

SPACE

ENABLING FIRST FLIGHT SUCCESS
FOR MORE THAN 70 YEARS



REVOLUTIONIZING THE WAY TO SPACE

Moog designs and manufactures components and systems to survive the harsh environments of space travel. The space industry has trusted Moog as a reliable source for solutions that work the first time, every time, since the inception of spaceflight. Moog continues to make significant investment in innovative spacecraft buses, propulsion facilities, metal additive manufacturing, avionics, and innovative in-space delivery systems.

SPACE DIVISION AT A GLANCE

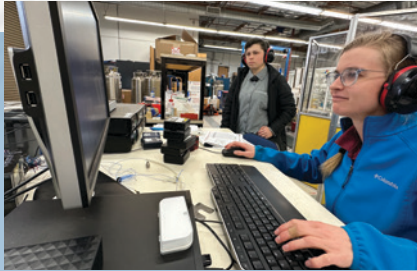
- 60+ years of Spaceflight Heritage
- 1,200 Employees
- \$407M in 2023 Revenue

MOOG SPACE FACILITIES

- Huntsville, Alabama
- Gilbert, Arizona
- Chatsworth, California
- Mountain View, California
- Arvada, Colorado
- East Aurora and Niagara Falls, New York
- Nieuw-Vennep, Netherlands
- Reading, United Kingdom
- Hiratsuka, Japan

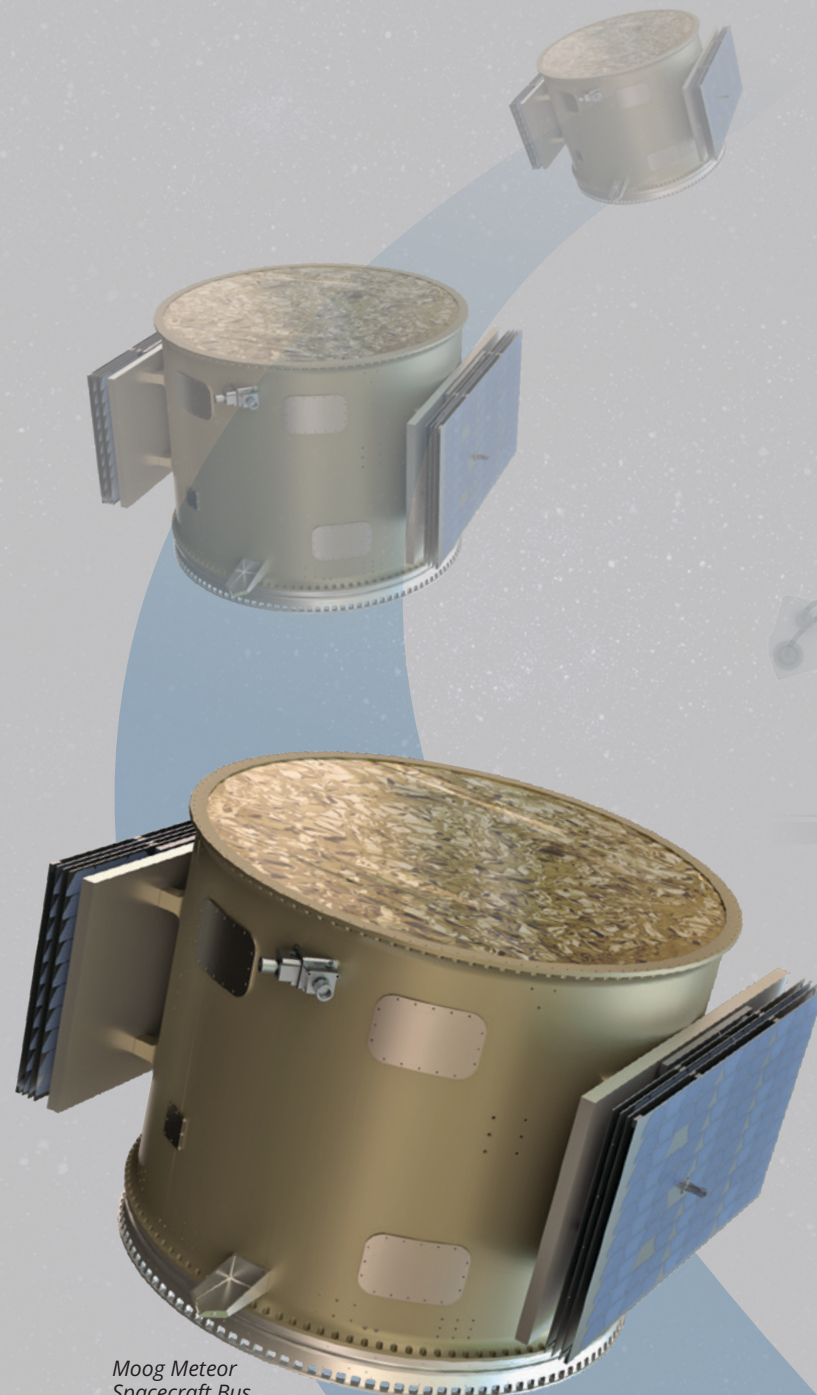
"Our philosophy at Moog is a simple one. We believe in the people who work for us."

