
MARSHALL
SPACE FLIGHT CENTER
60
YEARS
1960 - 2020
NASA
CENTENNIAL
CHALLENGES

1
00:00:01,220 --> 00:00:03,640
(Narrator)
NASA's Centennial Challenges looks to the public,

2
00:00:03,650 --> 00:00:09,269
industry, entrepreneurs, small businesses
and even garage inventors to develop revolutionary

3
00:00:09,269 --> 00:00:12,320
solutions to some of the biggest challenges
that NASA faces.

4
00:00:13,240 --> 00:00:17,720
Since 2010 Marshall Space Flight Center has
been home to Centennial Challenges.

5
00:00:18,220 --> 00:00:22,060
During that time we've been able to accomplish
great things, together.

6
00:00:22,700 --> 00:00:26,760
Our Astronaut Glove Challenge sourced novel
ways to improve the gloves that astronauts

7
00:00:26,769 --> 00:00:27,930
use in space.

8
00:00:27,930 --> 00:00:30,820
making it easier for them to perform tasks
during spacewalks.

9
00:00:30,820 --> 00:00:32,689
(Soundbite)
My background is in costuming.

10
00:00:32,689 --> 00:00:39,010
I'm a designer and fabricator and these challenges
allow people like myself to participate in

11

00:00:39,010 --> 00:00:44,140
a dialogue about aerospace that otherwise
they would have no interest in.

12
00:00:44,480 --> 00:00:46,740
(Narrator)
Our Lunar Lander Challenge task teams with

13
00:00:46,740 --> 00:00:49,000
building and flying a rocket powered vehicle

14
00:00:49,000 --> 00:00:51,960
that simulates the flight of a vehicle on the Moon.

15
00:00:52,840 --> 00:00:54,840
[cheers]

16
00:00:55,500 --> 00:00:59,840
Our Sample Return Robot Centennial Challenge
asked competitors to develop an autonomous

17
00:00:59,840 --> 00:01:04,630
rover that could seek out and cache samples
for future return missions from other worlds.

18
00:01:04,630 --> 00:01:06,690
(Soundbite)
It takes high-resolution pictures of the area,

19
00:01:06,690 --> 00:01:09,570
it analyzes those images, then it sends the
robot after it.

20
00:01:09,570 --> 00:01:13,480
(Soundbite)
This is like a top-notch competition, and

21
00:01:13,480 --> 00:01:14,480
it's NASA.

22
00:01:14,480 --> 00:01:15,850
I mean, well, it's awesome.

23
00:01:15,850 --> 00:01:18,510
(Narrator)
Our 3D-Printed Habitat Challenge sourced ideas

24
00:01:18,510 --> 00:01:23,240
and technologies to develop 3D printers that
could one day print habitats on the Moon and

25
00:01:23,240 --> 00:01:25,430
Mars, and also here on Earth.

26
00:01:25,430 --> 00:01:28,380
(Soundbite)
It's often counterintuitive that space research

27
00:01:28,380 --> 00:01:31,160
actually improves Earth, but it's seen time
and time again.

28
00:01:31,160 --> 00:01:33,800
(Soundbite)
We are all together developing a technology

29
00:01:33,800 --> 00:01:39,390
that advances the way we think about constructing
buildings on Earth.

30
00:01:39,390 --> 00:01:43,940
Nothing gets done without multiple people
coming together.

31
00:01:43,940 --> 00:01:45,820
(Narrator)
Our Space Robotics Challenge is advancing

32
00:01:45,820 --> 00:01:51,440

robotic software and autonomous capabilities
for space exploration missions on other worlds.

33
00:01:51,440 --> 00:01:54,840
Sending robots ahead of humans could give
us a robotic leg up.

34
00:01:54,850 --> 00:01:58,070
(Soundbite)
We look at this robot as being a type of caretaker

35
00:01:58,070 --> 00:02:01,630
robot that can manage human environments while
the crew's not there.

36
00:02:01,630 --> 00:02:04,780
(Narrator)
NASA's first in-space competition the Cube Quest Challenge

37
00:02:04,780 --> 00:02:09,120
tasked the public with developing
small satellites capable of orbiting the Moon,

38
00:02:09,120 --> 00:02:10,880
surviving the longest in deep space

39
00:02:10,880 --> 00:02:14,760
or being able to communicate from beyond our Moon back to Earth.

40
00:02:14,770 --> 00:02:16,180
(Soundbite)
It's a wonderful challenge to be able to go

41
00:02:16,180 --> 00:02:18,540
and push the boundaries of what exists.

42
00:02:18,540 --> 00:02:19,920
(Soundbite)
“Excited” might be an understatement.

43
00:02:19,920 --> 00:02:22,000
(Soundbite)
It's an amazing opportunity.

44
00:02:22,540 --> 00:02:24,720
(Narrator)
Our Vascular Tissue Challenge is tasking the

45
00:02:24,730 --> 00:02:30,050
public with creating vascularized human organ
tissue, in vitro, in order to advance research

46
00:02:30,050 --> 00:02:34,080
and benefit medicine on long-duration space
missions and on Earth.

47
00:02:34,080 --> 00:02:36,760
(Soundbite)
It will have an enormous impact on humankind.

48
00:02:36,760 --> 00:02:39,360
(Soundbite)
It can really change the face of medicine

49
00:02:39,360 --> 00:02:40,360
as we know it.

50
00:02:40,360 --> 00:02:42,320
(Narrator)
NASA's CO2 Conversion Challenge is all about

51
00:02:42,320 --> 00:02:47,620
converting carbon dioxide into sugars as a
step to creating mission critical resources.

52
00:02:47,620 --> 00:02:50,120
By combining these byproducts with on-site materials,

53
00:02:50,120 --> 00:02:54,340

we could create fuels, food, construction materials and even medicine.

54
00:02:55,280 --> 00:02:58,060
(Soundbite)
The NASA Centennial Challenge really opened the door.

55
00:02:58,060 --> 00:03:00,540
(Soundbite)
I think it's a really great illustration of

56
00:03:00,550 --> 00:03:04,590
how open NASA is to change and how important
these competitions are.

57
00:03:04,590 --> 00:03:06,850
(Soundbite)
The NASA Centennial Challenge for me was a

58
00:03:06,850 --> 00:03:07,940
life-changing experience.

59
00:03:07,940 --> 00:03:10,210
(Narrator)
Together NASA's Marshall Space Flight Center

60
00:03:10,210 --> 00:03:12,560
and Centennial Challenges have come so far.