



The Internet of Things for Good

Speaker: Jim Poss, CEO of Modifi Inc., Founder of BigBelly Solar

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Video: <https://www.freerange.com/thrive/conversation/jim-poss>

Transcript:

Randall: I had the fortunate opportunity to have a little walk with you outside before this interview, and we're just kind of walking down the Embarcadero and, of course, we have drinks in our hands, and we're getting ready to toss the trash, and there's a BigBelly Solar trash compactor. And he walks up, and it just doesn't work the way he wants it to, which I really appreciate. And he goes, "This is unacceptable."

And so I really love when CEOs, owners, founders take so much pride in their product. I just would love for you to talk a little bit about that moment.

Jim: That moment. A few minutes ago. The foot pedal is, like, a ten-year discussion. The BigBelly is a trash can. And being a trash can, it gets kind of nasty. There's trash and stuff in it. As a safety mechanism, we have to have this trap door so people can't stick their arm in and get chopped up. And so for years and years and years, since the beginning, we need a foot pedal. We need a foot pedal.

Experiments, you know, go on and it's a daunting thing. I mean the whole concept of building a machine that could crush somebody's hand, and putting it out in the public space where it gets vandalized, and hit by cars, and rained on, and everything on, it's a hard thing to do. And to make it work. For a long time, ten years, twelve years.

And so the foot pedal was like this thing, like, we got to do it. We know we have to do it. But not right now. We're barely profitable. We need to make the machine work better first. We need to make it cheaper first. We just can't take this on.

And so, we finally get the foot pedal. And all these considerations. What if there's snow? What if it freezes? What if somebody hits their foot on it? How do you make it go four million times without breaking? That's the thing. It's like engineering a car door or something. Test, and test, and test. Accelerated life cycle testing where you put the thing in a closet and you're just banging the foot pedal for months to simulate what it's like in the real life. I mean, you really can't do it. So we put these things out there. We finally launched the foot pedal. And a very hard engineering project to make it, you know, backward compatible. And the best it can be.

And I went and stepped on the foot pedal, and it didn't quite open right, or it didn't quite close right. And I said, "Damn." And I recalled, you know, my suggestion to the engineering team that we have a stronger spring in there. And they're not dummies! We've worked together for a long time.

I'm like, "You got to be making a stronger spring, because when you step on the thing, it's got to come back." And it's got to, you know, it gets full of gook. You know? It gets full of stuff.

And they said, "Well, we had a stronger spring, and then kids would come up and step on the foot pedal, and they'd get bonked on the head with the hopper. So we went with a lighter spring." And I guess, you know, that's why we have a lighter spring.

Randall: And there is why I kind of intro'd with that because you were so passionate about the details at that moment.

Jim: And I think for ten years on since kind of the founding of the company. Even more than that. Right.

[00:03:50]

Randall: And so I would love that ... you had a business plan. It was kind of written out. And you're just as passionate about the details.

Jim: Right.

Randall: What's that journey been like for you?

Jim: Well, the concept is simple. The PowerPoint slide is simple.

We're going to use solar power to compact the trash and displace garbage truck trips. The garbage trucks are highly polluting and very expensive. And if we can cut those, we save everybody money. Everybody's happy. Pretty straightforward.

The details are what takes fourteen years. And, you know, you go through revision after revision, and things work, and things fail, and things break, and things get gross from time to time. You go through funding rounds. You go through hiring and firing and mishaps, and all that kind of stuff. And that's where the challenge really is.

Randall: Yeah.

Jim: You have to learn about politics and lobbying, and municipalities, and city councils and all of these ugly parts of what is just a very simple, straightforward and, I've heard, brilliant concept. I'm like I didn't seem that brilliant. You know? Fixing a broken RAM, or whatever.

[00:05:23]

Randall: Yeah. It was one of three concepts at the time that you had?

Jim: Yeah. Yeah. I went to Babson. It was after the dotcom bubble had burst, and I was living in San Francisco at the time. And everybody got fired, basically. My company went out of business, and I had no prospect for funding. I said it's a great time to apply to business school. So I applied to Babson, because I had worked a bunch of jobs in a bunch of different companies, and I felt like I should just do this myself. These people are, can't do it right.

And so I went to Babson. I have these, I went to this program called EIT, Entrepreneurship Intensity Track, where the second year of Babson, you write a business plan and try to start a company. It was like Goldilocks. I had three plans that I went through. And for one reason or the other, the two wouldn't have worked. I got good advice, and I decided to do the easy one, ironically.

