[00:00:02] Deep Chakraborty: Just with the image of building in terms of the whole platform we offer, you can design a complete solar system down to nuts and bolts, literally show you where the panels are going to go and how much you're going to save and cash flows, and then give you choices like, do you want brand x, brand Y with the pricing, with the specifications, with the outcomes prediction of how much generation you're going to have and how much money you're going to save on your electric bill? So it's the first time where you can also measure what you predict in solar.

[00:00:33] Ryan Newman: This is dare to disrupt, a podcast about Penn State alumni who are innovators, entrepreneurs and leaders, and the stories behind their success. I'm your host, Ryan Newman, and on the show today is Deep chakraborty. Deep is the co founder and CEO of Enact Systems, a leading software platform revolutionizing the solar and energy storage industry. Deep co founded Enact in 2014, driven by the vision of creating a scalable and impactful solar solution. Under Diep's leadership, enact has grown exponentially, nearly quadrupling its staff in recent years and expanding to over 35 countries. Starting in the automotive industry, DIEP discovered a passion for renewable energy and has spent over 15 years accelerating clean energy adoption. He graduated from the Indian Institute of Technology, Karagpur, with a bachelor's in tech and mechanical engineering. He graduated from Penn State in 2000 with a master's in mechanical engineering and from the University of Michigan in 2006 with an MBA in Business Administration.

Deep, welcome to the dare Disrupt podcast. This is a first for us. This is the first time we've had an entrepreneur in the solar energy industry as a guest, and we're excited to talk to you about your story. Thank you for joining us.

[00:01:58] Deep Chakraborty: Thank you for having me. Thank you, Ryan, for the opportunity, and thank you, Penn State.

[00:02:02] Ryan Newman: We'll get started as we always do, which is at the beginning. If you wouldn't mind telling our listeners where you grew up and what some of those really early formative years were like in your youth.

[00:02:11] Deep Chakraborty: Sure. I grew up in India in a small town, Tal ranchi, which is in the eastern side. I was born in Kolkata, which is a major city. My brother and I, we traveled a lot when we grew up. My father was very internationally focused on business across the world. He had lived for a long time outside India. In fact, he spent a long time in Germany himself and did a lot of german travel. So very early on in my formative years, I was exposed to and always wanted to do international work and also was fascinated by travel. Besides school and study. I was a musician. I still am. I play the sitar, which is a classical indian instrument, did very well with it, in fact, in college, and even now, I try to keep up with it.

[00:02:55] Ryan Newman: For the listeners that may not know what a sitar is, can you describe what it looks like or what it's comparable to?

[00:03:00] Deep Chakraborty: It's a guitar of sorts, because you have a string instrument, but has two layers of strings, unlike a hawaiian guitar, let's say one. And so there's a lot of resonance. It's actually made out of wood and a pumpkin shell. And it's a very old instrument and not, of course, very popular anymore, but you will see it. Ravi Shankar was one of the big proponents of sitar, and he, very early on in the sixties, he did a lot of music, even in the US with it.

[00:03:27] Ryan Newman: So when you went to college in India, correct?

[00:03:30] Deep Chakraborty: Yes.

[00:03:31] Ryan Newman: And how did you decide what to study?

[00:03:33] Deep Chakraborty: I went to college near Kolkata at IIT Kharagpur in India. Unfortunately, there's not a lot of freedom in choosing your majors. You gotta pick your thing, like, either it's engineering or commerce. In those days, you gotta pick whether you wanna do medicine, engineering or trade. Those are the three main tracks in my time. And I decided I wouldn't do medicine. I wanted to build new things, always wanted to solve problems, and I was lucky to get in through. And I was actually picked for metallurgy. You don't choose. You get picked based on the rankings. And after a few months of metallurgy, I wasn't truly interested in it. And I realized mechanical is what I wanted to do. So I had to change my major once into IIT, and I was lucky enough to do that, otherwise I would be stuck in the steel industry by now.

[00:04:20] Ryan Newman: And so when you were studying in college, did you have it in your mind that you potentially wanted to leave India for additional schooling, or how did that first thought come about, about what you were going to do from the perspective of being in college?

