AT Banter Podcast Episode 326 - Lotus Labs

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SPEAKERS

Lis Malone, Steve Barclay, Rob Mineault, Dhaval Patel, Natalie Shearer, Ryan Fleury

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L **Lis Malone** 00:00

Hey, and welcome to another episode of AT Banter.

S **Steve Barclay** 01:10

Banter, banter.

R **Rob Mineault** 01:12

Hey, this is of course the podcast where we talk with advocates and members of the disability community to educate and inspire better conversations about disability. Hey, my name is Rob Mineault and joining me today. Mr. Steve Barclay.

S **Steve Barclay** 01:29

I get the second billing again. That's twice in the entire history of this podcast.

R **Rob Mineault** 01:34

I know. I made a note to actually like to move you up in the in the rotation, just to be fair. Hey, look who else is here? It's Miss Lis Malone.

L **Lis Malone** 01:43

Oh, wow. This is uh, I'm all weirded out this time

R **Rob Mineault** 01:48

I'm throwing you guys off. And hey, bringing up the rear. Mr. Anchor himself, Mr. Ryan Fleury.

R **Ryan Fleury** 01:57

This will be my last show. Thank you very much.

R **Rob Mineault** 01:59

That's it. This is actually has been the first time he's ever taken the last place. Hoe does it feel?

R **Ryan Fleury** 02:07

It's fine. It's all good.

R **Rob Mineault** 02:19

How's everybody today? Okay. Hey, listen, I have a really quick question for you guys. Since before we start the show, I need your help because this is where I glean all my hockey knowledge from but okay, so here's the deal. I bought this really cool sweater hoodie thing. Really the only thing that appealed to me there was a sweater hoodie, because I love hoodies and I love sweaters. And I thought this is great. But it has the Edmonton Oilers logo on it. So now here's the deal. I was at work today and I ran into a co worker there who I'm very sure knows nothing about hockey and she saw my shirt and went "Edmonton Oilers??" and then just like moved on. So my question to you hockey people, is this thing going to get me beat up or something? Like, like what's Is there something I should know about the Edmonton Oilers that I should not be wearing this in public or what's going on?

R **Ryan Fleury** 03:24

You live in Vancouver?

S **Steve Barclay** 03:26

Yeah. That's probably where we should start with. I mean, it's not as bad as if it said, you know, like Toronto Maple Leafs. Right?

R **Rob Mineault** 03:34

Well, that's what I thought. Yeah. That's a thing. But like we don't have a, you know, a real rivalry with with Edmonton do we?

S Steve Barclay 03:49

Oh, yeah.

R Rob Mineault 03:52

Okay. Well, this is important information.

S Steve Barclay 03:54

Well, here's the thing when it when it comes to standings right now. Edmonton has a chance of making the playoffs. Vancouver has zero. So you know, you can if people ask you and say no, I'm just going with a team that's winning.

R Rob Mineault 04:09

I see okay, well now this is good to know. i This maybe that was what that reaction was about.

S Steve Barclay 04:19

It's probably jealousy. But that's that's any team with Vancouver these days.

R Rob Mineault 04:23

Yeah. Oh, there you go. Yeah, I mean, I feel like yeah, in Vancouver, like pretty much where any other hockey jersey of any other team you're gonna get a look.

S Steve Barclay 04:32

Yeah, you're the only one you're likely to get beat up with this Boston.

R Rob Mineault 04:37

Okay, okay. Well, that's good to know, too. Okay.

L Lis Malone 04:41

Yeah, I'm kind of in dangerous territory because I live in the Carolinas but the New Jersey Devils that's my team. And I will very openly route for my team under all circumstances. Yeah, see. But I don't you know, I'm not I don't I'm not I don't lean over to the person next to me, I get

your fat, you know, I'm not picking fights, but yeah, I'm gonna be enthusiastic about my team. But right now I mean, right between the Hurricanes and the Devils were one and two. Well, one and two in the metropolitan division. So yeah, he's getting It's getting real. It's getting real right now in Carolina country.

R Rob Mineault 05:29

So I opened Pandora's Box. Sorry. Yeah. I know. We need to go sports. No, I'll just call it accidental hockey talk. I just I bring up a topic and then just Lis and Steve go off. All right, hey, Ryan.

R Ryan Fleury 05:53

Oh, you're coming to me first.

R Rob Mineault 05:54

I knew I knew that was a mistake. Steve just lived with it. He didn't care. Like he did kind of cared.

R Ryan Fleury 06:04

He'll be calling me tomorrow and talking about it.

R Rob Mineault 06:11

Hey, what the heck are we doing today?

R Ryan Fleury 06:13

Today, we are speaking with two people from an organization called Lotus Labs about a product they are hopefully bringing to market shortly. They are Natalie Shearer who is the accessibility subject matter expert. And Dhaval Patel, who is the founder of Lotus Labs. And I hope I pronounced your name, but welcome to the show.

D Dhaval Patel 06:39

Thanks. Nice to be here.

N Natalie Shearer 06:40

Yeah, thank you for having us.

R Rob Mineault 06:42

Yeah, it was our pleasure. You've been really fascinated with, with what you guys are up to and I'm excited to talk about the product. But maybe before we do get to that, maybe you can just each give us like a really a brief little intro about yourselves. And then maybe like a real quick overview of Lotus Labs itself.

N Natalie Shearer 07:03

Yeah, I am happy to go first. I am an accessibility advocate. I've actually been on the show before for my work as an accessibility consultant. And I'm continuing that work with Lotus and I want to tell this story. So I was actually approached by Dhaval, I had posted something on LinkedIn related to disability awareness, and inclusion. And he reached out asking if I would be interested in doing a user interview. We can talk about that a bit more, but it's been sort of part of this whole development process is to work directly with folks with disabilities in the development of the Lotus Ring. And I was one of the people picked to do a user interview, talking about my experiences as someone who is both legally blind and hard of hearing. And through that process and getting to know Dhaval I knew this was a mission that I really wanted to be part of. Yeah, so I'll hand it over to you Dhaval, we can go into it.

