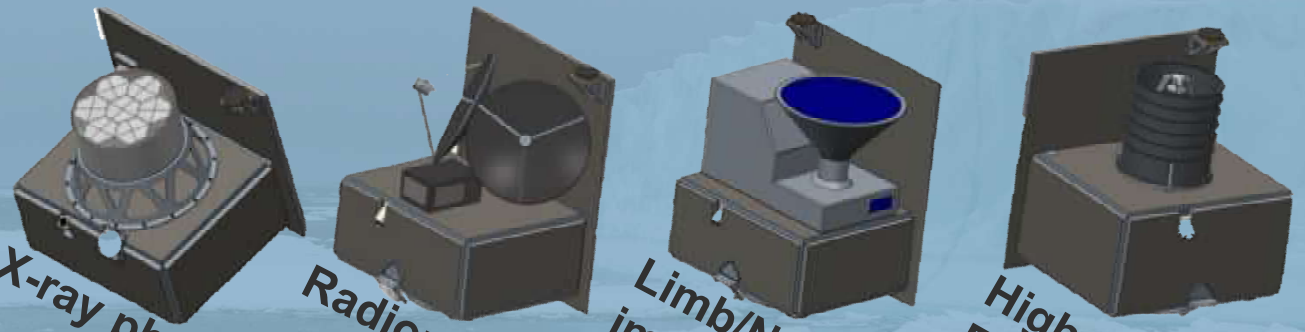
STEAM (study)

Need for new Polar Services:
- **Climate Monitoring**
- **Weather forecasts/Ice situation**
- **Communication**
- **Navigation**

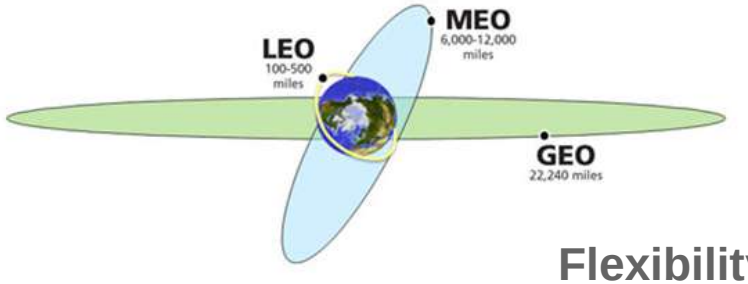


MATS (under production)