Randall: But it hasn't been that easy.

Jim: Oh, no! I mean, that's the thing. I'm glad I didn't choose the hard one, you know. It was hard. It is hard.

[00:06:40]

Randall: So talk about those initial days. I mean, did you really understand what it was going to be at the beginning?

Jim: I guess some things are exactly like they were supposed to be. And some things we're way off on.

I think the biggest and most important early one was I thought we would sell to the private sector first. And my first customer was Vail Ski Resorts. And there was such a good value proposition for them. I mean, they would go and pick up the trash up the, you know, four miles up the trail in a snowcat. And that thing was high paying. It was very expensive. And there was an aesthetic, and you can't have litter, and there are animals out there. So it was a big deal. And they bought like instantly.

I mean it was false positive. And I'm like, ah, they own eleven other resorts. And we're going to move into Hyatt, and we're going to move fast.

And the product just wasn't there enough for them. They want a much better aesthetic. Thin, cheap metal just doesn't cut it. It was a big, ugly machine. Because in the beginning, you don't have molds. You can't do the \$500,000 mold for the sexy shaped side skin. So I was wrong about who would buy this.

And it ended up being municipalities. And you learn the hard way how hard it is to see an efficiency product to municipalities. Because they often don't really want to be efficient. And the sanitation isn't that into brand-new technology to displace the guys. So that was the challenge.

And so, yeah, there's the product development challenge, which you expect. But then there's this, oh my God! It actually takes three years to sell a meaningful amount to a municipality, and more. I mean we worked on New York City for, I mean, we're still working on New York City, but the first real deployment was like year seven.

[00:08:53]

Randall: Right. Year seven. So you're wearing a ton of hats. I heard about one hat you wore today, that was in Seattle. I thought you should share that story a little bit, where I guess there is some drops of water getting into the trash can.

Jim: Ahhh.

Randall: I think this is important.

Jim: You're making me tell all the bad horror stories.

Randall: Yeah.

Jim: What about the glamour? I thought it was supposed to be glitzy and glamorous?

Randall: It's coming. Yeah. It's coming. Yeah. Entrepreneurship is glitzy and glamorous.

Jim: So I was telling Lynn this story earlier, and she whispered it to you. Okay? I put this into the category of, like, the most humiliating and disgusting moment.

I got this, I mean way before this, one guy was like, CEO. That stands for Clean Everything Out. In the trash business, that's not such a great thing sometimes.

Yeah, I moved to Seattle and I was kind of pioneering the sales effort out there. And, you know, I ran into two problems with that made us better, eventually, but they were kind of painful.

Randall: Yeah.

Jim: First season, I found myself with big batteries in my backpack, going up to machines and secretly swapping out batteries in December and January. Because it's Seattle, and December, and you don't realize that wow – we're as far north as Nova Scotia. I mean it's up there. And we hadn't had that much of a test.

And so, to get through the winter, I'd go and pull out, and these were wirelessly compatible at the time. I'd pull out my laptop. I'd plug it into the machine. I'd download

all the solar data, and I'd create a spreadsheet at home and calculate when the next time would be that I'd have to show up. Because the battery, the voltage would zzzzzzz, like this. Every two weeks I'd have to show up with a new battery. And then I got a little better at that. I'd switch the batteries from the south side of the street to the north side of the street.

But I just had to get through the two months, basically. And I knew it would come out. It was getting better and better. And I learned a lot about solar, and ambient solar, which is an under-appreciated science, probably?

So that was one, but I think you were referring to another. But that created, right, a special project to fix the problem. And we moved our sensor up a couple inches. Then we developed a dual sensor, which we could remotely control, and it would automatically go into winter mode so that didn't happen again. And that makes us better,

So when the competitor comes out of South Korea and steals everything, And violates our patent and whatnot, their machines are still running out of energy. And they can't sell to Northern Europe because the machine fail, because they don't have the software, logic, and they didn't haul batteries in the backpack.

But there was one more. There was the rain in Seattle. It rains, as well, in the winter. And I had just made a sale of 85 machines into the rural parks outside of Seattle. They don't, nobody goes to the parks in the winter. And it rains in the winter.