D Dhaval Patel 08:20

Now I will share the truth, just for the record. Well, so we saw Natalie's post, I came across Natalie's posts, and we I just thought it was phenomenal. And so my version is I chased Natalie down and basically asked her to be a part of Lotus and our mission because yeah, we'd be stronger together. So that's my version. And I'm just gonna say that's the truth. And we'll stick with that. But anyway, my, my name is Dhaval. My background is in hardware engineering. And so electrical primarily, but also some mechanical physics and applied math. Basically nerd and, and I previously managed an organization at Apple and worked there for about two and a half years. The last thing I did was manage an organization for iPhone, Watch and Air Pods. And then founded Lotus because of sort of my own lived experiences. Yeah, that's the that's the nutshell version about me.

R Rob Mineault 09:22

Now, so how old is Lotus?

D Dhaval Patel 09:25

Um, we were founded in 2021. But the first nine months, I didn't build anything. I actually had the idea, but chose not to build anything because I wanted to make sure. This thing that Apple trains you in deeply is, should your device deserve to exist? Like why why do you even do it? Why do you wake up in the morning and work on this device because hardware takes time. It takes a lot of effort and a lot of planning and especially the smaller it is, the harder it is. And so

In the first nine months, I just spent interviewing persons with different kinds of disabilities. And a lot of this will start to make sense at some point when I share my own story. But the intent was to conduct essentially single blind interviews where I wouldn't tell anybody about the idea we had, we would just interview people with different kinds of disabilities, intermittent disabilities, no disabilities, caregivers of persons with disabilities, you know, kind of everyone to get a diverse set of lived experiences, and from each person's perspective, understand, you know, what are your pain points? And really, each of the interviews would kind of focus on just three aspects. What are your top three problems, and they can be anything. What are your solutions to those top three problems? And why are those solutions inadequate? Which is why they're still your top three problems, right? If they were perfect solutions, then they wouldn't be your problem anymore. And so for the first nine months, that's, that's all we did. And so anyway, only after that, is when we started reaching out, that's when we, you know, kind of got connected with Natalie and other team members. And so yeah, we've been building hardware for maybe around nine months now. So yeah, in existence since 2021. But I would say practically, Lotus is maybe about nine months old.

R **Rob Mineault** 11:18

And so what started the whole ball rolling?

D **Dhaval Patel** 11:21

Yeah, good question. So I have intermittent short term disability myself. I was I was born with bowed legs, so my knees bent inwards. Ironically, my brother's actually born with his knees bent outwards. I don't know what that's about. But over the years, I have, I'm often on crutches for short periods of time, couple every couple of years, or every year, and just the past year, I tore my ACL. So I'm often on crutches, long story short. And a couple of years ago, I had, at the end of a long day, I had just gotten into bed, only to realize I had forgotten to turn off the hallway light. But I was too exhausted, to climb out of bed, onto my crutches, go 10 feet, turn off the light bubble back 10 feet and get back into bed. So I slept with the lights on the entire night. And woke up in the morning thinking, well, if someone like me, an engineer, in big tech, with expertise in wall electronics have also worked at an electronics company. If I'm not even using smart home tech, then who is? And so we went and started going down this road. And lo and behold, we're here.

R **Rob Mineault** 12:29

So maybe we can start with kind of describing what you guys are sort of working on hardware wise and how that ties in to the concept of the Smart Home.

D **Dhaval Patel** 12:41

So in a nutshell, for persons with limited mobility, so veterans, seniors and persons with disability, we've created a wearable ring that controls objects at home by pointing. And unlike typical home tech, like Alexa, there's no apps, no rewiring, and no internet. Essentially, we let you go from home to smart home in seconds. That's the core underlying benefit. Now the way

this works is very simple three step process. So step one, you put the ring on, it has a little button on one side, which you can click with your thumb. And there's a little black stripe that goes across the ring, which I'll explain what that does in a second. Step number two for any existing molds, which you can attach a module magnetically, so there's no rewiring. And step three, all you do is point and shoot. And the reason this is helpful, is putting on the ring once eliminates the need to put smart speakers in every room of your house, which is what you have to do today if you want you know, an accessible home. And that's assuming you're okay putting smart speakers in primary areas of your house like bedrooms and bathrooms, which not necessarily everyone is. Step two, like I mentioned, you can attach our module magnetically, which means there's no rewiring, which is also what you have to do if you want to do something like Alexa or Siri HomePods If you want those devices to control your lights, you have to take out the old wall switch and rewire in a new wall switch that connects to the internet to be able to talk to Alexa or Siri or so on. And then you have to repeat that process everywhere that you want smart home tech. So if you want that in the kitchen, you have to rewire your kitchen lights if you want to get smart lights in your living area or your dining room, you have to rewire your dining room lights and so on and so forth. Which depending on the size of your home can be up to $2,000 and 11 hours of rewiring. So a lot of time and effort. And step three just like your TV remote, we use infrared. So just like your TV remote, all you do is point towards the object and click that eliminates the need for internet apps, or smartphones, essentially, like I mentioned, you get the ability to go from home to smart home in seconds. But as we've learned more recently, there are two other important benefits. The second is you can take this with you wherever you go, right, because there's no reward takes seconds. And so if you're going to, you know, if you're going somewhere on vacation, or if you're going to a hotel, you don't have to pay what's often called as the disability tax. Right, you don't have to pay for this extra special accessible room, you can make any space accessible wherever you go. And it also turns out, it's helpful for anyone living in rental apartments today, who can't upgrade to smart homes, because of all the rewiring that's necessary. And then the third, and probably the most important benefit in my book is network effects. So even if you've done everything I just described, so if you put smart speakers everywhere in your home, and you've rewired all your existing switches, your granddad comes to visit you. He can't use any of it. I mean, for starters, he doesn't have access to your smartphone. And he also doesn't know what different things are named. Is this kitchen light is this left light is this like number one. Versus with Lotus, it's literally no different than him coming to your home and turning on your television and vice versa. So him having it benefits you and you having it benefits him. Hence the network effects. And because of this, because there's we can control any existing walls, which we can use, we can control things that in existing walls which control so lights, fans, appliances. But the neat part is because we use infrared, we can also control televisions, no extra components needed. And in the future, we're working on drapes, followed by doors. So that's that's the idea. Our vision is in a couple of years, any person, elderly, disabled, non disabled, can stay healthy in their own home because there will be a universe of bring controllable objects, making them more independent.

