1
00:00:00,000 --> 00:00:03,003
(music throughout)

2
00:00:18,651 --> 00:00:21,454
The Lucy mission is a planetary mission

3
00:00:21,454 --> 00:00:25,592
to the Trojan asteroids
that are around Jupiter.

4
00:00:25,625 --> 00:00:30,830
It's going to survey actually
a total of eight targets, seven asteroids

5
00:00:30,830 --> 00:00:35,068
around Jupiter and one asteroid
in the main asteroid belt.

6
00:00:35,068 --> 00:00:38,605
Once you know where you're going and
the type of science that you want to take.

7
00:00:38,638 --> 00:00:41,841
One of the things that you start looking
at is the spacecraft.

8
00:00:43,777 --> 00:00:48,648
What size spacecraft, where is it going,
how much power does it need to carry?

9
00:00:48,648 --> 00:00:51,885
Does it need solar rays,
what type of solar arrays?

10
00:00:51,885 --> 00:00:55,822
What type of vehicle is going
to be used to launch it into space.

11
00:00:56,289 --> 00:00:59,592

So that dictates
how much mass you can carry.

12
00:00:59,592 --> 00:01:04,597
And one of the things I do as a project
manager is to assemble a team

13
00:01:04,597 --> 00:01:08,301
of scientists and engineers
and technicians and business

14
00:01:08,301 --> 00:01:12,572
people to design that overall spacecraft
to achieve your mission.

15
00:01:14,107 --> 00:01:17,444
In designing the
spacecraft, you are always thinking

16
00:01:17,444 --> 00:01:21,281
about what type of environment
is it going to be subjected to.

17
00:01:21,314 --> 00:01:23,883
Is it going to orbit around Earth?

18
00:01:23,883 --> 00:01:26,486
Is it going into deep space?

19
00:01:26,519 --> 00:01:28,288
Is it going to Mars?

20
00:01:28,288 --> 00:01:30,390
Is it going close to the Sun?

21
00:01:30,390 --> 00:01:34,494
And so as engineers, one of the things
that you're thinking about

22

00:01:34,494 --> 00:01:40,967
very early on is how can you design this
system and test the system

23
00:01:40,967 --> 00:01:45,672
in order to verify and convince yourself
that it's going to survive in space.

24
00:01:45,972 --> 00:01:51,244
And as part of that, it goes through
a very rigorous test program.

25
00:01:51,277 --> 00:01:54,848
And so we call it shaking and baking.

26
00:01:55,281 --> 00:01:58,818
And so we actually put it
through what we call

27
00:01:58,818 --> 00:02:02,989
a thermal vac chamber in which we simulate
the space environment.

28
00:02:03,022 --> 00:02:04,524
You also put it on

29
00:02:04,524 --> 00:02:09,262
what we call a vibe table
in which we vibrate it, so we shake it.

30
00:02:09,295 --> 00:02:10,997
And one of the important things

31
00:02:10,997 --> 00:02:14,200
that you have to do in order
to be convinced that it's going to survive

32
00:02:14,200 --> 00:02:17,470
is to make sure that the environment
in which you're testing it in

33
00:02:17,470 --> 00:02:21,908
the simulated environment is harsher
than what it's going to see in space.

34
00:02:22,275 --> 00:02:27,113
So once you subject the spacecraft
or that instrument to that environment,

35
00:02:27,413 --> 00:02:28,982
then you can have confidence