We learned the hard way that water drips on the top, rolls down the front, a little water shed, kind of comes down the front, and bends a way around the hopper and finds its way into the bin. And this had never been a problem before, because people picked up the trash every couple of days, or week, or whatever. There wasn't enough water. But you go two months in Seattle, and you have a big bin that's full of water.

The client calls and they're like, these things are full of water. What? It's impossible. We have, like, 10,000 of them out there. Why me? What happened? And then, of course, we realized the slow trickle, and they filled up. But I had to go deal with that, because I didn't have a staff at the time, you know.

Randall: How many years was this?

Jim: This was like year, I don't know, seven or eight. Something like that. Eight.

So eight years we're flying blind, not knowing that the things are leaking. It was the most disgusting thing when you pull out a bin full of water, dog poop, trash, banana peels, cigarette butts. It's like a tea. You make a tea of the, it's like the nastiest substances ever. This would be like the worst fraternity pledge thing you would ever have to make somebody do. You know.

So, yeah, I had to pull these things out, and it would spill all over. I'm like uh-oh, you know? That was bad. So, you know, but things, you know, that was a low point. We created a gutter, and the gutter diverted the water. I won't go into the redesign where they forgot the gutter after that.

[00:14:06]

Randall: You're losing the job during the dotcom, start-up goes south a little bit. You start another company. You're eight years in. You're cleaning out the sludge. You're on your third company now? Like-

Jim: Why do I keep doing this to myself? Like, what's next? I don't know what to say about that.

Randall: There are good parts, too.

Jim: Yeah.

Randall: What are those?

Jim: Let me think about that. Well, you know, there's that hopeful light at the end of the tunnel. There's the opportunity that you see every day develop where you're changing something, that you didn't like.

I mean, garbage trucks suck. I mean, they're nasty. We need them off the road. We need to recycle better. It's a bigger problem, and I'm helping solve it.

And now this thing's got a life of its own, and fifty people go to work every day, and they have families, and they come to work, and the families are, you know, they're paying the

kid's tuition. And people are actually working every day. Well, recycling and getting diesel off the road. You want to rag on garbage trucks a little bit? They kill more people than anything else. They get 2.8 miles a gallon. That's one Exxon Valdez worth of oil burning up into the atmosphere every four days in America alone.

Like it's, there's something, there's some meaning there. And it's going well. They had the best quarter ever. It's just been on a trajectory. It's been a long time, but you got to be patient, I guess.

[00:15:45]

Randall: Yeah. So you're on the third company now?

Jim: Yeah.

Randall: And what are you working on?

Jim: Well, I try to take all the good things that I've learned in life, and apply it to the next company. So, it's largely a software company, because I didn't want to the whole gutter-battery thing anymore. And, you know, most of what we do is we buy a recycled smartphone. We put our app on it. We get rid of all the other apps, and we give it to companies, and they give it to their workers. And those smartphones are underappreciated assets.

You can buy a recycled smartphone, a good one, for \$20. It's got an accelerometer, a gyroscope, and a magnetometer, a light meter, and a GPS, and all this stuff, video, microphone. Incredible technology. And they're being thrown away. I mean, how many people have an old smartphone in their drawer right now? [audience raises hands] How about more than one? Pretty good, Probably lower than average.

But they're 47 billion dollars worth of smartphones sitting in people's drawers right now. I buy from wholesalers who give me exactly my spec. I got, I want this phone, that O/S, you know. Type A or Class A. And I can get it. And I'm buying from people that are re-selling like 15 million phones a month. Yeah. That's a missed opportunity.

I've always liked to be as resourceful as possible. So why burn diesel when you don't have to? Why drive a garbage truck when you don't have to?

Humanity gets better if we are more sparing with the resources that we have, because we really don't have that many. We have one Earth. Apparently we're on pace to need like two or three, so we got to figure out the asteroid thing. But that's a pain in the ass. And Elon Musk can do that stuff.

But we don't have that much energy coming in. And so, using things, re-using things, repurposing things just makes sense to me. And so, and that was kind of where it started. That's not really what we are and what we're doing.

Randall: Mm-hmm (affirmative).

[00:18:20]

Jim: We're actually thinking about just partnering with companies that can supply those phones. I don't even want that much hardware in my life.

But our software is incredible. So we put it in the truck, and we monitor where the truck is going, and when, and who's doing what with the accelerometer, which is, to most people, a video game sensor. And a microphone, which we talk in but you can sense a lot, and the GPS. And we map what the truck is doing. And so the logistics are incredible.