L Lis Malone 17:08

Oh, my God, Rob is never going to get up out of his chair ever. I'm a little frightened for you, Rob.

R Rob Mineault 17:16

This is true. That's fascinating, because, you know, we've been talking about the concept of smart homes for years and the impact that that that can have on people accessibility wise. But I feel like for for most people, it's just not something that's gotten a lot of traction. Sounds like this solves the problem of smart homes can be we're, you know, historically very expensive to get set up. And you're all over the map, you have different manufacturers making different things. And everything had to run through an app or a smartphone. And for some of that, that could be a real barrier for people. Is that sort of the mandate behind this is to try to overcome that and make it a lot more ubiquitous?

D Dhaval Patel 18:14

Yeah, exactly. In fact, smart speakers have been around for over a decade, depending on which specific company and talk about it's somewhere between eight and 12 years. But the market penetration is only 18%. And by the way, that's here in North America, if you talk about Asia, it's 2%. And in India, it's 1%. This was a report that actually Google commissioned and so it's really, really low. And the big reason for that is, you know, there's all these barriers to entry are great. For starters, you have to rewire all your wall switches. That's a huge barrier. I mean, you know, I'm an electrical engineer, and I, you know, it's still time consuming. And even then it's it's such a high barrier. I mean, let's, let's, let's say someone gives you an Alexa Echo speaker for Christmas, you don't even have to pay for it. What's the first step? What's the first thing you have to do? Well, if you wanted to control your lights, you got to take out your old light switch and put in a new one. Well, let's talk about that process, right? Well, do you know what the wattage of your bulbs are? You know what size they are, you know what neutral, you know, if you have a neutral wire in your wall or not. This is before you even purchased the device that you need to know and figure out all these things. Then you purchase the device, it shows up and you have to rewire one switch. And all of this was for one switch. And you have to repeat that process. So you know, the barrier to entry is just really, really high. And this goes just this just goes back to the social model of disability versus the medical model, right? Just the spaces built around us are just not the most accessible spaces, especially if you're not living there permanently, then it's even worse. And so yeah, that was very much the idea. In fact, this was a little shocking to me if I'm being you know, if I'm being completely vulnerable and honest, when I first had this pain point, and I woke up in the morning having not slept really well, I assumed it was just a knee problem. It was typical imposter syndrome. I didn't think anybody else had this, I figured it was just a knee problem, and I should suck it up. And then I started digging into it little by little, and it turns out 91% of homes in the US were built before smart homes even existed. So that even you couldn't, and there's no easy way to upgrade them. And so yeah, absolutely, the intent is for all living in these homes that were built quite a long time ago, with no easy way to upgrade them and make them accessible. And so that's part of the reason why, you know, smart homes have been more than a phase, then their ubiquitous. And that's very much the problem we're trying to solve, which is why it helps everybody, not just people with disability, and that's our design pieces. We can talk more about that too.

N Natalie Shearer 20:58

Yeah, I want to add, so part of the work I do at Lotus is outreach to other disability advocates, organizations, leaders influencers, to work with them on ways that we can partner, whether through user interviews, or partnerships moving forward. And one of the questions I always ask them is if they have a smart home, and 100% of the time I met with this like exasperated sigh,

like yes, I do, and I hate it. And it just made me realize smart homes really aren't that smart. One of the women I spoke with, she had an accident when she was young, so she has a spinal cord injury. And her parents home was completely retrofitted with smart homes. And she was sort of just explaining to me, like the process involved with activating all the different speakers, the fact that some of them don't work properly. And it seems like a lot of us change the way we live our daily lives to adapt to our smart home technology rather than the other way around. And that's something I've been thinking about a lot with Lotus and I feel like it really does solve that problem. Because with wearing the ring, you sort of become the center of your own universe, and you have the control on you at all times. So yes, that's kind of been my take away smart homes, not so smart.

D Dhaval Patel 22:31

Yeah, and, you know, I'll chime in smart homes definitely moves the ball forward, which is great, because for a lot of people that made it that much more accessible than it was before smartphones even existed. And so this is, I think my perspective was that moved the ball forward. But then there's so many other barriers now with the new tech. And so how can we make it really, really truly, completely accessible? And you know, to put this in perspective, by the way, the the number I was quoting earlier, that's from a couple years ago, I think it was 2018, or 2019, which was 18%, market penetration. To put that in perspective, when smartphones came out, in eight years, it went from 7% to 79%, or 8% to 79% versus even after a decade or 12 years, we're at somewhere between 18 to 20%. It's really low. And it's because of all these barriers to entry. Or put another way, they're not necessarily completely accessible to everyone all the time.

R Ryan Fleury 23:29

So I'm gonna jump in and ask the question that I know our audience is probably going to want to ask because I know I'm asking it, infrared is going to, I don't think be specific enough in pointing out an object you want to turn on or off. I've got a couple of wall plates in my house that have three switches on them. How will that know I want that laid on and not the fan, or the fan or not the light without an app to tell it? Or is there a way to program these things? How is how is this actually going to work?

D Dhaval Patel 24:02

It's a good question. So I would say high level, infrared is actually architecturally the only type of electromagnetic wave that is actually uni-directional and not omni-directional. So yes, if you're pointing, you know, if you're pointing in front of you, and you don't want the thing behind you to activate, infrared it is very much the way to go. Versus let's say you're a car fob. You know, which way to point it's going to trigger everywhere. Now the point you bring up, which is you for pointing in one direction, and then sort of one switch, there are three switches. Yeah, that's a little more complicated. We don't have to we could get into the technicalities of it, there are many ways to skin that cat. I would say we are intentionally and this is specifically because we're an early stage hardware startup. We're intentionally saying we don't want to solve that problem now. I want to actually and part of the reason for that is it's a lot more complex. There are ways to solve it. You can do it through different gestures. You can do it

through, you know, even without apps, you can actually just do it still with no internet and just just the same interface. My expertise for the record is actually human interface. That's actually my specialty is what I did at Apple, I ran user studies, I worked on sensing haptics in power. And so that's actually my forte. And then we can go into a lot of detail on specifically how to how to solve that problem, you get just a simple example, you can do double click or triple click, you can change gestures to toggle between them, there's many ways to do that. The trick there ends up being what's least physical and least cognitive approach. That's where we started. From this, we overthrew lots of interviews, we actually wanted to find the least cognitive effort and the least physical effort of controlling your space around you, so that you have full control. And it turns out, the best way to do that is a, you are the transmitter. So you carry technology with you wherever you go, and me to do it single handedly. And that was one of the big requests that we repeatedly got. And so we can talk more about inclusive and universal design, the universal design aspect, is that we use infrared, the inclusive design is there are different modes of operation that we intended to put in the room. No matter your disability or no disability, you have different ways of controlling your space.

