

WEBVTT

- 1
00:00:02.120 --> 00:00:04.560
Okay, welcome everyone. We're going to make a start of it.
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00:00:04.700 --> 00:00:08.240
I'm today joined by Simon Rafel. He's the CEO of Archer
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00:00:08.260 --> 00:00:10.900
Materials. AXE is the ticker code here.
- 4
00:00:11.640 --> 00:00:14.580
If you've been with us for a while, there's a good chance you've come across Archer
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00:00:14.620 --> 00:00:18.020
before. We had the opportunity to speak to Mohammed
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00:00:18.300 --> 00:00:19.380
Shoukaa. He was,
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00:00:20.200 --> 00:00:23.940
in fact, one of the, I guess, brains behind some of the pioneering
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00:00:24.040 --> 00:00:27.500
technology here, and we spoke with him in 2022 and 2024.
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00:00:27.560 --> 00:00:30.260
So this is well overdue for a catch-up.
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00:00:31.100 --> 00:00:34.780
The very quick overview here is that Archer is developing advanced semiconductor
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00:00:34.820 --> 00:00:38.800
devices, including chips for quantum computing, sensing, medical devices.
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00:00:40.460 --> 00:00:44.380
Well above my pay grade in terms of understanding, so I'm going to try and get
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00:00:44.440 --> 00:00:48.280
Simon to sort of dumb it down for us so we can get a bit of an

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00:00:48.300 --> 00:00:52.260

understanding of how it sort of works and what's relevant, I suppose, from an

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00:00:52.320 --> 00:00:52.840

investor's

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00:00:53.820 --> 00:00:54.420

viewpoint.

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00:00:55.540 --> 00:00:59.480

What's really interesting, and we got into this with Mohammed, is that Archer is

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00:00:59.520 --> 00:01:03.100

really focusing on the design and the IP.

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00:01:03.180 --> 00:01:06.840

They run a fables model, so basically that means without

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00:01:06.900 --> 00:01:10.360

fabrication. This is outsourced to the big sort of

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00:01:12.840 --> 00:01:15.240

fabrication plants. These are big multi-billion dollar

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00:01:16.120 --> 00:01:18.540

installations that handle all of this kind of stuff.

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00:01:18.580 --> 00:01:21.320

And the company's been really busy over the years.

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There's a portfolio, I think, of over 40 different patents at this point

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in time. It's also interesting, the company's got 10 million in cash

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in the bank to sort of help proceed towards commercialization.

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00:01:32.620 --> 00:01:36.540

So really what I guess today the goal is to

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00:01:36.600 --> 00:01:40.550

get a better sense of what the business is about, some of the progress it's made,

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00:01:40.700 --> 00:01:44.450

some of the opportunities that are available to it, and what the path looks like,

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00:01:44.700 --> 00:01:48.590

I guess, in the years ahead. It's always important for me to stress that none of

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00:01:48.620 --> 00:01:51.680

this is financial advice. Got to keep the lawyers and the regulators happy.

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00:01:52.320 --> 00:01:54.600

But of course, that's something that I think we'd say anyway.

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00:01:54.640 --> 00:01:58.500

We're all care, no responsibility here, and no one cares more about

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00:01:58.540 --> 00:02:02.340

your money than you do, so it really pays to pay attention, I

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00:02:02.380 --> 00:02:04.730

suppose. But I hope you get a lot out of this.

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00:02:04.760 --> 00:02:08.110

And if you do have any questions, we've had a few come through already, use that

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00:02:08.140 --> 00:02:11.240

Slido link and I'll put them to Simon when we get the chance.

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00:02:11.320 --> 00:02:14.060

So that's all said and done. Simon, thanks so much for your time today.

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00:02:14.660 --> 00:02:15.940

No problem. Good to be here.

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00:02:16.700 --> 00:02:18.140

I'm trying to think of a more

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00:02:19.420 --> 00:02:23.280

difficult concept to get across than quantum computing and chip

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00:02:23.340 --> 00:02:24.820

manufacturing and design.

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00:02:25.680 --> 00:02:26.360

Mm.

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00:02:27.600 --> 00:02:29.240

But we're going to try and do that as well.

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00:02:29.880 --> 00:02:31.840

Where do you even start with something like this?

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00:02:31.880 --> 00:02:35.280

If you've just run into someone for the first time at a barbecue or something, and,

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00:02:35.310 --> 00:02:39.160

"Hey, Simon, what do you do?" "I run a little company called

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00:02:39.220 --> 00:02:43.020

Archer. And what do you do?" It's a very broad question, but it's

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00:02:43.040 --> 00:02:44.480

probably a good place to sort of stay.

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00:02:44.840 --> 00:02:48.740

How do you explain it in a

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00:02:48.780 --> 00:02:51.400

way that's meaningful to the layman?

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00:02:52.940 --> 00:02:56.480

Yeah, that's a good one. That's something I wrestle with a lot.

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00:02:57.960 --> 00:03:01.180

Yeah, what we're doing, as you described, we're developing

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00:03:01.400 --> 00:03:03.820

technology and IP around those technologies.

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00:03:05.200 --> 00:03:07.580

And we're a quantum technologies company.

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So yeah, what does that mean, right?

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00:03:11.020 --> 00:03:14.560

Well, quantum computing, quantum sensing, it's

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00:03:15.000 --> 00:03:18.600

the next generation of computing, if you like, or

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00:03:18.840 --> 00:03:20.860

hardware that's coming up on the horizon.

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00:03:22.380 --> 00:03:26.320

It's a little unclear on when all of that will be in everyone's everyday

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00:03:26.440 --> 00:03:29.799

lives, but it's coming in the next 5 to 10 years probably, I would say.

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00:03:30.250 --> 00:03:30.380

Yeah.

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00:03:31.880 --> 00:03:34.480

And I'll start with the easiest stuff that we do.

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00:03:34.560 --> 00:03:38.109

It's probably easier to link to the general

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00:03:38.120 --> 00:03:38.880

person, right?

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00:03:40.040 --> 00:03:43.640

We've got a broad technology portfolio, and that's

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00:03:44.520 --> 00:03:46.160

purposeful at this point because,

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00:03:47.220 --> 00:03:50.980

as you'll probably learn as I'm talking here, the technologies are all

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00:03:51.020 --> 00:03:54.940

early stage. So we're backing a few of those and running them in

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00:03:55.000 --> 00:03:58.970

parallel and eventually the hope is all, or at

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00:03:59.000 --> 00:04:01.280

least some of them, will be businesses in their own right.

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00:04:02.100 --> 00:04:02.260

Right.

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00:04:03.100 --> 00:04:06.820

So one of those technologies, the easiest to sort of connect with is the med

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00:04:06.860 --> 00:04:10.060

tech and the project that we call our biochip.

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And what we're doing there is building advanced chips

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00:04:15.160 --> 00:04:18.950

that do biological sensing. Now, they're advanced chips only

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00:04:18.959 --> 00:04:21.481

because they're advanced in terms of sensing.

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00:04:21.610 --> 00:04:25.320

So if you look at things that you might buy, everyone's familiar

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with RAT COVID tests, right? Flu tests,

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pregnancy tests. Those things have been around, all that technology at least,

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has been around since the '60s, basically, and '70s, when you could start

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00:04:36.880 --> 00:04:38.770

getting the at-home pregnancy tests.

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And those things are great. You buy them, pick them up at the pharmacy, bring them

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00:04:43.700 --> 00:04:47.060

home, stick the thing up your nose, and do the test, and it tells you whether

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00:04:47.100 --> 00:04:48.560

you've got COVID or not, right?

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00:04:49.840 --> 00:04:53.340

It's a proven technology. It's been around for a long time.

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00:04:53.380 --> 00:04:57.220

But our chip is replacing that, if you like.

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It's going to be the first big inflection in that technology for 40 or 50

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00:05:01.200 --> 00:05:01.580

years.

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00:05:03.140 --> 00:05:07.040

So we're developing different sensors that do stuff for medical

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00:05:07.120 --> 00:05:11.040

purposes, where you can take something that looks like a

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00:05:11.280 --> 00:05:15.180

cheap RAT test, you plug it into a handheld reader, or it connects

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00:05:15.240 --> 00:05:16.780

to your phone or something like that.

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It's a rapid test that you can do at home, or it can be done in a clinic

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00:05:21.300 --> 00:05:23.700

or in a doctor's surgery really quickly.

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00:05:23.740 --> 00:05:27.420

Now, the real difference now is that technology, called lateral flow

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00:05:27.520 --> 00:05:31.440

technology, that's been around for ages, that's replaced with our biochip.

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00:05:33.660 --> 00:05:36.680

So that sits in a disposable cartridge.

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00:05:36.800 --> 00:05:40.420

And in our lead application that we're developing, we're measuring potassium in

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00:05:40.500 --> 00:05:43.780

blood. And you say, "Okay, what's the big deal with that?" Well,

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00:05:44.300 --> 00:05:47.580

there's a huge portion of the population that has

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00:05:47.640 --> 00:05:51.480

cardiovascular disease, kidney disease, and diabetes, especially in the

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00:05:51.520 --> 00:05:52.820

aging population.

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00:05:53.960 --> 00:05:57.560

And usually, the medication that those people are taking or the

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00:05:57.600 --> 00:06:00.920

treatments they're having can cause the potassium in their body to go

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00:06:01.240 --> 00:06:05.180

up... higher than it should be. That's really

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00:06:05.200 --> 00:06:08.620

important it turns out, because it controls basically your heart

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00:06:08.680 --> 00:06:12.560

operation and other things in your body, and you can die if that goes too high.

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00:06:12.680 --> 00:06:16.540

So it's something that has to be monitored, and currently there

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00:06:16.600 --> 00:06:18.710

isn't an easy way to do that. You'll

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00:06:20.320 --> 00:06:23.240

go to your doctor, the doctor will say, "I need to do these measurements.

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00:06:23.320 --> 00:06:27.300

You need to go to the pathology clinic, have a blood draw, wait till the next

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00:06:27.360 --> 00:06:30.220

day or the day after for the results to come back, and then you have to go and see

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00:06:30.260 --> 00:06:33.859

your doctor or your specialist again."

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00:06:33.960 --> 00:06:37.900

So there's a real need for a quick test that can be done

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00:06:37.960 --> 00:06:41.140

in the GP surgery, in your

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00:06:42.200 --> 00:06:45.780

cardiologist's office or even at home that'll give you that result quickly,

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00:06:46.300 --> 00:06:49.800

and then action can be taken there, and you can monitor more frequently and all

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00:06:49.820 --> 00:06:49.980

that

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00:06:50.900 --> 00:06:51.720

good stuff that comes-

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00:06:52.070 --> 00:06:52.070

Mm

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00:06:52.070 --> 00:06:52.430

... with it.

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00:06:53.000 --> 00:06:53.160

Mm.

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00:06:54.220 --> 00:06:57.880

So that is different. That's a bit more advanced than a RAT test.

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00:06:57.940 --> 00:07:00.220

It's something that you just can't do currently.

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00:07:00.280 --> 00:07:01.870

The technology doesn't exist there.