Bill Moog

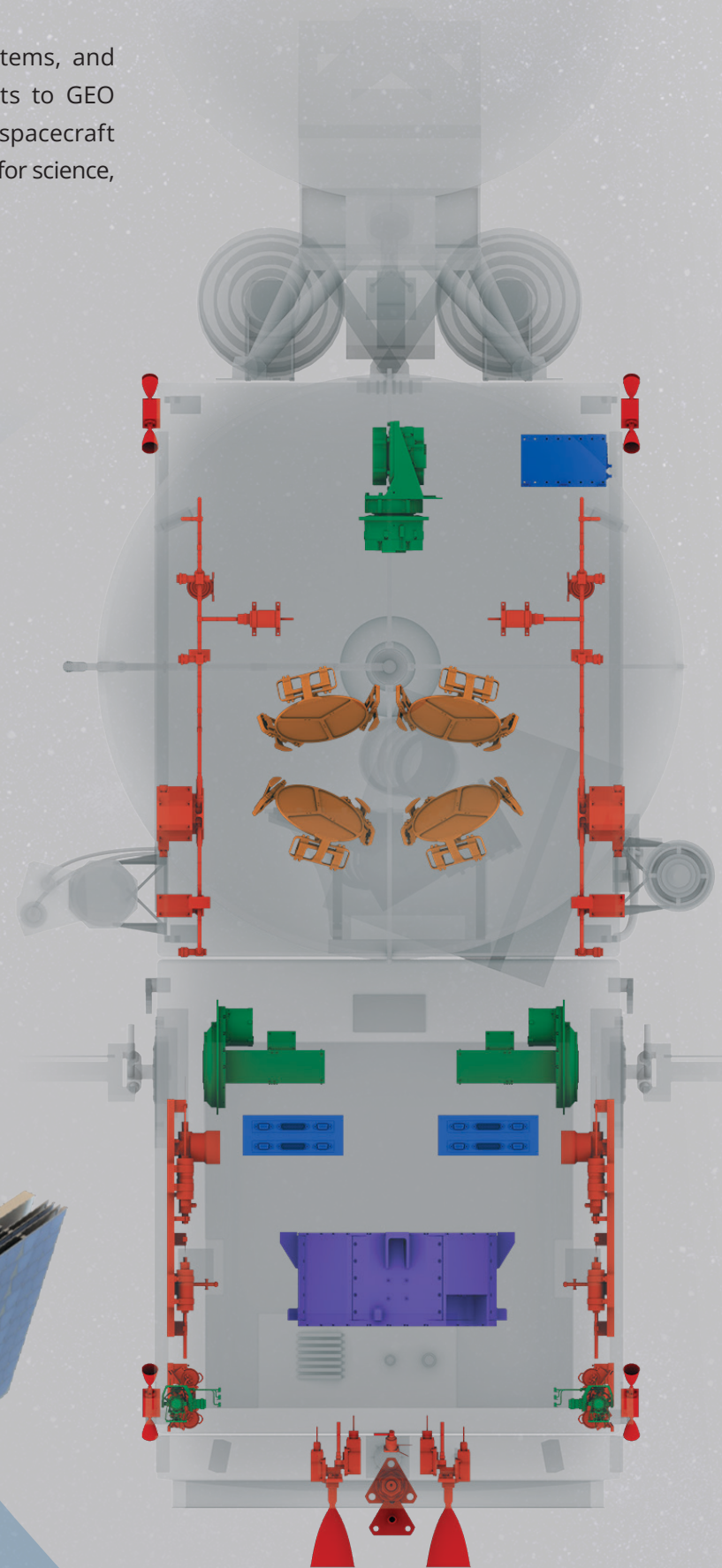


SPACECRAFT TECHNOLOGIES

Moog is a proven leader in components, subsystems, and systems for spacecraft of all sizes, from smallsats to GEO spacecraft. Moog has been successfully providing spacecraft controls, in-space propulsion, and major subsystems for science, military, and commercial operations.

