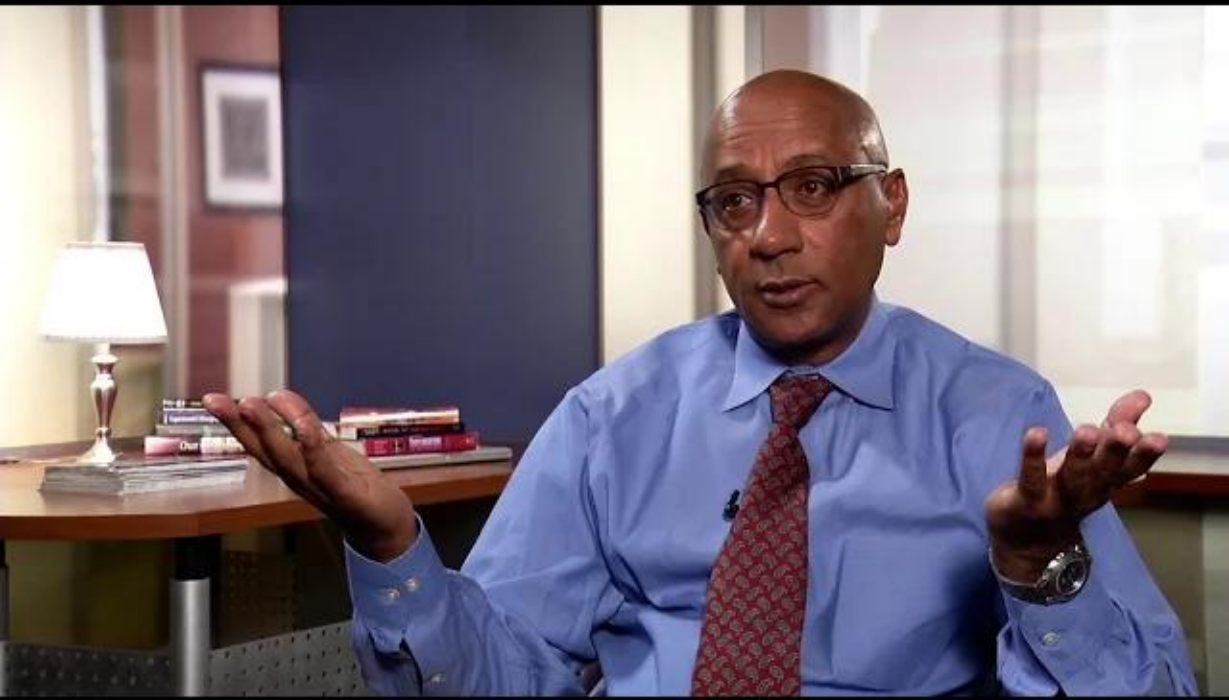

1
00:00:00,000 --> 00:00:04,010
Each February young scientists at NASA's Goddard Space Flight Center enroll in the Planetary Science Winte

2
00:00:04,030 --> 00:00:08,020
Together with a group of veteran engineers

3
00:00:08,040 --> 00:00:12,030
they have one week to work and submit the design

4
00:00:12,050 --> 00:00:16,050
of an instrument that can be proposed to fly in space. Mission proposals are not selected the first

5
00:00:16,070 --> 00:00:20,050
time around. It's a very competitive environment.

6
00:00:20,070 --> 00:00:24,060
Proposals are usually rejected when they fail to meet science, technical and cost requirements.

7
00:00:24,080 --> 00:00:28,070
A lesson that Brook Lakew, who has been on several successful flight missions learned on a personal level. I w

8
00:00:28,090 --> 00:00:32,080
designing an instrument, but the mission itself was deemed too expensive

9
00:00:32,100 --> 00:00:36,090
by NASA and was not selected. But that's the name of the

10
00:00:36,110 --> 00:00:40,100
game. Not every mission that you design flies.

11
00:00:40,120 --> 00:00:44,110
You submit several times and improve on it. And then someday you

12
00:00:44,130 --> 00:00:48,120
hope that you're going to be selected. In order to train young NASA scientists into mission creators,

13
00:00:48,140 --> 00:00:52,130

Dr. Lakew created the Planetary Winter School.

14
00:00:52,150 --> 00:00:56,140
In the Integrated Design Center they come with their abstract concept

15
00:00:56,160 --> 00:01:00,150
work with the engineers and then they face their reality if you will.

16
00:01:00,170 --> 00:01:04,160
As a young scientist, you're usually very

17
00:01:04,180 --> 00:01:08,180
focused on your science and analyzing data

18
00:01:08,200 --> 00:01:12,180
and hoping to participate in new missions. But, I think to be

19
00:01:12,200 --> 00:01:16,200
able to build your own instrument, your own mission, you really have to

20
00:01:16,220 --> 00:01:20,200
understand the engineering. The Integrated Design Center is where the

21
00:01:20,220 --> 00:01:24,220
magic happens. It's where they bring in all the different disciplines from

22
00:01:24,240 --> 00:01:28,230
communications and power and radiation and it allows us to get

23
00:01:28,250 --> 00:01:32,270
our feet wet in designing an instrument or a mission that could potentially

24
00:01:32,290 --> 00:01:36,280
be proposed to a real live NASA program one day. So if I'm going to

25
00:01:36,300 --> 00:01:40,300
be apart of a member of a large mission design, or going to be

26
00:01:40,320 --> 00:01:44,310
a PI not only should I be thinking about the science

27
00:01:44,330 --> 00:01:48,320
I should also be worrying about what the engineers can tell you. My job is

28
00:01:48,340 --> 00:01:52,330
naturally very collaborative. I work with a lot of scientists, but it's a very different way

29
00:01:52,350 --> 00:01:56,340
of thinking to go over to the engineers and talk with them.

30
00:01:56,360 --> 00:02:00,340
So one of the great things about the winter school is that we go from researchers

31
00:02:00,360 --> 00:02:04,350
to mission developers. We all learn about

32
00:02:04,370 --> 00:02:08,360
every element, from the budget to the mechanical, from the electrical and

33
00:02:08,380 --> 00:02:12,370
as scientists we typically don't have that choice. My role

34
00:02:12,390 --> 00:02:16,390
in the planetary science winter school is communications. I'm in charge of getting the data back

35
00:02:16,410 --> 00:02:20,410
from the instrument suite back home. Every time somebody made a change we had

36
00:02:20,430 --> 00:02:24,420
to figure out how long it was going to take to get things from the spacecraft back

37
00:02:24,440 --> 00:02:28,430
to Earth, how much time we had with the orbital parameters of

38
00:02:28,450 --> 00:02:32,440

the spacecraft and how much power that would take. So there we so many tradeoffs that

39
00:02:32,460 --> 00:02:36,450
every time any change was made, I had to recalculate all the numbers.

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00:02:36,470 --> 00:02:40,460
When you're designing a mission or an instrument, it's all about trading off your science and

41
00:02:40,480 --> 00:02:44,470
the engineering. So you make sure you can keep the science you really want,

42
00:02:44,490 --> 00:02:48,480
maybe get a little bit of extra science that you'd like, but you've got to make it work.

43
00:02:48,500 --> 00:02:52,490
My vision is that the Planetary Winter

44
00:02:52,510 --> 00:02:56,510
School becomes the premiere program for training NASA

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00:02:56,530 --> 00:03:00,520
earlier career scientists. It's a real investment in

46
00:03:00,540 --> 00:03:04,520
people and that's the most important one in my view.

47
00:03:04,540 --> 00:03:08,540
Goddard's postdoctoral planetary scientists are enrolling now for the 2016-2017 Planetary Science Winter Sch