R **Ryan Fleury** 26:19

Sure. Okay. Thank you.

L **Lis Malone** 26:22

Hey, Dhaval, I'm just curious, what is the thinking in terms of for, let's say, for the blind community, and you'd maybe don't necessarily know what you're pointing at? Sometimes, you know, I'm just kind of, so I kind of see it on from from from two angles, one like, hey, that would be really cool to have something that maybe could help orient somebody in their space. Because sometimes, you know, that is a tricky thing, and not having to turn on a million lights and you know, to find your your center. And yeah, blind people actually can get disoriented in their own homes, just FYI. And then how that interface could work for somebody who doesn't necessarily know where the switches are because of the lack of orientation?

D **Dhaval Patel** 27:12

Absolutely, absolutely. It's a great question. And so I will start off by caveat in saying, initially, our focus is to help people with limited mobility. Ultimately, yes, we want to help everybody. And I will still answer the question, but our initial focus is to not try and be everything for everyone, but just focus on helping and part of the reason for that is one of the largest groups of disability is limited mobility. And so at least here in the US, it's 52% of all disabilities, actually, mobility disability. And so we wanted to start there, because that's from our, from all the interviews that I was just talking about over the nine months, that kept coming up repeatedly. And part of the reason for that was, it doesn't even have to be permanent, it's very easy to get temporarily have mobility, disability, right? Everything from pregnancy, to having twisted your ankle to someone like me, just last year, I tore my ACL that was a year long process, and we're still going through physical therapy. So it doesn't ambulation or mobility is kind of the one disability where there's no redundancy. And so that's why it's our initial focus. Now, having said that, one of the one of the things we're planning on doing, we haven't done this yet, this is further down the pipeline. But one of the things we want to do is actually

incorporate haptic feedback into the ring. And there's, there's a fair bit of precedents for this, the benefit, the key benefit that we're trying to actually provide is exactly the point you made. And this actually came out through one of the interviews, we were talking to a gentleman, an older gentleman, based in Georgia, and he was actually telling us, you know, one of his problems was getting disoriented in his house. And for that reason, specifically, one of the things we want to be able to do is with the ring, when you're pointed in the right direction of, you know, let's say a switch, you will get haptic feedback. And then as you get closer and closer to that switch, you get a higher frequency or higher rate of haptic feedback. And so that will you get orientation and distance to help you navigate through your home. And as he was explained to us, the way he does it today is just step counting. Which because in the home, he doesn't really use his his, his cane. And so oftentimes, what happens is there will be two doors and unfortunately, in his situation, there were two doors, one going upstairs, one going downstairs, they're just, you know, two feet apart, or whatever that distance is. And he ended up opening one thinking he was going upstairs, in his words, felt like he was stepping into space and nothingness and unfortunately, tumbled down. And so that's the and was there for quite some time. It's disoriented. did have a few cuts, thankfully, nothing more serious than that, but had a little bit of a bleed, ended up having to call his wife who was at work, and then sort of gradually came back to and so one of the problems we're trying to solve is that one and the way we're trying to solve that is through haptic feedback. So hopefully that answers your question.

L **Lis Malone** 30:04

Yeah, it's just a such a tricky way to figure out there. I mean, I don't think there's any perfect solution. So I think that we're always very hungry for things that just make it a little bit easier. Because I don't I think, you know, sometimes in the, in any community, not just a disability, you just want everything to just, you know, you want your oven to clean itself, you want your oven to airfryer now and do this to do that, and you don't, you know, so I think that, for me, you know, I like that, that idea of having something that is just going to make your life easier, but has that extra element of, you know, creating that orientation. So, I mean, it's really, it's very fascinating and very exciting to see what what could come of this for sure.

D **Dhaval Patel** 30:51

And, you know, just to add to that, and this is by impostor syndrome coming out, the way I think about these things is, they're a good stepping stone. But then you want to iterate. And so for instance, you know, one of the things we're doing now, we've already run these pilots twice, you know, if there are other people who listen to this and are interested in this technology, things definitely do reach out to us, we'll share our contact details later for the website is lotuslabs.org. You know, even even with the orientation and navigation idea that we want to incorporate that sometime, you know, it's going to be an iterative process we'll build it will share with, with people, we want to hear feedback, like what is working, what is not working. Maybe it sounds good on paper, but it doesn't work in real life. It's not meant to be this, you know, we're going to design in a silo in our room, and we're gonna get four people because we think we know at best, and then sort of just deliver this to the world. The whole idea, and part of the reason we're, you know, we want to be here we want to be talking to more people is we want to continually be getting, and this is one of our actually, our, our core values and core principle is it needs to be human centered design. It has to be I mean, otherwise, technology

should feel like a part of you. One of our core design principles is technology should come up when you need it and disappear when you don't. And the reason for that is it should be more human. And so the only way to do that is to incorporate as many lived experiences into every design iteration as possible, and make that as diverse as possible. So it's not just one group of people that you ask. And so very much, you know, this idea is what we've, you know, it is in our patent that we've patented it, but, you know, once we actually build the first prototype, and we give it out, get more feedback, and then we'll iterate and maybe maybe some aspects of the idea that I describe it will change, and that's okay. If anything, I would love for that to be the case.

N Natalie Shearer 32:46

Lis, I love that you you brought up, you know, how is this helpful for folks who are blind and might need that haptic feedback. So to give some background on myself with my vision loss, I have something called retinitis pigmentosa.

L Lis Malone 33:01

Yeah, high five.

