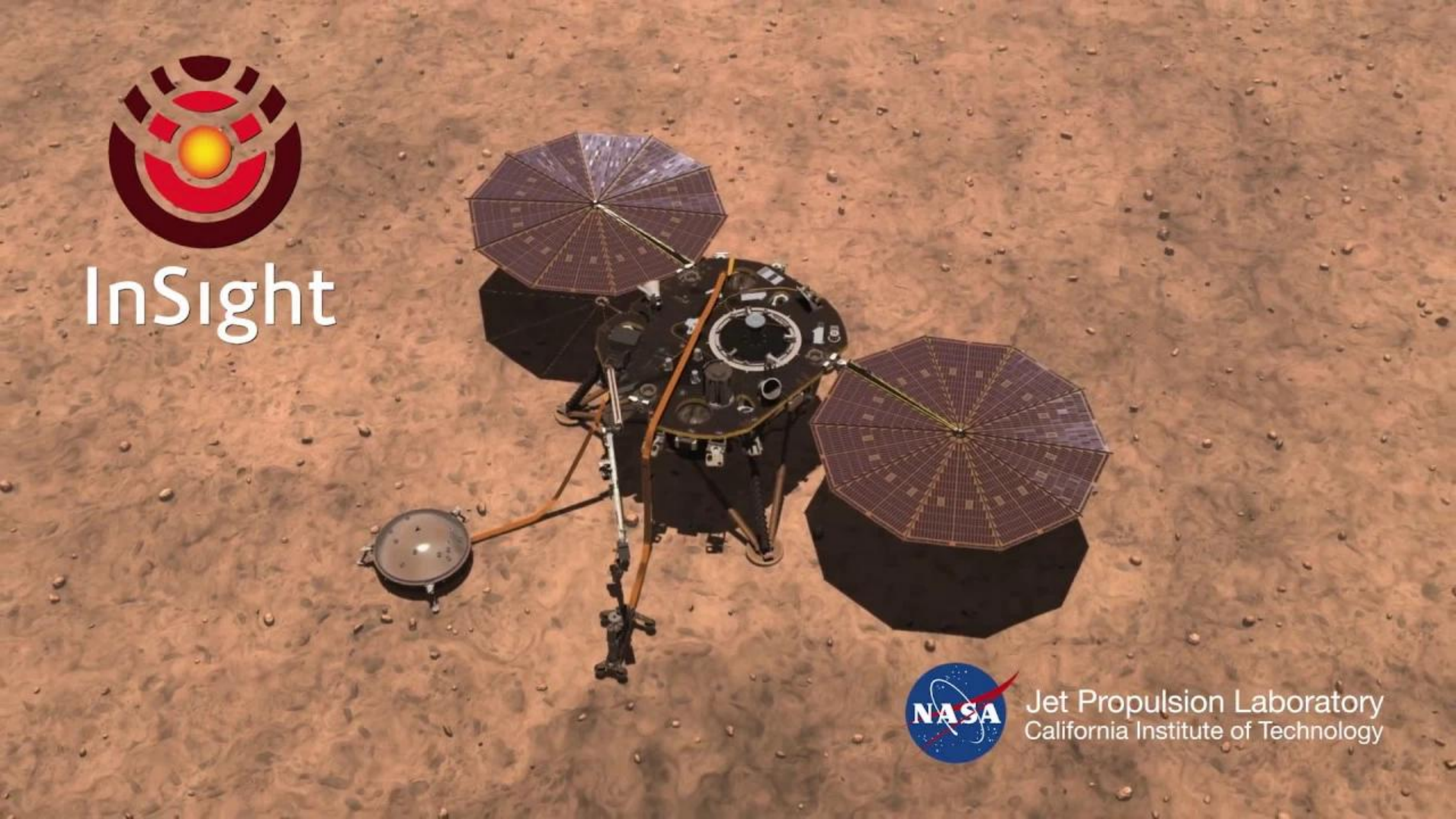
InSight
NASA
Jet Propulsion Laboratory
California Institute of Technology

1
00:00:01,101 --> 00:00:03,903
[Bruce Banerdt] The basic idea
of InSight is to map out

2
00:00:03,936 --> 00:00:06,272
the deep structure of Mars.

3
00:00:06,305 --> 00:00:08,007
We know a lot about the
surface of Mars.

4
00:00:08,040 --> 00:00:09,709
We know a lot about
its atmosphere

5
00:00:09,742 --> 00:00:11,778
and even about
its ionosphere

6
00:00:11,811 --> 00:00:14,147
but we don't know very much
about what goes on

7
00:00:14,180 --> 00:00:16,582
a mile below the surface;
much less 2000 miles

8
00:00:16,615 --> 00:00:18,384
below the surface
down to the center.