[00:04:33] Deep Chakraborty: Yeah, I always wanted to build something of my own. You know, I had the entrepreneurial bug in me when I was very young, even in high school. And thanks to my father, who was himself a successful entrepreneur. So after my college, I got the scholarship from Penn State to study, and that's what brought me to the US. Doctor Mishra, who was one of the leaders in laser technology, he encouraged me to apply for graduate studies. I wasn't too inclined into an academic track. I knew I wouldn't do a PhD, but I was interested in research and advanced machining and manufacturing technology, and we would do a lot of work with simulation of different types of scenarios. And that's what led me to my master's work, which was all in simulation of manufacturing process. So, yes, I got really lucky with Penn State.

[00:05:22] Ryan Newman: So the first time you come to Penn State, presumably, is when you were enrolled as a graduate student. Was that your first time coming to the United States as well?

[00:05:30] Deep Chakraborty: Yes, first time to the United States. So I did arrive, I think, in New York with my sitar and my one piece of baggage. Took the train. I got off the track, on the track with my sitar, and my friend picked me up.

[00:05:43] Ryan Newman: Ah, that must have been a sight to be seen.

[00:05:46] Deep Chakraborty: Yes. I wish I had taken a picture of that. And I still have that ticket on my sitar box. I keep it as a memory.

[00:05:52] Ryan Newman: Oh, that's amazing. So when you get to state college, you're trying to settle into Penn State. What were some of your earliest experiences like settling in? What were your impressions of the place and the experience?

[00:06:04] Deep Chakraborty: Early on, I loved it because the campus was so unique. What I loved the most was it was so self sufficient. You were far away from the noise. You could, you know, build a community and make friends and enjoy what's happening on college. Obviously, the football thing was new for us. We're coming from a land of cricket, went to some of the games, and I was also very lucky to have college seniors who have gone through that experience from India. So that helped me make friends quickly. And my professors at Penn State were always encouraging us to work with industry. So that was when I decided not to pursue my PhD and go for industry track.

[00:06:41] Ryan Newman: So you graduate from Penn State with this mechanical engineering

masters. And then what is your first job, and what was that first experience like?

[00:06:47] Deep Chakraborty: First job out of college was at Chrysler, and it was a very well structured rotational program where they make you go through different divisions of the company for over two years, in six months stints, which leads to a final job in a division you like. And so in those years, I pretty much learned everything about the car, literally, like from the suspension to the body to aerodynamics to manufacturing plants. So it was amazing. And then did really well within Chrysler because of that educational experience, plus the rotational program, I was promoted a few times, went from a manager, product manager to manufacturing to marketing to then dealer programs, and finally came back into their leadership for a whole platform. And eventually the strategy group, which was very prestigious to enter as a new Ohio, and that led to very interesting projects. We made a Dodge nitro out of a jeep Liberty. I'm not sure how many people know it's the same underpinning. It's just a different brand. So a lot of ways to kind of innovate the product landscape.

[00:07:53] Ryan Newman: And then from that experience, did you continue on in the automotive industry or did you pivot?

[00:07:57] Deep Chakraborty: I really liked many things in automotive at that time. I was going, the industry was going through a recession, 2006 or seven, and I wanted to grow my exposure to other industries. And I found the best way to do that is to go back to school, learn about business. And of course, within Chrysler, they encourage us for executive education. So that's how we got into the MBA program at Michigan, and then later on, switched full time and finished it, learned about strategy. Luckily, in those days, Professor Prahlad was teaching in Michigan. He passed away later. So I had some really good professors in Michigan, too.

[00:08:33] Ryan Newman: And so you had this experience in Ann Arbor. Really interesting that you pursued a business degree having such a strong technical engineering background. How did you relate or expand your capability into general business coming from such a strong technical background?

