1
00:00:05,609 --> 00:00:13,149
Music

2
00:00:13,184 --> 00:00:16,301
Lasers are the optical communications

3
00:00:16,336 --> 00:00:18,941
of the future. Laser Comm demonstration

4
00:00:18,976 --> 00:00:21,206
is going to be a two year flight. The

5
00:00:21,241 --> 00:00:24,621
hardware is made up of avionics boxes

6
00:00:24,656 --> 00:00:28,309
which transmit the data up to optical

7
00:00:28,344 --> 00:00:30,541
telescopes that are going to be located

8
00:00:30,576 --> 00:00:33,074
on a geosyncronous satellite. The

9
00:00:33,109 --> 00:00:35,501
optical telescopes can receive and

10
00:00:35,536 --> 00:00:38,877
transmit the data not only to the ground

11
00:00:38,912 --> 00:00:41,301
stations but also to other geosyncronous

12
00:00:41,336 --> 00:00:43,894
satellites, low earth orbit satellites,

13
00:00:43,929 --> 00:00:47,350

space station or in the future deep space

14
00:00:47,385 --> 00:00:50,692
communication missions to Mars. In the

15
00:00:50,727 --> 00:00:56,853
fall of 2013 NASA launched a satellite

16
00:00:56,888 --> 00:00:59,486
to the moon called LADDE. On that

17
00:00:59,521 --> 00:01:01,924
satellite had a single terminal for a

18
00:01:01,959 --> 00:01:04,173
demonstration, only supposed to be for

19
00:01:04,208 --> 00:01:06,573
six hours. To demonstrate that it could

20
00:01:06,608 --> 00:01:10,005
receive and send back a high rate data

21
00:01:10,040 --> 00:01:12,270
by high rate data. When we talk about

22
00:01:12,305 --> 00:01:14,253
high rate data we are talking about an

23
00:01:14,288 --> 00:01:16,390
order of magnitude higher than an RF

24
00:01:16,425 --> 00:01:19,724
system can do right now. That particular

25
00:01:19,759 --> 00:01:21,692
program was very successful, it actually

26
00:01:21,727 --> 00:01:25,341
operated for 25 hours before the whole

27
00:01:25,376 --> 00:01:27,381
thing on purpose was crashed into the

28
00:01:27,416 --> 00:01:32,405
moon. So LCRD, Laser Communications

29
00:01:32,440 --> 00:01:35,213
Relay Demonstration, is a follow-up

30
00:01:35,248 --> 00:01:38,732
program that will have the high rate

31
00:01:38,767 --> 00:01:42,669
system transfer on a geosyncronous

32
00:01:42,704 --> 00:01:47,069
satellite. Scheduled for two years on

33
00:01:47,104 --> 00:01:48,644
orbit but could live as long as five

34
00:01:48,679 --> 00:01:52,180
years. The benefits of laser and or

35
00:01:52,215 --> 00:01:54,437
optical communications is the fact

36
00:01:54,472 --> 00:01:57,101
that you can transmit data much much

37
00:01:57,136 --> 00:02:01,397
faster than you can using RF device.

38
00:02:01,432 --> 00:02:04,181

It will also carry more data, in both

39
00:02:04,216 --> 00:02:06,604
cases the benefit to NASA is that we

40
00:02:06,639 --> 00:02:09,349
can get information out to deep space

41
00:02:09,384 --> 00:02:11,989
missions faster and we can also carry

42
00:02:12,024 --> 00:02:13,933
more data at the same time, whether

43
00:02:13,968 --> 00:02:16,109
it is a manned mission or a probe and

44
00:02:16,144 --> 00:02:18,662
get that information back. It’s more

45
00:02:18,697 --> 00:02:21,317
efficient, it’s higher data rate, it’s

46
00:02:21,352 --> 00:02:23,004
just much better across the board.