Verizon
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>> Welcome back to Up to Speed, a Verizon podcast. Today's episode is all about 5G and the future of medicine, and with the help of Verizon's 5G network, today's guest is driving medical imaging into the future.

>> Christopher Morley: My name is Christopher Morley. I'm a radiologist and cofounder of Medivis.

>> Christopher, and his cofounder, Dr. Osamah Choudhry, started Medivis to create tools for surgeons that will allow them to leverage the potential of augmented reality and artificial intelligence in their work. But Christopher shared one reason why improving medical imaging is so important to him personally. This year, his mother was diagnosed with terminal gastric cancer.

>> Christopher Morley: I mean, of course it's -- you know, we are just, I guess, speaking about my mom. It was actually -- you know, it was something that was -- it was cancer that was missed by four doctors, and it was myself that kind of took a look at the imaging, and, of course, when it's your own family, do you a closer inspection, and so, you know, that -- I -- I saw abnormalities that concerned me, of course, and so we transferred her to NYU Hospital to actually get her the right care.

>> Radiology is a difficult practice that requires patience and attention to detail.

>> Christopher Morley: People make a joke about it sometimes: The radiologist is the kicker, but in football, right, it's like your job is to always make the finding, always make that kick, and then if you miss it, you know, then you're kind of -- "Wow, how could you?" That's your only job, is to make that finding, make that observation. Right? But, actually, it's an incredibly hard skill, this skill of -- the art of observation, right, and to be able to, you know, scroll through these scans very meticulously, have set patterns of being able to recognize abnormalities, understanding the variation of normal–that in itself takes years of practice. And then what I was drawn to radiology for was the fact -- the tremendous influence that it has on patients, the different pathways that the patients are then sent down, based on your recommendations on a radiology report. And I loved the collegial atmosphere, that as a medical imaging expert, I'm able to work with all of the different subspecialties of medicine, and, you know, that's how I met

Osamah, our cofounder. Osamah and I met, you know, around three years ago. Immediately, we recognized that we had tremendous overlap of what our interests were, our understanding of technology, and really trying to project that into the future, really assuming any incremental change year over year, where this technology was going to go, and it's -- you know, it's pretty astounding when you kind of look at it in that historical context, and so that's -- that was kind of the motivation, that we, especially given our backgrounds in clinical medicine and medical imaging and then the surgical utility of that imaging, being able to really explore that interface, all right, because I think it's at those interfaces and the edges that the most exciting innovation can happen, and this is no different. And so it's been three years in the works. You know, it was only two years ago that we had a prototype that was decent enough that we could show people outside of our small little circle and begin to try to, you know, get people's thoughts and advice and -- you know, "Do you think there's utility to be had in this," if we could make this better, if we could build this feature, and then be just -- you know, became a conversation that we were able to actually go out into the community and talk to our advisors and people that did have more experience than us, and less experience than us. You know, that was what was interesting, is that it does have this cross-generational impact, for both students as well as seasoned professionals, and so I think the potential impact there is universally wide-ranging.

>> With Medivis, Christopher and Osamah are taking radiology to the next level by creating data-driven three-dimensional scans for their patients.

>> Christopher Morley: The way that I think about it is, really, we are able to look at the data as it truly is. It's an actual three-dimensional representation of what we, you know, really consider cross-sectional imaging data, but we are able to collapse all of that into one three-dimensional volume and then look at it as it truly is. It's the truest fidelity and rendering and representation of the data, and so, you know, the practice of medicine itself, it's -- it's how we handle data and how we think with it, and it's the very structure of the data that oftentimes determines the quality of the clinical output, and that's where I really see an opportunity here.

>> When Christopher and Osamah brought their ideas to a Verizon Innovative Learning Lab meet-up, they found a place to workshop with other new companies, and they began to see the limitless possibilities that 5G could open up for Medivis.

>> Christopher Morley: Yeah, so I think -- so this technology is so new, and it needs a lot of love, and it needs to be cultivated, and I think Verizon and their 5G environment at the Innovation Lab has been instrumental in doing that and bringing the community together, and so that's how we actually connected with them about a year, year and a half ago, is at one of these meet-up events, where the intention is really about show and tell, right? People in the community that are out there tinkering on different things, they have a bunch of different ideas. Why don't we come together, you know, at night and spend an hour or two talking about these ideas and being able to have that cross-pollination that, otherwise, is hard to kind of make happen on your own, but bring it together in a central location, have people be able to show what they are working on, and the other guy, you know, right across from you actually happens to work on something that completely complements what you're trying to do, right, and with those powers combined, we like actually push both these things further, and so that's an environment that I think Verizon has worked very hard on cultivating, and we are kind of

the result of that.

>> Christopher sees 5G as not just a way to speed things up, but more importantly, a way to bring different sources of information and data together to understand the bigger picture.

>> Christopher Morley: To put it in the most simple terms, the way that I think about it is 5G gives portable mobile devices super powers. Right? So, in this case, we are talking about being able to have underpowered devices be able to render data at a speed and a scale and a fidelity that otherwise wouldn't be possible without 5G, by leveraging the power of an incredibly powerful GPU, and being able to do that at such a low latency that it is in real-time, right? And we are talking about single-digit latency speeds, so the real power of this medium, as I understand it today, is it is -- it allows us to consolidate all data and information into one medium, one means of being able to put everything we need to do our job well in one spot, and I think 5G is instrumental in that. To be able to take data that is otherwise kind of siloed in all of these different servers at all of these different locations and filter it and funnel it and consolidate it at one medium at the point of care, I think that's where it's going to have its biggest impact.

There's all of these downstream effects of the decisions that we make very high up in the decision-making pipeline, that I think this technology allows you to revisit those and kind of rethink how we use medical imaging throughout all action stages of this surgical decision-making process, and I think, you know, people oftentimes want the metrics of -- surrounding the efficacy of “why this is important,” right? Does it improve the rate of procedures? Does it decrease the hospital stay, decrease readmissions? Kind of all of these things, and I think that's -- those types of studies are going to be very, very difficult, because when we are successful, it kind of stops the cascade of all of the potential bad things that can happen at the very beginning, so we don't even capture those things, because we avoided it, and so I think -- you know, I think that's the potential here, is that this allows us to look -- to use the data that we have already acquired.

That's the other part of this. We are not changing the processes that are already in place. We could take an MRI or a CT scan from 1988 and put it in our system, and you could look at that holographically as well, right? So, we are not talking about reinventing how we do a lot of these things. It actually fits very well into the traditional workflows that are already in place, and it really does augment the powers, of surgeons in this case, and, you know, it takes years and years to accrue the experience to have that "surgical intuition," right? We hear that expression used a lot. We also hear other expressions: You know, "We'll find out when we get in there," right? Phrases like this, where this technology allows us to actually kind of look at what we are going to be getting into before we actually get in there.

>> And with the power of a 5G network, combined with innovative thinkers like Christopher, the future of medicine is looking bright.

>> Christopher Morley: You know, that's ultimately what I want to do with my life. It's about being able to leverage the skills that have been harnessed now over the course of a decade, between school and residency and all of -- you know, living in the trenches and kind of dealing with this and interacting with patients, but apply those skills on a broader scale that can have far-ranging impact across the globe, and so that's kind of what inspires me to wake up every day.

>> Thanks for listening. You can follow us on Instagram and Twitter at @VZUpToSpeed, or find us on Facebook at Verizon Up to Speed, and stay tuned for more conversations about technology today.