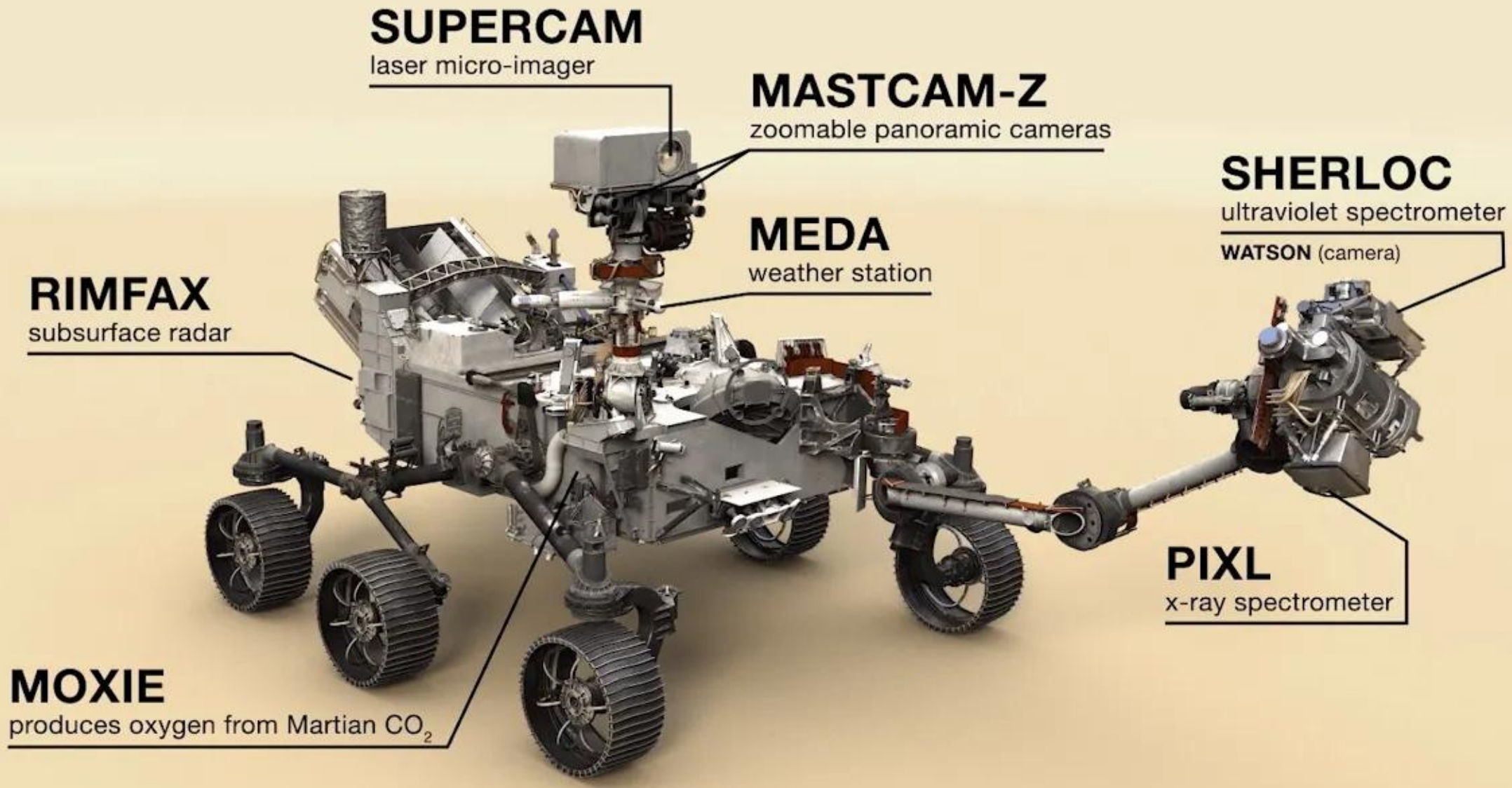
SUPERCAM
laser micro-imager
MASTCAM-Z
zoomable panoramic cameras
SHERLOC
ultraviolet spectrometer
WATSON (camera)
MEDA
weather station
RIMFAX
subsurface radar
PIXL
x-ray spectrometer
MOXIE
produces oxygen from Martian CO_2

