1
00:00:00,010 --> 00:00:04,020
(Music)

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00:00:04,040 --> 00:00:08,090
My name is Brian Blair, I'm an instrument scientist and I'm the

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00:00:08,110 --> 00:00:12,110
principle investigator for the LVIS sensor. What's really interesting about

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00:00:12,130 --> 00:00:16,140
being an instrument scientist is, it's not a really a precisely defined field.

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00:00:16,160 --> 00:00:20,200
So essentially you're trying to translate scientific requirements

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00:00:20,220 --> 00:00:24,220
into engineering requirements. So it's a pretty broad field, there's a lot of room

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00:00:24,240 --> 00:00:28,250
for creativity, it's very exciting. So LVIS is a high

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00:00:28,270 --> 00:00:32,280
altitude, airborne laser mapping sensor. The acronym

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00:00:32,300 --> 00:00:36,360
stands for the Land, Vegetation and Ice Sensor (LVIS). It's designed to operate at

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00:00:36,380 --> 00:00:40,450
high altitudes so we can map a much larger area very quickly. Because it can

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00:00:40,470 --> 00:00:44,490
map such a large area, we can look at landscape scale processes.

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00:00:44,510 --> 00:00:48,520
So we may not look at an individual patch of vegetation

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00:00:48,540 --> 00:00:52,580

or a small feature of a glacier. We would map

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00:00:52,600 --> 00:00:56,610
the entire glacier system. So in 2009,

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00:00:56,630 --> 00:01:00,660
we flew to the Antarctic Peninsula, and as we were mapping with LVIS we were

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00:01:00,680 --> 00:01:04,740
taking high-resolution camera imagery at the same time. So we

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00:01:04,760 --> 00:01:08,770
took all those images, mosaic them together and merge them with the LVIS data.

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00:01:08,790 --> 00:01:12,790
Now we have a product that you can actually interact with,

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00:01:12,810 --> 00:01:16,810
and see all the different views; you can go walk around places that you could never

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00:01:16,830 --> 00:01:20,920
physically walk around because they're too dangerous. So when we developed that,

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00:01:20,940 --> 00:01:24,960
it was with the intention of giving scientists the ability

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00:01:24,980 --> 00:01:29,020
to interact with the topography data in a way that they never could, just looking

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00:01:29,040 --> 00:01:33,040
at it flatly on a computer screen. Maybe they pick out a different

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00:01:33,060 --> 00:01:37,090
way to approach a problem, or you know, it would inspire them to do something different

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00:01:37,110 --> 00:01:41,150
with the data. So where we're getting to now, we flew the LVIS sensor

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00:01:41,170 --> 00:01:45,160
that was developed for this high altitude drone, the Global Hawk. That can fly at 60

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00:01:45,180 --> 00:01:49,200
thousand feet for up to 30 hours. So we used to fly for 3 hours

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00:01:49,220 --> 00:01:53,240
in some aircraft now the Global Hawk is 30 hours. We used to have a

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00:01:53,260 --> 00:01:57,260
few hundred meter swath, now we have a 4 kilometer wide swath. But the other

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00:01:57,280 --> 00:02:01,300
advantage of flying high is that you burn less fuel, you can fly

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00:02:01,320 --> 00:02:05,350
faster and you can fly a much larger area. Most scientists

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00:02:05,370 --> 00:02:09,380
believe that you can only get small amount of area mapped.

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00:02:09,400 --> 00:02:13,430
As you bring in LVIS and especially Global Hawk LVIS, all of a sudden you bust through that

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00:02:13,450 --> 00:02:17,520
limitation, you're mapping huge amounts of areas. And what could

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00:02:17,540 --> 00:02:21,550
have taken 10 or 20 years with some of the older

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00:02:21,570 --> 00:02:25,590
sensors, now could literally be done in a single season. You

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00:02:25,610 --> 00:02:29,610
could almost map the entire Greenland ice sheet in a single season.

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00:02:29,630 --> 00:02:33,670

So everything that we do with LVIS whether it's science application

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00:02:33,690 --> 00:02:37,750
development or algorithms or technology prototyping, leads us to planetary

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00:02:37,770 --> 00:02:41,760
mapping. We want to map the earth because we want to map everything and we want to do it

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00:02:41,780 --> 00:02:45,780
often. But we could also apply this technology to other planets as well.

42
00:02:45,800 --> 00:02:49,820
(music)