1
00:00:19,510 --> 00:00:16,710
two

2
00:00:21,349 --> 00:00:19,520
one and liftoff of the space shuttle

3
00:00:24,150 --> 00:00:21,359
discovery with the hubble space

4
00:00:26,550 --> 00:00:24,160
telescope our window on the universe the

5
00:00:28,950 --> 00:00:26,560
hubble space telescope was the first

6
00:00:32,709 --> 00:00:28,960
major optical telescope to be placed in

7
00:00:35,190 --> 00:00:32,719
space its launch in 1990 marked the most

8
00:00:37,350 --> 00:00:35,200
significant advance in astronomy since

9
00:00:40,229 --> 00:00:37,360
galileo's telescope

10
00:00:43,190 --> 00:00:40,239
whirling around our planet at 17

11
00:00:46,549 --> 00:00:43,200
500 miles an hour the observatory has

12
00:00:50,630 --> 00:00:46,559
taken about a half million images of 25

13
00:00:53,189 --> 00:00:50,640

000 planetary bodies made some 800 000

14
00:00:56,549 --> 00:00:53,199
studies and changed our view of the

15
00:00:59,430 --> 00:00:56,559
universe and our place within it it's

16
00:01:01,990 --> 00:00:59,440
looking at incredibly dim objects

17
00:01:04,070 --> 00:01:02,000
extremely far away and just little

18
00:01:05,030 --> 00:01:04,080
pinpricks of light and you can actually

19
00:01:08,070 --> 00:01:05,040
tell

20
00:01:10,310 --> 00:01:08,080
that these tiny supernova are going off

21
00:01:12,789 --> 00:01:10,320
you know far far far away

22
00:01:14,469 --> 00:01:12,799
and be able to extract from that this

23
00:01:16,870 --> 00:01:14,479
kind of information

24
00:01:18,550 --> 00:01:16,880
and to me that's just fascinating to

25
00:01:21,749 --> 00:01:18,560
think that something that we built could

26
00:01:24,710 --> 00:01:21,759
go and do that kind of measurement with

27
00:01:26,630 --> 00:01:24,720
an unobstructed panorama the telescope

28
00:01:29,670 --> 00:01:26,640
has supplied to astronomers around the

29
00:01:32,469 --> 00:01:29,680
world data on the most distant stars and

30
00:01:33,910 --> 00:01:32,479
galaxies as well as the planets in our

31
00:01:35,830 --> 00:01:33,920
solar system

32
00:01:38,710 --> 00:01:35,840
hubble weighs 24

33
00:01:40,390 --> 00:01:38,720
500 pounds about the weight of two

34
00:01:43,590 --> 00:01:40,400
full-grown elephants

35
00:01:46,149 --> 00:01:43,600
and is the size of a large school bus

36
00:01:48,230 --> 00:01:46,159
the data it generates each day would

37
00:01:50,389 --> 00:01:48,240
fill the hard drive of a typical home

38
00:01:52,550 --> 00:01:50,399

computer in just two weeks

39
00:01:55,030 --> 00:01:52,560
this is one of the first really big

40
00:01:56,069 --> 00:01:55,040
space observatories or space missions

41
00:01:57,910 --> 00:01:56,079
where

42
00:02:00,630 --> 00:01:57,920
more people than just the folks that

43
00:02:03,030 --> 00:02:00,640
were building the stuff were really

44
00:02:04,389 --> 00:02:03,040
both interested and capable of using it

45
00:02:07,030 --> 00:02:04,399
they set up the

46
00:02:09,830 --> 00:02:07,040
space telescope science institute

47
00:02:12,470 --> 00:02:09,840
run by a private organization which is a

48
00:02:16,229 --> 00:02:12,480
collective if you will of universities

49
00:02:18,949 --> 00:02:16,239
has set up a process for soliciting

50
00:02:21,350 --> 00:02:18,959
proposals to use the instruments

51
