

# NCWIT Interview with Judy Estrin

*BIO: Judy Estrin is President & CEO of Packet Design, LLC, a network technology company she co-founded in May 2000. Prior to co-founding Packet Design, LLC, Estrin was Chief Technology Officer for Cisco Systems. Beginning in 1981 Estrin co-founded three other successful technology companies with Bill Carrico. Bridge Communications, founded in 1981, was a vendor of internetwork routers and bridges that went public in 1985 and merged with 3Com Corp. in 1987; Estrin served as Engineering Vice President and Executive Vice President of Bridge, and later ran the Bridge Communications Division at 3Com. Network Computing Devices, a maker of X terminals and PC-UNIX integration software, was founded in 1988 and went public in 1992; Estrin started with NCD as Executive Vice President and became CEO in 1993. Estrin served as CEO of Precept Software from the company's 1995 founding as a maker of streaming video software until Cisco Systems acquired Precept in 1998, and she became Cisco's Chief Technology Officer until April 2000. Estrin has been named three times to Fortune Magazine's list of the 50 most powerful women in American business. She sits on the boards of directors of The Walt Disney Company and The Federal Express Corporation as well as two private company boards -- Packet Design, Inc. and Arch Rock. She also sits on the advisory councils of Stanford's School of Engineering and Stanford's Bio-X initiative. She holds a B.S. degree in math and computer science from UCLA, and an M.S. in electrical engineering from Stanford University.*

**Lucy Sanders:** Hi, this is Lucy Sanders, the CEO of the National Center for Women and Information Technology, or NCWIT. Today we have another great interview with a fabulous woman entrepreneur. And with me is Larry Nelson from w3w3.com. Hi, Larry.

**Larry Nelson:** Hello, I'm so excited to be here.

**Lucy:** Why don't you tell us a little bit about w3w3.com, since the podcast series will be also syndicated on your site?

**Larry:** Yes, and we've started already, and it's really popular so far. At w3w3.com, have it all set it where they can download it as a podcast, they can listen to it on their computer, and it's having great reception.

**Lucy:** That's great! Also here is Lee Kennedy who is an NCWIT director and also, in an exciting new twist of events, is starting yet another new company called Tricallex. Welcome, Lee.

**Lee Kennedy:** Thanks, I'm so glad to be here.

**Lucy:** Well, and today we're interviewing somebody who is just somebody I'm thrilled to talk to because she loves data networking. Now you guys don't get on my case about this. I'm sure that she loves lots of other things, but I know she gets network congestion, and TCIP, and all those great packet protocols. Judy Estrin, welcome.

**Judy Estrin:** It's nice to be here.

**Lucy:** Judy is the co-founder and chairman of Packets Design. And she sits on the board of the Walt Disney Company and also Federal Express. So, Judy, you know you certainly have done a lot in the area of networking, and not just networking but route analytics and all the different algorithms. Why don't you tell us a little bit about Packet Design first, and then we'll get into the interview?

**Judy:** OK, Packet Design has actually evolved over the last five years. It started out in 2000 as a company that we started to target what we called medium term innovation. So we didn't want to just focus on one product area. We started a number of projects, and the idea was to either license technology or spin out companies.

Now, we all know what happened in 2001 and 2002 in the networking market; actually and in the technology market, in general. So it was an interesting time to start a company like that. But we did

spinout three companies: Verneer Network, Packet Design, Inc., and Precision IO.

A couple of years ago, we changed the business model and stopped doing new projects and just focused our time on the spinouts that existed. So Packet Design, itself, is really somewhat of a shell company at this point. Packet Design, Inc., which I'm chairman of the board of (but not CEO), is in the route analytics business. Verneer is in the network security business. And Precision IO, unfortunately, ended up getting shut down because of, I would say, running out of patience in the eccentric community.

**Lucy:** When you mention route analytics, tell us a little bit about what that entails.

**Judy:** The products that Packet Design, Inc., which is really the spin off that most of the people from Packet Design, LLC went to, the products they provide, probably the easiest way to describe it, is allow you to get more information about an IP network, so that you can manage, diagnose, and plan more effectively.