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00:07:01.870 --> 00:07:05.560

There's people trying to do it and people making progress, including ourselves.

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00:07:05.820 --> 00:07:06.040

Mm.

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00:07:06.880 --> 00:07:09.180

But that's one application with the biochip.

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00:07:10.180 --> 00:07:13.860

Now it's super advanced because it's actually, in the case of that

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00:07:13.880 --> 00:07:17.320

potassium is you'll p***k your finger to get a drop of blood,

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00:07:18.160 --> 00:07:22.120

put it onto the device, so the device will send the blood to the chip, and the chip

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00:07:22.140 --> 00:07:25.120

does the analysis, and you have a digital output straight away.

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00:07:25.500 --> 00:07:25.700

Mm.

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00:07:26.740 --> 00:07:30.660

So it's advanced in that respect, but we're leveraging, again,

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00:07:30.960 --> 00:07:33.600

60 years of microchip fabrication and development.

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00:07:34.320 --> 00:07:36.330

So although these things are advanced and it's

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00:07:36.400 --> 00:07:39.070

sort of

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00:07:39.200 --> 00:07:43.180

state-of-the-art diagnostics and at home tests, those chips

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00:07:43.200 --> 00:07:47.180

are still going to be produced for tens of cents each, and then the

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00:07:47.220 --> 00:07:50.940

infrastructure for the rest of the system is already there.

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00:07:50.980 --> 00:07:52.040

Yeah.

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00:07:52.580 --> 00:07:52.800

And

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00:07:54.640 --> 00:07:56.820

because it's a microchip, the work that we've done,

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00:07:58.040 --> 00:08:01.720

we're leading with this blood potassium testing, but we can test for other

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00:08:01.780 --> 00:08:05.100

things as well. So we've got a whole pipeline of applications that are coming

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00:08:05.120 --> 00:08:06.080

through behind that.

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00:08:06.480 --> 00:08:06.780

Mm.

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00:08:07.540 --> 00:08:11.300

They can be in human health, but also we're looking at industrial

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00:08:11.380 --> 00:08:13.600

applications, ag tech applications.

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00:08:14.140 --> 00:08:17.700

So this biochip that gets made in a chip foundry and then this

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00:08:17.740 --> 00:08:21.420

proprietary processing that Arch has developed over the last few years on

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00:08:21.480 --> 00:08:22.360

that,

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00:08:23.220 --> 00:08:26.060

it has a whole range of applications, which is the beautiful thing.

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00:08:26.620 --> 00:08:26.800

Yeah.

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00:08:27.800 --> 00:08:31.600

And massive markets as well. So if you look at this potassium issue that I

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00:08:31.640 --> 00:08:32.220

talked about,

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00:08:34.380 --> 00:08:38.260

you look at the US, the cost for that condition, which

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00:08:38.280 --> 00:08:42.120

is called hyperkalemia, is a \$30 billion cost burden just in the US

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00:08:42.201 --> 00:08:42.600

alone.

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00:08:43.260 --> 00:08:43.270

Mm.

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00:08:43.280 --> 00:08:47.240

Now you can save massive chunks of that by saving on hospital visits that

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00:08:47.300 --> 00:08:50.420

happen to these patients, and our test will help prevent that.

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00:08:50.480 --> 00:08:54.320

So there's a massive value pricing option there for

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00:08:54.400 --> 00:08:54.860

us and

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00:08:55.700 --> 00:08:58.340

we're addressing \$30 billion markets there.

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00:08:58.860 --> 00:08:59.080

Mm.

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00:09:01.240 --> 00:09:03.229

So I don't know how I've described that really, but that

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00:09:04.320 --> 00:09:08.200

technology's a bit easier to describe because everybody's used these RAT

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00:09:08.240 --> 00:09:10.700

tests and you can see how that can help and-

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00:09:11.060 --> 00:09:11.260

Yeah

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00:09:11.620 --> 00:09:11.620

...

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00:09:12.960 --> 00:09:15.200

and where the value proposition is there.

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00:09:15.800 --> 00:09:18.620

Absolutely. Can we nerd out a little bit?

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00:09:18.680 --> 00:09:18.940

And let's-

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00:09:19.040 --> 00:09:19.050

Yeah

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00:09:19.050 --> 00:09:22.840

... let's get into the tech. So with some of the RATs and the other things, there's

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00:09:23.100 --> 00:09:27.060

often, again, I'm way outside of my circle of competence here,

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00:09:27.140 --> 00:09:31.040

but there is either an antigen or more of a chemical-based

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00:09:31.120 --> 00:09:34.640

reaction that's at place here. Am I reading it right that when we talk about

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00:09:34.780 --> 00:09:37.620

quantum chips, we're looking more at quantum signatures,

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00:09:38.820 --> 00:09:41.560

whether that's something to do with the electron shell or...

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00:09:42.680 --> 00:09:45.860

I'm going to start throwing out big words here that are beyond me, but what I'm

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00:09:45.880 --> 00:09:49.860

trying to get a sense of, what's the secret sauce in the chip

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00:09:49.900 --> 00:09:53.740

that allows it to detect particular elements or molecules or whatever

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00:09:53.780 --> 00:09:56.660

that's sort of qualitatively different from

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00:09:58.340 --> 00:09:59.820

how it's been done previously?

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00:10:00.200 --> 00:10:04.160

Mm-hmm. Yeah. So, yeah, those previous tests are sort of

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00:10:04.200 --> 00:10:07.780

chemicals that react on basically a strip of paper that has

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00:10:07.820 --> 00:10:09.860

chemicals already sort of preset on there.

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00:10:09.940 --> 00:10:10.490

So it's very

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00:10:11.920 --> 00:10:15.540

qualitative if you like. If you do those RAT tests, a

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00:10:15.740 --> 00:10:19.620

colored bar appears and it's hard to tell whether it's actually there sometimes

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00:10:19.660 --> 00:10:20.740

or not, that sort of thing.

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00:10:21.360 --> 00:10:21.370

Yeah.

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00:10:21.420 --> 00:10:23.220

So yeah, in our case, what we're doing,

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00:10:24.260 --> 00:10:27.209

we're taking electronic devices, and because they're on a chip, they're highly

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00:10:27.300 --> 00:10:28.060

miniaturized.

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00:10:28.440 --> 00:10:28.540

Mm.

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00:10:28.660 --> 00:10:32.560

So on a square millimeter chip, if we want, we can get thousands or tens of

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00:10:32.620 --> 00:10:34.440

thousands of these sensors on there.

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00:10:34.660 --> 00:10:34.850

Mm.

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00:10:36.320 --> 00:10:40.080

And then the layers that we build on top of that do

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00:10:40.140 --> 00:10:43.900

special-- That's where the magic happens, where the blood will

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00:10:43.960 --> 00:10:46.110

come in there and it can analyze what's in there.

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00:10:46.560 --> 00:10:46.640

Mm.

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00:10:46.720 --> 00:10:50.540

Now, the signature that's produced there is tiny, so we're

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00:10:50.580 --> 00:10:54.570

measuring tiny voltage changes essentially because of whatever is in the blood.

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00:10:55.340 --> 00:10:59.200

But because these devices are miniaturized on a chip, they're highly sensitive

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00:10:59.260 --> 00:11:00.080

to that.

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00:11:00.140 --> 00:11:00.240

Yeah.

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00:11:00.280 --> 00:11:04.010

And then on top of that, because we can fit many on a chip, we can

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00:11:04.020 --> 00:11:07.800

design a really clever circuit to get the sensitivity there.

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00:11:07.860 --> 00:11:08.280

Right.

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00:11:08.380 --> 00:11:12.080

And it's extremely quantitative in this case, so it gets you very precise

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00:11:12.140 --> 00:11:15.220

numbers, which is what's required for things like this potassium.

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00:11:15.280 --> 00:11:18.960

So it doesn't just tell you your potassium's high or low,

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00:11:19.060 --> 00:11:22.860

it gives you a very precise number, which is key for the clinicians to use

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00:11:22.920 --> 00:11:23.080

and-

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00:11:23.380 --> 00:11:23.440

Mm

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00:11:23.480 --> 00:11:24.760

... key for this application.

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00:11:25.290 --> 00:11:25.500

Mm.

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00:11:25.920 --> 00:11:29.460

So it's a combination of the materials being able to measure tiny

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00:11:29.520 --> 00:11:32.160

changes with these reduced

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00:11:32.980 --> 00:11:36.960

miniaturized devices on a chip. And because we're using

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00:11:37.000 --> 00:11:40.840

chip fabrication facilities and we're using the same types of processes to

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00:11:40.880 --> 00:11:44.360

build the layers on top afterwards, these things are incredibly

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00:11:44.400 --> 00:11:48.120

reproducible and repeatable, which is not the case in other

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00:11:48.340 --> 00:11:51.040

types of diagnostics, especially these lateral flow ones.

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00:11:51.440 --> 00:11:51.520
Yeah.

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00:11:51.560 --> 00:11:55.400
They're designed to be very cheap and designed to do what they do, but it means

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00:11:55.420 --> 00:11:58.140
they're not capable of some of the things we're achieving.

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00:12:00.160 --> 00:12:01.340
So

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00:12:02.380 --> 00:12:04.159
I take it that the

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00:12:04.720 --> 00:12:08.488
physics... is pretty

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00:12:08.548 --> 00:12:12.248
established. And this is, I don't want to say just an

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00:12:12.288 --> 00:12:14.888
engineering challenge, but an engineering challenge.

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00:12:14.948 --> 00:12:18.808
And we see it a lot actually with sort of earlier stage tech

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00:12:18.848 --> 00:12:19.708
companies, sort of like

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00:12:21.048 --> 00:12:23.068
the things have been worked out on the chalkboard.

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00:12:23.408 --> 00:12:27.028
We've even got some small demo sort of things that work, and then it

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00:12:27.108 --> 00:12:30.928
feels like, at least to an outside, feels like, oh, we just need to scale it

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00:12:31.008 --> 00:12:34.588

up. But then you realize very quickly that in fact, there is

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00:12:34.628 --> 00:12:38.248

immense challenge in the engineering of these kinds of things,

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00:12:38.828 --> 00:12:42.548

especially when specificity and accuracy and all of these kinds of

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00:12:42.728 --> 00:12:46.048

things are important. So is that right in terms of when we're talking about the

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00:12:46.068 --> 00:12:49.168

biochips is there's no question mark over the

248

00:12:50.008 --> 00:12:53.408

theoretical basis of it in terms of the physics?

249

00:12:53.488 --> 00:12:57.028

It's really just trying to make sure that this can be

250

00:12:57.068 --> 00:13:01.008

done to a specification and quality that is

251

00:13:01.048 --> 00:13:04.488

reproducible, accurate, and of a certain standard.

252

00:13:04.528 --> 00:13:05.188

Is that correct?

253

00:13:05.828 --> 00:13:09.668

Yeah. That's exactly right. And that's where we are now.

254

00:13:09.868 --> 00:13:13.688

So if I go back like probably two years, just

255

00:13:13.708 --> 00:13:17.607

after I joined the company, we started the very basic work with this, and for

256

00:13:17.628 --> 00:13:21.408

the most part, we were reproducing what's already out there that professors have

257

00:13:21.448 --> 00:13:22.788

done in universities.