[00:08:48] Deep Chakraborty: Great question. So when you spend many years of your career in technology and product, I think you understand, of course, enough about product, but you then want to know, why can you make a better business out of making good products? And also the strategy behind marketing a product, which is really important. And that's what drew me into getting a business education, because I knew enough about how to make a product. But how do you make your sales targets? How do you distribute those products? Well, what are the important channels? And investing in the right marketing area. So that's what drew me into my business education. I did a lot of projects. In fact, Chrysler helped us too. We did projects in Europe for testing new products as part of my MBA program. So it's action based learning. That's what they promote a lot in business there. And that's what I loved about figuring out the problems every day in the evening, getting some of the answers from the professors, and then going back to work the next day. It was amazing. It's a great way to learn.

[00:09:44] Ryan Newman: So you finished your MBA, and then what was your first job post MBA?

[00:09:48] Deep Chakraborty: I picked a consulting career for a company called Roland Berger, which is like a mckenzie, but very strong in automotive in Europe. And I decided to do that because I had spent seven years by then in us. And along the way, I got married. We had our first child in Michigan, and we were looking for some more adventure. I think we were done with the Michigan snow and we said, okay, where to next. Luckily, an Afro Landberger offered me a position in their headquarters in Munich, which is somewhere I'd been once and really loved town, but never lived there. So we took the chance and we moved to Munich with a young kid.

And we had a great time. It was amazing. Of course, in those years, you're talking right after the recession in the US, you know, Europe was going through a tough time, the automotive industry was going through a tough time. So it was a great time for me to consult because companies needed help and advice. And the us background helped me get new ideas into Europe. And then many new ideas, of course, came from Europe as well.

[00:10:47] Ryan Newman: And deep. Did you start to develop any sort of an expertise or specialty within the automotive industry around this time? And if so, what was that?

[00:10:54] Deep Chakraborty: After almost ten years in the industry, I was very well versed with the supply chain aspects of different products, but specifically the engine and the automotive, let's say industry, which is formed around the engine. Right. The heart of the car, which is most important. We were getting into the alternative, the electric car. This was 2008 project. Better place happened in Europe. And the electric car was being tested with the swappable battery. So I was lucky to get involved in many exciting projects like that. Also new types of batteries, new types of form factors. So very fascinated by the future of the car. In fact, I spent a couple of years working on such projects. Many car companies were reorganizing for the future of the car. But then after a couple of years of doing that, I would say there was not much to do with it. The EV, then we had EV's in Chrysler testing on the Vegas track, taxi cab fleets for years. But there was not much of a noise then.

And so I was almost disillusioned by my interest in EV's and kind of figured that, well, the auto industry is stuck, nothing is going to happen here, nothing new. And my entrepreneurial skills were not going to be of any use because I wouldn't be able to fund or build a car company around EV's, because there was no EV selling yet.

[00:12:11] Ryan Newman: And so at a certain point, you have to take the plunge. And so what was the catalyst that ultimately led for you to take that big, courageous step deep to become an entrepreneur?

[00:12:20] Deep Chakraborty: Yes. So here's what happened. The next door office to Roland Berger, which was in the heart of Munich, was a solar company, and it was called Central Solar. They were publicly listed by then 2009. And I happened to connect with their management team. They were looking to enter the us market with their products. Solar was new, then they had an opening for someone who would join and then help build a us business for them. They're looking exactly for my background, someone who has spent some time in the US. So again, I got lucky. I would say I was looking for entrepreneurs stay in this scheme with little risk of going back to the US again, but no financial problems in the way. I was not asked to raise money. And so I would say it's a very easy entry into entrepreneurship. And I was asked to build a business from Xero that was the first hire in the US. I would say that was formative step for my career, because I could build a business focused on marketing and sales, not about financing. And that really helped kind of shape my career.

[00:13:24] Ryan Newman: And when you talk about building a business focusing on market and sales instead of financing, is it fair to say that part of what you're saying is not having to worry about the greatest fear that most entrepreneurs have, which is meeting payroll, being able to meet the financial obligations of whomever is going along this journey with you. Is that fair to say?

[00:13:41] Deep Chakraborty: Exactly, yes. You get handheld into a business building planning effort without the complete failure of a risk of failure of meeting payroll. So here you have a bigger company, kind of banking your initial years. Eventually we got to a point where we had our own p and l and budget, and we wouldn't get the budget if we didn't meet our targets. But that took a

couple of years to build and we got good at that. And I think eventually, the fifth year there, we were able to run the business almost on our own with less and less help from the parent. So it was a very formative experience in business building and the german way, which is you get five years, not more. It's not like a VC mindset, right. It's more of a corporate backed startup and also the german way, because the comp was really german, there was not much of an equity upside.

