1
00:00:16,950 --> 00:00:14,870
every year millions of visitors come to

2
00:00:18,150 --> 00:00:16,960
washington dc to tour the national

3
00:00:20,150 --> 00:00:18,160
archives

4
00:00:22,390 --> 00:00:20,160
the nation's largest storehouse of

5
00:00:24,870 --> 00:00:22,400
historic documents

6
00:00:26,870 --> 00:00:24,880
this year marks the constitution's 200th

7
00:00:29,029 --> 00:00:26,880
anniversary and to help monitor the

8
00:00:30,630 --> 00:00:29,039
aging process of this document and

9
00:00:32,790 --> 00:00:30,640
others like the declaration of

10
00:00:34,790 --> 00:00:32,800
independence and the bill of rights the

11
00:00:37,350 --> 00:00:34,800
national archives recently installed a

12
00:00:39,270 --> 00:00:37,360
space-age camera designed by nasa's jet

13
00:00:42,950 --> 00:00:39,280

propulsion laboratory in pasadena

14
00:00:44,950 --> 00:00:42,960
california the national archives came to

15
00:00:48,389 --> 00:00:44,960
nasa

16
00:00:50,869 --> 00:00:48,399
take a look at what kind of technology

17
00:00:53,430 --> 00:00:50,879
could possibly be used to provide a

18
00:00:54,709 --> 00:00:53,440
long-term monitoring system that would

19
00:00:56,790 --> 00:00:54,719
allow them to

20
00:00:58,470 --> 00:00:56,800
have baseline information

21
00:01:00,229 --> 00:00:58,480
that was taken at the beginning of the

22
00:01:02,709 --> 00:01:00,239
monitoring period and then to be able to

23
00:01:03,510 --> 00:01:02,719
follow in a very detailed fashion

24
00:01:09,190 --> 00:01:03,520
the

25
00:01:13,750 --> 00:01:11,590
chris stevens team led by ed miller

26
00:01:16,149 --> 00:01:13,760
designed the national archives camera

27
00:01:17,990 --> 00:01:16,159
adapting technology normally used for

28
00:01:19,990 --> 00:01:18,000
deep space missions

29
00:01:22,469 --> 00:01:20,000
the camera images the documents by

30
00:01:25,830 --> 00:01:22,479
scanning under green light a handful of

31
00:01:28,149 --> 00:01:25,840
pre-designated postage stamp size areas

32
00:01:29,910 --> 00:01:28,159
in this case a practice target is used

33
00:01:31,670 --> 00:01:29,920
instead of a real document

34
00:01:33,749 --> 00:01:31,680
during each pass of the scanner a

35
00:01:34,870 --> 00:01:33,759
million bits of digital information are

36
00:01:36,789 --> 00:01:34,880
collected

37
00:01:39,510 --> 00:01:36,799
the system has the capability of going

38
00:01:41,429 --> 00:01:39,520

back year by year to the exact same spot

39
00:01:45,510 --> 00:01:41,439
in order to make comparative studies of

40
00:01:50,469 --> 00:01:47,830
in addition a whole variety of image

41
00:01:52,230 --> 00:01:50,479
processing techniques can be used

42
00:01:55,830 --> 00:01:52,240
in the case of the first two letters in

43
00:01:56,710 --> 00:01:55,840
the constitution the w and e of we the

44
00:01:58,709 --> 00:01:56,720
people

45
00:02:01,830 --> 00:01:58,719
the black and white image can be color

46
00:02:04,310 --> 00:02:01,840
enhanced to more easily see areas where

47
00:02:05,830 --> 00:02:04,320
ink has flaked off the parchment

48
00:02:07,510 --> 00:02:05,840
there are other needs for the system

49
00:02:10,710 --> 00:02:07,520
according to norvel jones of the

50
00:02:12,470 --> 00:02:10,720
national archives preservation

51
00:02:14,550 --> 00:02:12,480
we have concern that

52
00:02:17,110 --> 00:02:14,560
changes do happen when documents are

53
00:02:19,670 --> 00:02:17,120
exhibited there can be fading or changes

54
00:02:21,110 --> 00:02:19,680
in contrast or paper can darken

55
00:02:23,270 --> 00:02:21,120
and by

56
00:02:25,350 --> 00:02:23,280
getting a baseline reading before an

57
00:02:28,309 --> 00:02:25,360
item goes on exhibit and then monitoring

58
00:02:30,309 --> 00:02:28,319
it after exhibit and keeping records on

59
00:02:32,070 --> 00:02:30,319
items that are frequently requested that

60
00:02:34,309 --> 00:02:32,080
we'd be able to

61
00:02:37,509 --> 00:02:34,319
tell changes that were occurring before

62
00:02:39,430 --> 00:02:37,519
any serious damage it happened

63
00:02:41,670 --> 00:02:39,440

the monitoring system can also be a

64
00:02:44,229 --> 00:02:41,680
valuable tool for determining what type

65
00:02:46,470 --> 00:02:44,239
of active measures to take in order to

66
00:02:48,390 --> 00:02:46,480
save and stabilize a document or piece

67
00:02:50,309 --> 00:02:48,400
of artwork

68
00:02:52,229 --> 00:02:50,319
the imaging system represents a

69
00:02:54,390 --> 00:02:52,239
down-to-earth use of technology

70
00:02:56,869 --> 00:02:54,400
developed over the years for outer space

71
00:02:58,630 --> 00:02:56,879
probes like voyager which used it to

72
00:03:01,589 --> 00:02:58,640
capture incredible pictures of our

73
00:03:04,470 --> 00:03:01,599
nearby planets norvel jones sums up

74
00:03:06,630 --> 00:03:04,480
nasa's link with the past at the time

75
00:03:08,550 --> 00:03:06,640
that the constitution was created

76
00:03:11,910 --> 00:03:08,560
pen and ink on parchment was about the

77
00:03:13,990 --> 00:03:11,920
most permanent and best that you can do

78
00:03:16,309 --> 00:03:14,000
and i think now in

79
00:03:18,869 --> 00:03:16,319
honor of the 200th anniversary of the

80
00:03:20,550 --> 00:03:18,879
constitution were able to use what is i

81
00:03:21,589 --> 00:03:20,560
think now the best that you can do in

82
00:03:23,750 --> 00:03:21,599
terms of

83
00:03:26,470 --> 00:03:23,760
uh wrapping up new technology in order

84
00:03:29,430 --> 00:03:26,480
to be able to assure that the documents