258

00:13:23.228 --> 00:13:23.548

Yeah.

259

00:13:23.888 --> 00:13:25.188

But yeah, you're absolutely right then.

260

00:13:25.288 --> 00:13:28.528

To be able to turn that into a product, it's a massive challenge and-

261

00:13:29.108 --> 00:13:29.268

Yeah

262

00:13:29.648 --> 00:13:32.828

... every day I'm talking to our head of engineering about the next challenge and

263

00:13:32.868 --> 00:13:34.008

the new challenges, and it's

264

00:13:35.448 --> 00:13:38.568

hard. So yeah, our focus has been on

265

00:13:40.568 --> 00:13:44.448

not only making the thing work and making it accurate and precise, but

266

00:13:44.508 --> 00:13:47.948

a lot of the stuff that's been done in research, that's not

267

00:13:47.988 --> 00:13:51.208

applicable to a manufacturing or a scalable system.

268

00:13:51.668 --> 00:13:51.968

Mm.

269

00:13:52.768 --> 00:13:56.628

And then for these types of diagnostic products, there's really stringent

270

00:13:56.668 --> 00:14:00.168

requirements on the human-user

271

00:14:00.228 --> 00:14:02.488

interface and how that works and

272

00:14:03.888 --> 00:14:07.288

how easy the thing... These things have to be idiot-proof, right?

273

00:14:07.488 --> 00:14:07.788

Like

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00:14:08.688 --> 00:14:09.908

for it to be safe.

275

00:14:10.348 --> 00:14:10.528

Yep.

276

00:14:11.568 --> 00:14:14.888

There's things like really strict lifetime requirements.

277

00:14:14.988 --> 00:14:18.608

So, if you produce a disposable cartridge for use in this reader,

278

00:14:19.308 --> 00:14:22.228

you have to be able to store it for up to 18 months before it gets used, for

279

00:14:22.268 --> 00:14:22.948

example.

280

00:14:23.008 --> 00:14:23.168

Yep.

281

00:14:23.848 --> 00:14:25.138

And then,

282

00:14:26.628 --> 00:14:30.348

historically with tests like this, there's usually, at

283

00:14:30.588 --> 00:14:33.448

the time of use, a calibration process that has to be run.

284

00:14:33.488 --> 00:14:35.908

Well, that's a no-go for a product like this.

285

00:14:35.948 --> 00:14:39.908

The idea of it is that the person's going to be able to take it, put a drop

286

00:14:39.928 --> 00:14:41.368

of blood on, and it gives you the result.

287

00:14:41.528 --> 00:14:45.248

A lay person can't be messing around with calibration and so on.

288

00:14:45.568 --> 00:14:45.808

No.

289

00:14:45.888 --> 00:14:48.968

So these are engineering challenges. You're right.

290

00:14:49.048 --> 00:14:52.148

It's just engineering. But yeah-

291

00:14:52.168 --> 00:14:52.697

Just engineering. Yeah

292

00:14:52.697 --> 00:14:54.078

... but yeah, it turns out that it's

293

00:14:54.888 --> 00:14:58.338

hard, right? So that, at least for the last year, that's been

294

00:14:59.228 --> 00:15:02.808

the core of our engineering activities, and that's going to continue through

295

00:15:02.888 --> 00:15:05.628

to the end of the year and into early next year.

296

00:15:06.188 --> 00:15:10.088

But what's good is, or what's really enjoyable about that

297

00:15:10.168 --> 00:15:12.948

process is it's productization now.

298

00:15:12.988 --> 00:15:14.428

It's not research anymore.

299

00:15:14.888 --> 00:15:15.168

Yeah.

300

00:15:15.288 --> 00:15:19.188

And what comes with solving these problems is all the IP

301

00:15:19.248 --> 00:15:19.908

as well, which is-

302

00:15:20.068 --> 00:15:20.158

Yeah

303

00:15:20.468 --> 00:15:23.768

... really, that's what we needed as a company, right?

304

00:15:23.828 --> 00:15:26.388

We've got to stop other people figuring this stuff out and protect-

305

00:15:27.048 --> 00:15:27.068

Yeah

306

00:15:27.078 --> 00:15:30.668

... the value there. So it's an exciting phase.

307

00:15:31.908 --> 00:15:35.888

And because we're going through that now as well, it's allowing us to start

308

00:15:35.898 --> 00:15:39.588

planning out our regulatory pathways and engaging with

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00:15:39.608 --> 00:15:43.448

clinical trial designers and so on so that, we're probably still a

310

00:15:43.488 --> 00:15:45.138

year away from that, but-

311
00:15:45.228 --> 00:15:45.828
Mm

312
00:15:45.838 --> 00:15:47.488
... we've got to start doing it now.

313
00:15:47.528 --> 00:15:51.468
And because we know the engineering's proceeding forward, we'll be in a position

314
00:15:51.628 --> 00:15:55.108
to actually get into that phase of the project later as well.

315
00:15:55.748 --> 00:15:59.238
Yeah. It's funny, isn't it? You kind of want it to be hard

316
00:15:59.628 --> 00:16:02.208
because if it wasn't, everyone could do it, right?

317
00:16:02.328 --> 00:16:02.488
Yeah.

318
00:16:02.568 --> 00:16:06.108
And it also means, I think I make this point often

319
00:16:06.388 --> 00:16:09.868
is that, when you sort of see the potential for something, particularly as an

320
00:16:09.888 --> 00:16:11.988
investor, you get very itchy and, when?

321
00:16:12.028 --> 00:16:15.968
You see things, once you see something, you expect that it's just

322
00:16:16.188 --> 00:16:19.808
a matter of time. But what you don't see is

323
00:16:19.868 --> 00:16:23.848
sometimes 20, 30 years of development and hard graft in sort of getting to

324
00:16:23.908 --> 00:16:27.468

that kind of stage, which is no fun, I'm sure.

325

00:16:27.507 --> 00:16:29.288

Well, depending on your perspective.

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00:16:29.327 --> 00:16:33.108

But it doesn't mean that when you are there, anyone who

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00:16:33.148 --> 00:16:36.948

may be looking to sort of eat your lunch, they're going to have to overcome those

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00:16:36.988 --> 00:16:39.668

challenges. So there's the sort of legal protections that are around that.

329

00:16:39.698 --> 00:16:43.268

But just the sheer magnitude of the engineering challenge in and of

330

00:16:43.308 --> 00:16:45.648

itself provides a little bit of a moat.

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00:16:45.708 --> 00:16:49.628

If you can sort of solve problems, and then people have to then themselves figure

332

00:16:49.648 --> 00:16:53.248

it out from first principles, it's not an

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00:16:53.268 --> 00:16:56.908

entirely bad thing to have, but particularly when I'm always interested in

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00:16:56.968 --> 00:17:00.548

companies that you come across where a lot of that

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00:17:00.568 --> 00:17:03.528

legacy stuff is, it's unavoidable. You can't get past it.

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00:17:03.568 --> 00:17:05.949

It has to be done, but it has been done, right?

337

00:17:06.368 --> 00:17:07.328

And

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00:17:08.229 --> 00:17:11.148

you're kind of coming in at the interesting phase where it's, again, not just say

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00:17:11.248 --> 00:17:14.647

just engineering, but it is more of a

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00:17:14.709 --> 00:17:15.888

procedural,

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00:17:17.748 --> 00:17:19.088

what's the word I'm sort of looking for?

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00:17:19.148 --> 00:17:22.548

It's just a matter of rolling up the sleeves and getting it done rather than

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00:17:22.588 --> 00:17:26.468

waiting necessarily for some Hail Mary kind of moment, and let's cross our fingers

344

00:17:26.508 --> 00:17:28.908

that this is even possible in the first place.

345

00:17:29.948 --> 00:17:30.108

Yeah.

346

00:17:31.028 --> 00:17:31.508

That's right.

347

00:17:33.168 --> 00:17:37.048

The other thing that's good that comes with this as well is we have prototypes now

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00:17:37.108 --> 00:17:40.788

as well that are tangible things that we've

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00:17:41.028 --> 00:17:44.408

used them a few times for potential investors to come and take a look and see the

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00:17:44.488 --> 00:17:44.688

thing-

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00:17:45.208 --> 00:17:45.328

Yeah

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00:17:45.508 --> 00:17:48.508

... and have it operational, which is a big step forward as well from the

353

00:17:48.728 --> 00:17:51.988

research-y stuff 18 months ago that we were doing.

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00:17:52.048 --> 00:17:56.038

Yeah. Am I right to frame it in that way, that it is

355

00:17:56.088 --> 00:17:57.238

just a matter of

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00:17:59.028 --> 00:18:01.928

time and engineering? It's like renovating your house, right?

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00:18:02.068 --> 00:18:05.288

Maybe it'll take longer or cost more than sometimes initial

358

00:18:05.348 --> 00:18:09.218

expectations, but are we at a stage where whether or

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00:18:09.288 --> 00:18:13.248

not it is possible and will get done, that has well and truly passed that

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00:18:13.308 --> 00:18:16.928

point? And if from an investor's point of view, the

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00:18:16.988 --> 00:18:20.814

uncertainty that exists is one more of-Not

362

00:18:20.864 --> 00:18:24.704

of whether there's a market for it, not whether the

363

00:18:24.724 --> 00:18:28.584

product will work as intended, but just more a question

364

00:18:28.664 --> 00:18:29.464

of when.

365

00:18:31.044 --> 00:18:31.224

Yeah.

366

00:18:32.224 --> 00:18:33.024

I would say so.

367

00:18:33.274 --> 00:18:33.534

Okay.

368

00:18:34.124 --> 00:18:37.564

I definitely have the mindset, and I push this on the team, is it's not

369

00:18:38.044 --> 00:18:40.304

if we can do it, anyway, we will do it, right?

370

00:18:40.334 --> 00:18:40.334

Right.

371

00:18:40.354 --> 00:18:42.364

And these are the targets we're moving to.

372

00:18:43.784 --> 00:18:46.584

Things change, new problems come up.

373

00:18:46.784 --> 00:18:48.224

That's all going to be there.

374

00:18:48.294 --> 00:18:48.294

Sure.

375

00:18:48.304 --> 00:18:49.024

But

376

00:18:50.804 --> 00:18:54.644

we have to be successful and work towards that, so that's the mindset,

377

00:18:54.704 --> 00:18:55.944

and yeah, it is just when.

378

00:18:57.164 --> 00:19:01.124

And I think we're doing a lot of the technical de-risking,

379

00:19:01.364 --> 00:19:03.544

which is good, and that needs-

380

00:19:03.554 --> 00:19:03.554

Yeah

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00:19:03.554 --> 00:19:06.704

... to continue. I think the next biggest step will be the clinical trials.

382

00:19:06.764 --> 00:19:09.824

It's all de-risking stages if you're-

383

00:19:09.984 --> 00:19:10.054

Yeah

384

00:19:10.054 --> 00:19:10.864

... an investor, right?

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00:19:11.304 --> 00:19:11.584

Yep.