The InnoSat multi purpose platform

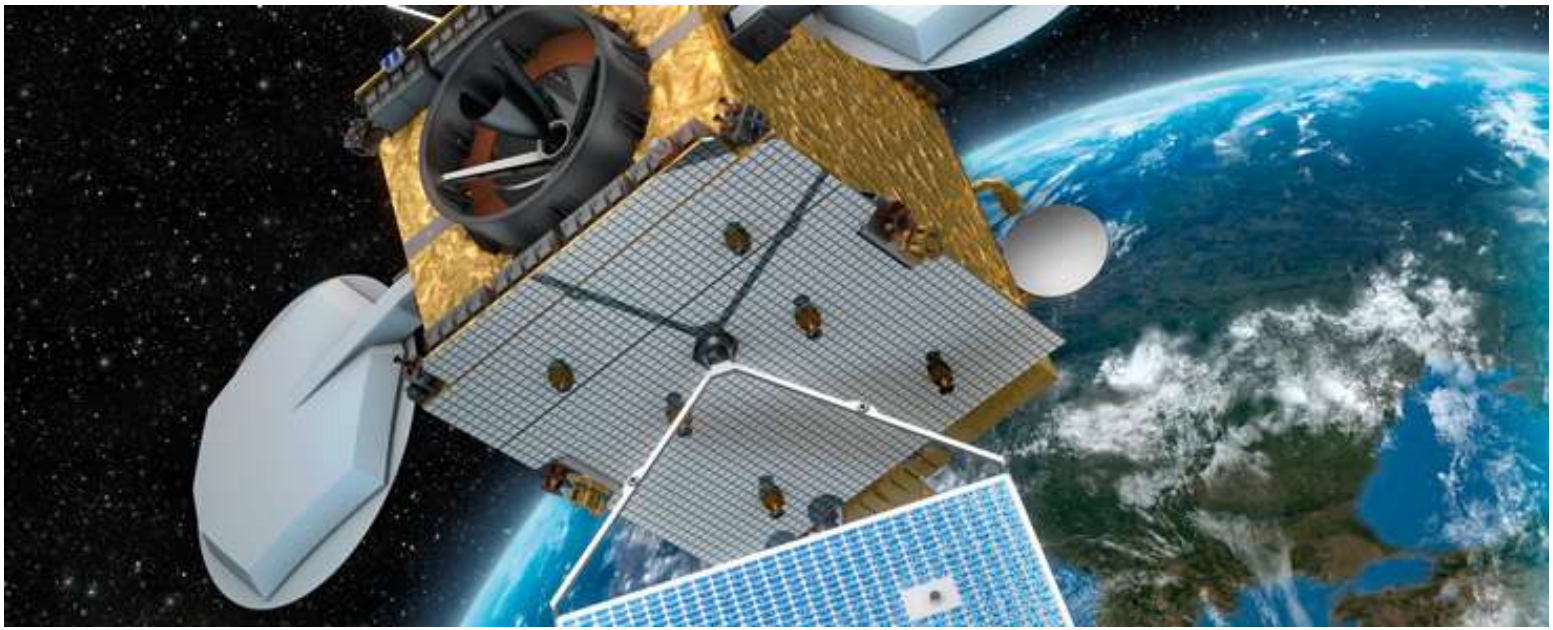


- ***InnoSat 2***
- ***ESA's Arctic and Space***
- ***Commercial Applications***

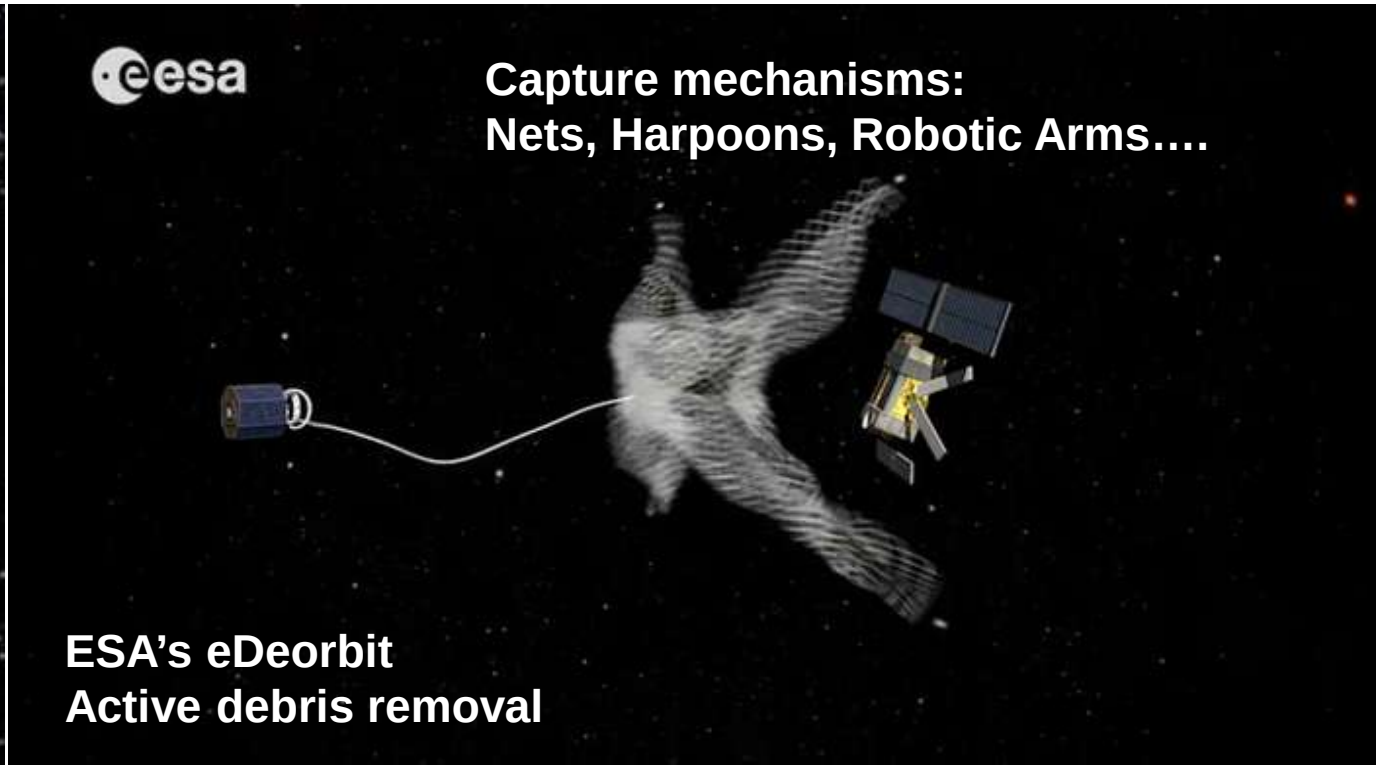


Flexibility in mass
Flexibility in launcher
Movable in orbit
In-orbit-servicing

Credit: Snecma



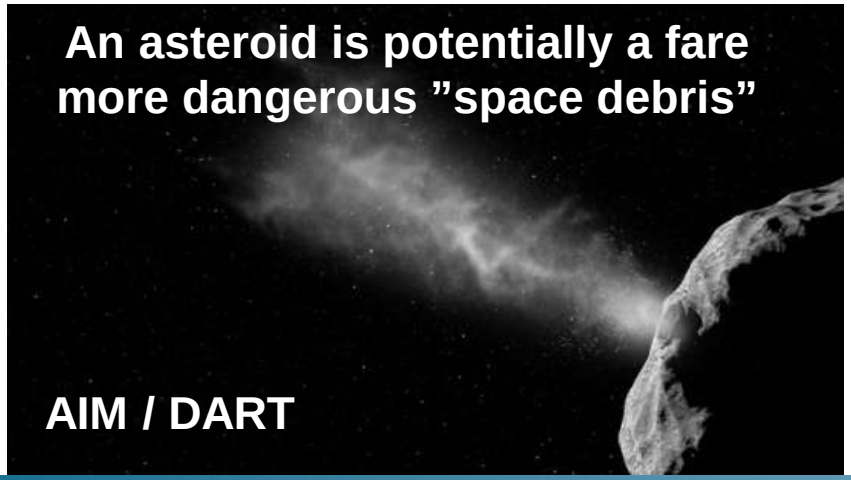

Curtesy of NASA/ESA