N Natalie Shearer 33:06

So I have a very narrow field of vision. And I've heard retinitis pigmentosa or RP described in the best way it's, it's spotting a marble on the other side of the room and on the floor and tripping over your couch on the way to grab it. And so for me, I'm able to see switches on the other side of the room. But if it's dark, especially, there's a good chance I'm going to trip over something on my way to go turn that switch on or off. And through the interview process. I didn't realize how many of these barriers I have inside my own home. I remember at the beginning of the interview, I was kind of like, well, as soon as I leave my door, yeah, I do. There are a lot of barriers, attitudinal, physical, I face them all. But in my home, I'm pretty safe. And then through the conversation, I was like, oh, yeah, like I probably fall like once or twice a day probably, you know, bump into different furniture. So, you know, the idea of being able to turn a light on from the other side of the room, I realized would have a huge benefit for me. But I also thought of other people in my life, I thought of my mom. She had ALS when I was younger, which is also probably Gehrig's disease, and as a progressive, neurological condition. And for her I know losing her mobility within the home was really difficult and having something that would allow her to maintain that independence for longer, really would have benefited her. And I also thought of, you know, my friends right now who are home with young babies and getting sort of nap trapped under their babies and not able to, to control things around their home because they're sort of, you know, stuck on the couch, and it just was this like universal realization that so many people would benefit from this technology. And the fact that everybody would benefit from it would mean you know, the folks that would benefit most from it would be more likely to use it because it wasn't this sort of like medicalized stigmatizing thing. I know, I still sometimes, you know, have trouble using my white cane outside of the home, because it really just sort of, you know, puts this spotlight on me as oh, she's somebody with a disability. And I know, if something's, you know, marketed as specifically for people with

disabilities, there's less likely to be uptake because it can be somewhat stigmatizing. So I love this idea that it's something that benefits everyone. But it's specifically optimized for folks with disabilities. And as Dhaval mentioned, mobility disabilities first.

L Lis Malone 35:56

I wasn't kidding, Rob is gonna be your first customer. He's ready to do the prototype and everything

R Rob Mineault 36:02

I was just about to jump in. That it's so true. And, you know, if we look at all of the, you know, the the assistive technology devices that have made the most progress, it's always one of these things that also leaks into the mainstream. And I love this idea that you that you, you, you put forward on the website, you have this idea that technology that is optimized for disability is usable for everyone. And, yeah, I'll be first in line to get this thing when it's ready. Like I love this idea. And I think that that's really what we need for to really move this idea of the Smart Home forward. I'm a nerd, I went out and I bought smart lightbulbs, for my lamps in my living room, so that I could tie them into my Google Home. And getting that setup was a huge pain in the butt, I had to download, like an external app. And I had to, like, you know, like, turn the lights on and off, like three times really fast to like, make it connect to the app to make it up to the wireless. It was a whole thing. I finally got it on. And it works okay. But like, honestly, 75% of the time, if I tell my Google to turn off the lights, it dims them. Or if I try to them to dim them, they turns it off. Or sometimes, I've come home, and they've just they're on. I don't even know why. So it's it's these all of these external apps that all feed into different devices in the home. It really doesn't feel like a smart home. It feels like sort of, you know, a summer school.

L Lis Malone 37:40

It's a cluster of apps.

D Dhaval Patel 37:44

I mean, throughout the nine months of interview, I don't think I met a single person who said, oh, my God, I have too few apps on my phone. You know, it just doesn't exist. And you know, the other thing about the apps, and I will share this a little bit. I'm an immigrant. And so my grandmother lived with us as we were growing up. And of course, now I'm here, but my parents live far away, they're getting older, I think about them a lot. And there was just no way I could get my grandmother an app and ask her to use it, even if I knew that was going to benefit you, right? I mean, a finding your phone, be unlocking it, going into the app, and clicking on the specific device that you're trying to control. You know, it's like the five step process, four or five step process. And so it's just not user friendly for what you would typically do in seconds. And, you know, you like Natalie was saying you sort of you acclimatized to it, because that becomes your de facto, there's no other way of doing it. But there are no if there is an easier way, that is definitely the way to go. And you know, the reason I say this is, yeah, my grandma, or there's

plenty of folks who sort of are not tech savvy, and it shouldn't need to be, I feel like the conversation Natalie and I were just having before this is the real product is not the ring. The product is dignity that you get from the independence that the ring is giving you. And I would say the product of Lotus as a company. It's not even the product. I think the product should be the mindset. All technology should be built this way, not just us. I mean, I would consider Lotus a success truly, if other companies followed suit, if all hardware especially hardware technology, because you can't change it at the last minute. It has to be from the inception of the hardware to test this will be built into the DNA of the product where all hardware should be usable by everyone by optimizing for disability first. I mean, why not? What do you lose?

R Rob Mineault 40:00

Yeah, no, it that totally. And I mean, I also feel like there are a lot of different manufacturers these days that are jumping on this whole Smart Home idea. You know, you can buy light bulbs, you can buy, you know, outlet plugs, you can you know, most new stoves, fridges, appliances, they all have this ability. And there, they certainly most of them don't develop from the lens of how can we make this actually accessible for everybody. But given that, is that somewhat of a barrier for you guys, because there are so many different manufacturers, because there are so many different devices, is that sort of a barrier for you guys, when you're developing it?

D Dhaval Patel 40:48

Actually, it turns out, it's not really, because again, one of the things we're trying to do is make your built environment or build space around you more accessible. And so it turns out, especially in the US, and I find this aspect interesting anyway, because my dad was an architect. So growing up, this was just sort of infused. And I also ended up working for sort of a switch manufacturer. It turns out in the US, the most common switches are really just two types. It is the type that you push. So it's called a rocker goes in and out. And then there's the type you have to flip up or down. It's called a toggle. Those are the two most common types. If your home was built before 1970s, then chances are it's a toggle. If your home was built after the end, chances are it's a rocker. So that's the new home, which I'm still saying New but anytime after 1970s had a rocker. And so that's the bulk of switches in the United States. And so that would help control lights, fans and appliances. And then following that, the benefit and this is funny, we joke about it internally in engineering all the time. In many ways we're building we're bringing back old tech in a new way, right? And for it's been around for 30 something years. But the benefit of that is it's inexpensive. It's small, it's been miniaturized, and it's everywhere. In fact, all TV is open standard now. All infrared. And so that's part of the reason why you can just walk into a Best Buy and get a universal remote if you break yours. And so that's the benefit, which is that it's it's everywhere. And so you can actually tap into that system. And so it was interesting. It was interesting to us were early on where we were deciding kind of architectural if this made sense. There was a lot, you know, we joked about it saying, oh, wow, you know, everyone's chasing internet? Are we not seeing something obvious? Is this a huge mistake? And it turns out, you know, as much as everyone choosing internet, Internet has a big challenges, which is because you have to be connected to the Internet all the time. You're taking power all the time, which is why you need the wiring to get power all the time to be safe to stay connected all the time. And funnily enough, using infrared. I mean, do you even remember when the last time was that you change batteries on your TV remote? And that's exactly why right, because the only takes power for that 50 milliseconds or 100

