1
00:00:00,200 --> 00:00:02,836
You may be familiar with
Hubble’s iconic Deep Field

2
00:00:02,836 --> 00:00:05,772
images, where Hubble peered
farther back into space and time

3
00:00:05,772 --> 00:00:08,775
than ever before, and you may
have thought surely that’s as

4
00:00:08,775 --> 00:00:12,012
good as it gets. But a lot of
Hubble scientists inspired by

5
00:00:12,012 --> 00:00:15,582
Star Trek want to continue
boldly pushing as far into the

6
00:00:15,582 --> 00:00:19,119
final frontier as we can. So in
celebration of Star Trek’s new

7
00:00:19,119 --> 00:00:22,756
movie and the franchise’s 50th
anniversary, Hubble is releasing

8
00:00:22,756 --> 00:00:27,261
its latest Frontier Field image.
This image uses a clever trick

9
00:00:27,261 --> 00:00:29,796
from nature predicted by
Einstein’s general theory of

10
00:00:29,796 --> 00:00:33,767
relativity called gravitational
lensing to magnify distant

11
00:00:33,767 --> 00:00:36,770
galaxies that we may not
otherwise be able to see. We

12
00:00:36,770 --> 00:00:40,340
point the telescope at a cluster
of galaxies where there's so

13
00:00:40,340 --> 00:00:44,611
much mass that it's warping the
fabric of spacetime. Light from

14
00:00:44,611 --> 00:00:47,447
behind the mass of objects
appears to bend around the

15
00:00:47,447 --> 00:00:50,817
cluster, and we see this
incredible distortion effect on

16
00:00:50,817 --> 00:00:54,755
the appearance of the background
galaxies. In this image, the

17
00:00:54,755 --> 00:00:58,025
foreground galaxy cluster Abell
S1063 is about 4 billion

18
00:00:58,025 --> 00:01:02,863
light-years away. You can see
bright blue galaxies behind the

19
00:01:02,863 --> 00:01:05,933
cluster appearing as these
stretched out arcs, and some

20
00:01:05,933 --> 00:01:09,136
even appear in multiple
locations. These galaxies are

21
00:01:09,136 --> 00:01:12,306
about twice as far away as the
foreground cluster, on the order

22
00:01:12,306 --> 00:01:15,509
of 8 billion light-years. Then
if you look at this small,

23
00:01:15,509 --> 00:01:18,679
orange dot, that’s an extremely
distant galaxy we’re seeing

24
00:01:18,679 --> 00:01:23,350
nearly 13 billion light-years
away. And here, and here, and

25
00:01:23,350 --> 00:01:27,955
here - that’s actually all the
same galaxy. At 26 years and

26
00:01:27,955 --> 00:01:30,424
counting of cutting-edge
science, the Hubble Space