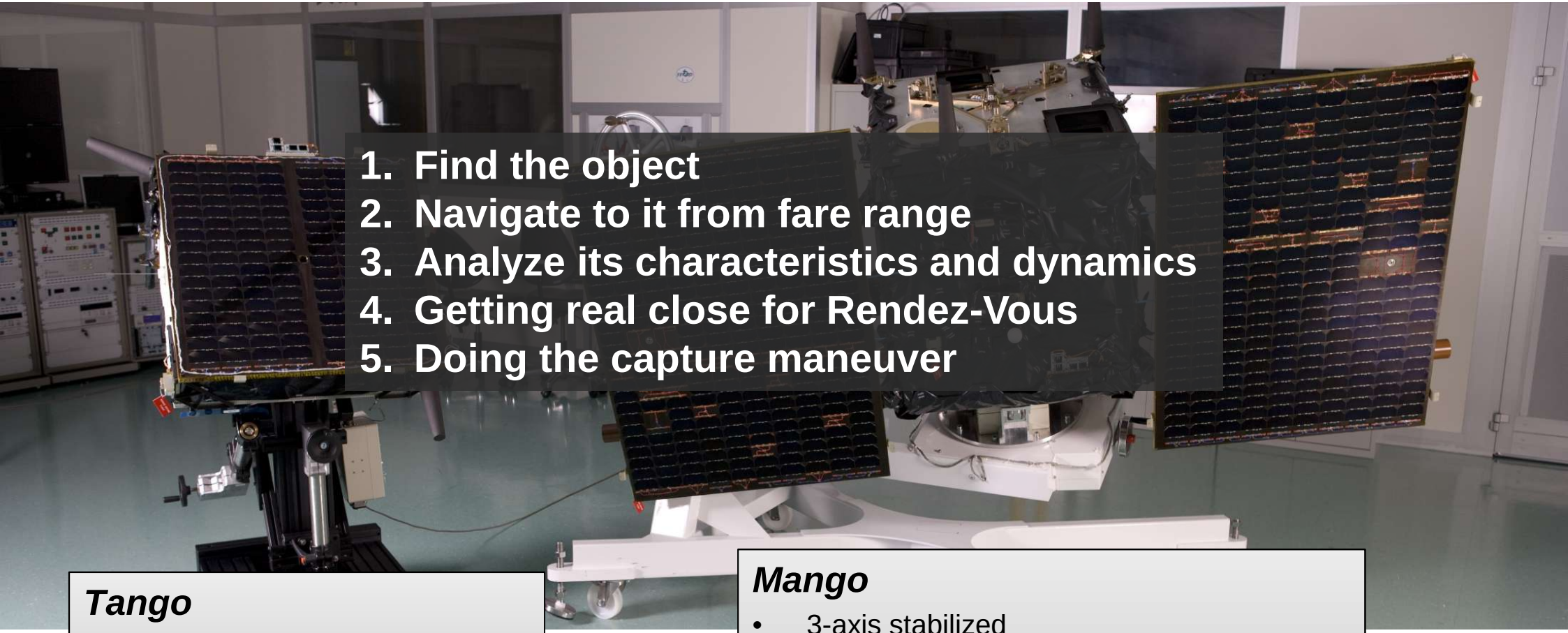
29,000 - for sizes larger than 10 cm

670,000 - for sizes larger than 1 cm

More than 170 million - for sizes larger than 1 mm



The PRISMA Satellites – tech.demo for debris removal



1. Find the object
2. Navigate to it from fare range
3. Analyze its characteristics and dynamics
4. Getting real close for Rendez-Vous