9
00:00:18,417 --> 00:00:20,186
And, this will be the first
mission that's going to Mars

10
00:00:20,219 --> 00:00:24,590
specifically to investigate
the deep inside of Mars.

11

00:00:24,623 --> 00:00:26,559
[Tom Hoffman] We know that
the Earth is habitable.

12
00:00:26,592 --> 00:00:28,461
We know that Mars is not.

13
00:00:28,494 --> 00:00:30,296
There might be something
that we find out

14
00:00:30,329 --> 00:00:32,865
in terms of the
structure of Mars

15
00:00:32,898 --> 00:00:34,634
versus the
structure of Earth

16
00:00:34,667 --> 00:00:37,303
that maybe can help us
understand why that is.

17
00:00:37,770 --> 00:00:40,106
[Banerdt] InSight carries a
seismometer which measures the

18
00:00:40,139 --> 00:00:43,376
seismic waves that have traveled
through Mars from marsquakes

19
00:00:43,409 --> 00:00:46,679
and maps out to deep interior
structure of Mars.

20
00:00:46,712 --> 00:00:48,648
[Hoffman] We're gonna also
have a Heat Flow and

21
00:00:48,681 --> 00:00:50,249

Physical Properties Probe

22
00:00:50,282 --> 00:00:52,418
which will penetrate
into the Mars surface

23
00:00:52,451 --> 00:00:55,021
about five meters
or 16 feet

24
00:00:55,054 --> 00:00:57,123
to take the
temperature of Mars.

25
00:00:57,156 --> 00:00:59,125
[Banerdt] And it has a radio
science experiment

26
00:00:59,158 --> 00:01:01,194
which uses the radio
on the spacecraft

27
00:01:01,227 --> 00:01:04,697
to measure small
variations in the wobble of

28
00:01:04,797 --> 00:01:07,900
Mars's pole to understand more
about the structure

29
00:01:07,933 --> 00:01:09,936
and composition
of the core.

30
00:01:12,905 --> 00:01:15,341
[Jaime Singer] Insight will
be the first mission to

31
00:01:15,374 --> 00:01:17,710
pick instruments up off

the deck of the lander

32
00:01:17,743 --> 00:01:19,679
and place them on the
surface of Mars.

33
00:01:19,879 --> 00:01:22,381
I like to say that we're
playing the "claw game" on Mars

34
00:01:22,414 --> 00:01:23,483
with no joystick.

35
00:01:24,650 --> 00:01:27,086
The seismometer needs to be
installed in one place and

36
00:01:27,119 --> 00:01:30,623
basically not move in order to
get the best seismic data.

37
00:01:31,223 --> 00:01:33,126
[Hoffman] We also have a
wind and thermal shield

38
00:01:33,159 --> 00:01:35,194
that will then be
placed on top of that

39
00:01:35,227 --> 00:01:38,598
seismometer to protect it
further from the environment.

40
00:01:38,797 --> 00:01:42,235
[Singer] For the heat
flow probe, HP3,

41
00:01:42,268 --> 00:01:44,203
it also needs to
sit in one place,

42
00:01:44,236 --> 00:01:46,272
take a while
to hammer itself

43
00:01:46,305 --> 00:01:47,406
down into the ground

44
00:01:47,439 --> 00:01:48,975
and acquire the
thermal measurements

45
00:01:49,008 --> 00:01:51,010
over a long period of time.

46
00:01:54,346 --> 00:01:56,015
[Banerdt] Insight is a
mission to Mars but it's

47
00:01:56,048 --> 00:01:57,583
much much more than
a Mars mission.

48
00:01:57,616 --> 00:01:59,585
In some sense it's
like a time machine.

49
00:01:59,618 --> 00:02:02,088
It's measuring the
structure of Mars

50
00:02:02,121 --> 00:02:04,624
that was put in place 4 1/2
billion years ago

51
00:02:04,657 --> 00:02:07,693
so we can go back and
understand the processes

52

00:02:07,726 --> 00:02:10,463
that formed Mars just
shortly after it was accreted

53
00:02:10,496 --> 00:02:12,532
from the solar nebula.

54
00:02:12,565 --> 00:02:15,801
By studying Mars, we'll be able
to learn more about Earth,

55
00:02:15,834 --> 00:02:18,137
Venus, Mercury, even the moon,

56
00:02:18,170 --> 00:02:20,440
even exoplanets
around other stars.

57
00:02:21,907 --> 00:02:23,509
[Rocket fire]

58
00:02:23,542 --> 00:02:27,313
[Text: InSight
Launching May 2018]

59
00:02:27,346 --> 00:02:29,248
[LOGO: NASA / Jet Propulsion
Laboratory /