



S02E07: Empowering Human Capability with Tech

Francesca Burgo (00:00):

The idea of creating light, accessible, wearable technologies for people with disability was a great idea for me as a child of a disabled parent.

Kyle Fox (00:26):

This is the Smarter World podcast, focusing on breakthrough technologies that make our connected world better, safer, and more secure. I'm host Kyle Fox. Each episode, we introduce bright minds and their approach to a more sustainable world. We discuss the opportunities and challenges they face and how technology can change the world for the better. And today's guest truly embodies that sentiment when we talk about Tech for Good. Today I'm joined by Francesca Burgo, Business Development Manager at Existo, an Italian health tech company that offers innovative solutions for the wellbeing of people with disabilities. Most notably, this startup has designed and produced a wearable solution designed to restore abilities to a person's upper limbs. It's a robotic extension that fastens to the person's forearm and the user controls it with their voice. Truly amazing stuff, and I cannot wait to talk about the full capabilities of this device and the impact it has had on those with disabilities. Welcome to the pod, Francesca.

Francesca Burgo (01:24):

Thank you, Kyle. It's a pleasure to be here. Thank you for inviting me.

Kyle Fox (01:27):

Before we dive into it, can you tell us a bit more about you and how Existo came about? The company's accomplished so much in such a short time. It was only founded in 2019.

Francesca Burgo (01:36):

Yeah, that's true. We've gained great accomplishment, but actually I was not among the founders of the company. The company, as you said, was born at the end of 2019, but the very first founder was Fanny, which is my colleague, the head of the technical development. I came across Fanny two years ago, more or less. I was in consulting, but I was looking for a more purpose driven job and that's when I came across Existo. Fanny was looking for someone to improve the business side of the company. We met because we had some friends in common, and as soon as she told me about the technology and the mission of the company, I fell in love with the mission, and I felt the urge to join the company. And the idea of creating light, accessible, wearable technologies for people with disability was a great idea for me as a child of a disabled parent. This was something that I really cared about. When I was born, my father was already disabled. He had an accident when he was 20 years old. For me, it was very natural to see disability. This is the normal life. But then growing up, I realized that the entire world, the



outside world was not so ready as I was. The idea of joining a company and a community that could help the world become a more inclusive place for everyone was thrilling for me.

Kyle Fox (03:09):

What an amazing story. You sound like a perfect match for what the mission of your company is, especially I like how you described your own personal experiences with this. When I think about that, I don't have someone that close to me that is disabled. You're going to have just a natural understanding of what's needed here much more so than somebody that's not.

Francesca Burgo (03:29):

Yeah, that's true. That's what actually Fanny always tells me, and even other people. I don't want to sound like, I don't know how to say it in English, but I don't want to praise myself, okay. But when I talk to people with disability, I know it sounds very normal for them because sometimes I realize people are scared to talk with disabled people because they don't know how to approach them, which words to use and things like that. And when I meet someone with a disability, whether it is a physical disability or another kind, like more mental disability, it's very easy for me to get in contact with them. I just ask about their experience. I don't even know how to explain it, but I know I sound very natural to them, which is not easy.

Kyle Fox (04:29):

Not at all. And the word that was coming to my head as you described that was you see them. And I certainly know in my own experience that sometimes I will act differently with somebody that does have a disability because I'm not sure. For you, it's just a natural part of being, which makes it so much more powerful for you to be a part of this job. This is fascinating.

Francesca Burgo (04:47):

Yeah, it's normal to be scared not knowing how to interact with someone with disability. It's very normal even if you don't have any experience with your relatives or friends or people around you, of course. But when they ask me, how can you do it, how do you do it? I always tell for me it's like asking to someone, why do you have blonde hairs? Why are you a brunette and you turn to be a blondie? It's actually the same thing.

Kyle Fox (05:17):

It is a completely natural part of your extension, which actually answers and asks questions so far is I imagine in high-tech we come up with ideas that we want to go build into products, right? It could be a cell phone, it could be different things, but some of our products and some of the technologies can be quite challenging if you're an outsider coming in to create that solution and you just answered the question, you're perfect for this because you're able to come in and say "Yes, that most likely will work or most likely will not work." And perhaps it's a good segue to talk a little bit more about what this technology does because it's so powerful and I believe at Mobile World Congress this year, Existo showcased this robotic extension and you



demonstrated in front of everybody how it can restore ability to use a person's upper limbs. And I don't want to steal too much of your thunder here by continuing that description. Can you tell us more about how does this all work? People have this idea of a robotic extension as they listen to the podcast. Can you describe how does this actually work in practice?