5. Doing the capture maneuver

Tango

- 3-axis stabilized
- Solar Magnetic control
- 40 kg launch mass
- FFRF, GPS, Inter-satellite link

Mango

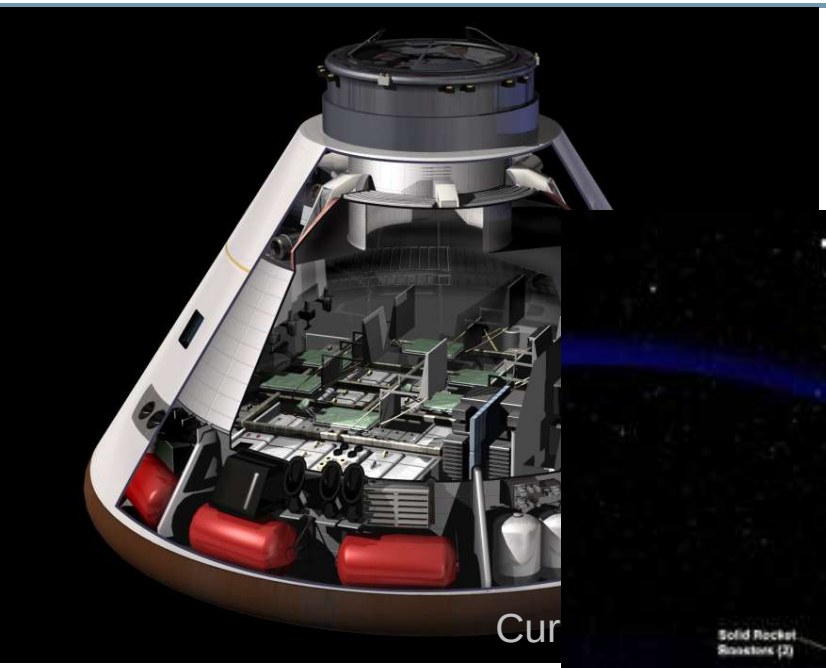
- 3-axis stabilized
- Attitude Independent Orbit Control
- 145 kg launch mass
- FFRF, GPS, VBS, DVS, Inter-satellite link
- 3 propulsion systems, >200 m/s Delta-V