386

00:19:12.164 --> 00:19:16.044

And I'm pretty confident the engineering work, we'll finish that, we'll

387

00:19:16.084 --> 00:19:20.004

have a product, and then, the next hurdle will be

388

00:19:20.024 --> 00:19:21.284

getting through clinical trials.

389

00:19:21.964 --> 00:19:25.824

Yeah. I'm glad we made that point because it is, again, early stage tech,

390

00:19:26.164 --> 00:19:27.484

there's a lot of moving parts to it.

391

00:19:27.524 --> 00:19:30.504

So I think that's a really important point to clarify.

392

00:19:30.904 --> 00:19:34.844

One of the other things, Simon, might be worth clarifying, or I'll put it to you,

393

00:19:35.084 --> 00:19:38.254

is that there's a lot of things, the market's

394

00:19:38.844 --> 00:19:40.904

the biggest culprit of this, where we

395

00:19:42.364 --> 00:19:46.304

put things in buckets and things get labeled, and they

396

00:19:46.344 --> 00:19:47.934

get put in buckets where it

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00:19:48.824 --> 00:19:52.664

probably overly simplifies what it

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00:19:52.744 --> 00:19:56.184

is. So AI or, I mean quantum, right?

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00:19:56.264 --> 00:19:59.584

That's a very broad term, and usually when I

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00:20:00.304 --> 00:20:03.824

encounter it, you'll come across things such as the stuff that

401

00:20:03.884 --> 00:20:07.484

Google's doing and trying to form enough logical qubits such that

402

00:20:08.184 --> 00:20:11.764

encryption algorithms can be broken, and all of that kind of stuff.

403

00:20:11.794 --> 00:20:15.704

And so naturally, it conjures up those kinds of things, but this

404

00:20:15.784 --> 00:20:15.904

is

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00:20:16.824 --> 00:20:20.704

not that. This is a very different application of a quantum

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00:20:20.744 --> 00:20:21.224

process,

407

00:20:22.044 --> 00:20:23.844

if I've understood it correct.

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00:20:25.244 --> 00:20:28.144

Yeah, and it is. It's a very different application.

409

00:20:28.284 --> 00:20:28.544

And

410

00:20:29.404 --> 00:20:33.224

just to qualify, the reason I started with that is because in

411

00:20:33.284 --> 00:20:36.364

terms of quantum technology, it's probably the lowest level.

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00:20:36.444 --> 00:20:40.104

It's almost just conventional sort of technology and electronics.

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00:20:40.444 --> 00:20:40.804

Yeah.

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00:20:41.184 --> 00:20:44.864

But some of the materials and learning that's gone into that has come from the

415

00:20:44.904 --> 00:20:46.264

quantum program.

416

00:20:46.324 --> 00:20:50.124

Yeah. I'm glad we clarified that as well because,

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00:20:50.184 --> 00:20:52.564

again, talking to some people, I follow it a little bit

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00:20:54.864 --> 00:20:57.304

for Bitcoin kind of reasons, to be honest with you.

419

00:20:57.704 --> 00:20:57.953

But it's

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00:20:58.964 --> 00:21:02.784

one of those things that there are big debates as to whether these things are even

421

00:21:02.824 --> 00:21:06.714

possible and where they're closer, but it's important to distinguish under that

422

00:21:06.744 --> 00:21:10.544

banner of quantum, there are some things that are very unknown and there's a lot of

423

00:21:10.564 --> 00:21:13.624

uncertainty around, there's other things that are more established, even though

424

00:21:13.664 --> 00:21:16.064

they sit under the same umbrella.

425

00:21:16.164 --> 00:21:17.084

Yeah.

426

00:21:17.984 --> 00:21:21.374

Maybe let's have a look at some of the

427

00:21:22.284 --> 00:21:25.424

other applications here as well. I was looking at one of your presos as well.

428

00:21:25.464 --> 00:21:29.233

So BioChip is super interesting, but there's also a partnership with

429

00:21:29.584 --> 00:21:33.394

CSIRO in terms of detecting financial fraud using

430

00:21:33.444 --> 00:21:36.614

quantum machine learning. Can you tell us a bit about that?

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00:21:36.704 --> 00:21:39.904

Yeah. If I just go back to your original point as well-

432

00:21:39.994 --> 00:21:39.994

Yes

433

00:21:39.994 --> 00:21:43.884

... or just previous point anyway, in terms of where things lie and

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00:21:43.924 --> 00:21:47.844

their doability, I think the BioChip is probably the easiest to

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00:21:47.864 --> 00:21:51.444

describe. It's got the least amount of quantum, and there's certainty there on the

436

00:21:51.804 --> 00:21:54.264

pathway forward. As a company-

437

00:21:54.324 --> 00:21:54.404

Yep

438

00:21:54.524 --> 00:21:55.924

... we just need to execute on that.

439

00:21:56.324 --> 00:21:56.484

Yep.

440

00:21:56.524 --> 00:21:59.384

And then you're right, some of the other quantum activities that we're about to

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00:21:59.424 --> 00:22:03.084

talk about and get into are a bit more uncertain and further out.

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00:22:03.124 --> 00:22:05.594

So that's the way Arch is structuring

443

00:22:06.524 --> 00:22:07.744

what we're doing.

444

00:22:07.804 --> 00:22:09.344

Makes sense.

445

00:22:09.384 --> 00:22:11.404

But yeah, some of the deeper quantum stuff is

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00:22:12.584 --> 00:22:16.404

slightly more speculative, but there's a lot of value trapped in there as well,

447

00:22:16.464 --> 00:22:18.264

locked up in there that we're going after.

448

00:22:18.584 --> 00:22:18.724

Mm.

449

00:22:19.564 --> 00:22:23.544

Yeah, so the next thing I talk about, which is probably new, it's definitely

450

00:22:23.604 --> 00:22:27.564

new from a couple of years ago, is we're just trying to, again, just broaden

451

00:22:27.604 --> 00:22:29.264

the portfolio of things we work on.

452

00:22:29.424 --> 00:22:33.384

So we're doing hardware. We said, "Well, look, we should be

453

00:22:33.424 --> 00:22:37.423

doing some software development alongside that." So

454

00:22:37.444 --> 00:22:40.444

this quantum machine learning, the simplest way to

455

00:22:41.884 --> 00:22:45.664

put it out there is if you've got a laptop, it's not very useful unless you've got

456

00:22:45.724 --> 00:22:49.424

software running on there, like Microsoft Windows, Office, whatever

457

00:22:49.904 --> 00:22:51.044

you need to run it.

458

00:22:53.424 --> 00:22:56.124

So what we're doing, you can build a quantum computer.

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00:22:56.224 --> 00:22:59.744

For those things to be useful, there's got to be software to run them.

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00:23:00.884 --> 00:23:01.844

Now it turns out

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00:23:02.684 --> 00:23:04.504

quantum computer's not going to fix everything.

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00:23:04.584 --> 00:23:08.444

It's actually going to solve several extremely high-value

463

00:23:08.564 --> 00:23:09.484

niche problems.

464

00:23:10.684 --> 00:23:14.414

Some of the things that it'll be really good at is identifying

465

00:23:14.444 --> 00:23:18.284

things like financial fraud. So it's extremely good at

466

00:23:18.764 --> 00:23:22.724

doing image analysis, for example, and understanding, say,

467

00:23:23.204 --> 00:23:26.844

forged signatures, which is hard to do

468

00:23:27.144 --> 00:23:30.864

with classical computing. And it's very good at looking at massive

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00:23:30.964 --> 00:23:33.344

data sets with lots of different variables.

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00:23:33.424 --> 00:23:34.824

So if it's looking at

471

00:23:36.164 --> 00:23:39.604

millions of transactions daily with all sorts of

472

00:23:39.644 --> 00:23:43.544

parameters in there, a normal computer struggles to do the analysis of that

473

00:23:43.604 --> 00:23:43.684

as

474

00:23:44.684 --> 00:23:48.484

you uncombine the problem. Whereas a quantum computer can do it very

475

00:23:48.524 --> 00:23:52.424

effectively and fast because what it is able to

476

00:23:52.464 --> 00:23:56.454

do is look at lots of potential solutions at the same time, which

477

00:23:56.484 --> 00:23:57.784

a normal computer can't do.

478

00:23:58.604 --> 00:24:02.164

So anyway, we spent a bit of time looking at, well,

479

00:24:02.264 --> 00:24:05.084

how do we get into the software side of things?

480

00:24:05.104 --> 00:24:07.464

What do we do there, and what's of value?

481

00:24:08.604 --> 00:24:10.694

And what is a quantum computer good at?

482

00:24:10.804 --> 00:24:13.844

And we landed on this financial fraud detection

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00:24:13.904 --> 00:24:16.704

because obviously there's a lot of value in there.

484

00:24:16.724 --> 00:24:20.024

If you just look at the big banks in Australia, it's

485

00:24:21.964 --> 00:24:25.524

a lot of money that it's costing them to look after these fraudulent

486

00:24:25.564 --> 00:24:26.724

transactions that happen.

487

00:24:27.044 --> 00:24:27.484

Yep

488

00:24:28.880 --> 00:24:32.500

And just down the street is CSIRO and there's

489

00:24:32.820 --> 00:24:36.340

some people there that are actually world experts in this quantum machine learning

490

00:24:36.360 --> 00:24:37.519

and software development.

491

00:24:37.640 --> 00:24:38.260

Mm-hmm.

492

00:24:38.700 --> 00:24:41.920

So we worked with those guys to start a project up,

493

00:24:43.380 --> 00:24:45.710

which is a year long initially, and

494

00:24:46.780 --> 00:24:50.000

something I'll get back to as well, 2026 for Archer,

495

00:24:50.320 --> 00:24:51.960

my focus at least is

496

00:24:52.880 --> 00:24:56.540

getting working prototypes that can be used as marketing

497

00:24:56.600 --> 00:24:57.440

collateral and

498

00:24:58.400 --> 00:25:01.720

fuel commercial discussions and proper partnerships, and that's something we

499

00:25:01.780 --> 00:25:04.720

haven't had before. And the software,

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00:25:06.480 --> 00:25:09.740

it's not exempt from that. What we want is a working prototype at the end of the

501

00:25:09.800 --> 00:25:10.000

year.

502

00:25:10.440 --> 00:25:10.600

Mm-hmm.

503

00:25:11.120 --> 00:25:14.660

So it's a stage program that we've kicked off in January.

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00:25:14.740 --> 00:25:18.440

We're coming up to the halfway point now, where

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00:25:19.200 --> 00:25:22.980

what we're doing is developing the machine learning algorithms to detect

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00:25:23.040 --> 00:25:25.140

fraudulent transactions and signatures,

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00:25:26.340 --> 00:25:27.760

mainly in credit card fraud.

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00:25:28.880 --> 00:25:32.720

And then starting in the middle of the year, we'll then benchmark that against

509

00:25:32.900 --> 00:25:35.000

stuff that's already in place right now-

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00:25:35.500 --> 00:25:35.600

Mm-hmm

511

00:25:35.660 --> 00:25:39.560

... so that we'll not only have a

512

00:25:39.580 --> 00:25:42.370

prototype, but we'll have the data that says, "Well, it's much better, it's much

513

00:25:42.400 --> 00:25:42.800

faster."