milliseconds that you press the button, the rest of the time, it's not doing anything. So it's great. It's actually there's all these benefits that we have forgotten about that we're bringing back. And then this is not to say that this solves every problem under the sun, it's just that the pros certainly seem to outweigh the cons when we're trying to make your built environment accessible. And so that's why we chose it.

R Rob Mineault 43:34

I have to ask the question, I know this is going to be a hard question to answer. And, you know, again, you've only been developing the actually developing it for about nine months. But if you had to guess when do you think something's going to be ready for market?

D Dhaval Patel 43:51

Um, so I would say, to do it right in, in anyone in hardware will recognize this, a typical hardware cycle, from proof of concept to in production usually takes about 12 months, plus minus three. So if you're, if you're doing it really fast, or if it's really simple, then it can take nine, if it's more complex than it can take 15 months. You know, we've been in the proof of concept phase, just to make sure that there's really deserves to exist, we've been getting it you know, we've run two pilots now. Net Promoter Score, you know, how many people liked it both times was 100 Meeting while everyone rated it at nine or 10, which is really, really, really high. Usually it's significantly lower. And so we're headed in the right track. The next big milestone for us. So the short answer is, it's probably going to be out and about in scale sometime next year, early next year is what I'd like to say. But the next big milestone that we're focused on, is in about two months, two to three months, where we'll have somewhere between 30 and 50 of these devices available. Working and ready. Let's, so if anyone's interested if you'd like to provide feedback, if you think it will help you, I would, I would invite people to reach out to us. Rob, you can be first in that line.

L Lis Malone 45:11

Wait a minute, wait a minute. Did you forget about Lis's very famous gift basket?

D Dhaval Patel 45:25

I didn't want to make any assumptions.

L Lis Malone 45:27

But that's okay. Give the able bodied guy the ring. Let him have it. Sorry, Rob.

S Steve Barclay 45:48

You know, if you guys build a robot that delivers piping warm, Chef Boyardee, Rob will never

leave his chair.

R Rob Mineault 45:57

True.

L Lis Malone 45:59

Well, you can operate your your, your your microwave, and just, you know, wave a ring, right.

D Dhaval Patel 46:05

Yeah, ultimately, I mean, the the ultimate vision is yeah, you should be sort of, we'll we'll get there when we get there. But ultimately, the vision is, yeah, you should sort of, in fact, a couple of people have used different analogies to us as part of our user, discovery interviews or, and there's everything from the force, if you want to, you know, Professor X in the X Men and so there's kind of, you know, pick your pick your fantasy world where we would like to be.

S Steve Barclay 46:43

On a more practical question so I have a smartwatch and and that smartwatch doesn't survive for more than about eight hours at a time. What sort of battery expectation would you have for a ring?

D Dhaval Patel 47:11

It's a great question. Um, I'm going to first ask if you had to guess. What would your guess be as to the battery life?

S Steve Barclay 47:20

Well, I would, I would think that if you were targeting something, I would think you'd want at least 24 hours.

L Lis Malone 47:41

But what you were saying about how the remote on your TV last forever, because it's just using it just sporadically for like power on power off maybe channel change here and there. So I'm going to guess it's probably going to be a you've developed something with or at least the concept is going to be much longer battery life. I think the haptics might take a little bit more, because that's going to take a little more a little more juice, but I'm gonna I'm gonna say like, it's probably maybe like, closer to like, maybe once a week, maybe even longer.

D Dhaval Patel 48:25

Oh, okay. Well, we have okay, I've my guess. No, this is this pretty good. You know, of course, no matter what, you're going to be right, Lis? Because I want those cookies. Ryan any guesses?

R Ryan Fleury 48:42

Well, I can't like Steve, my Apple Watch needs a better battery. But let's say I'm gonna go with 90 days.

D Dhaval Patel 49:04

To be clear, if Ryan's right. He's not getting the cookies. Done.

R Rob Mineault 49:13

Yeah, let's see, I'll go with a month, I'll say 30 days.

D Dhaval Patel 49:20

30 days. Okay. So, obviously, this is still work in progress. And it's ongoing. So don't hold me to this. But as of now, we are at somewhere between 125 days. So yeah, it's amazing. And again, a lot of your depends on what we choose to put on there or not on there. And when you choose to take power and so, you know, it's a work in progress. And so I can't promise but yeah, that's that's pretty much it. And these numbers are as of three days ago.

L Lis Malone 49:51

Would it be waterproof?

D Dhaval Patel 49:54

Yes, that was the very first there were a couple of really interesting things that came up from user interviews. And which is why they were they were really, really helpful. I mean, the first thing was, and it's funny, you mentioned the watch. One of the first things we were told was, hey, can you make it a watch? Sure, we can turn it, you know, we can make it this in whatever form factor you want. Why do you want the watch? And then people told us, you know, oh, yeah, I love wearing watches. And then, you know, we asked them like, Okay, do you own one? They said, Yes. Do you wear it? No, where's it right now, it's in a drawer. Why is it in a drawer? Well, you know, it's heavy, or like, you know, I don't go to bed with it, because it's just out of habit. Or, you know, it gets stuck in my spouse's hair, or what have you, or I have to charge it every day. And so after a while, I'm just tired of that. Or the other problem that is often associated with the watch. And this is a little more user designing. So I'll go a little deeper with