And it gives you information about the routing itself, which is why it is called route analytics, as well as the products that give you information about the traffic that goes on the network and correlates that traffic with the routing. And previously there'd not been products that understood the routing the way this product did.

**Lucy:** Well, and that maybe gets us to our first question around technology because, certainly, I know enough about networking protocols to know that route analytics is an extremely difficult technology. How did you first get into technology? And as you look out into the future, what technologies do you think are going to be especially important?

**Judy:** So, this is kind of a funny answer to have to how did I first get into technology, I would say I was born into it. And today it's common to have second-generation computer scientists. But when I was growing up, it was not so common. But my father worked with Flid Noiman at the Institute for Advanced Studies, and they started the Computer Science Department at UCLA. My mother is also a Ph.D. in electrical engineering, and was one of the very early biomedical engineers.

So I grew up in an environment filled with science and technology. I had a very strong aptitude toward math. And I used to joke that if computers hadn't been invented, I might have ended up being a statistician. So I'm very lucky that computers were invented.

When I think of myself and what I really like to do, it's solving problems. And if you think of about technology and computer science, specifically, it really is about solving problems. And I, very early in my career, moved from being a dedicated engineer into management. And I was, in essence, an individual contributor for probably a couple of years before I started managing.

And what I found is the same problem solving techniques that I learned in computer science worked very well in the world of solving overall problems, whether it was organizational or people or technological. So I was exposed to technology very early, and I loved it.

When you ask me what technologies I think are cool today, as I look forward, some of the most interesting technologies I think are the ones that are, what I would call, interdisciplinary, essentially applying information technology to different things. So whether it's to the consumer market, when you look at entertainment or social networking or any of the other problems that technology is solving in that arena.

The increase of mobility, so looking at the problems of trying to take everything we've done that runs so well on personal computers and make that information available on mobile devices.

One of the areas that I'm very interested in, my sister happens to run this center at UCLA in this area, and I'm on a board of a startup, is something called sensor-nets, which is the area of bringing the physical world, or being able to monitor the physical world, and bring information about the physical world into your information systems.

Because you now can combine processors, sensors, and wireless together in a very small device that can be sprinkled around, and allow you to get information about the physical world that might be used for environmental needs, or energy, in data centers, in monitoring the elderly at home. There's a whole range of applications. So I think that is another interesting application.

I think the application of information technology to healthcare and education will be very important areas, because both of those are areas we have big problems in. And I believe technology can really help solve them.

And then last, it's a broad area, but anything having to do with what people call clean techs. So the whole area of energy efficiency as well as new forms of energy I think are going to be very interesting. And technology, information technology will play a role in solving those problems.

**Lee:** Well, the area of sensors is also particularly interesting to me and us at NCWIT. Just a plug for a future NCWIT summit we're going to have at the University of Illinois, Urbana Champagne will be exactly, Judy, what you were just talking about. And we're talking about the future of computing and how it's driven from multiple disciplines.

**Judy:** Great.

**Lucy:** And Judy you may have already answered our next question when you talked about your love to solve problems. But the question is: why are you an entrepreneur? And what is it about it that makes you tick?

**Judy:** You know it's interesting, a lot of entrepreneurs will tell you stories about how when they were kids they had a lemonade stand or they started a business, and I don't have any stories like that. When I was growing up, I don't think I ever imagined that I would become an entrepreneur.

But when I graduated with my master's from Stanford, I had offers from a number of different technology companies. I was interviewing at Intel, at HP, Xerox, the classic large companies. But I also interviewed at a very small company with 50 people called XLog, which was a spinout of Intel. And I decided to go there, because a friend of my parents told me that the smartest people that he knew worked at that company.

So I started off my career at a small company. And just became very passionate about what you could do in small groups. And how quickly we were able to move. And how innovative the environment was. And I realized, also, how much I enjoyed building my own culture, developing groups, developing an organization.