Francesca Burgo (06:17):

Well, the Mobile World Congress was a great stage for us. We gained the interest from private companies, from governments, investors and stuff, was a very great stage for us. The first product is Existo. We decided to give our first product the same name of the company. This was a strategic decision first of all because people just remember one name, which is easier for them. And on the other side, what we want to convey is that our values as a company are represented by our product as well. If the company, the brand has a reputation, the product has the reputation as well and vice versa. If the product is reliable, the company is reliable as well. Existo is basically a robotic extension that is worn on the forearm. It is designed as a bracelet that people with upper limb disability can wear on the forearm or other places on the arm according to how much they feel comfortable with the bracelet.

(07:22):

And attached to the bracelet, there is this robotic tentacle which functions, more or less, as an opposing thumb. This tentacle opens and closes to grasp objects, and it's supposed to work together with the hand because the idea was born for people who still have the hand, but cannot use it anymore. I'm talking about mainly stroke patients or people who suffer from neurological disease. The idea was that this tentacle worked together with the hand to allow people who cannot grasp objects anymore, they don't have the ability to open and close their hand, to performing direct manual actions or bimanual actions.

Kyle Fox (08:15):

Incredible. You've literally added a, let's say alternative, but a secondary opposable thumb. And I think about it right when you were describing it, how much with a functional hand we use our thumb to be able to grasp hundreds of different objects, grasping a railing, that sort of thing, and be able to maneuver. And if you lose that ability, how debilitating it can be. And so the picture in my head and I have seen the device itself, but for our listeners that haven't seen it, having that robotic extension becomes amazingly powerful because you could pretty much grasp anything that your thumb could do, correct?

Francesca Burgo (08:47):

Yeah. This version of the device, which is a market ready version as we call it, you can grasp objects in different sizes. Of course we need to improve. We are a startup, so we are going to improve even this kind of technology because you cannot actually grasp very small objects like the pen if you want to write. It's very difficult to grasp a pen with that tentacle. The idea was that people were given the means to perform basic actions to go again to their life and perform what they need to do, the grasping of a glass of water or holding a jar to open the jar. What we



realize performing the trials with the users is that the most common actions they perform when they're given the device are bimanual actions. Because if you think about it, as I said, we work mainly with stroke patients.

(09:43):

Stroke patients, they go through a rehabilitation pathway. They're trying to regain their ability. But sometimes this brings to a condition where people cannot regain the ability to use half of their body. They have one hand and one arm functioning normally, but the other one is not functioning anymore. If I need to open a door, I'm going to do it with my healthy hand. I'm not going to do it with another device, of course. But when I need to open a bottle, that's the pain part. And furthermore, during the past few years, we got really involved with the communities of disabled people, clinics of course, but also foundations and families with babies with disabilities. We worked closely with these people and we had the chance to test the device even with people who don't have the hand anymore. It's like another kind of user, another kind of audience.

(10:45):

And in that way, in the case we found it to be useful, even for them. It's a low-cost alternative to prosthetic, which is very nice in Italy, since you don't have any reimbursement of this stuff. A low-cost alternative is very interesting. And sometimes I still get surprised when people tell me what they do with the device. There is this guy, he's one of our ambassadors, his name is Eric. He was born without the hand, and now he's 21. Of course he learned to do anything with just one hand. That's why he doesn't use any prosthetic, but sometimes it's useful for him. For example, when he goes to the cinema and he told us, "I go to the cinema and I can hold my chips with Existo and eat them at the same time." And I was like, "This is great." I couldn't even imagine something like that.

Kyle Fox (11:42):

Yeah, absolutely. And you'd use the example of somebody with a baby. As a parent myself, I'm thinking, I may have my own bag of stuff and then I've got a diaper bag in the right hand. If I can't use that hand, that's going to get really big struggle in the movie theater. Yeah, you got to have your beverage and your popcorn. That could be challenging. And those are everyday things.