anything that is on the wrist, especially if it has a, it's on the wrist and a screen, there are two challenges. Number one, you have to use two hands. Right, you have to be able to turn your wrist and use it with the other hand, finger at the other hand, and not more. And you have to be able to look at the screen. Often, it depends on the UI and UX. And there are some things you can do just with the button, especially if this is an Apple Watch. But oftentimes, you have to look at the UI, and use two hands. And of course, there's plenty of life situations where you can't do both. If you're if you're able to look at the device, but your hands are not free, then you can't use it, you can look at the device, but your hands are free. So you both conditions need to be true for you to be able to use it versus with a ring, the whole idea is you should be able to use the this device without looking at the device. And think of intuitively, you know, when you go to grab an object, or when you go to touch an object? You know, do you look at your own hand? Or do you look at the object? And of course, in this situation, if you're, if you can't see, then of course, it's a moot question. But the whole idea is intuitively you you sort of focus on the object you're trying to hold or manipulate and not yourself. And so that was very much kind of the thing that we wanted to eliminate. The other big benefit is, we wanted to be able to enable, of course, one handed gesture. But the other obvious benefit, then is if you already own a watch, then you're not not going to wear two watches. And we don't want to force you to wear, you know, one or the other. So the benefit of having it as a ring is that you can have watch and have a ring, you don't have to choose between them. And so anyway, I digress. But that was that was one of the surprising thing is along with the fact that everyone requested it to be waterproof, because they wanted to keep it on all the time. In fact, we actually had some folks that we interviewed, who mentioned that they haven't taken the rings off in 12 or 15 years. And so that was part of the reason, which is the whole idea is that this should be with you wherever you go.

L Lis Malone 53:00

Now, I know that it's very difficult to make this usable for every disability, at the especially on the onset. But has anybody raised the question about if you are incapable of wearing a ring? Because of, you know, various disabilities and abnormalities?

D Dhaval Patel 53:20

Yeah, absolutely. Um, we have gotten that question. I don't want to claim that we have an answer yet. The good news is that, you know, there's nothing specific that it has to be in the shape of a ring. It could be it could be in, you know, in the form of, you know, a wrist device, it could be, you know, something you wear around your neck. There's nothing specific to the technology that makes it forcefully be on the finger, just as the form factor we chose based on all the interviews we did, because people didn't want to take it off. They wanted it to be, you know, case in point, if you're trying to go to the bathroom at night, and you have limited vision, and limited mobility, which a lot of people we interviewed, actually, they could tell the difference between light and dark and so and see shadows, but they weren't completely blind. And so for them, oftentimes, you know, kind of like Natalie was saying falling is a big problem, especially at night. And so we would only have two options either during what happens, can you put these lights on around the house, which of course if they lived with other members in the in the house, that was little problematic. Or they would have to try and find the light switch in the dark, to get some light to be able to kind of maneuver. And so the whole idea is to be able to find the light in the dark is the catch 22 that we want to help prevent. And so the part of

that reason was, if that's the case, you don't want to go looking for your device in the middle of the night. So the whole idea was what, what would be a device that you would go to sleep with and never feel like you have to take off. And after many, many interviews, it turned out even the folks who actually mentioned oh, you know, I think wrist is more interesting all I'm at least circled back around saying no, no, you know, I changed my mind. I want the ring. And so yes, absolutely. Lis, to your point. It could be other things, too. We're just starting off with the ring, because that seems to help more people off the on the get go.

R Rob Mineault 55:14

So it'd be the difference between using the force, which would be the ring or something along the wrist you could be like, Spider Man.

D Dhaval Patel 55:21

That's true. The possibilities are endless. It's true.

R Ryan Fleury 55:25

One ring to rule them all.

D Dhaval Patel 55:31

The Lord of the Rings universe.

R Rob Mineault 55:38

That's right. Are you guys still working actively with sort of the disability community? Are you still looking for people? And if if anybody out there is listening, and they do sort of want to connect with you, and and get in on the process? How can they do that?

N Natalie Shearer 55:55

Yeah, yeah. So we are absolutely still working with folks with disabilities. And that's a big part of my job. I'm doing outreach right now. But if anybody is interested in learning more, and would like to partner with us in any way, please reach out to me directly. My email is Natalie@lotuslabs.org. You can also find us on our website, as Dhaval mentioned, www.lotuslabs.org. And you can also follow us on social media where we are @lotuslaboratories.

D Dhaval Patel 56:50

Feel free to reach out to me as well. dhaval@lotuslabs.org. I will say, this will always be the

case, it's kind of one of our deep seated principles, and cultural values, which is, every, it can't be this thing at the beginning. And then you know, forget about it, we will always be talking to folks with different kinds of disabilities, because that that is part of the DNA. It's not just a one time. And then, and then you come back to it for the next product. We want to continually be in touch with kind of the community hearing about, you know, we learn something new every day, there's just almost always something new that we learn all the time. And, you know, I would rather that always be the you know, then it's truly a living product. And then we're really doing something that moves the needle and helps the community otherwise, I'm not so sure. So yeah, absolutely, please, if you find this interesting, if you just want to give him a word of support, if you believe in the mission, if you like the values, we could, you know, we're an early stage, I don't want to claim that we're big is big conglomerate, certainly could use the help. In any words of advice, you know, suggestion, encouragement, those are ultimately welcomed. But certainly we're absolutely looking for, for people. I will say, from my perspective, also, one of the big things we're trying to do next is because we will have somewhere between 30 and 50 prototypes in about a month and a half. We would love love to hear from you, if you run an organization that could kind of run a pilot at a little larger scale. So when I say a little larger, I mean 30 to 50 units, because we won't have anything bigger than that. An example of that would be Veterans Affairs. So we are we have now been invited by Veterans Affairs to come to Los Angeles in March. So in about two weeks, for the exact same reason we would love to kind of be doing pilots, with with organizations, just so we can get more feedback. You know, for more set of people quicker, so we can develop this faster and get this out to people faster.

R Ryan Fleury 59:00

Will you guys be at CSUN?

D Dhaval Patel 59:03

Oh, good question. Actually, we're debating that right now. There's, there's the Ability Tools Expo as well as CSUN. It's around the same time. And so we're debating if we can insured. We're a small team and be nimble and be as many places as we can. And it's a little late, I don't think we'll be able to present at CSUN but at minimum I think we're debating. Are any of you going to be at CSUN?