514

00:25:43.660 --> 00:25:46.160

It can learn fast, which is

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00:25:47.080 --> 00:25:49.440

a key point for quantum software,

516

00:25:50.480 --> 00:25:51.700

because you can imagine, right,

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00:25:52.880 --> 00:25:56.740

financial fraud's constantly evolving, and people are pretty clever, and

518

00:25:56.780 --> 00:25:58.300

that happens fast. So the systems have-

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00:25:58.400 --> 00:25:58.410

Yeah

520

00:25:58.410 --> 00:25:59.800

... to keep up with that, and that's an issue.

521

00:26:00.700 --> 00:26:03.280

So the faster the software can learn,

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00:26:04.100 --> 00:26:05.500

the better it is at that.

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00:26:06.060 --> 00:26:06.110

Mm-hmm.

524

00:26:06.600 --> 00:26:10.370

So we're in a position, we've already started talking to some financial

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00:26:10.380 --> 00:26:14.180

organizations, but as the program advances and we start

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00:26:14.220 --> 00:26:17.930

getting data and benchmarking, again, that'll make it a lot

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00:26:17.960 --> 00:26:21.140

easier to talk to some of these end customers for this software.

528

00:26:21.660 --> 00:26:21.940

Mm-hmm.

529

00:26:23.080 --> 00:26:26.580

And just like the biochip, where the blood potassium is the lead

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00:26:26.640 --> 00:26:30.020

application, financial fraud's going to be the lead application.

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00:26:30.060 --> 00:26:33.720

But again, once that's in place, it's a lot easier and

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00:26:33.800 --> 00:26:37.500

faster to then develop that core software to be used in

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00:26:37.600 --> 00:26:38.700

other areas like

534

00:26:39.900 --> 00:26:43.260

public transport optimization, for example, is a

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00:26:43.860 --> 00:26:46.650

big one. That's actually hard to do on a normal computer, but-

536

00:26:46.960 --> 00:26:47.040

Mm-hmm

537

00:26:47.050 --> 00:26:48.900

... quantum could do that very efficiently.

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00:26:50.600 --> 00:26:54.590

How do you think about productization and commercialization when

539

00:26:54.640 --> 00:26:58.420

you're dealing with a really foundational kind of

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00:26:59.480 --> 00:27:01.249

technology and engineering here?

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00:27:01.249 --> 00:27:03.180

Because there's multiple paths you could go forward.

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00:27:03.780 --> 00:27:06.040

As with sort of the fables models, like, well,

543

00:27:06.900 --> 00:27:09.380

Archer doesn't want to get involved in the business of fabrication.

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00:27:09.420 --> 00:27:13.300

That's a whole other thing. Likewise, too, is potentially it could be like,

545

00:27:13.340 --> 00:27:14.390

well, we give you the

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00:27:15.220 --> 00:27:18.140

SDK, sort of. "Well, here's the software development kit.

547

00:27:18.220 --> 00:27:20.980

You go and develop applications based on that."

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00:27:21.980 --> 00:27:25.210

Some of the AI companies sort of tend to go that way.

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00:27:25.800 --> 00:27:27.900

Other companies prefer more vertical integration.

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00:27:27.930 --> 00:27:30.740

"No, we've got the layering, we've got foundational technology.

551

00:27:30.820 --> 00:27:34.400

We will build on top of it, and we will capture all of the value." And there's no

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00:27:34.480 --> 00:27:35.620

right or wrong answer to-

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00:27:35.900 --> 00:27:35.909

Mm-hmm

554

00:27:35.909 --> 00:27:39.200

... any of this. There's pros and cons on each side.

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00:27:40.520 --> 00:27:44.420

But I'm interested in what your view is, because you've got a

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00:27:44.440 --> 00:27:47.460

broad opportunity set. As you say, we sort of will

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00:27:47.540 --> 00:27:48.440

see

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00:27:49.740 --> 00:27:53.020

how things evolve and what we pursue, but,

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00:27:54.000 --> 00:27:57.940

and maybe it's too early a stage to ask about these kinds of things, but how do

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00:27:57.980 --> 00:28:01.900

you think about that quandary, in terms of do you focus

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00:28:01.940 --> 00:28:05.140

on that one narrow thing and let others sort of run with it, or do you control

562

00:28:05.200 --> 00:28:06.020

everything in-house?

563

00:28:08.240 --> 00:28:12.120

Yeah, it's a good one. That's obviously something we think about a

564

00:28:12.160 --> 00:28:14.999

fair bit, especially because we're doing multiple things.

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00:28:15.220 --> 00:28:18.760

It doesn't make life any easier. So it depends

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00:28:19.380 --> 00:28:22.820

on the project and the application and what we're doing.

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00:28:22.920 --> 00:28:23.600

So,

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00:28:24.500 --> 00:28:28.060

there's a pretty big contrast between, say, the biochip

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00:28:28.080 --> 00:28:31.360

project and this software that I just talked about for Quantum.

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00:28:31.860 --> 00:28:31.920

Yeah.

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00:28:32.720 --> 00:28:36.430

With the biochip, again, we're early enough with all of this

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00:28:36.520 --> 00:28:36.910

stuff that

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00:28:37.980 --> 00:28:40.200

a lot of the options are still on the table.

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00:28:40.240 --> 00:28:42.410

And what we are doing right now, though,

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00:28:43.320 --> 00:28:47.260

is making sure that we've got our IP structured and the company structured so

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00:28:47.320 --> 00:28:47.630

that

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00:28:48.659 --> 00:28:52.040

if one of these options comes up early and it's good for Archer and its

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00:28:52.049 --> 00:28:54.370

shareholders, we'll be in a position to do that-

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00:28:54.850 --> 00:28:54.930

Mm-hmm

580

00:28:54.960 --> 00:28:58.440

... without hurting some of the other things that we're working on or losing value

581
00:28:58.500 --> 00:28:58.900
on that.

582
00:28:59.300 --> 00:28:59.760
Mm-hmm.

583
00:29:00.660 --> 00:29:03.100
So with the biochip, for example, we

584
00:29:04.520 --> 00:29:08.500
don't see Archer as being the fully integrated med tech company where we're

585
00:29:08.520 --> 00:29:10.280
going to develop this right through to the end,

586
00:29:11.720 --> 00:29:14.200
market it, distribute it, after sales

587
00:29:15.160 --> 00:29:19.100
work, and all those activities. Now, I'm

588
00:29:19.120 --> 00:29:22.340
not saying we won't do that, but it's unlikely just for the size of Archer and

589
00:29:22.360 --> 00:29:23.220
where we're positioned.

590
00:29:24.500 --> 00:29:28.320
We'd much rather license the IP, so get to the point where the devices

591
00:29:28.400 --> 00:29:29.420
are approved,

592
00:29:30.920 --> 00:29:34.860
and either get to that point with a joint development where the development

593
00:29:34.960 --> 00:29:38.820
partner then takes it through right to market afterwards, or later on

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00:29:39.220 --> 00:29:42.140

we go to a big med tech company and license that

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00:29:42.180 --> 00:29:45.990

technology. And we'll structure it so we're not licensing the whole biochip,

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00:29:46.040 --> 00:29:50.020

it'll be use case by use case. So, for example, the potassium

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00:29:50.060 --> 00:29:53.900

might be an area that we can license separately from the other applications we

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00:29:53.980 --> 00:29:54.420

build up.

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00:29:54.840 --> 00:29:55.240

Mm-hmm.

600

00:29:56.080 --> 00:29:59.910

And then with the software, like you say, yeah, some companies want to be fully

601

00:30:00.060 --> 00:30:04.020

vertically integrated, right? So for

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00:30:04.040 --> 00:30:07.750

example, these companies are very different to us, but Microsoft, right, is

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00:30:08.080 --> 00:30:10.120

probably one of those where,

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00:30:11.420 --> 00:30:14.920

or definitely is one of those where they're building a computer, they're building

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00:30:14.960 --> 00:30:18.799

the software, they're building the service provision and the cloud and all that

606

00:30:18.880 --> 00:30:19.140

stuff.

607

00:30:19.560 --> 00:30:19.780

Mm-hmm.

608

00:30:20.680 --> 00:30:24.640

And again, so that might be, in

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00:30:24.680 --> 00:30:27.320

that case, if we were doing something that they were interested in, that would

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00:30:27.400 --> 00:30:29.500

purely be a licensing opportunity.

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00:30:30.140 --> 00:30:30.540

Yeah.

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00:30:31.860 --> 00:30:35.500

That could be a bit different if we were trying to sell to CommBank, for

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00:30:35.560 --> 00:30:38.399

example. They're not going to want to do that. Right?

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00:30:38.960 --> 00:30:42.880

And again, we're staying open to this because

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00:30:42.920 --> 00:30:46.750

we've been thinking about what it might look like if we're successful with this and

616

00:30:46.780 --> 00:30:48.180

it's something that someone wants.

617

00:30:50.040 --> 00:30:53.700

So I don't know, CommBank probably buy the software from a large software provider,

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00:30:53.840 --> 00:30:56.900

so we would be further down the chain on that.

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00:30:56.940 --> 00:30:57.020

Yeah.

620

00:30:57.040 --> 00:31:00.980

But yeah. We're not mature enough where we're locked into

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00:31:01.060 --> 00:31:04.870

any of these things. I think we've got to make sure we're planning right now to

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00:31:04.940 --> 00:31:08.800

be fairly flexible later as these things progress.

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00:31:09.360 --> 00:31:09.500

Yep.

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00:31:10.320 --> 00:31:14.000

And what else can you do? So I think that is the

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00:31:14.040 --> 00:31:17.480

perfect answer. It's actually that flexibility sort of comes into sort

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00:31:17.540 --> 00:31:21.440

of the pursuit of various applications

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00:31:21.500 --> 00:31:25.330

as well. I mean, everything, and I think investors, the market in particular is

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00:31:25.620 --> 00:31:26.040

very,

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00:31:27.340 --> 00:31:29.460

what's the word, unreasonable in this.

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00:31:29.700 --> 00:31:32.560

So, like a lot of companies get pilloried because they tried something and it

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00:31:32.600 --> 00:31:36.399

didn't work. I'm of the view, after doing this for many decades, that

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00:31:36.700 --> 00:31:39.240

if you're not failing, you're not trying hard enough, right?

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00:31:39.560 --> 00:31:39.620

Mm-hmm.

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00:31:39.640 --> 00:31:42.620

Not to say that you should be throwing everything at anything that sort of moves

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00:31:42.640 --> 00:31:46.540

and hoping it sticks, but too conservative is just as

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00:31:46.580 --> 00:31:50.330

much of a risk. So it's another question and one that has no right or

637

00:31:50.420 --> 00:31:53.690

wrong answer, but it's interesting to get your perspective on, is,

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00:31:55.480 --> 00:31:58.360

particularly when you are sort of pre-revenue and capital,

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00:31:59.320 --> 00:32:03.080

it's a finite kind of resource, and also

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00:32:03.100 --> 00:32:06.360

particularly when the opportunity set is so large, it's such a fascinating

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00:32:06.400 --> 00:32:10.310

technology, it can do this, it can do that, in theory it can do so many different

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00:32:10.380 --> 00:32:14.360

things. How do you and the team sort of narrow that focus into, well,

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00:32:14.420 --> 00:32:18.040

these are the lowest hanging fruit, and then how do

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00:32:18.160 --> 00:32:20.090

you sort of hit that

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00:32:22.180 --> 00:32:25.220

potential kill switch after something becomes

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00:32:26.200 --> 00:32:28.580

obvious that it's not as viable as perhaps it

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00:32:29.880 --> 00:32:31.700

might have initially seemed to be?

