



InSight

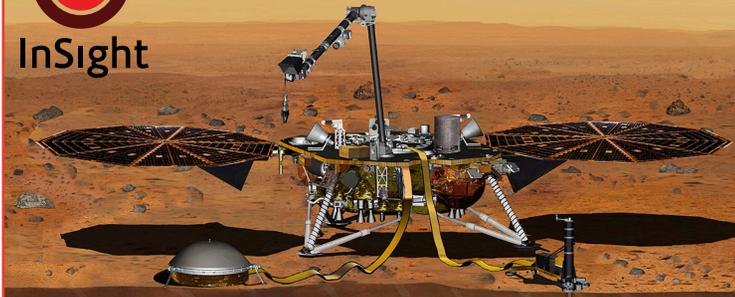
EXPLORATION OF THE MARTIAN INTERIOR

LOCKHEED MARTIN





InSight



Credit: NASA/JPL-Caltech

## InSight Science

Peering into the interior of a terrestrial planet, other than our own, from an in-situ, surface-based platform.

## InSight Will:

- Determine the size, composition, and physical state of the core
- Determine the thickness and structure of the crust
- Determine the composition and structure of the mantle
- Determine the thermal state of the interior
- Measure the rate and distribution of internal seismic activity
- Measure the rate of meteorite impacts on the surface

InSight is more than just a Mars mission—It's the study of the formation and evolution of all terrestrial planets.



SEIS



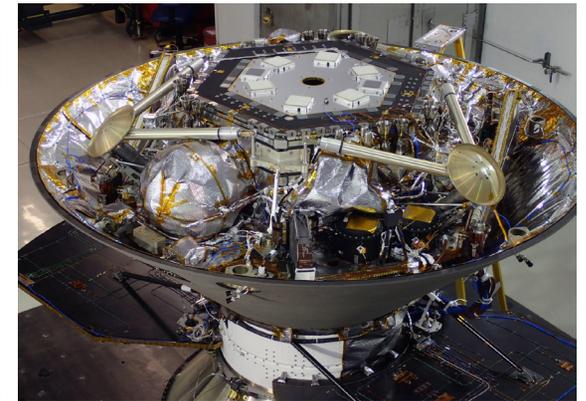
HP<sup>3</sup>



IDS

## Lockheed Martin is the InSight prime contractor and is responsible for the complete Spacecraft System—Cruise Stage, Aeroshell and Lander

- Proven spacecraft design—Significant heritage from the successful 2007 Phoenix mission including a cruise, entry, descent and landing system that has demonstrated capability for safe landing on Mars
- Low-risk development—Heavily leverages current-generation avionics presently in use on numerous Lockheed Martin interplanetary spacecraft
- Surface operations—Long mission lifetime with low operational costs and reliable data return
- Payload accommodation—Integrating and testing science instruments from a variety of partner institutions



## Instruments to Explore the Martian Interior:

- SEIS: Seismic Experiment for Interior Structure—An extremely sensitive, surface-based single-station seismometer to monitor seismic activity, tidal displacements, and surface impacts
- HP<sup>3</sup>: Heat Flow and Physical Properties Package—A penetrating probe to determine the geothermal heat flux; capable of up to 5 meters of depth
- IDS: Instrument Deployment System—A robotic arm to deploy the SEIS and HP<sup>3</sup> to the surface, and two cameras to support a variety of operations
- APSS: Auxiliary Payload Sensor Suite—A complement of sensitive environmental sensors to measure wind velocity, atmospheric temperature and pressure, and the magnetic field
- RISE: Rotation and Interior Structure Experiment—An X-band Doppler tracking experiment to measure rotational variations of the planet