1
00:00:06,070 --> 00:00:03,909
you know mars is the closest

2
00:00:07,990 --> 00:00:06,080
place that we can reach with robotic

3
00:00:10,150 --> 00:00:08,000
exploration that we think had a really

4
00:00:12,390 --> 00:00:10,160
good chance of having ancient life

5
00:00:14,470 --> 00:00:12,400
the perseverance rover will land at a

6
00:00:16,470 --> 00:00:14,480
location called jezreel crater

7
00:00:18,150 --> 00:00:16,480
jezreel crater is a very interesting

8
00:00:20,230 --> 00:00:18,160
place it's a crater

9
00:00:21,189 --> 00:00:20,240
that once held a lake there are a lot of

10
00:00:23,029 --> 00:00:21,199
craters on

11
00:00:24,630 --> 00:00:23,039
the surface of mars that could have once

12
00:00:26,550 --> 00:00:24,640
hosted ancient lakes

13
00:00:28,790 --> 00:00:26,560

but not every crater that we think had a

14
00:00:30,070 --> 00:00:28,800
lake actually preserves evidence that

15
00:00:31,990 --> 00:00:30,080
that lake was there

16
00:00:33,990 --> 00:00:32,000
it had an inflow channel and it had an

17
00:00:35,510 --> 00:00:34,000
outflow channel that means it was filled

18
00:00:37,910 --> 00:00:35,520
the crater was filled

19
00:00:39,910 --> 00:00:37,920
with water in jezreel we have probably

20
00:00:41,430 --> 00:00:39,920
one of the most beautifully preserved

21
00:00:43,990 --> 00:00:41,440
delta deposits

22
00:00:45,350 --> 00:00:44,000
on mars in that crater this is a

23
00:00:47,670 --> 00:00:45,360
wonderful place to live

24
00:00:48,630 --> 00:00:47,680
for microorganisms and it is also a

25
00:00:51,510 --> 00:00:48,640
wonderful place

26
00:00:52,790 --> 00:00:51,520
for those microorganisms to be preserved

27
00:00:54,869 --> 00:00:52,800
so that we can find them

28
00:00:56,709 --> 00:00:54,879
now so many billions of years later

29
00:00:58,630 --> 00:00:56,719
there is no other place on mars that has

30
00:01:00,389 --> 00:00:58,640
the unique combination of

31
00:01:02,389 --> 00:01:00,399
a lake setting a beautifully preserved

32
00:01:04,469 --> 00:01:02,399
delta and the diverse mineralogy that we

33
00:01:05,270 --> 00:01:04,479
have in jezreel crater so it's truly a

34
00:01:08,390 --> 00:01:05,280
special

35
00:01:09,590 --> 00:01:08,400
landing site the major goal of the

36
00:01:13,109 --> 00:01:09,600
perseverance mission

37
00:01:14,390 --> 00:01:13,119
is to investigate astrobiology on mars

38
00:01:16,149 --> 00:01:14,400

and in particular

39
00:01:17,429 --> 00:01:16,159
to address the question of whether life

40
00:01:20,230 --> 00:01:17,439
ever existed

41
00:01:21,590 --> 00:01:20,240
on mars the perseverance rover starts

42
00:01:23,749 --> 00:01:21,600
with a design that's very similar to

43
00:01:25,670 --> 00:01:23,759
curiosity but we've added to it a whole

44
00:01:27,270 --> 00:01:25,680
new set of science instruments

45
00:01:28,950 --> 00:01:27,280
and these science instruments were

46
00:01:30,789 --> 00:01:28,960
purposefully selected

47
00:01:32,550 --> 00:01:30,799
to help us in the search for

48
00:01:34,789 --> 00:01:32,560
biosignatures

49
00:01:35,590 --> 00:01:34,799
we're going to be taking microphones

50
00:01:38,469 --> 00:01:35,600
with us

51
00:01:39,670 --> 00:01:38,479
for the first time we're going to have

52
00:01:43,270 --> 00:01:39,680
that human sense

53
00:01:43,830 --> 00:01:43,280
on another planet perseverance carries

54
00:01:46,389 --> 00:01:43,840
with her

55
00:01:47,270 --> 00:01:46,399
a grand experiment in space fairing

56
00:01:50,630 --> 00:01:47,280
technology

57
00:01:53,350 --> 00:01:50,640
a helicopter the name of which is now

58
00:01:54,630 --> 00:01:53,360
ingenuity one of the major upgrades that

59
00:01:56,709 --> 00:01:54,640
perseverance has

60
00:01:57,910 --> 00:01:56,719
from curiosity is that it's able to

61
00:02:00,709 --> 00:01:57,920
self-drive

62
00:02:01,429 --> 00:02:00,719
for a distance of up to 200 meters per

63
00:02:03,749 --> 00:02:01,439

day

64
00:02:05,030 --> 00:02:03,759
as the rover is driving it's literally

65
00:02:08,309 --> 00:02:05,040
building the map

66
00:02:10,309 --> 00:02:08,319
of the road it's driving on on mars

67
00:02:12,470 --> 00:02:10,319
scientists for years have told us that

68
00:02:14,229 --> 00:02:12,480
to really unlock

69
00:02:16,470 --> 00:02:14,239
the secrets of mars we have to bring

70
00:02:20,229 --> 00:02:16,480
samples from mars back to earth

71
00:02:23,589 --> 00:02:20,239
so what marsh 2020 is going to do is to

72
00:02:25,190 --> 00:02:23,599
drill samples put them in small tubes

73
00:02:27,190 --> 00:02:25,200
we're going to seal it in its own

74
00:02:27,830 --> 00:02:27,200
individual tube we set them on the

75
00:02:29,990 --> 00:02:27,840
surface

76
00:02:31,030 --> 00:02:30,000
to provide a target for the second two

77
00:02:32,949 --> 00:02:31,040
missions

78
00:02:34,309 --> 00:02:32,959
which hopefully will get in development

79
00:02:36,070 --> 00:02:34,319
in the next several years and could

80
00:02:40,229 --> 00:02:36,080
potentially get the samples back

81
00:02:40,949 --> 00:02:40,239
to earth by 2031. perseverance is a very

82
00:02:44,390 --> 00:02:40,959
very

83
00:02:45,830 --> 00:02:44,400
profound first step in both our

84
00:02:49,350 --> 00:02:45,840
understanding

85
00:02:50,949 --> 00:02:49,360
of our place in the universe and