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00:32:31.710 --> 00:32:34.390

Which is just going to be a matter of course for a lot of these sort of

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00:32:34.420 --> 00:32:35.560

cutting-edge kinds of stuff.

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00:32:36.500 --> 00:32:37.800

Again, it's a no right or wrong answer.

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00:32:37.820 --> 00:32:40.960

It's a balancing act, but I'm curious as to how you think about all of those

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00:32:41.320 --> 00:32:41.880

challenges.

653

00:32:43.200 --> 00:32:44.920

Yeah. I don't think there's anything

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00:32:45.740 --> 00:32:48.220

novel with how that gets treated. I

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00:32:50.680 --> 00:32:54.340

suppose I draw on my experience from how they worked in the

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00:32:54.400 --> 00:32:56.140

US when I was there for 10 years, and

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00:32:58.140 --> 00:33:02.100

so at least my philosophy and the way I work with the team is let's

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00:33:03.120 --> 00:33:04.900

fail fast is the biggest thing. Right?

659

00:33:05.000 --> 00:33:05.010

Yeah.

660

00:33:05.060 --> 00:33:08.100

So again, yeah, I'm not afraid of trying something.

661

00:33:08.460 --> 00:33:12.300

But what you really have to do is make sure you've got a system

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00:33:12.340 --> 00:33:16.140

in place so that the project doesn't just drag on because you want to

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00:33:16.200 --> 00:33:17.230

keep it going. It's like-

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00:33:17.540 --> 00:33:17.630

Yeah

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00:33:17.820 --> 00:33:21.300

... let's start quantum machine learning, but as a company, let's get

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00:33:21.900 --> 00:33:24.260

some structure in place and some real assessment of

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00:33:25.720 --> 00:33:27.680

what's required to keep that going and

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00:33:29.780 --> 00:33:32.720

a month from now, if it's not going to work, we're better off stopping it than

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00:33:32.780 --> 00:33:36.500

wasting money on it. So again, there's no rocket science there.

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00:33:36.520 --> 00:33:38.420

It's pretty standard stuff, I would say. I don't know.

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00:33:39.040 --> 00:33:39.390

I don't think-

672

00:33:39.980 --> 00:33:40.399

Well-

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00:33:40.410 --> 00:33:41.560

... we're doing anything special.

674

00:33:42.000 --> 00:33:45.900

No. Well, you're right. There's

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00:33:45.960 --> 00:33:49.360

nothing complicated or special about it, but human beings...

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00:33:49.420 --> 00:33:52.780

I mean, the sunk cost fallacy is not just a thing for poker players.

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00:33:52.840 --> 00:33:56.660

Like we see it all the time in companies, and so I actually think that's a

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00:33:56.680 --> 00:33:59.960

brilliant answer, Simon. It's the only rational kind of answer.

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00:34:01.720 --> 00:34:04.700

So yeah, no, that's fantastic. I'm also interested

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00:34:04.940 --> 00:34:07.280

in the breakup of

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00:34:08.660 --> 00:34:12.341

just the team. I mean, at the end of the day, a company, whether it's Microsoft or

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00:34:12.361 --> 00:34:14.460

whether it's Archer, it's just a collection of people.

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00:34:14.580 --> 00:34:18.540

So if you had an entire company offsite, how

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00:34:18.580 --> 00:34:21.761

many people would we see? How many are engineers

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00:34:22.520 --> 00:34:24.261

versus scientists versus

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00:34:25.400 --> 00:34:29.011

SG&A? Give us a bit of a flavor of

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00:34:29.540 --> 00:34:32.980

what Archer looks like from a people perspective.

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00:34:33.080 --> 00:34:34.560

Lots of PhDs, I imagine.

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00:34:35.361 --> 00:34:36.801

Yeah. We've got some PhDs.

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00:34:38.281 --> 00:34:42.020

Yeah. I'll start with the core. The core team is here in

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00:34:42.060 --> 00:34:42.440

Sydney.

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00:34:44.380 --> 00:34:47.960

Our executive chairman, Greg English, sits in Adelaide by himself.

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00:34:48.420 --> 00:34:49.420

Yeah.

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00:34:49.739 --> 00:34:51.940

But yeah, the core team's here in Sydney.

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00:34:52.020 --> 00:34:54.680

There's about 20 of us at the moment.

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00:34:56.440 --> 00:34:59.140

Yeah, nearly everybody as technical as you might expect.

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00:34:59.280 --> 00:34:59.360

Mm-hmm.

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00:34:59.590 --> 00:35:01.760

We're a tech company, we're pretty early stage.

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00:35:02.260 --> 00:35:02.380

Yeah.

700

00:35:03.220 --> 00:35:06.740

The quantum side of things, like the deep quantum,

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00:35:06.960 --> 00:35:09.180

there's PhDs there, and

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00:35:10.220 --> 00:35:14.100

again, because a lot of that technology has still got a way to go, that's very

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00:35:14.160 --> 00:35:14.820

technically

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00:35:15.640 --> 00:35:18.860

heavily weighted, and that'll continue to be the case for

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00:35:19.760 --> 00:35:22.940

the next period and next year or two, I would say.

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00:35:25.400 --> 00:35:29.340

With the biochip project, because there's a clearer

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00:35:29.380 --> 00:35:32.640

commercialization path there, because med tech's already a

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00:35:33.160 --> 00:35:37.120

proper industry. Again, we've got technical people, but

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00:35:38.000 --> 00:35:41.320

we've made a big effort over the last couple of years to bring in people that have

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00:35:41.360 --> 00:35:44.860

been in that field and have had the commercialization

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00:35:44.880 --> 00:35:48.760

experience as well as just the propeller heads that are in the lab

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00:35:48.800 --> 00:35:49.540

doing the work.

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00:35:50.180 --> 00:35:50.280

Yep.

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00:35:50.840 --> 00:35:52.720

So that's a slightly different makeup.

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00:35:53.700 --> 00:35:57.000

And what's interesting, because of the phase we're getting into now

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00:35:57.040 --> 00:36:00.390

where there's still lots of engineering to do, but we've got to worry

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00:36:00.540 --> 00:36:03.310

about regulatory stuff, quality management-

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00:36:04.860 --> 00:36:04.910

Mm-hmm

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00:36:04.940 --> 00:36:07.300

... clinical trials, things like that, that are coming up.

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00:36:07.540 --> 00:36:11.500

We are looking to bring in different skill sets outside of those deep technical

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00:36:11.600 --> 00:36:11.900

people.

722

00:36:12.500 --> 00:36:12.620

Yep.

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00:36:12.670 --> 00:36:16.400

So that's quite exciting. So that makeup will change, and we'll probably grow in

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00:36:16.440 --> 00:36:17.500

that side of the business.

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00:36:19.260 --> 00:36:21.280

So that's the core team. Now,

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00:36:22.180 --> 00:36:25.440

as you've pointed out, Archer doesn't invest in a lot of

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00:36:25.480 --> 00:36:29.100

infrastructure. I mean, we can't buy a billion-dollar clean room

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00:36:29.180 --> 00:36:29.800

facility-

729

00:36:30.260 --> 00:36:30.380

Right

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00:36:30.540 --> 00:36:31.940

... to do our development in.

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00:36:32.940 --> 00:36:36.388

And at the same time, we leverage-A lot of partnerships.

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00:36:37.148 --> 00:36:41.058

Now, traditionally, years ago, they were very much academic, so we were spending

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00:36:41.088 --> 00:36:45.028

money at universities. And with those projects, they come

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00:36:45.048 --> 00:36:49.008

with people as well. So although we've got that core team of 20, outside

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00:36:49.068 --> 00:36:52.988

of that, there's probably another 20, 30 people that are at

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00:36:53.028 --> 00:36:56.668

least spending time on Archer's projects that aren't employed here in Sydney.

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00:36:57.348 --> 00:36:57.458

Right.

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00:36:57.868 --> 00:37:01.778

And that's also evolving from those academic partnerships

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00:37:01.848 --> 00:37:05.328

to a bit more serious industry and technology development

740

00:37:05.388 --> 00:37:06.248

institutions,

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00:37:07.428 --> 00:37:10.748

where, again, we've got access to facilities and a lot of people.

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00:37:10.808 --> 00:37:14.708

So, in terms of that, we've got that core team, and then there's another shell of

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00:37:14.788 --> 00:37:17.888

people associated with Archer that are spending time there.

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00:37:17.948 --> 00:37:21.908

So, if you look at it that way, we have a pretty big

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00:37:21.968 --> 00:37:25.848

team without having to sort of bring on a lot of risk

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00:37:25.888 --> 00:37:27.488

with full-time people.

747

00:37:28.268 --> 00:37:28.428

Yeah.

748

00:37:30.748 --> 00:37:34.228

Gosh, time's racing by. Let me go to some questions, Simon.

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00:37:35.288 --> 00:37:38.678

I've got one here. The Australian government has invested significantly in

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00:37:38.748 --> 00:37:42.188

promising Australian quantum players via the National Reconstruction Fund,

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00:37:43.588 --> 00:37:47.068

940 million for PsyQuantum, 13 million for Quantum Brilliance.

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00:37:47.328 --> 00:37:49.048

A few others are listed here.

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00:37:49.968 --> 00:37:52.268

Has Archer been able to attract any such government investment?

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00:37:52.348 --> 00:37:56.128

I can see on your 4C that you do get quite a bit in grants and

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00:37:56.168 --> 00:37:58.368

tax incentives. But is there anything in particular with

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00:37:59.288 --> 00:38:01.568

regard to the National Reconstruction Fund?

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00:38:02.928 --> 00:38:05.068

Yeah, I'll talk about that because,

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00:38:06.708 --> 00:38:10.028

again, traditionally, the company has not looked at that.

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00:38:11.328 --> 00:38:14.658

So in the last 18 months, we've had a concerted effort that

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00:38:15.308 --> 00:38:19.268

we've spun up to go after government funding and grants.

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00:38:20.628 --> 00:38:23.498

So I won't get into details, but

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00:38:24.288 --> 00:38:27.068

we're going after grant funding for

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00:38:28.588 --> 00:38:31.988

the core quantum program, which we haven't really talked about much either, by the

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00:38:32.028 --> 00:38:34.128

way, as well, but we can come back to that.

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00:38:35.648 --> 00:38:35.788

The

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00:38:36.748 --> 00:38:40.408

software that we've talked about and the biochip, and that's an ongoing process.

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00:38:40.488 --> 00:38:44.438

It's not easy, but it's a no-brainer to be putting

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00:38:44.488 --> 00:38:47.688

effort into that and consuming resources.