S Steve Barclay 59:34

Yeah, yeah.

R Rob Mineault 59:36

Well, listen, guys, thank you so much for coming on. Love it. I can't wait. And please, please, please come back on maybe when you guys are a little bit closer to launch. We'd love to have you on again and get an update.

D Dhaval Patel 1:00:48

Absolutely. It's been a pleasure being here. And for what it's worth, thank you for doing what you're doing. It's this is an amazing platform that you provide for for other impact missions as well. And so thank you.

N Natalie Shearer 1:00:59
Thank you for having us. Again. It's always great chatting with you, folks.

R Rob Mineault 1:01:04
Yeah, it was great. Great to see you again. Best of luck.

D Dhaval Patel 1:01:08
Thanks. Have a good one.

R Rob Mineault 1:01:12
Looking forward to this. When is CSUN by the way?

S Steve Barclay 1:01:27
13th through the 18th? Somewhere in there. Yeah.

L Lis Malone 1:01:36
And where is it this year?

S Steve Barclay 1:01:41
Anaheim.

L Lis Malone 1:01:41
Is that where Disneyland is?

S Steve Barclay 1:01:44
Yep.

L Lis Malone 1:01:46

See you as you can go and check off the boxes. Disneyland and go to CSUN.

S Steve Barclay 1:01:52

And they'll get you drunk.

R Rob Mineault 1:01:56

That's true. That's true.

R Ryan Fleury 1:01:59

And he'll videotape everything. Oh. Good stuff.

R Rob Mineault 1:02:19

No, this is this is such a cool, cool idea. Like this is this is exactly what was needed.

L Lis Malone 1:02:29

I liked that possibility of almost turning your your arm into like, you'd become like a human compass. Yeah. Like you could pick okay. Like, you know, like, just like a double was was describing the haptics, increasing and whatnot. Yeah. I mean, for me, I sure I'd like to operate things, but I liked that orientation part of it. Yeah, I think it could be coming down the pike.

R Rob Mineault 1:03:00

I mean, I think I see two huge benefits of, you know, in a way that they're doing things right in that's, you know, engaging with the community is one, but also going from the concept of like keeping it very simple. Because that is really the barrier for a lot of people first, for smart home technology is just, it's too complicated. Or it's just, it's too hard to install, you know, the fact that they're talking about, you know, just magnetic plates that would go over your light switches and completely convert them over to be able to use this technology. I think that's key, because I don't think making it more complicated for people to use is gonna work because people aren't engaged with it. That's why we've had smart home technology for years and years, and it's still really isn't all that common. Unless you consider like, you know, smart speakers, sure those are common, but you know, having, you know, automatic lights or your appliances all tied in or TV like none of that is is common at all.

R Ryan Fleury 1:04:05

Not all it works great until your internet goes out or your power goes out.

L Lis Malone 1:04:08

Or your router is not up to date and compatible that many, that many devices at once I actually had that happen. And I was like, Why isn't why can't I get logged into the Wi Fi? And they were like, oh, yeah, you can only have so many.

R Rob Mineault 1:04:24

Yeah. It's good point, too.

L Lis Malone 1:04:27

You actually count how many devices you have on your Wi Fi? Oh, it's it's it's frightening.

R Rob Mineault 1:04:32

Yeah, it's good point. It's your you know, you again, using that infrared technology is going to make it so that it is not a thing. So I'm excited to wait and see.

L Lis Malone 1:04:45

I am excited. Very nice big brained people.

R Rob Mineault 1:04:51

Yeah.

L Lis Malone 1:04:52

Yeah. Making things better

R Rob Mineault 1:04:56

Better for dummies like us. Hey Lis.

L Lis Malone 1:05:10

Hey Rob. Where can people find this? I've been told they can find us athapter.com

Hey Rob. Where can people find this? I've been told they can find us atbanter.com

R Rob Mineault 1:05:18

They can also drop us an email if they so desire at cowbell@atbanter.com. How cool would it be if we could rig up some sort of a cowbell strike with just a motion?

L Lis Malone 1:05:38

Rob is trying to make you obsolete Ryan. That's so uncool.

R Rob Mineault 1:05:42

I'm just trying to make his life easier that way. He doesn't have to worry about picking up the drumstick and going getting the cowbell ready.

R Ryan Fleury 1:05:50

I gotta know where I put the cowbell.

R Rob Mineault 1:05:54

Exactly what if suddenly, the TV comes on.

S Steve Barclay 1:05:57

Every single time that Ryan goes to strike that cowbell. I always point at my microphone, so it's just like I'm wearing one of those rings.

R Rob Mineault 1:06:10

Right hey, where what else can we be found? Pointing at Steve.

S Steve Barclay 1:06:17

You pointing at me? Well, I mean, gosh, they could find us on social media if they wanted to. They could they could look on places like Twitter. They could look at Facebook. They could look at Instagram. They're not gonna see anything on Instagram. But they could look there.

R Rob Mineault 1:06:31

There's a picture of Ryan eating pancakes. I keep telling him trying to get people to go have a look at that picture.

R Ryan Fleury 1:06:40

Should change it to Oreos.

L Lis Malone 1:06:42

Yeah, I think you should you need to post a picture of you with your Oreos booty.

R Rob Mineault 1:06:50

Yeah, yeah, I totally can do that. I've already worked halfway through the, the coconut caramel, which I would highly recommend anybody out there listening. Apparently, anybody who's outside of BC can get them. Which is we need to do an episode of that we need to write our MLAs or something. Because if it's just our provinces getting screwed over on this Oreo thing, that's a problem.

S Steve Barclay 1:07:19

But you know what I was in the I was in a Asian supermarket the other day. And they had a bunch of Oreo flavors that I hadn't seen. with Asian packaging. So there may actually be ones that maybe even Lis doesn't get.

R Rob Mineault 1:07:36

interesting. Get ready, Lis, you're gonna get a Kimchi Oreo.

L Lis Malone 1:07:40

I would love a Kimchi Oreo. Sweet and savory.

R Rob Mineault 1:08:26

With that I think that is about do it for us this week. Big thanks, of course to Natalie and Dhaval for joining us. And we will see everybody next week.