Francesca Burgo (12:01):

Yeah, everyday things. That's right. And as you mentioned being a parent, another one of our ambassador, she's Tatiana and she's a mom and she told us, "Moms are multitasking and that's why I need Existo because with one hand I grab the grocery shopping, with the other one, I'm going to give the milk to the baby." It's very interesting to learn in these new ways Existo may work and may help people with disabilities.

Kyle Fox (12:33):





You've helped to lead into a question I had, which was just the overall usability testing of the device. When I first heard of the company, I was thinking certainly stroke victims, people with diseases that have limited their movement. But I also thought about combat veterans, victims of industrial accidents. And we've talked a little bit about experiences people have, but how do you go about and test that this is ready to go and what does ready to go even mean?

Francesca Burgo (12:57):

I will never be thankful enough to our clinical partners because they helped us since the very first day to start testing the device, not only to gain the certificate as a medical device. Since we are a certified company, the device is certified as a medical device in the European Union. But we gave us the chance from the very beginning to test the device with users. As you said correctly, the first test were just with stroke patients or with people who suffer from neurological disease because the device was born with that idea. The idea that there was plenty of solutions for people who have lost the hand or the arm, but no solution for those people who still have the hand but cannot use it anymore. That's why we first tested the device with the stroke patients. And the first testing brought us to change the interface.

(14:02):

The way the user interacted with the device and arrived to let's say our prototype, which was a one-fits-most device. That doesn't mean one fits all because it was merely impossible to create a standard device for any person with a disability to the upper limb. But we arrived to a design that was one fits most, which is something we are very proud of. Then when we finished the test, they brought us to getting their certification, we started to collaborate also with communities. On the one side, we have the clinical network. On the clinical network we meet people who are what we call the "new disabled". People who face disability for the first time because they suffer from an injury. In a clinical environment, they test Existo, and sometimes they are even biased on this kind of technologies because they are angry with the world.

(15:07):

But even in that moment, we try to find the best way to communicate with them. And that's why the work with the community was very important, and that's why we try to change the narrative about the disability, but also about technologies that help people during their lives. Normalize disability, but at the same time normalize the use of technology supporting disability. That's why we became the very first medical Italian company to go consumer. And we are talking directly to the user and we are finding the right way to talk to the user. We were in Florida last year to test the device in a rehabilitation center, and there was this community of friends who were in the Army together and they've lost an arm or a hand and they tried Existo and they're at the moment using the device in the rehabilitation center in Florida. And their way of using the device is even different from what we've talked about up to now. They use device to train, which is very interesting because what they sometimes cannot do is to hold the weight to train themselves. They cannot grasp the object, so they use Existo to train and to straighten the muscles, which is a very interesting way to use the device if you think about it.



Kyle Fox (16:34):

Just to reflect back what I've heard, you guys got two pillars going on here, which is one, working with the actual doctors and clinicians and people that are working on therapies, as well as working with people where you said the example from one of your brand ambassadors that said, "Hey, you go to the movie theater and it can be a little bit of a struggle." You're going out there without defining what it's going to do and letting people come back to you and say, "Hey, look what I can do with this."

Francesca Burgo (16:58):

Yeah. I'll give you one figure just to understand why we decided to follow two parallel path because only 5% of disabled people worldwide are new disabled. People who gravitate around clinics and rehabilitation centers. This means that 95% of disabled people are at home, unattended with no brand and no company that speaks directly to them. You can notice yourself if you see advertising from companies on assistive technologies, sometimes they're just trying to evoke pity. And that's why we wanted to create something which was even more appealing to them. You're angry, you're disabled, you don't find a world where you fit in. We are giving you a way to become part of a community that not only gives you the mean, which is the device, to live a better life, but gives you an identity. You're part of existing community and you're cool because you're part of existing community. We are trying to begin that status quo. I'm so cool that I wear Existo products.

Kyle Fox (18:17):

Exactly. And I'm glad you brought up because you never want to, I guess, be in a position where you need a device. It would be better if you don't need it, but if you do, there is a cool community factor to this. The tech geek in me would be like, "I got a robot on my arm and look what I can do with this."

Francesca Burgo (18:32):

Yeah, exactly.

Kyle Fox (18:33):

There's an additional step there, which is "yeah, and we'll make it cool" because we see you and you are a part of a community that sees you. That's incredibly powerful.