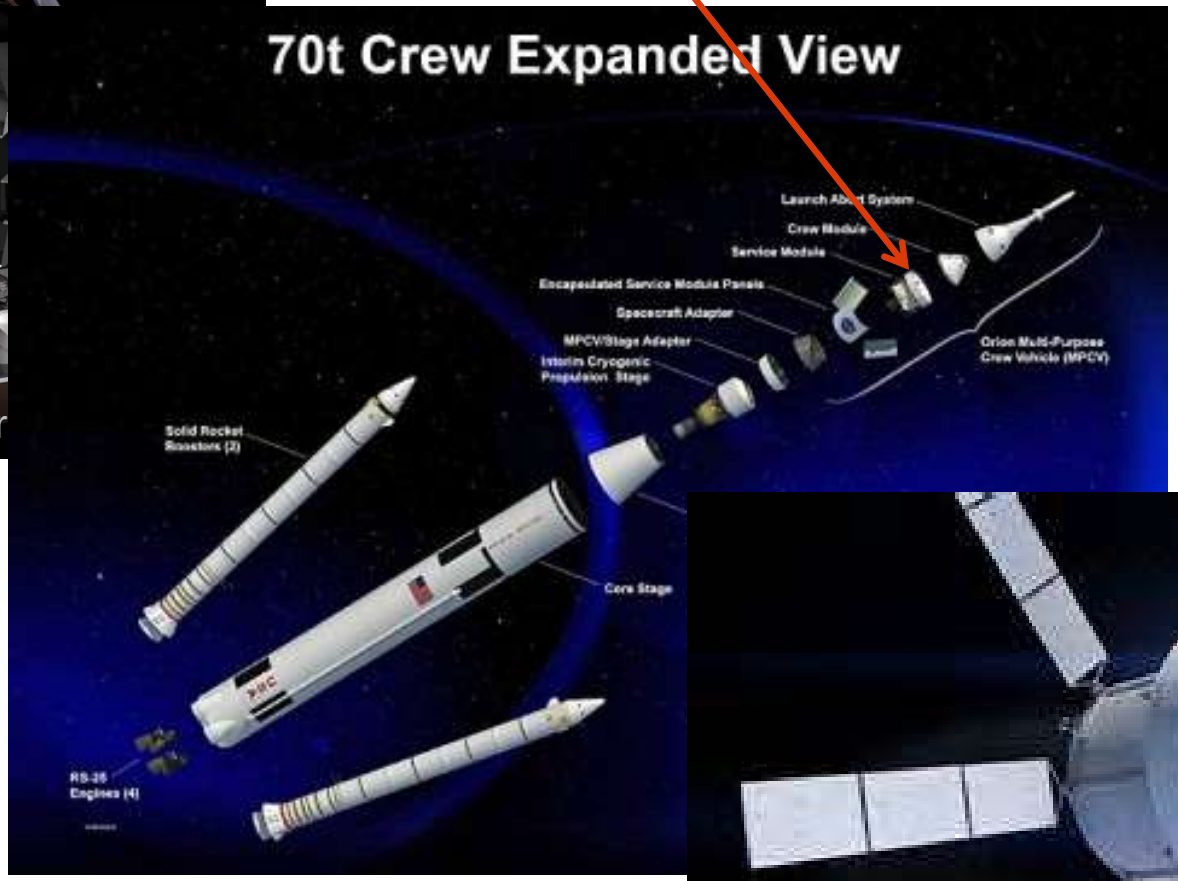
PRISMA Rendezvous Reconstruction and Video from Orbit

Recon-
struction
of real
flight data

Real pics
from space

Will NASA be first to Mars? Now the Orion Propulsion QM in production in Kista





Will NASA be first to Mars? Now the Orion Propulsion QM in production in Kista


OHB
SWEDEN
Thank you!
Visit www.ohb-sweden.se for more information