00:02:22,710 --> 00:02:21,360
and selecting those proposals and then

52
00:02:25,589 --> 00:02:22,720
making those

53
00:02:27,750 --> 00:02:25,599
proposals get turned into useful data

54
00:02:30,229 --> 00:02:27,760
that the scientists can then process

55
00:02:33,350 --> 00:02:30,239
hubble has benefited from four servicing

56
00:02:35,589 --> 00:02:33,360
missions in its 18-year history each one

57
00:02:37,589 --> 00:02:35,599
enhancing its capabilities

58
00:02:39,390 --> 00:02:37,599
a final mission is scheduled for later

59
00:02:42,150 --> 00:02:39,400
this year when

60
00:02:45,270 --> 00:02:42,160
sts-125 crew members will install new

61
00:02:48,229 --> 00:02:45,280
instruments replace degraded systems and

62
00:02:50,470 --> 00:02:48,239
bring inactive instruments back to life

63
00:02:53,110 --> 00:02:50,480

these repairs and upgrades should keep

64
00:02:56,150 --> 00:02:53,120
the telescope functioning at least into

65
00:02:57,589 --> 00:02:56,160
2014. hubble's upgrades with the new

66
00:02:59,990 --> 00:02:57,599
instruments

67
00:03:02,550 --> 00:03:00,000
more than anything else will give us a

68
00:03:05,350 --> 00:03:02,560
tremendously increased capability for

69
00:03:06,710 --> 00:03:05,360
spectroscopy and imaging over what we

70
00:03:08,390 --> 00:03:06,720
previously had

71
00:03:10,070 --> 00:03:08,400
and this is actually one of the great

72
00:03:12,550 --> 00:03:10,080
benefits of being able to put new

73
00:03:15,589 --> 00:03:12,560
instruments in an existing telescope in

74
00:03:17,990 --> 00:03:15,599
august 2008 hubble made its 100

75
00:03:21,830 --> 00:03:18,000
thousandth trip around earth having

76
00:03:24,070 --> 00:03:21,840
racked up about 2.4 billion miles

77
00:03:27,350 --> 00:03:24,080
astronomers have used findings from this

78
00:03:30,229 --> 00:03:27,360
celestial surveyor to publish nearly 7

79
00:03:32,149 --> 00:03:30,239
000 scientific papers making the hubble

80
00:03:34,550 --> 00:03:32,159
space telescope one of the most

81
00:03:37,990 --> 00:03:34,560
productive scientific instruments ever

82
00:03:39,589 --> 00:03:38,000
built hubble has had a tremendous impact

83
00:03:42,550 --> 00:03:39,599
on the way people look at the universe

84
00:03:44,149 --> 00:03:42,560
and i was talking or joking i guess a

85
00:03:45,270 --> 00:03:44,159
little bit earlier about the fact that

86
00:03:48,149 --> 00:03:45,280
when you saw

87
00:03:50,229 --> 00:03:48,159
star trek voyager or the new star trek

88
00:03:52,550 --> 00:03:50,239

enterprise movies if you looked at their

89
00:03:54,869 --> 00:03:52,560
screens in the old days of the early

90
00:03:57,270 --> 00:03:54,879
star trek they had a viewfoil with a

91
00:03:59,110 --> 00:03:57,280
light behind it that showed some stuff

92
00:04:01,270 --> 00:03:59,120
well now what they have on there are

93
00:04:04,470 --> 00:04:01,280
beautiful lcd displays

94
00:04:06,229 --> 00:04:04,480
with moving versions of hubble's images

95
00:04:08,390 --> 00:04:06,239
on them i mean that's what they show

96
00:04:10,869 --> 00:04:08,400
them flying through

97
00:04:13,589 --> 00:04:10,879
people see the universe today

98
00:04:15,350 --> 00:04:13,599
the way hubble sees it to learn more

99
00:04:19,430 --> 00:04:15,360
about the hubble mission visit