1
00:00:40,630 --> 00:00:37,670
what looks like a scene out of a science

2
00:00:42,709 --> 00:00:40,640
fiction movie is actually real

3
00:00:45,190 --> 00:00:42,719
scientists from nasa's jet propulsion

4
00:00:48,150 --> 00:00:45,200
laboratory have manipulated spacecraft

5
00:00:49,590 --> 00:00:48,160
data of venus to give a bird's-eye view

6
00:00:51,510 --> 00:00:49,600
of its surface

7
00:00:53,910 --> 00:00:51,520
venus is out there being digitized but

8
00:00:55,189 --> 00:00:53,920
this digital model this virtual reality

9
00:00:56,790 --> 00:00:55,199
of venus is what's actually being

10
00:00:59,430 --> 00:00:56,800
explored on earth

11
00:01:01,910 --> 00:00:59,440
dr michael mcgreevey of nasa's ames

12
00:01:04,789 --> 00:01:01,920
research center has taken the idea of

13
00:01:07,109 --> 00:01:04,799

being there a few steps further

14
00:01:09,830 --> 00:01:07,119
by strapping on 3d visual display

15
00:01:13,270 --> 00:01:09,840
goggles and specially censored gloves

16
00:01:16,310 --> 00:01:13,280
one can be immersed into new worlds what

17
00:01:18,789 --> 00:01:16,320
is unique about virtual reality is that

18
00:01:19,990 --> 00:01:18,799
the user has complete control over the

19
00:01:22,070 --> 00:01:20,000
environment

20
00:01:24,149 --> 00:01:22,080
head or body movements translate

21
00:01:26,390 --> 00:01:24,159
directly into the way a simulated

22
00:01:28,710 --> 00:01:26,400
martian landscape is seen

23
00:01:31,749 --> 00:01:28,720
in another example the task is to

24
00:01:34,230 --> 00:01:31,759
withdraw a square shape from its slot

25
00:01:36,950 --> 00:01:34,240
the operator's glove can be manipulated

26
00:01:38,950 --> 00:01:36,960
to control a robotic arm while sound

27
00:01:40,950 --> 00:01:38,960
cues help with depth perception and

28
00:01:43,510 --> 00:01:40,960
finding proper fit

29
00:01:44,710 --> 00:01:43,520
scientists have also designed a virtual

30
00:01:46,789 --> 00:01:44,720
wind tunnel

31
00:01:49,670 --> 00:01:46,799
the investigator can move anywhere in

32
00:01:52,389 --> 00:01:49,680
the tunnel to study air flow

33
00:01:55,109 --> 00:01:52,399
virtual reality gives the operator

34
00:01:57,030 --> 00:01:55,119
complete choice and is beginning to be

35
00:01:58,389 --> 00:01:57,040
used for a variety of commercial

36
00:02:01,429 --> 00:01:58,399
applications

37
00:02:03,350 --> 00:02:01,439
what sets nasa apart in this uh current

38
00:02:05,429 --> 00:02:03,360

climate is that we aren't looking at the

39
00:02:08,070 --> 00:02:05,439
mainstream applications

40
00:02:10,389 --> 00:02:08,080
of the this global activity which tend

41
00:02:11,750 --> 00:02:10,399
to be entertainment and video games

42
00:02:14,070 --> 00:02:11,760
we're more looking to how to use this

43
00:02:15,990 --> 00:02:14,080
for scientific visualization

44
00:02:17,830 --> 00:02:16,000
in particular looking at the detailed

45
00:02:19,670 --> 00:02:17,840
environments of the planets

46
00:02:22,470 --> 00:02:19,680
looking at computational fluid dynamics

47
00:02:25,510 --> 00:02:22,480
models of the airflow over a wing that

48
00:02:31,110 --> 00:02:28,229
virtual reality is an idea that dates

49
00:02:32,790 --> 00:02:31,120
back to the 60s and will be commonplace

50
00:02:34,869 --> 00:02:32,800
by the next decade

51
00:02:36,949 --> 00:02:34,879
already it has been used during the gulf

52
00:02:37,990 --> 00:02:36,959
war to train tank commanders and

53
00:02:39,990 --> 00:02:38,000
soldiers

54
00:02:42,150 --> 00:02:40,000
the american bobsled team honed their

55
00:02:45,110 --> 00:02:42,160
skills for the olympics with a form of

56
00:02:46,790 --> 00:02:45,120
virtual reality and the japanese have

57
00:02:49,589 --> 00:02:46,800
developed a system that allows

58
00:02:53,830 --> 00:02:49,599
architects to walk clients through a

59
00:02:56,390 --> 00:02:53,840
virtual building before it's constructed

60
00:02:58,390 --> 00:02:56,400
the dry valleys of antarctica may soon

61
00:02:59,750 --> 00:02:58,400
become a far-reaching outlet for this

62
00:03:01,589 --> 00:02:59,760
technology

63
00:03:03,589 --> 00:03:01,599

scientists have long been interested in

64
00:03:04,790 --> 00:03:03,599
the area because it is so similar to

65
00:03:07,270 --> 00:03:04,800
mars

66
00:03:09,509 --> 00:03:07,280
its frozen lakes contain primitive

67
00:03:11,990 --> 00:03:09,519
microbial mats that live in the water

68
00:03:14,309 --> 00:03:12,000
below many feet of ice

69
00:03:16,949 --> 00:03:14,319
researchers at nasa ames are planning to

70
00:03:19,910 --> 00:03:16,959
use a form of virtual reality called

71
00:03:22,309 --> 00:03:19,920
telepresence to operate a remote imaging

72
00:03:23,990 --> 00:03:22,319
and sampling vehicle to explore this

73
00:03:26,869 --> 00:03:24,000
bizarre world

74
00:03:29,910 --> 00:03:26,879
dr carol stoker leads this effort

75
00:03:32,229 --> 00:03:29,920
with telepresence we think that that we

76
00:03:34,229 --> 00:03:32,239
can really expand the range of access to

77
00:03:36,550 --> 00:03:34,239
the surface of mars from a scientific

78
00:03:39,430 --> 00:03:36,560
perspective not just in terms of

79
00:03:41,110 --> 00:03:39,440
operating you know relatively uh simple

80
00:03:43,190 --> 00:03:41,120
robots to do things like construction

81
00:03:43,990 --> 00:03:43,200
but but really to do scientific field

82
00:03:46,710 --> 00:03:44,000
work

83
00:03:49,430 --> 00:03:46,720
the potential of virtual reality and

84
00:03:51,270 --> 00:03:49,440
telepresence and planetary exploration

85
00:03:53,509 --> 00:03:51,280
is very promising

86
00:03:56,309 --> 00:03:53,519
and earthly applications derived from