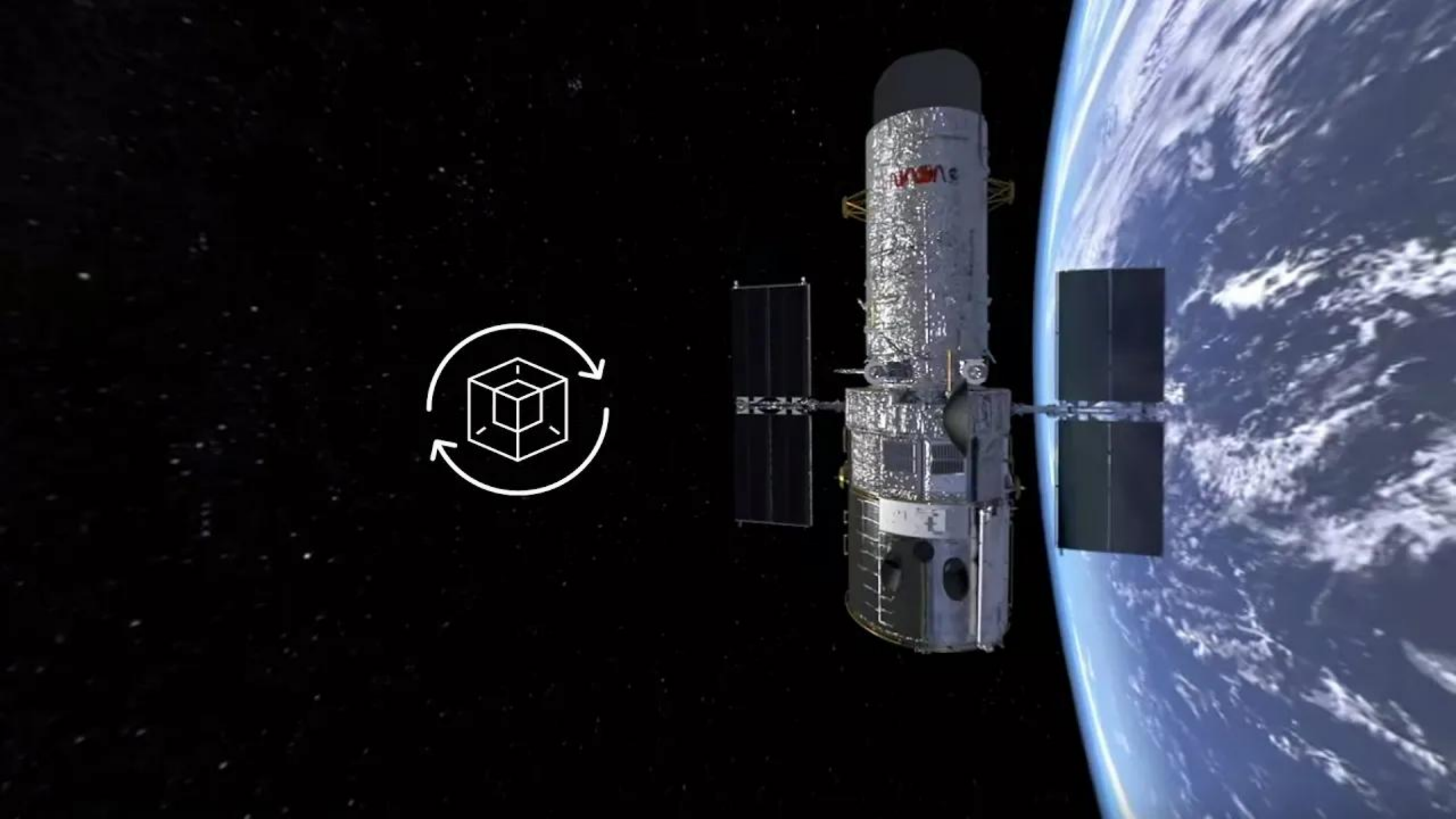

1
00:00:05,289 --> 00:00:02,690
welcome to a virtual tour of the Hubble

2
00:00:08,780 --> 00:00:05,299
Space Telescope our window to the stars

3
00:00:11,299 --> 00:00:08,790
Hubble which launched into space in 1990

4
00:00:14,810 --> 00:00:11,309
circles the earth 15 times a day

5
00:00:16,340 --> 00:00:14,820
gazing into our vast universe coming in

6
00:00:19,130 --> 00:00:16,350
at about the size of a school bus

7
00:00:22,099 --> 00:00:19,140
Hubble flies 340 miles above Earth's

8
00:00:23,480 --> 00:00:22,109
surface it travels at a speed of about 5

9
00:00:25,609 --> 00:00:23,490
miles per second

10
00:00:27,650 --> 00:00:25,619
Hubble's position beyond Earth's

11
00:00:29,720 --> 00:00:27,660
atmosphere gives us a clear view of

12
00:00:31,580 --> 00:00:29,730
cosmic objects the Hubble Space

13
00:00:33,770 --> 00:00:31,590

Telescope has several science

14
00:00:36,410 --> 00:00:33,780
instruments that allow us to study light

15
00:00:38,690 --> 00:00:36,420
behind these doors you'll see the Space

16
00:00:40,880 --> 00:00:38,700
Telescope imaging spectrograph the

17
00:00:43,549 --> 00:00:40,890
advanced camera for surveys and the

18
00:00:46,549 --> 00:00:43,559
cosmic origins spectrograph Hubble can

19
00:00:49,850 --> 00:00:46,559
see visible ultraviolet a near-infrared

20
00:00:51,380 --> 00:00:49,860
light with these instruments scientists

21
00:00:53,420 --> 00:00:51,390
observe these different wavelengths of

22
00:00:57,049 --> 00:00:53,430
light to learn about chemical content

23
00:00:58,610 --> 00:00:57,059
temperature density and motion this

24
00:01:02,060 --> 00:00:58,620
light can help us learn about the

25
00:01:06,289 --> 00:01:02,070
evolution of galaxies stars dark energy

26
00:01:09,080 --> 00:01:06,299
and dark matter now you see the Wide

27
00:01:10,910 --> 00:01:09,090
Field Camera 3 this instrument was

28
00:01:12,289 --> 00:01:10,920
upgraded on the last servicing mission

29
00:01:14,090 --> 00:01:12,299
to Hubble and is the most

30
00:01:17,690 --> 00:01:14,100
technologically advanced instrument on

31
00:01:20,090 --> 00:01:17,700
board coming to the top of the telescope

32
00:01:22,370 --> 00:01:20,100
you can look down and see Hubble's two

33
00:01:24,890 --> 00:01:22,380
mirrors which are made of special glass