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00:38:49.068 --> 00:38:51.768

So we've applied for a few of those grant programs.

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00:38:51.848 --> 00:38:55.577

We've got two or three in the works at the moment, so we'll be looking for

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00:38:55.648 --> 00:38:57.348

outcomes of those in the coming months.

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00:38:59.968 --> 00:39:03.768

Without going into too much detail with the NRF, it's on our

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00:39:03.828 --> 00:39:04.288

radar.

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00:39:05.388 --> 00:39:09.308

It's not grant money. It's usually equity or loans from the NRF, but

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00:39:10.168 --> 00:39:12.508

they're interested in

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00:39:13.308 --> 00:39:16.968

companies like us and what we're doing, and for sure, we'll be pursuing that

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00:39:16.988 --> 00:39:18.208

moving forward as well.

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00:39:18.808 --> 00:39:18.988

Yeah.

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00:39:19.008 --> 00:39:22.898

As well as other opportunities. The beauty as well, because we have partnerships

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00:39:23.008 --> 00:39:26.928

in Europe and the US, we're also looking to expand

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00:39:26.948 --> 00:39:30.768

out and look for chasing money in the EU and US as

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00:39:30.828 --> 00:39:31.008

well,

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00:39:33.188 --> 00:39:36.928

basically to-- It's all non-dilutive funding, right, which is important.

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00:39:37.548 --> 00:39:37.688

Yep.

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00:39:38.468 --> 00:39:41.128

So yeah, I think that's answered the question.

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00:39:43.268 --> 00:39:46.948

But yeah, and we don't need it. The PsyQuantum one's

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00:39:47.008 --> 00:39:48.988

interesting because that was nearly a billion dollars.

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00:39:49.708 --> 00:39:53.688

What I was going to say with the Quantum stuff is they're an example of a

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00:39:53.708 --> 00:39:56.688

company that's building a full computing system, right?

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00:39:56.888 --> 00:40:00.858

And you've got other big players like Microsoft, Amazon,

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00:40:01.168 --> 00:40:04.488

IBM, Google, that are planning on doing the same

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00:40:04.528 --> 00:40:08.468

thing. Archer will never try and do that because you

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00:40:08.508 --> 00:40:09.848

need billions of dollars, right?

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00:40:10.468 --> 00:40:10.608

Yeah.

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00:40:11.408 --> 00:40:15.208

So in terms of quantum computing, the hardware

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00:40:15.248 --> 00:40:18.038

development, we're dealing with qubits and sensing,

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00:40:18.828 --> 00:40:22.688

we're strictly developing enabling components, right?

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00:40:22.748 --> 00:40:25.708

So it's a much larger space. There's more companies there.

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00:40:25.748 --> 00:40:28.928

There's more space to play. You don't need

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00:40:28.938 --> 00:40:31.488

that billion-dollar investment.

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00:40:32.748 --> 00:40:36.468

And we've got some really clever technology there that'll really

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00:40:36.508 --> 00:40:40.498

enable these system builders. So our model there would be lower amounts of funding,

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00:40:40.668 --> 00:40:44.348

lower money, which I think at least our current shareholders are

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00:40:44.448 --> 00:40:44.948

aware of,

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00:40:46.228 --> 00:40:50.048

that allow us to develop those components that then we'll license or sell to

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00:40:50.088 --> 00:40:52.648

those players making the big systems.

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00:40:53.427 --> 00:40:53.668

Yep.

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00:40:54.288 --> 00:40:57.588

And that also allows us to go for some, like these grant programs that are

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00:40:57.628 --> 00:41:01.588

maybe one, two, \$3 million from the government, they're actually

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00:41:01.668 --> 00:41:02.428

useful to us,

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00:41:03.608 --> 00:41:05.668

even at those lower amounts.

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00:41:06.208 --> 00:41:06.588

Yeah.

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00:41:07.988 --> 00:41:10.908

Well, on that, the other one mentioned here is Quantum Australia, who's charged

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00:41:10.948 --> 00:41:14.528

with accelerating Australia's national adoption of the technology, has formed

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00:41:14.588 --> 00:41:18.528

around 78 industry research partnerships and helped create a number of

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00:41:18.568 --> 00:41:22.308

quantum startups. Have you guys ever been approached or selected by someone worth

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00:41:22.348 --> 00:41:25.928

partnering with, in your opinion, under that program?

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00:41:26.708 --> 00:41:30.648

Well, some of the companies in that program we talk to and work with, an example

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00:41:30.688 --> 00:41:32.328

would be Emergence Quantum, that we-

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00:41:32.748 --> 00:41:33.268

Oh, yeah

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00:41:33.328 --> 00:41:35.528

... recently announced the project with.

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00:41:36.548 --> 00:41:37.408

We're part of

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00:41:38.208 --> 00:41:42.168

the Tech Council Australian Quantum Alliance, I

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00:41:42.208 --> 00:41:43.448

think the acronym is.

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00:41:43.708 --> 00:41:43.948

Mm-hmm.

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00:41:43.988 --> 00:41:47.768

So we're part of that. We're pretty active now, which we weren't, again, a

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00:41:47.868 --> 00:41:48.548

few years ago.

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00:41:48.888 --> 00:41:49.008

Mm.

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00:41:49.748 --> 00:41:53.638

Which is good because it's sort of helping us provide links with other companies,

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00:41:53.688 --> 00:41:57.488

but more importantly, up through to the government as well, which I think, again,

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00:41:57.548 --> 00:42:00.668

going back to grant funding and partnerships, it's going to be important.

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00:42:03.468 --> 00:42:06.778

The next one says, "Archer has very

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00:42:06.778 --> 00:42:10.728

carefully utilized its finite cash holdings

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00:42:10.788 --> 00:42:14.388

and to progress its technology in recent years." There's a big tick of approval.

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00:42:14.758 --> 00:42:18.108

"However, it's clear it will need to raise capital at some point." You've touched

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00:42:18.148 --> 00:42:20.248

on that a little bit here.

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00:42:21.428 --> 00:42:24.848

And I guess I just ask it for the sake of completeness here.

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00:42:24.858 --> 00:42:27.708

The question is really, is it possible you might be able to do some kind of

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00:42:27.768 --> 00:42:31.548

licensing deal to avoid that dilutive component of capital

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00:42:31.628 --> 00:42:32.188

raises?

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00:42:33.288 --> 00:42:35.628

You've touched on part of that. Is there anything else to say there?

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00:42:37.808 --> 00:42:38.168

Um,

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00:42:39.188 --> 00:42:39.498

not really

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00:42:39.498 --> 00:42:41.128

Maybe the answer is no. I'm just making sure.

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00:42:41.168 --> 00:42:43.987

I've put all questions that come through to you.

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00:42:44.468 --> 00:42:48.328

It's more or less no. The way I've described the technology, we're in

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00:42:48.368 --> 00:42:51.588

an exciting period where we're productizing it.

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00:42:52.048 --> 00:42:52.148

Yeah.

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00:42:52.288 --> 00:42:52.468

If

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00:42:53.488 --> 00:42:55.488

somebody came along and was very,

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00:42:56.568 --> 00:43:00.048

not the opposite to risk-averse, and they wanted to license a

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00:43:00.748 --> 00:43:03.948

much earlier technology, yeah, fine, we would do that, but

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00:43:04.428 --> 00:43:07.568

we're working on the assumption that with the biochip, we would need

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00:43:07.948 --> 00:43:09.408

regulatory approval.

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00:43:10.428 --> 00:43:11.168

With the qubit,

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00:43:13.168 --> 00:43:16.888

for our quantum program, we'd have to demonstrate that, which is coming up this

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00:43:16.948 --> 00:43:19.668

year, but I think further to that, we'd have to demonstrate that it's

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00:43:19.708 --> 00:43:21.328

manufacturable at scale as well.

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00:43:21.838 --> 00:43:21.838

Yeah.

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00:43:22.208 --> 00:43:25.948

And then, I think the licensing opportunities become a lot easier there, and it's

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00:43:25.968 --> 00:43:27.548

the same with the software and so on.

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00:43:28.128 --> 00:43:28.198

Yeah.

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00:43:28.308 --> 00:43:32.108

It's just a bit unrealistic at the moment,

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00:43:32.248 --> 00:43:36.128

and so, yeah. So the timing for that is another year or

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00:43:36.188 --> 00:43:37.768

two, and we're going to need-

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00:43:37.928 --> 00:43:37.938

Yeah

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00:43:37.938 --> 00:43:39.848

... we're going to need to raise capital before then.

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00:43:40.448 --> 00:43:40.568

Yeah.

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00:43:41.708 --> 00:43:42.008

Simon,

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00:43:42.808 --> 00:43:44.608

you speak to a lot of investors, I'm sure.

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00:43:45.588 --> 00:43:48.758

And I'm sure it feels like Groundhog Day.

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00:43:49.128 --> 00:43:53.008

Part of me feels a little bit guilty making the CEOs go through the usual

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00:43:53.128 --> 00:43:57.088

song and dance, but I'm always curious as to the questions you don't

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00:43:57.148 --> 00:44:00.628

get asked that, to your mind, are important and relevant,

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00:44:00.688 --> 00:44:04.568

often from the outside, particularly in very niche areas.

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00:44:04.608 --> 00:44:08.368

The average person just doesn't come across this kind of stuff, and so it's

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00:44:08.648 --> 00:44:08.928

all

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00:44:09.768 --> 00:44:11.228

sort of hard to wrap your head around.

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00:44:11.268 --> 00:44:15.028

And so when you do get questions, I'm sure there's always a very,

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00:44:15.908 --> 00:44:19.588

for you, familiar line of questioning, but I'm interested in the lines of

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00:44:19.668 --> 00:44:23.638

questioning or the aspects of Archer, or some of the things that you're doing that,

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00:44:23.848 --> 00:44:27.508

to your mind, are actually super important, or not to be too

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00:44:27.568 --> 00:44:31.448

hyperbolic, not necessarily super important, but very much relevant, that no

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00:44:31.568 --> 00:44:35.328

one seems to talk about. Or do you feel as though the market as a

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00:44:35.348 --> 00:44:37.758

whole has a pretty good grasp on everything?

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00:44:40.108 --> 00:44:44.028

Yeah. I don't know where to start yet because the

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00:44:44.048 --> 00:44:47.038

problem is I get asked the same questions over and over again, so you forget about

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00:44:47.068 --> 00:44:49.148

the stuff that's maybe not being asked.

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00:44:49.548 --> 00:44:53.528

One problem, especially in Australia, is that the investment capital

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00:44:53.588 --> 00:44:56.888

markets are pretty uneducated in terms of technology.

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00:44:56.898 --> 00:44:57.168

Yep.

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00:44:57.608 --> 00:44:59.038

So a lot of the questions aren't

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00:44:59.868 --> 00:45:03.858

really probing what's super special about Archer, and what we're doing and

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00:45:04.148 --> 00:45:05.068

how we're going to win.