[00:14:31] Ryan Newman: And when you mentioned building a business the corporate way as opposed to a VC way, can you unpack that for our listeners? What are really the biggest differentiators of building a business? The corporate way versus the VC way.

[00:14:41] Deep Chakraborty: Yeah, both ways work. But I think that the way I learned to build a good business is to, of course, take some risk and try, but limited risk, and you get limited Runway. And when you prove that something works, you fund it again and again and again till it's perfected.

The VC mindset is a little different, I think in the US, which I've seen, which is you spend a lot of money and almost an unfair amount of money into making an idea work. But you know that there are four others getting that type of money and maybe five, and only one of them will make it. So it's a lot more riskier approach. It's really, in my view, investors. It suits investors goals of making money quick because you're portfolio based. As a thinking approach, the german way was a little less risky.

[00:15:31] Ryan Newman: Is it fair to say deep that if an entrepreneur gets the experience to build a business inside of a corporation, where you get that entrepreneurial learning while having the financial backstop of a corporation, it's a great opportunity. The issue is that not a lot of those opportunities exist and you have to be in the right place at the right time to even get that opportunity or privilege to do such a thing. Is that fair to say?

[00:15:53] Deep Chakraborty: Fair to say. And I also think that one should look harder for those opportunities because in my view, there are better ways to learn how to build a startup than quitting college and getting VC funded early. I still value that corporate experience. I feel like there's a lot more corporations can do to encourage this and spin offs and educating and nothing's happening now. I must say, many of the things we did worked very well. The first team we formed, the first customers we did that led to more investment and more investment from the parent company. So it was a process. I wouldn't say that it happened overnight, but we built a very strong team and then once the team was formed, the sales started happening. The main thing in business is the people. So one of the things I learned very early on is all about the team. And once you have the right team, it works. Unless you have the right team, it will never work. So that was the best thing about this whole experience.

[00:16:45] Ryan Newman: And so you're working for this us subsidiary of a german company, Centrosolar, and at a certain point you decide to fully go off on your own. Can you talk about that ultimate transition and what the decisions that went into that are the drivers behind that?

[00:17:01] Deep Chakraborty: So the solar industry, when I joined in 2009, the US was small and we saw it grow a bit. At Centrosolar we did many of the right things, which any company should have done, but we were held back by the legacy of having a manufacturing business, which is Centro's business and also the legacy of a german public company. In 2013, the german government cut all the subsidies for solar in a very big way. It was one of the worst years and that was going to really hurt central solar, looking ahead. So that was the formative time in my career, I decided, given all the learnings, I've had, almost 15 years of corporate experience, plus five years in solar, I really need to plunge and plunge, meaning quit what I'm doing to believe in something next. And that was also the time when I'd met my co founder back in India from my

college days, Maharasij. He also had gone through some learnings in solar, having led a solar business in India. So we met at a conference and we decided, like, this is the time to try something new as a business model altogether in solar, which is not around the hardware, but around the software and the process of getting projects built. So, yes, we took the risk. I quit my job, he also quit his job, and we started the company.

[00:18:21] Ryan Newman: And what was the initial business problem you were trying to solve or service you were trying to offer initially out of the starting gates of the business.

[00:18:30] Deep Chakraborty: The problem was, how do you have a customer journey, which is exciting, rewarding the customer, meaning the building owner, the homeowner that buys solar. It's a very cumbersome process to get a project done. Not just cumbersome, because it's physically challenging. You're building a power plant on your home with different things coming to you, but also it's financially a big investment, a lot of unsure outcomes. How do you make that customer journey more exciting? The buying as well as the ownership. That was our whole focus. And, you know, we learned our way. We developed some initial products, digital products, to help them make better decisions, and tested those. And we learned that, yes, digital is the answer.
But just having digital products that help you decide alone may not help you win. You still need physical delivery, you need good installation companies coming to your home, and of course, having good products built on your roof. So that led to, obviously, a whole platform, which we have today, which is not just digital interfaces, but very good installation companies running a very good process using software that helps them deliver well as well.