We found out that a major customer of ours -- a \$14 billion company, retail company in the United States -- they pay people to drive these trucks back and forth. And they're actually driving the trucks for 13 minutes an hour. And we know that because we have four million data points, And a hundred thousand of these moves saying that they're doing this for 13 minutes an hour, on average.

And you can see the spikes. And you can see the troughs. And we know when, and where, and who and now we're starting to ask why.

So that's kind of our logo: We modify to ask why.

And if you know why, that's kind of the best. You can know who and where and what and all that kind of stuff, but if you know why, then you can do something about it.

And, you know, given that information, they decided to figure out what to do with this problem. They're paying people to do nothing for nine hours a day. The cost of moving a trailer varies from \$2.00 to \$30.00. What are you doing? Amazon's not doing this. And they know that. Whoa, we're a retailer and Amazon is just killing us on logistics. So there's a race to catch up.

And I think with smartphones at this price point, there's a leapfrog opportunity in construction, in logistics, in inspection and repair. And so we developed this software to basically push down the queries to the phone, which a human can answer by saying, *Yes, I did it. Here's a picture. The bolt is rusty. The wrench is missing.* And we know where and when and we monitor all these sensors, and use machine learning to say that did happen. Or, that didn't happen. Or, we think that guy drove too fast, too slow. We think the trailer should move from here to there, not from here to here.

And that makes people more efficient, more productive, given the resources that they have. And, you know, ultimately, that falls to the bottom line. I've been at it for three years. And it started with this premise that there's something there. I don't know what it is, but it's big. And people are consuming.

We buy over 1.5 billion smartphones a year. And it's just like this incredible computing power and communication opportunity that's so under-utilized. Oh, yeah. And not even utilized. So we can deliver this as an app on your phone, or what not, and help companies understand what's going on. Help fight what we call anecdotes and post-it notes.

Which is, if you're at headquarters, and you're running Starbucks, and you're like, *How much stale inventory is on the shelves of my stores at Starbucks?* Well, that's like a global question that ends up getting answered by people with checklists, rolling it up in spreadsheets, bringing it to meetings. And then they say, okay, change this thing. And then they go, if they really want to do it right, they have to measure again.

And so, this is ridiculous. You can't do that. And what we do is provide people to ask, at the opportunity, at headquarters, a question. Whatever it is. Push down a series of tasks

to people and we coordinate this without people having to filter information, use opinions and anecdotes, and things like that.

So we think we provide a much clearer layer from decision-makers to these things that are happening in the field that are inefficient and mistakes because there's too much subjectivity, or travel knowledge, or the information doesn't flow right.

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Randall: So, you're three years in. Where are at from a life cycle perspective? Are you taking a couple of rounds of funding?

Jim: Yeah. Taken some funding from private sources, really good angel investor group, very small group. And recently expanded from the two people, co-founder and I who built the software. I'm not a programmer. He built the software. I went out and figured out what people might want.

And we got to this point where, okay, we got a good revenue model. This is really, really good. Margins are great. Scalability is there. The infrastructure's built. We had a couple of really good, brand name clients who are moving on to phase two, phase three, liking what we're doing, coming up with new ideas. And we said, this is good. First quarter of this year, this is good. Everybody agreed. Let's go hire some more people. So we're six now.

Randall: Mm-hmm.

Jim: We're customizing stuff for big companies right now. And getting them started in the early phase of growing this thing out.

[00:23:55]

Randall: And so, as you think about building companies, this question is kind of two-fold. But as you think about building companies, do you think about setting them up for acquisition? Do you think about just building companies for the long haul? Or, what?

Jim: I guess, that, you know, the goal with BigBelly was we'll grow it up, and we'll sell it to somebody. And somebody will want this strange company that's like a trash can

company, and an IOT company, and a Smart Cities company. It's still evolving. And it's getting really quite interesting.

But, yeah. That was the plan. You know, I don't know about this one.

If I could, here's what I'd do with this one: develop an automobile division. Sell it to the automobile guys. Develop a construction division. Sell it to those guys. You see, it's a perpetual motion machine.

Randall: Mm-hmm (affirmative).