Francesca Burgo (18:43):

Yeah, thank you. We wanted to convey this meaning of being part of something cool. And at the same time, we want to make it easy for people to enter in this mindset. The previous prototype was bigger and the tentacle, the robotic finger, was controlled by an external joystick, which was like a ring. The user was supposed to wear the ring on the healthy hand, move the ring to open and close the tentacle. And that's why we realized that we were occupying the healthy hand.



We were giving the disabled hand a way to function again, but at the same time, we were making the healthy hand busy controlling the device. It was useless.

Kyle Fox (19:31):

It cancels itself out.

Francesca Burgo (19:33):

Yeah. What we thought is that okay, we cannot use an external joint to control the device because otherwise it's going to be useless. And what can we do? Since we work with stroke patients, we cannot put any myoelectric sensor on the device because stroke people don't have much of impulses. You don't know where to place the sensor to give the right impulse to move the device. And that's when we met NXP as partner. NXP was already partner with our mother company, which is Inovia. There was already a trustworthy relationship with them. And indeed the partnership was a success. We decided to put the voice control inside the device. The voice control was the best trade off to make user interact with the device and make the device accessible for them.

(20:27):

And if you think about it, voice control is very powerful because we are used to talking with our phones. We are used to talking with our voice assistant, with our homes and talking with your prosthetic because it's a prosthetic in the end, makes it even easier for you to accept that you have a prosthetic. The voice control helped us positioning among wearable consumer goods. And so giving another boost to the technology to be perceived as a watch, as something very like an accessory. That's why we advertise ourself as an accessory, not as a medical device.

Kyle Fox (21:10):

I'm just now realizing how powerful that would be. It's an accessory that helps your life and you interface to it just like you do 100 different devices you do every day. The barrier to entry on that is quite low. And this is battery charging, right? It's something that you need to charge it up, you stick it in a cradle, very similar to what you do your phone or other devices.

Francesca Burgo (21:30):

Yeah. Same way.

Kyle Fox (21:31):

You haven't changed the use case to be able to make the technology work. You're actually taking advantage of how people do it today with other devices.

Francesca Burgo (21:39):





Imagine entering a pub, asking for a beer, grab your glass of beer with the device. You're going to be the coolest in the pub.

Kyle Fox (21:47):

You're going to be the coolest in the pub. My head was going exactly there.

Francesca Burgo (21:50):

I did it myself.

Kyle Fox (21:51):

And what was your experience with it?

Francesca Burgo (21:54):

It was something for me to gain curiosity from other people and that was the goal. People asked me, the technology, how does it work? For example, during the Mobile World Congress, this was a way for me to advertise the product because I was alone at the fair. I needed something that helped me to gain attention from the outside world. And that's why I was walking around the restaurants with the Existo, eating and drinking with the device.

Kyle Fox (22:23):

I can imagine in a high-tech conference, even if you're just sitting the restaurants, you're going to have a lot of people going, "what is that, what is that?" We've covered a lot of ground today and believe me, I could spend another hour with you. We've hit some really powerful stories here. The value of Existo, the word that keeps coming to my mind is uncharted. Yes, you know where you're going now, but I see a future where you're going to optimize and perhaps 10 years from now would we perhaps see some more optimized Existos that are tailored to a specific use case or more maybe the technology would do it to where it becomes a little more generic and it can reconfigure itself, transform itself to optimize for a different one.

Francesca Burgo (23:01):

When talking about the future, I don't want to make uneducated guesses. I don't want to fantasize on which direction technology will take or what will be the improvement on a prosthetic point of view, for example, because innovation is an acceleration. What we know now is not enough to understand what will happen in 10 years, in 50 years from now. If I had to think about the future and how technology can improve, can help the world become a more accessible place, a more inclusive place for everyone, I'm thinking about a two-sided pathway of development. On the one side there is the physical world that needs to be addressed. I'm talking about infrastructures, buildings, homes, and even assistive technology of course. And this is where technology plays a pivotal role like in creating more accessible infrastructures for



everyone, like with the wheelchairs or without the hand and more accessible home when you can interact with all the objects in the home without so much effort.