[00:19:38] Ryan Newman: Indeep, what's the geographical footprint of the business today?

[00:19:40] Deep Chakraborty: So we started in California. It's still very California centric in terms of the whole platform we offer.

But we grew and act very carefully because it was software, not physically shipping goods. We could sell the software in many countries. And so today, the geographical footprint is in 35 countries with customers paying to use an act. We got to like five countries within the first few years, and then the rest followed.

[00:20:07] Ryan Newman: Incredible.

You're actually not producing any of the solar panels themselves or doing any installation. So to use an entity term your capex light in your business model, you're mainly a software company then.

[00:21:05] Deep Chakraborty: That's right, we are a software company. All we do is to help solar companies that do the physical projects improve their sales and operations, improve their asset management. And so our software is two sided. On the one side, it helps them really cut down on the sales and marketing costs. Just with the image of a building on Google or satellite imagery, you can design a complete solar system down to nuts and bolts, literally show you where the panels are going to go and how much you're going to save and cash flows, and then

give you choices like, do you want brand X, Brand Y, with the pricing, with the specifications, with the outcomes prediction of how much generation you're going to have and how much money you're going to save on your electric bill. All of that experience is digitized and it's also very interactive. And that's the core of an act that quickly spread to many countries. And then we also now develop the other side, which is if you have the solar already done through enact, you could see your outcomes like what we promised you. Certain outcomes and savings and ROI are now being measured live also by an act. So it's the first time where you can also measure what you predict in solar. Until now, solar tools were very design centric, but no one's doing the outcome against the design we have. True, let's say m and v measurement and verification.

[00:22:26] Ryan Newman: And how have you been able to adapt deep to just multiple different cultures and multiple different policies by each country, given that you're in so many different countries?

[00:22:35] Deep Chakraborty: The rules are different for solar in many countries, so that's one of the powers of the platform. We have developed the architecture so well that adapting it to every country is now becoming easier and easier. You know, we can launch sometimes a new country market in a month. We even now doing language versions in two months, like the german version we did this year, now a spanish version and even a japanese version coming, right. So the technology we developed is very cool, but solar based country policies like tax benefits or let's say different incentive schemes. They're all country specific, so we have to manage that complexity. The only platform I think that today is in so many countries and is also two sided. So we have the homeowner business owner view as well as the provider view.

[00:23:24] Ryan Newman: What do you think allows you to be so effective at having both sides of the business, both consumer and business? Because you're right. That's very unusual to serve two different customer cohorts in the same company.

[00:23:34] Deep Chakraborty: Great question. Solar was meant to be always installed on the distribution where the load is. So wherever the building consumption center is, that's where you need to put solar on. In fact, solar panels were invented to bring power close to where it's consumed. But along the way, solar became big utility scale, for example, where you have huge plants and they feed the solar through a transmission line. So solar was meant to be where the consumption is. And today the consumption of electricity is only going up, right. Obviously, the electric car is just one, if so many other appliances which are electric. And so the whole insight around energy use needs to be at the same place where you see your solar product capability, a generation of performance. So that's been the core at an act. Right. When we realized the problem we're trying to solve for the customer journeys, their excitement and their happiness as they're discovering savings through solar, we had to build a two sided platform. We started with the consumer side. We realized just having that is not enough. We built the back end, and then they came back to the consumer engine. And now it's a very complete experience, because now the consumers can decide, okay, well, I can invest in my own home solar system. They see the results, many of them. They like their outcomes. They invest more, right? They say, okay, I bought a second evident. Maybe I need some more panels. Now I get it. They learn and it's almost like a new way of discovering your ROI of energy investments. Until now, the ROI part was never really understood, always been a mystery for many.

[00:25:13] Ryan Newman: And so you have this business that's obviously grown by leaps and bounds, serving both consumers as well as businesses. And it's all been during the backdrop of continued focus on different sources of alternative energy. And the solar market is just one of many. Can you talk to our listeners about how you think solar fits into the conversation related to other sources of alternative energy? And ultimately where this ends up in 15 or 20 years.