Jim: Because it's so hard to build a company in the first place. Why'd you sell a perfectly good company? But, you know, there are other ways to get value out of that. I mean, in theory, you generate cash and you give people dividends. That's a great thing, too. So, I'm not in a rush at all. I mean, we are, this is a big one. This is a platform play. We could go into a lot of different industries.

Randall: Mm-hmm (affirmative).

Jim: We're not out there as a construction monitoring company, or a truck monitoring company. We're an enabler. And I think that if we can connect the ecosystem appropriately, and send the right people to do these things, it can be a very powerful platform that helps solve real world problems, where computers alone can't do that.

And sensors alone can't do that. You know, it's very hard to put a sensor on a hammer, or a drill bit, or a, you know, a construction site, or whatnot.

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Randall: On that note ... I mean, on that note of solving real world problems, it seems like every idea you have come up with, and even your first company, right, has been around solving problems that the world is facing. I mean, it seems to be purpose-driven.

Jim: Yeah.

Randall: Anything you do is purpose-driven.

Jim: I don't know. You get this itch. You're like, *God, there's this problem out there and there's an opportunity there to solve it.* I mean, yeah. There's some problems that exist that I decided not to go and fix. I mean, there are things that are definitely out of my realm. But, you know, I'm a gadgety guy. I like electronics and, now, more software and algorithms. And, you know, just figuring stuff out. That's why I'm a tinkerer.

[00:26:45]

Randall: Okay. Can we talk about your first company?

Jim: Sure.

Randall: I think this is-

Jim: Sure. Sure. Yeah, that's like, probably the one that approaches the biggest problem of the three that are difficult that I've actually done so far. So this one was, my girlfriend and I, now my wife and I, started this company called Do Good Dates. It was a non-profit in San Francisco. The idea was volunteerism.

Volunteering is a big commitment and it's, a lot of people don't do it because it's a commitment, or it's a pain, or you don't know about it, or you're not sufficient motivated to go and do it. But there are all these problems out there. The homeless people need sleeping bags. And the food bank needs food moved around, and things like that.

So her idea was we should make a volunteer dating thing. I was like, that's a great idea! Because there's another problem where singles don't like, there are a lot of singles out there who have trouble meeting singles at the normal places, work or bars, or restaurants, or just through peer circles.

And so there's this Venn diagram of people who care about helping the environment, cleaning up the park, getting rid of invasive species, helping homeless, whatever, and people who also are interested in meeting other singles. So you combine the two. Convince bars in the area to give people a free drink and a space.

[00:28:30] And, all of a sudden, it was like shh, this mix that was like chocolate and peanut butter. It just worked. And people came back, and they loved it. And they came back. And then

there was an article about it in The Chronicle, right before Valentine's Day. And we were just overwhelmed. We were doing, we could've, we were doing two events a week, often like a hundred people. But getting people, a hundred people-

Randall: This was '99?

Jim: Yeah. Yeah. 1999, 2000. Getting 200 people a week to go and put on gloves and pick up trash in the beach for two hours, you try to do that. You need a hook. I mean, And the single thing was a very, very good hook for that.

So, ultimately, the economy tanked. Things changed. I had to go to business school. We realized that we couldn't put it in the hands of somebody else who had different objectives, and we shut it down. You know, we were approached by Match.com. They were still, they are still probably, it was very interesting.

Randall: It's there.

Jim: There's a there, there. And it was fun. It was really rewarding. Like every day, like, wow! We just cleaned up the whole beach, and then had a bonfire. And everybody actually took their empties back to their, you know.

[00:29:49]

Randall: Every story you've shared with me over the course of a few hours is, you've kind of end it with "it was rewarding." In many respects, like you really, you have a particular mindset and a particular attitude toward work and your companies, in general. Where did that stem from? I mean very positive.

Jim: Well, I guess, I don't know. My dad's a big role model. He said, looked at me one time, I was young, and he's like, "I'm not a genius. I'm just honest. I work hard." And he did. He left the house at six, came home at seven, played with us on the weekends. We were a little wild and crazy, you know. But he would come home, and tell us a story, give us a back rub, and good night.

But his job was rewarding. He helped people. I just, I wanted to do that, too. You could do that, or be a jerk and try and rip people off, and get a Porsche, and maybe feel good about that. But that's not my thing, I guess.

Randall: Oh. I think we appreciate that.

Jim: I want a Tesla. I'll take the Tesla.

Randall: You'll take the Tesla, though. Thanks for sharing your story, man.

Jim: Thank you.