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00:45:06.568 --> 00:45:08.628

So I've had a chance to talk about it here, but

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00:45:08.808 --> 00:45:12.688

if I was in

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00:45:12.728 --> 00:45:16.548

the US probably, for example, the quantum, the question wouldn't be, "What is

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00:45:16.628 --> 00:45:20.528

it?" and "What's the market size?" It would be like, "What's special about

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00:45:20.588 --> 00:45:22.548

Archer? And what are you guys doing that's different-

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00:45:22.588 --> 00:45:22.648

Yeah

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00:45:22.708 --> 00:45:23.128

... to

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00:45:24.148 --> 00:45:24.818

X, Y, and Z?"

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00:45:26.648 --> 00:45:30.508

So that's something that doesn't come up enough, or people don't worry about it, so

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00:45:30.568 --> 00:45:31.648

I don't talk about it because if

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00:45:33.368 --> 00:45:36.868

Australian investors aren't too worried, I won't talk about it.

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00:45:36.928 --> 00:45:38.268

But we are,

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00:45:39.308 --> 00:45:41.948

at least since I've been on board, there's sort of

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00:45:43.308 --> 00:45:46.928

three things that I've tried to make sure we're doing to be

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00:45:46.968 --> 00:45:48.638

successful. So one of them is

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00:45:49.748 --> 00:45:51.798

starting with the problem first and

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00:45:52.628 --> 00:45:53.588

how you solve that.

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00:45:54.128 --> 00:45:54.288

Yep.

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00:45:54.608 --> 00:45:58.328

I feel like, or I see a lot of

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00:45:58.368 --> 00:46:01.208

companies doing it the wrong way around, and I think Archer was doing that as well.

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00:46:01.228 --> 00:46:04.247

We had cool technology that we're then trying to push.

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00:46:04.288 --> 00:46:04.428

Yeah.

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00:46:04.468 --> 00:46:08.408

So last couple of years, I think we've identified some clear opportunities that

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00:46:08.728 --> 00:46:11.308

are large and high-value problems to go after.

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00:46:11.848 --> 00:46:12.028

Yeah.

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00:46:12.888 --> 00:46:13.548

The second is,

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00:46:14.488 --> 00:46:18.188

again, this is all basic stuff, I suppose, but

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00:46:18.608 --> 00:46:20.688

are we providing something unique?

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00:46:21.388 --> 00:46:22.968

And we've worked hard to get there.

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00:46:23.068 --> 00:46:26.968

So the biochip tech that we're developing, the fact that it's a chip,

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00:46:27.748 --> 00:46:29.738

the way we're doing the sensing is

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00:46:30.548 --> 00:46:34.368

different to other people. And we've worked pretty hard to firmly

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00:46:34.408 --> 00:46:38.388

believe that technology's going to win out over other companies, and we're

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00:46:38.448 --> 00:46:41.568

seeing that as other companies have tried to do some of the things we're doing and

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00:46:41.628 --> 00:46:44.328

then failed because they've fallen down at some point.

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00:46:44.418 --> 00:46:44.648

Mm-hmm.

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00:46:46.548 --> 00:46:48.468

And same with the quantum technology.

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00:46:49.028 --> 00:46:52.388

We were doing carbon materials as the base

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00:46:53.628 --> 00:46:56.208

differentiator and enabler, and that's still the case.

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00:46:56.258 --> 00:46:59.208

That's evolved over the last year to something a bit different.

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00:46:59.648 --> 00:46:59.768

Mm-hmm.

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00:47:00.308 --> 00:47:00.448

But

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00:47:01.468 --> 00:47:05.348

as we develop these prototypes, again, we're pretty confident that we'll

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00:47:06.328 --> 00:47:10.028

be providing something that's not just novel, but considerably

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00:47:10.128 --> 00:47:10.868

better as well.

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00:47:11.488 --> 00:47:11.628

Yeah.

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00:47:11.928 --> 00:47:14.248

Because what we don't want to be doing, we don't want to end up with quantum

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00:47:14.308 --> 00:47:17.308

components that sort of just fall in the mix with everybody else.

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00:47:17.348 --> 00:47:18.578

We're not going to be successful there.

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00:47:18.588 --> 00:47:20.528

It's going to be a waste of time and effort and money.

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00:47:21.128 --> 00:47:21.248

Yeah.

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00:47:22.148 --> 00:47:25.508

So again, I'm confident there, and we don't get asked about that because it's a

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00:47:25.548 --> 00:47:29.398

deep technical thing, and maybe it doesn't matter, but it's key in this

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00:47:29.508 --> 00:47:32.568

area when it's very crowded, the quantum space.

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00:47:32.648 --> 00:47:35.308

Software is incredibly crowded because it's a lower barrier.

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00:47:35.868 --> 00:47:35.988

Yeah.

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00:47:36.708 --> 00:47:40.368

In the hardware space, you've got the big giants that sit at the top, four, five,

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00:47:40.468 --> 00:47:41.308

six companies.

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00:47:42.168 --> 00:47:45.968

There's more at the level down, and then where Archer is playing, where we're

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00:47:46.028 --> 00:47:49.868

developing key components, it's a crowded space, so we've got to

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00:47:49.908 --> 00:47:50.788

do something that's

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00:47:53.148 --> 00:47:56.908

different and offers some enabling

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00:47:56.988 --> 00:48:00.858

attributes. And again, I think Archer's onto a

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00:48:00.868 --> 00:48:03.228

good thing there with the strategy we've taken.

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00:48:04.448 --> 00:48:05.338

I love that answer.

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00:48:06.808 --> 00:48:10.378

Before I let you go, Simon, what is it that

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00:48:10.648 --> 00:48:11.628

if you were to

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00:48:14.208 --> 00:48:18.018

encourage investors to look out for various things, what

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00:48:18.368 --> 00:48:22.348

to your mind are the big milestones that should be on an

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00:48:22.388 --> 00:48:24.568

investor's radar when it comes to Archer?

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00:48:26.268 --> 00:48:26.508

Yeah.

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00:48:27.588 --> 00:48:31.088

I'm just thinking of the presentations I've been giving recently.

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00:48:31.808 --> 00:48:35.528

As I've described, we're at a point where we're moving

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00:48:35.588 --> 00:48:39.458

from research only through to productization, especially with

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00:48:39.508 --> 00:48:41.198

things like the biochip and-

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00:48:41.198 --> 00:48:41.198

Mm

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00:48:41.198 --> 00:48:42.868

... some of the quantum technology we're

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00:48:42.888 --> 00:48:46.840

developing. Some key milestones there will be,

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00:48:46.940 --> 00:48:47.300

one,

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00:48:48.640 --> 00:48:52.420

not just that we produce prototypes and we have data and we can show off

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00:48:52.520 --> 00:48:56.180

stuff and there's something tangible there, but that

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00:48:56.440 --> 00:49:00.080

is starting to already trigger the more commercial type discussions,

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00:49:00.340 --> 00:49:01.660

very early ones.

978

00:49:01.720 --> 00:49:01.750

Mm.

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00:49:01.940 --> 00:49:05.900

But as those prototypes come out and we're publicizing that, I

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00:49:05.920 --> 00:49:09.770

think what investors need to know is that the plan is to be having much more

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00:49:09.820 --> 00:49:13.460

serious discussions with potential development partners and commercialization

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00:49:13.500 --> 00:49:14.000

pathways.

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00:49:14.400 --> 00:49:14.540

Mm.

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00:49:14.710 --> 00:49:18.040

We can't do that, or we haven't been able to do that sensibly yet, right?

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00:49:18.120 --> 00:49:20.260

You need some of those first steps.

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00:49:21.300 --> 00:49:21.440

So

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00:49:22.500 --> 00:49:24.600

just the prototype is key, but I think what

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00:49:25.740 --> 00:49:29.480

needs to be understood and what's going to be happening at the same time is

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00:49:29.500 --> 00:49:30.060

important.

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00:49:30.640 --> 00:49:30.800

Yeah.

991

00:49:32.480 --> 00:49:35.480

With the med tech, there's fairly clear ones that are fairly standard, right?

992

00:49:35.980 --> 00:49:39.360

We're going to have the technology development.

993

00:49:39.860 --> 00:49:43.640

What that's going to allow us to start doing is pre-clinical trials and

994

00:49:43.680 --> 00:49:44.920

external validation.

995

00:49:45.420 --> 00:49:45.660

Yep.

996

00:49:46.960 --> 00:49:50.300

We're talking to some really interesting partners that are going to be key, I

997

00:49:50.340 --> 00:49:53.320

think, as we announce those as well, so that's something to look out for.

998

00:49:53.830 --> 00:49:57.800

But then, I think any type of work like this, the next big

999

00:49:57.920 --> 00:50:01.240

step will be looking for things like our initial

1000

00:50:01.840 --> 00:50:03.920

pre-meetings with the FDA, and then-

1001

00:50:03.980 --> 00:50:03.990

Yeah

1002

00:50:03.990 --> 00:50:03.990

...

1003

00:50:05.840 --> 00:50:09.770

later successful trials. They're pretty well prescribed in that area, so it's

1004

00:50:09.860 --> 00:50:12.270

easy. It's a bit different with quantum because it's

1005

00:50:12.520 --> 00:50:16.270

still a little bit like the Wild West in the quantum world,

1006

00:50:16.360 --> 00:50:16.530

but-

1007

00:50:16.820 --> 00:50:16.880

Mm

1008

00:50:17.220 --> 00:50:20.520

... like I said, I think those prototypes are going to be key because any time

1009

00:50:20.540 --> 00:50:23.860

someone builds some hardware in quantum, I think it's a big deal, especially if

1010

00:50:23.880 --> 00:50:24.740

it's doing something

1011

00:50:25.580 --> 00:50:26.680

unique and useful.

1012

00:50:27.900 --> 00:50:31.760

But that will be coming with some more serious partner discussions,

1013

00:50:31.820 --> 00:50:33.440

which we haven't been able to do yet.

1014

00:50:33.980 --> 00:50:34.120

Yeah.

1015

00:50:35.640 --> 00:50:39.340

It's so super cool. I love all this cutting edge kind of stuff.

1016

00:50:39.460 --> 00:50:43.040

I think we live in the most interesting timeline as

1017

00:50:43.120 --> 00:50:46.960

possible, particularly with the confluence of all kinds of

1018

00:50:47.020 --> 00:50:48.740

technologies that are dovetailing, and I'm

1019

00:50:49.600 --> 00:50:53.260

forever grateful there's people like yourself and all the propeller heads, as you

1020

00:50:53.300 --> 00:50:55.620

say, out there pushing humanity forward.

1021

00:50:56.680 --> 00:50:58.700

So mate, I really appreciate the time.

1022

00:50:58.740 --> 00:51:02.640

We'd love to stay in touch. We might not leave it two years next time, but

1023

00:51:02.680 --> 00:51:03.620

we really do appreciate

1024

00:51:04.420 --> 00:51:06.860

your time and thanks for sharing all those insights with us.

1025

00:51:07.580 --> 00:51:09.140

Great. Yeah. Thank you. It was good.

1026

00:51:09.580 --> 00:51:09.880

Cheers.

1027

00:51:10.700 --> 00:51:11.680

All right. See you.

1028

00:51:11.960 --> 00:51:12.200

Bye.