1
00:00:04,670 --> 00:00:02,270
have you ever tried to download a movie

2
00:00:06,950 --> 00:00:04,680
with slow internet it buffers and it

3
00:00:08,690 --> 00:00:06,960
takes forever now imagine trying to

4
00:00:11,390 --> 00:00:08,700
download movies all the way from space

5
00:00:14,030 --> 00:00:11,400
the International Space Station's new

6
00:00:16,129 --> 00:00:14,040
terminal illuma T will use laser

7
00:00:19,130 --> 00:00:16,139
Communications to demonstrate an

8
00:00:21,769 --> 00:00:19,140
enhanced way to transmit data in fact

9
00:00:23,269 --> 00:00:21,779
illuma T can transmit data at a rate

10
00:00:25,849 --> 00:00:23,279
that would allow you to download a movie

11
00:00:27,890 --> 00:00:25,859
in under a minute

12
00:00:30,290 --> 00:00:27,900
the process of sending and receiving

13
00:00:33,410 --> 00:00:30,300

spacecraft data is known as space

14
00:00:35,510 --> 00:00:33,420
Communications NASA is enhancing space

15
00:00:38,569 --> 00:00:35,520
Communications capabilities through the

16
00:00:40,850 --> 00:00:38,579
power of lasers laser Communications use

17
00:00:42,889 --> 00:00:40,860
higher data rates to send an increased

18
00:00:45,729 --> 00:00:42,899
amount of Science and exploration data

19
00:00:47,990 --> 00:00:45,739
to Earth in a single transmission

20
00:00:50,450 --> 00:00:48,000
historically we've relied on radio

21
00:00:52,850 --> 00:00:50,460
frequency Communications to send and

22
00:00:55,069 --> 00:00:52,860
receive data from space with laser

23
00:00:56,510 --> 00:00:55,079
Communications we are supplementing that

24
00:00:58,970 --> 00:00:56,520
method

25
00:01:00,590 --> 00:00:58,980
laser Communications can help NASA's

26
00:01:02,569 --> 00:01:00,600
science missions send more information

27
00:01:05,030 --> 00:01:02,579
and data that is vital to our

28
00:01:07,429 --> 00:01:05,040
understanding of our planet the solar

29
00:01:08,750 --> 00:01:07,439
system and beyond

30
00:01:11,630 --> 00:01:08,760
to prove these groundbreaking

31
00:01:15,830 --> 00:01:11,640
capabilities NASA is infusing laser

32
00:01:17,929 --> 00:01:15,840
Communications into multiple missions

33
00:01:21,190 --> 00:01:17,939
one of these missions is a relay

34
00:01:24,590 --> 00:01:21,200
satellite known as lcrd

35
00:01:26,330 --> 00:01:24,600
lcrd launched in 2021 and is NASA's

36
00:01:28,550 --> 00:01:26,340
first ever laser relay which will

37
00:01:30,289 --> 00:01:28,560
receive data from illuma T on the space

38
00:01:33,530 --> 00:01:30,299

station

39
00:01:35,890 --> 00:01:33,540
together lcrd and Aluma T are NASA's

40
00:01:38,210 --> 00:01:35,900
first ever end-to-end laser relay system

41
00:01:40,310 --> 00:01:38,220
demonstrating the benefits of a laser

42
00:01:42,770 --> 00:01:40,320
communication system

43
00:01:44,510 --> 00:01:42,780
laser terminals are ideal for Missions

44
00:01:47,090 --> 00:01:44,520
like the space station because they are

45
00:01:49,910 --> 00:01:47,100
typically smaller lighter and more

46
00:01:53,270 --> 00:01:49,920
efficient than comparable Radio Systems

47
00:01:55,490 --> 00:01:53,280
in 2022 NASA launched another laser

48
00:01:57,889 --> 00:01:55,500
Communications mission called T-bird to

49
00:01:59,630 --> 00:01:57,899
demonstrate 200 gigabit per second data

50
00:02:00,830 --> 00:01:59,640
rates a record-setting rate for the

51
00:02:03,050 --> 00:02:00,840
agency

52
00:02:06,109 --> 00:02:03,060
T-bird is a small satellite it's only

53
00:02:08,270 --> 00:02:06,119
the size of a tissue box and soon NASA

54
00:02:10,910 --> 00:02:08,280
will launch a laser terminal on Artemis

55
00:02:13,729 --> 00:02:10,920
2 a crude mission to the Moon

56
00:02:15,350 --> 00:02:13,739
on board the Orion crew capsule the o2o

57
00:02:18,770 --> 00:02:15,360
system will send back high resolution

58
00:02:23,390 --> 00:02:18,780
images and video from the lunar region

59
00:02:25,369 --> 00:02:23,400
illuma T lcrd T-bird and o2o are only

60
00:02:27,830 --> 00:02:25,379
the start of how laser Communications

61
00:02:29,809 --> 00:02:27,840
are Paving the way for advancing our

62
00:02:32,150 --> 00:02:29,819
scientific discoveries

63
00:02:34,130 --> 00:02:32,160

NASA is infusing lasers to further

64
00:02:35,869 --> 00:02:34,140
Advance our Communications capabilities