(24:13):

And of course when talking about medical devices, more accessible means more affordable. This is one side, one world, the physical world that needs to be addressed through technology to make everything connected to the physical more accessible. And then there is what I call the soft world. And that's what I've talked about so far. The soft world is the world where people live. And here, communication plays the very central role. We humans, for example, have picked one language, which is English, to communicate with each other worldwide. This communication made knowledge, information accessible to everyone. At the same time, I think that learning new language and new vocabulary and fostering a new narrative about diversity, inclusion, accessibility, disability is the way to make the world a more inclusive place.

Kyle Fox (25:16):

Bold words, but that's where real change comes from and they're extremely powerful. I loved how you said that because getting the vocabulary correct, and I don't mean from a political correctness perspective, but actually including the words to be able to describe that reality is so important because then you have a common knowledge base, you have a common language to speak in and you can describe problems and solutions in that. And I think you're the first guest to ever really describe it in that way. And it's so powerful for long-term change. Both an infrastructure play but also the soft side of it. How do you communicate with this?

Francesca Burgo (25:54):

This is a learning process even for us, and that's why working with the final user, with the disabled community is very important for us because for example, I'm learning now inclusive is not so inclusive as a term and vocabulary as society changes every time. If you want to talk with the community, you need to be inside the community or at least trying to understand their vocabulary. This happens in every kind of community. It's a learning process. It's like error and trial like everything in life.

Kyle Fox (26:28):

It occurred to me, it's almost an invitation to go and have that conversation about a cool piece of technology that you're seeing it perform some amazing things on someone and allow you to have that conversation. Whereas somebody who perhaps doesn't have that, they may resist or not even see a need to enter into that community. It's almost like a community ambassador. Does that make sense?

Francesca Burgo (26:51):

Yeah. It makes sense because this is actually what we are trying to do because disabled community is not so attended nowadays. There is no one really talking to the disabled



community. And it's a very fragmented world when people try to say something. Now we are a small company, for now it's just me and Fanny. You can imagine our efforts to work everywhere on everything. We started in Italy and we started to collaborate with communities in Italy. And in Italy is very small communities, like 50 people, 100 people, 20 people. They work and they try to make their voice be heard by everyone, but it's very difficult. And at the same time, these communities, they don't know each other. What we are trying to do is to become the center around which this community will rotate. We are going to be the community for the disabled people. We are going to provide light, low-cost, wearable technologies for the physical disability and maybe one day even for other kind of disability. And at the same time, we are giving people a place to talk and to exchange experiences because from a personal experience talking with other people who are facing the same problems as yours, it's very important you don't feel alone.

Kyle Fox (28:20):

That was exactly the word that was coming to my mind is that you realize you don't feel alone. And for me personally, and I think that our listeners agree is that those are some of the most powerful words in the human languages. I am not alone.

Francesca Burgo (28:33):

Yeah. And the most interesting conversation I've had so far are with parents of children with disability. When they talk with a child of a disabled parent, they see the other perspective. And they always tell me, "Oh wow, I've never seen it the other way. I talk as a parent of a disabled child, you talk as a child of a disabled parent," and this is sharing experiences. I know it's mind-blowing because it's mind-blowing even for me when I come across this kind of conversation. But this is where passion is driven.

Kyle Fox (29:14):

Well, it's not surprising to me at all. Some of the most powerful things are some of the simplest things, but you have to see the simple in it. And I love how you described that, the child of a disabled parent or the parent of a disabled child. And right when you said that, I put myself into thinking of my child suddenly having a disability and a whole bunch of emotions just started kicking in. And then I thought about what if Existo could be used by my child to restore and enable their lives? And that tripped me up a little bit. You and your company are doing amazing things. I can see a vision through your eyes of where we could be in 50 years. I realize there's probably a million different ways in which it could go, but you really hit on the most powerful stuff. It's infrastructure, it's community. It's changing, yes, but updating and enhancing and improving and optimizing the language we use to communicate so that at the end of the day everybody can sit down and say, "I'm not alone."

Kyle Fox (30:12):



Francesca, this has been very meaningful for me and just amazingly powerful podcast. Thank you for what you're doing and thank you for being on our podcast today. It's been an absolute pleasure talking with you.

Francesca Burgo (30:24):

Thank you. I'm glad to hear what you said and your feedback, and I'm super happy that people can see my passion when I talk.

Kyle Fox (30:31):

Thanks for joining and we'll see you on the next one.