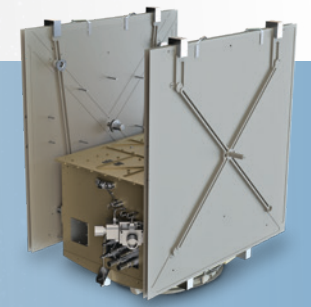


Moog Meteor Spacecraft Bus



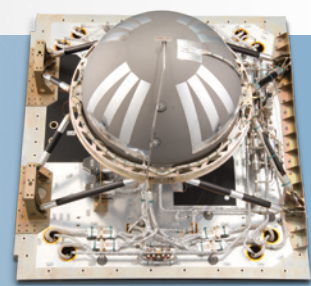
SPACE VEHICLES

- Meteorite: ESPA Class Bus, 3-5 Years in High LEO
- Meteor: Medium Spacecraft Bus for LEO to Lunar
- SL-OMV: Propulsive Tug for LEO CubeSat Missions



PROPULSION

- Components and subsystems
- Chemical, electric, cold gas, and green propulsion
- Station keeping and attitude control thrusters from 1N to 500N



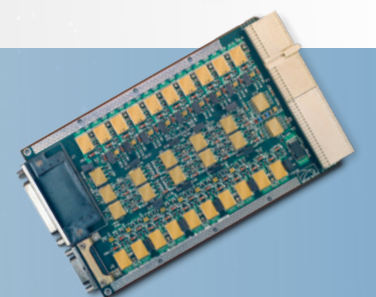
AVIONICS

- High performance and radiation-tolerant avionics
- Command and data handling, power control/distribution, and motor controllers
- Payload processing, data storage, and GPS receivers
- Onboard computing, artificial intelligence and machine learning



POWER SYSTEMS

- High-power control systems
- Power for telemetry, solar array, and battery management
- DC converters and switching



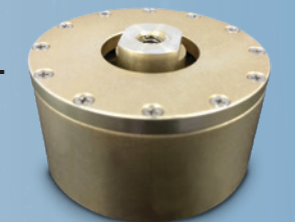
MECHANISMS

- Rotary and linear actuators for spacecraft motion control
- Solar array drives, gimbals, and antenna pointing mechanisms
- Control electronics and specialty positioners



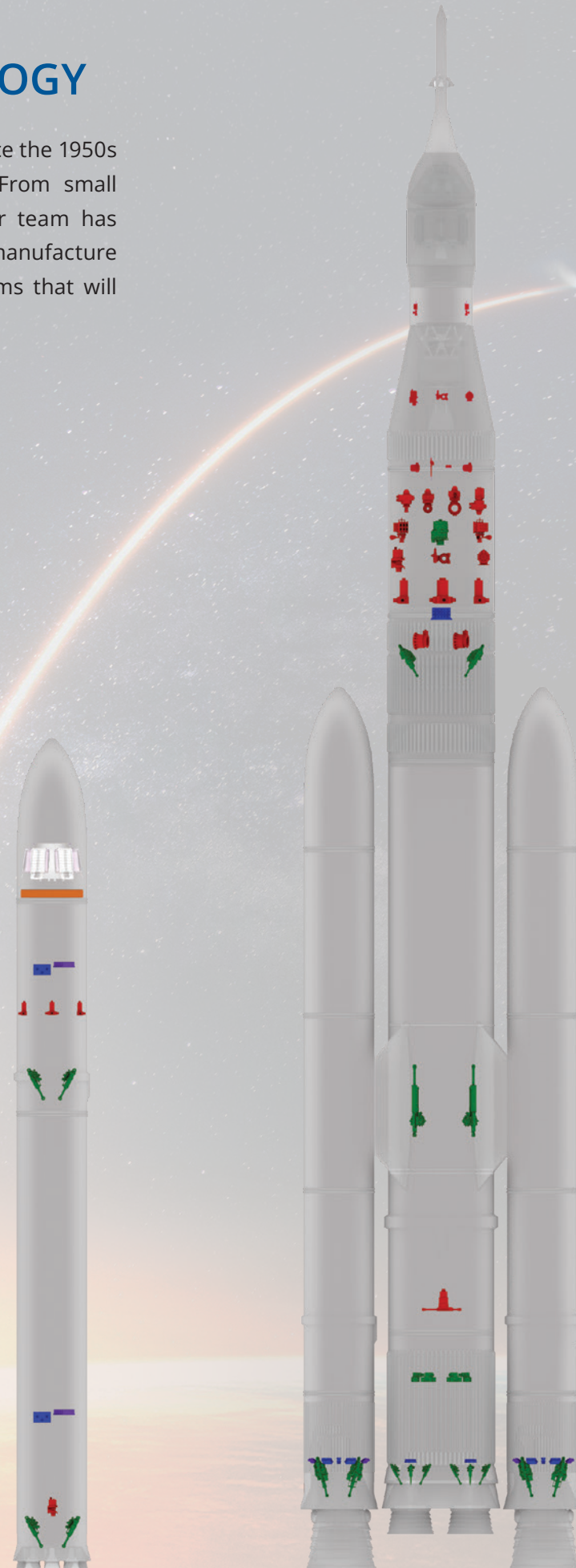
PAYLOAD ADAPTERS, SHOCK AND VIBRATION CONTROL