34
00:01:27,289 --> 00:01:24,900
with reflective coatings the large

35
00:01:29,749 --> 00:01:27,299
primary mirror collects cosmic light and

36
00:01:31,730 --> 00:01:29,759
reflects it to the secondary mirror the

37
00:01:33,020 --> 00:01:31,740
secondary mirror bounces the light back

38
00:01:35,539 --> 00:01:33,030

through the hole in the primary mirror

39
00:01:37,550 --> 00:01:35,549
and into the telescope's instruments as

40
00:01:40,160 --> 00:01:37,560
a safety precaution

41
00:01:41,780 --> 00:01:40,170
Hubble's aperture door can close to

42
00:01:43,760 --> 00:01:41,790
prevent sunlight from entering and

43
00:01:47,300 --> 00:01:43,770
potentially damaging the telescope or

44
00:01:49,999 --> 00:01:47,310
its instruments that glowing ring is

45
00:01:52,160 --> 00:01:50,009
Hubble's soft capture mechanism it will

46
00:01:53,749 --> 00:01:52,170
allow a robotic mission to safely move

47
00:01:57,020 --> 00:01:53,759
Hubble out of orbit when the telescope

48
00:01:59,600 --> 00:01:57,030
retires you can also see two large solar

49
00:02:02,270 --> 00:01:59,610
panels the panel's collect sunlight and

50
00:02:04,700 --> 00:02:02,280
convert it to electrical energy which is

51
00:02:07,100 --> 00:02:04,710
then stored in batteries and used to

52
00:02:09,350 --> 00:02:07,110
power the telescope Hubble also has

53
00:02:12,600 --> 00:02:09,360
three fine guidance sensors that allow

54
00:02:15,750 --> 00:02:12,610
the telescope to Point lock onto and

55
00:02:18,030 --> 00:02:15,760
measure the position of stars once light

56
00:02:19,830 --> 00:02:18,040
is processed the antennas beam Hubble's

57
00:02:22,980 --> 00:02:19,840
images and data to communication

58
00:02:25,470 --> 00:02:22,990
satellites then those signals are sent

59
00:02:27,540 --> 00:02:25,480
to stations on the ground the ground

60
00:02:28,920 --> 00:02:27,550
stations transmit the data to NASA's

61
00:02:32,490 --> 00:02:28,930
Goddard Space Flight Center in Greenbelt

62
00:02:34,470 --> 00:02:32,500
Maryland after it's processed

63
00:02:41,070 --> 00:02:34,480

scientists will study this data and

64
00:02:42,780 --> 00:02:41,080
share their findings with the world we

65
00:02:45,900 --> 00:02:42,790
hope you enjoyed your tour of the Hubble

66
00:02:49,080 --> 00:02:45,910
Space Telescope for more information