[00:25:40] Deep Chakraborty: So solar is, in my view, one of the cheapest sources of electricity that has ever been invented. Along with wind, it's equally very effective. The challenge with wind is you can put the windmills in places where there are wind zones. Nowadays you even have smaller windmills on a home, but not very effective yet. Solar, on the other hand, is the same, the sunshine, right? It's the same unit, so it can be ubiquitous. But the challenge with solar is it's only during the day, and so you need to pair it with other forms of renewable energy. And that includes the battery, which is a big new shift. We are doing a lot with solar and battery today.
And then comes also other electrical use, like charging or any other electrical appliances in the home, like heat pumps are now. Electric is a good trend. Basically, in my view, the alternative energy sources, which are electricity dependent, are getting very renewable quickly, because with the solar pad, with the battery and other similar accessories, you can basically be off the grid, a home or a building for 90% of your needs. This has been a big shift for California, Hawaii and Germany and many other developed nations. But when I grew up in India back in the eighties, we had no good grid power. And even at my home I had a battery and an inverter and backup power. So as a technology, it's nothing new. What's new is the combination of the systems with the solar and the electricity that make it now very reliable.

[00:27:14] Ryan Newman: Interesting, as you see dollars, investment dollars, or subsidies from government coming into this market, how do you think the influence of capital will affect where this market goes, particularly for solar?

[00:27:25] Deep Chakraborty: Yes, very disruptive going forward, because the traditional electricity generation industry has always been centralized power, and therefore poles and wires, we call it, since Thomas Edison invented electricity, it's always been the centralized, long distribution. It doesn't have to be anymore. Once you can be self sufficient in generating and consuming power on your own nodes, if you will, the grid becomes more decentralized. And the lot of investment that's gone into making more distributed energy work includes software, hardware, systems. It's going to remove the central distribution of energy as the foundation of electricity sales, just like it happened with the telephone industry. If you go back 20 years, right, there's no landlines, it's not central, it's the Internet. The same thing is happening in energy. It's the Internet of energy. You're going to have energy sold, produced and consumed at the same spot. The role of the electric utility, therefore, is different. Looking ahead, obviously we need the grid. It has to be a balancing act. It has to be a lot more sophisticated to allow this to happen, because if you don't, then you don't have energy at all. We need a lot of energy too. We need a lot of electricity.

[00:28:39] Ryan Newman: And so ultimately, when you think about the future, you certainly think solar is a key part of that solution. Whether it be large scale solar farms or independent solar panels on homes, or a combination of both.

[00:28:50] Deep Chakraborty: Combination of both. You need the large scale plants, you definitely need the nuclear two as baseload, you need natural gas. Peak up plants in some locations everywhere is not good for solar. Therefore need the hybrid aspects. But the foundation has to allow the Internet of energy, which means allowing consumers and the providers to interact and the consumers to produce their own energy and use it the way they want it, and also making it more fair. In terms of the ROI for consumers today, the entire investment comes from the consumer. They pay for everything. And of course, the grid is trying to adjust to that. In the future, I think it'll be more easier to share it, maybe rent it. You don't have to invest in the great infrastructure yourself.

[00:29:34] Ryan Newman: And so as you look out to the future and the role that your company enact will play on that alternative energy revolution, the solar revolution, how do you see your own business growing and expanding to take advantage of the continued reliance and alternative sources of energy for growth?