So out of that XLog experience, I think, was probably what made me start to think that, you know, maybe I'd like to start something on my own. And the other thing is, because I went to a small company, I was able to move into management much more quickly than I think if I'd gone to a larger, more hierarchical company. And I found I loved managing and so the non-technical side.

I always stayed deep in the technology. But the business side of entrepreneurship, I've found that I really enjoyed. One benefit of being an entrepreneur: when you're building a company, you get a choice to stay involved in the technology and do the higher level executive functions. And you have a very broad scope. And I found that that was something that interested me.

When you end up at a large company, you end up having to make a decision of either being at the top, and being very far away from the technology, or staying technical, and not being able to necessarily exercise the management side as much.

So I think what about entrepreneurship makes me tick. It's a passion for an idea. Every company we started was because we were passionate about an idea and about solving a problem in the marketplace. Most of the companies were pretty ahead of their time. So we tended to look forward a lot in what we

were doing. And I keep saying we. The companies that I was involved in, I co-founded with my ex-husband Bill Carrico. So that's the "we" that I'm saying there.

**Larry:** Judy, you know I thought it's interesting that it was obvious since the very beginning of time for you, IT was going to be part of your life. But it wasn't until after you got your master's degree that you really started thinking about the possibility of being an entrepreneur. And by the way, this is Lucy's favorite question, having to do with: Who were the people in your life that shepherded you through this career path? And who were your mentors?

**Judy:** Early on, as I was growing up, my parents were really my role models. And that is what led me toward science and to become a computer scientist. But both of them are academics. And so I was not at all exposed early on to the business world. And it really was at XLog that I first became exposed to the business world.

And I would say my first mentor was Bill, my ex-husband, because he came to XLog and was the one who promoted me into a management position. So I would say, if I had to pick an early mentor, it was Bill.

But the reason I don't like the question is: I think as I have gone through my career, there are so many people that have influenced me. I watched everybody, whether it's people who have worked for me who have taught me things. I have people I have worked for. I sit on the boards of directors of some incredible companies with just terrific leaders. And watching them and how they lead influenced me. Watching people who I don't like the way they lead at times influences me, saying I don't want to be like that.

So I would say that I really can't identify a small set, or a set of role models. I think I've pretty much built my career and have always taken a strategy of just learning from everyone around me. Again, from those people who have worked for me and those people I have worked for.

**Larry:** I think you answered that question quite well.

**Lucy:** Right.

**Judy:** You know, I'm asked these days... People often ask will I mentor, get together and ask for help. And one of the things I like to tell people is that when you're looking around, and when you're looking to someone who has experience, and hearing about hearing about their experiences, don't listen to what they say and just say, "OK, I have to do it that way."

What you need to do is listen to other people's experiences and then filter. And decide which of those things feel right for you. Because in the end, and I think this is probably the most important thing about mentoring and role models, one is most successful when you're being yourself and developing your own capabilities. That doesn't mean you don't learn along the way. But when you try to act like somebody else, and if it's not natural to your own personality and skills, it always backfires.

**Lucy:** Well, and I think that's really well said as well. We certainly do learn from everybody around us. And I think you had a brilliant answer for that. The next question we have for you is maybe on the other end of your experiences, in terms of the tough times in your career and the challenges you've had. What was the toughest thing that you've had to face in your career so far?

**Judy:** I'm going to say two things. They were kind of tied together. The Packet Design Model involved spinning out these companies, and then hiring executives to run them and getting back your investment for them. And it involved then me learning how to let go. Because if you spinout a company, the company has to become independent. The CEO of that company has to run the company. You can't have two CEOs.

So one of the very interesting things for me was one: I learned how hard it is to find good executives, to find good leadership and that process of learning how to let go, which I think I have developed as a board member and is one of the things that makes me more effective as a board member today, is that I have

learned when to suggest, when it's my business to poke in, and when not. And how to question in a way that helps the CEO think, and helps hold them accountable without meddling in their business or trying to do their job. So that's number one.

But I would say, by far, the hardest thing that I had to do was being involved in the shutting down of Precision IO. It was the first time that one of the companies that I helped start had to outright fail. And we couldn't navigate an exit strategy for it. Every other time when there was something that didn't go exactly the way we wanted, we were able to navigate an exit.