- Vibration and shock isolation solutions
- SoftRide and ShockWave products
- Payload adapters and ESPA ring



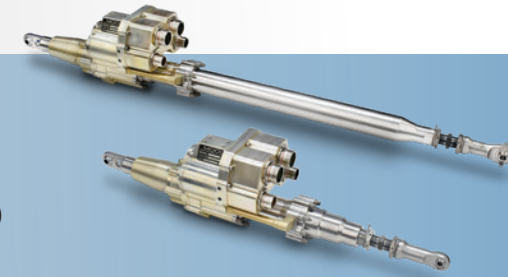
SPACE ACCESS TECHNOLOGY

Moog served the global space access market since the 1950s with the original Moog hydraulic servovalve. From small launchers to NASA's Space Launch System, our team has extensive experience to design, develop, and manufacture components, subsystems, and integrated systems that will assist your journey to space.



ACTUATION

- Motion control for launch vehicles and space planes
- Electrohydraulic (EH), Electromechanical (EM), and Electrohydrostatic (EHA)
- Thrust vector, fin, flap, and engine control



PROPULSION

- Earth-storable and cryogenic propulsion components and systems
- Fluid and pneumatic controls for engines
- Cold gas and Earth-storable thruster for roll control



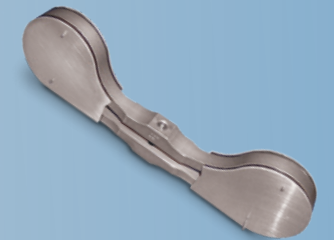
AVIONICS AND POWER SYSTEMS

- Control and power for actuation systems
- Data acquisition and engine controls
- Inertial navigation sensors and integrated guidance, navigation, and control solutions
- Power distribution and management



SHOCK AND VIBRATION CONTROL

- Shock and vibration isolation solutions
- Optimized for coupled payload and launch systems
- Significant reductions in launch environments
- More flexibility to maximize mission capabilities



ESPA RING AND PAYLOAD ADAPTERS

- Industry standard for small satellite rideshare and bus structures
- ESPA is payload configurable
- Payload adapters for any mission scenario



SURFACE AND HUMAN EXPLORATION

Moog technology is radiation-hardened to play critical roles in power conversion and management, data control and handling, and much more, enabling human exploration to the Moon, Mars, and beyond. Moog stands the test of time, as our hardware has supported human operations on the International Space Station for more than 20 years.



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ENVIRONMENTAL CONTROL AND LIFE SUPPORT

- Components and systems
- Valves, regulators, and quick disconnects
- Oxygen, nitrogen, water, and waste removal solutions
- High pressure, low pressure, and thermal regulation
- Applications: rovers, habitats, and deep space

AUTOMATION AND ARTIFICIAL INTELLIGENCE

- Autonomous technology, actuation systems, and fluid transfer
- Enabling docking and in-orbit assembly
- Investments in edge processing, artificial intelligence, and machine learning

ELECTRIFICATION

- Components to complete systems
- Electric motors, mechanisms, and actuators
- Radiation-hardened computing, control systems, and power management and distribution
- Enabling electric platforms for a sustainable lunar presence

POWER MANAGEMENT AND CONVERSION

- Relevant solutions for solar and fission technologies
- Industry leading efficient (above 95%) high-power voltage converters and distribution systems



WHEREVER YOUR MISSION NEEDS TO BE

SPACECRAFT



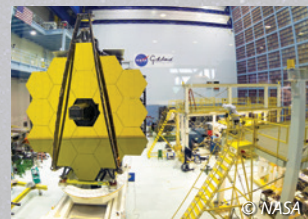
AEOH



GOES-R



ORBCOMM Generation 2 (OG2)