[00:29:49] Deep Chakraborty: For us, even the mission to have a customer experience was focused initially on just ROI and savings aspects of these projects, helping them get more trust in their decisions. And from that, we are now seeing the need for giving them more trust in living their life when there is no grid. So we are doing a lot of work with backup batteries and letting the battery discharge into the solar home and making it more reliable. Right? Like for example, now, if you don't have a good solar system and you rely on it and it doesn't charge your evdeenen, you can't go to work tomorrow morning. So our own role as enact has evolved from giving data and information to consumers, to even helping them control their choices and living more reliably on solar. And that's a business by itself, using data and software. And next, I feel in the future, you're looking at also making financial bets again and again with the same platform. Not just the first purchase, the second upgrade and the third upgrade, or even, you know, adding batteries and so on. So it's an evolving need for the consumer. We are playing, of course, exactly where we want it to be, which is making sure they have a very predictable journey. Customers are happy with the investments, have a good customer experience with the process of owning and buying and then even selling the home. We're seeing homes sell now with solar, the next buyer has to be educated on what happened with this home for the last ten years. Imagine doing that without an act. Right now you have a place to see what happened, how much money went in?
What is the system on the roof? What did it do the last five years? What was the warranty on it? If you go to a car dealership, you can turn in your lease and the next buyer takes it. You can't do that yet with solar.

[00:31:38] Ryan Newman: Well, thank you deep for taking the time today to share your entrepreneurial journey with me. Now I'd like to hand things over to a current Penn State student, Gari Patilhe. Garia is a senior at Penn State studying computer science. She participated in Penn State's humanitarian engineering and social entrepreneurship program and placed in the social impact pitch competition during Penn State Startup Week powered by PNC Gauri I'll now hand the interview over to you.

[00:32:06] Gauri Patil: Thank you for having me here, Ryan hi deep. My first question to you is, as someone who's passionate about building impactful solutions, what were some of the biggest challenges you faced while developing NACs systems and how did you overcome them to ensure the company's growth?

Deep Chakraborty: Great question. We faced many challenges as first time entrepreneurs.

I think Maharashtra and I were very focused on solving a problem quickly because we have engineers at heart. But we did not realize what it takes to building a good software product as well as marketing that product to the right market at the right time. So building the product was itself a challenge, finding the right software developers and the right process and so on, and then comes taking it to the right market at the right time.

We, looking back, think we are probably a few years early in 2014 launching an act and around 20 1718 is when the real lift came in. The need for such a technology, when solar got more ubiquitous and prices dropped. So the timing aspect of it, I think a little off. The last challenge is fundraise for any good business. If you don't have the product market fit and the right product soon enough, it's a challenge to raise capital and we face the same. And eventually, of course, once we got all those three things nailed, we started getting the seed capital we needed to build the product.
Gauri Patil: Considering your experience in the renewable energy sector, what advice would you give to someone looking to start a venture that aims to integrate technology with sustainability, particularly in a developing market?
Deep Chakraborty: The first advice is make sure the problem you're trying to solve has a large enough addressable revenue stream for the initial product market. With launch you're trying to

Improve. It's often clear that founders and entrepreneurs have a vision of what the problem is and how it can be solved. But is there a big enough market at that time or will it be a few years out? And make sure you pace then the solution building effort to meet that timing so that you can ride the curve in terms of the early adopters and scale out phases of the market if you don't time that well. I've seen a lot of entrepreneurs struggle with that, either raise too little or too much capital, sometimes for the wrong problem, and then eventually the problem needs to be solved with the right tools and they miss the cycle.

Gauri Patil: My last question is how did your experience as a Penn State alum influence your entrepreneurial journey? And what aspects of your education do you believe were most valuable in building a successful tech company? I had been very lucky along my way, whether it's education through industry partnerships at Penn State, at internships with companies, I was able to practice things that I learned at class and then practice it with clients, which was very formative in terms of engineering education. And I was also very lucky later on to go back and hire students, in fact from Penn State who went back to Chrysler later on as we build teams. But even business education was very much for me, the trial action and thought together. So being able to learn in class and then try it at work was very formative for me. My ability to meet different people in different places and learn from them and of course grow my own career around such learnings and pivot has helped me to solve problems quickly and share and learn within teams quickly and grow, which has also helped enact of course, along the years. Thank you deep. It was great learning more about your journey. I really appreciate your insights and I'm sure the listeners will find them valuable as well. Thank you once again.

[00:35:58] Ryan Newman: Thank you Gauri. that was Deep Chakraborty, co founder and CEO of Enact Systems this episode was produced and edited by our executive producer Katie DSlr. Story if you haven't already, be sure to subscribe to dare to disrupt wherever you listen to podcasts and look out for next month's episode. Thanks for listening.