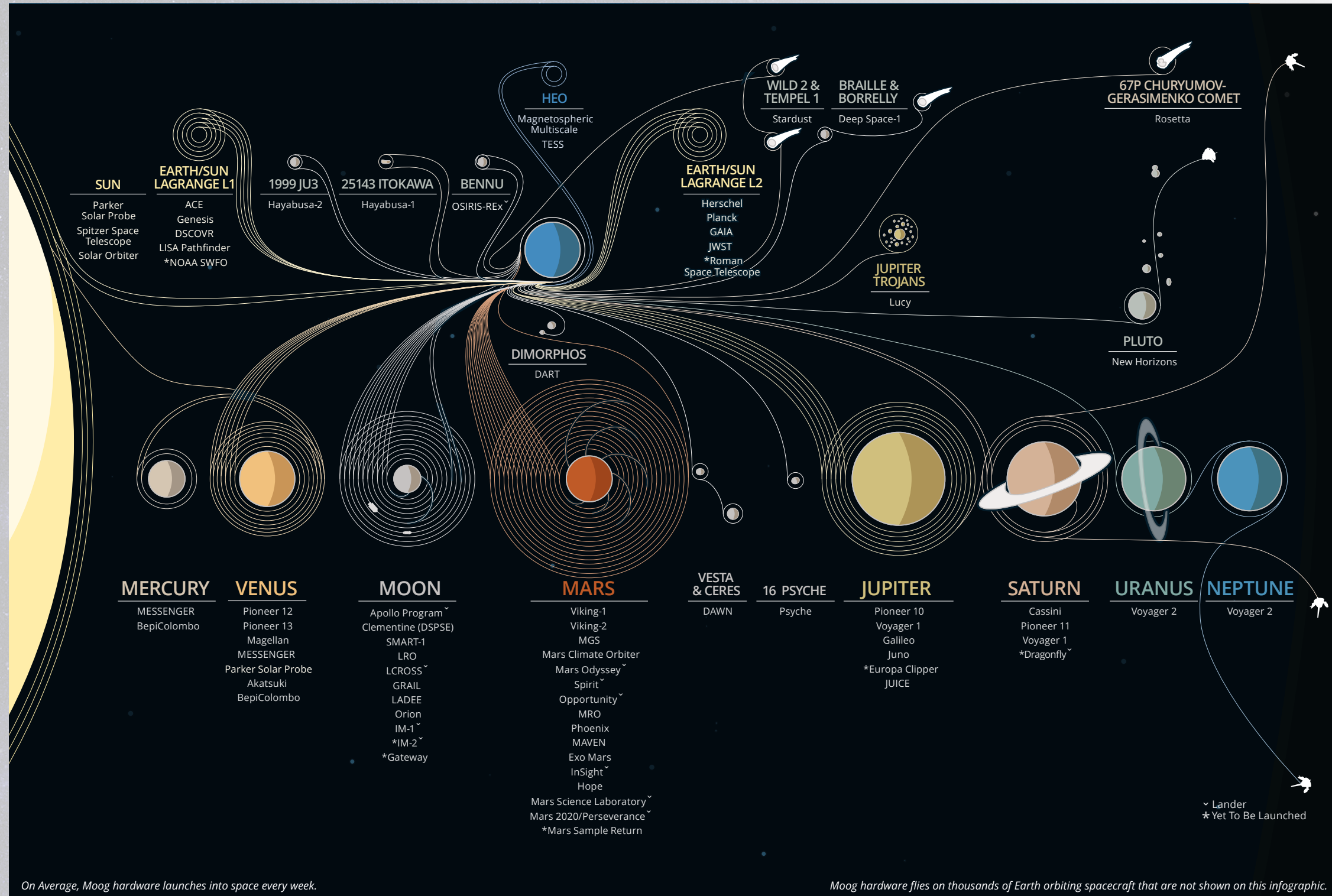
JWST



Galileo



1300



On Average, Moog hardware launches into space every week.

Moog hardware flies on thousands of Earth orbiting spacecraft that are not shown on this infographic.

LAUNCH VEHICLES



Vulcan



New Glenn



Ariane 5



SLS



Falcon 9



Atlas V

MOOG

Shaping the way our world moves™

For More Information:
Chet Crone +1.818.266.8337
ccrone@moog.com



Moog Space and Defense



Moog Inc.



@Moog_Inc



@Moog.Inc