And whether it is acquisition or partnership or changing strategy, here, because of the timing, because of execution, leadership, the venture dynamic, we ended up just shutting it down. And having to let people go that I've been involved in hiring was just very tough for me.

**Lucy:** It really is tough, I think, for anybody. And it's tough for the people on the receiving end. It's interesting how a lot of times; those are the changes in people's lives where they go off to do wonderful, exciting things.

**Judy:** Right. And I'm happy to say that the core team that got let go, those that I have continued to touch base with, are all in great places. They were all terrific people and very employable. But it doesn't make it any easier to make that decision.

**Lucy:** So, Judy, one of the reasons we are doing these interviews with women like you is we're hoping that a number of young people will listen to these, and learn, and get inspired to go off and, potentially, be entrepreneurs in their career. So if you were sitting there, what would be some of the best advice you would give them?

**Judy:** Well, I guess a couple of things. One is: do it for passion, not for money. So it's wonderful to make money if you're successful. But if you're doing it for the money, and the money is what you're doing it for first, I guarantee you won't come up with as good an idea or be as successful.

So every entrepreneur I've seen that is doing whatever they're doing (a new product, a new service), because they are passionate about solving a problem with a new type of technology, those are the ones that are most successful. I'm not going to say that having a company go public, or get bought, and making money from it is not great. And that has to also be a motivator, because the venture guys want you to want to make money, because they want to make money.

But the passion has to be there. And that should be the number one. So I guess that's one piece.

The second is: you have to be ready to fail. You have to be ready to fail, pick yourself up, and try again. I think that sometimes we get confused because it was such a long time of growth and opportunity in the IT business, that so many companies were so successful, that people forget how hard it is to really build a successful company. And more companies fail than succeed.

And so you really have to be ready to fail. And everybody says it, but you have to be ready to do it and pick yourself up and try again.

The third thing is: that when I think about what it takes to be an entrepreneur, I already talked about the passion. It takes flexibility and persistence. You really have to be willing to keep going and plow through obstacles. But you also have to have a sense of judgment and flexibility to know when that obstacle... Sometimes you need to push through the obstacle. Sometimes that obstacle is telling you something. And what it's telling you is: you need to be flexible enough to change your strategy a little bit.

And so this balance between persistence that just has you pushing forward, ignoring the naysayers and just knowing that your vision is right, but the flexibility and the open mindedness, to be able to say to yourself, "You know what? Maybe it's not 100 percent right. And maybe I just learned something new that I have to change slightly or change dramatically." So that balance between persistence and flexibility.

And then last, there are lots of people out of school that want to go right from school to being the CEO of a company. My advice is get experience first because it will make you a better entrepreneur. Again, I think everybody thinks it's easier to build a company that it really is.

Now that experience might be at another entrepreneurial company where you go work somewhere and watch someone else do it. It doesn't have to be 10 years of experience but getting some experience first I think will make you a much better entrepreneur.

I think the trend of get your degree and start a company is actually not a good one. Some people can do it but I think it's better to be able to watch others a little bit first.

**Lucy:** I can really echo this notion of passion. Last night I listened to the three-minute pitches of 10 young entrepreneurial teams here in Boulder. I got to be the judge.

The ones that really were in love with their idea and passionate about it - and you could really see that there was a subset that was and then a subset if I would have said, "Why don't you make black white?" they would have said OK. [laughs]

**Larry:** Hmm.

**Lucy:** So it was just kind of an interesting experience. You have given us a lot of, I think, great characteristics of entrepreneurs. I know that they are your personal characteristics as well in terms of flexibility and persistence and having good judgment.

Do you have any other personal characteristics that you haven't shared with us so far that you think have given you an advantage as an entrepreneur?

**Judy:** I work very hard. [laughs] So that's part of that persistence. I'm really willing to roll up my sleeves and work very hard. We have talked about passion.

Communication skills - I think that one thing that I have always been able to do is communicate my passion and my vision to a broad range of people, so whether it is to the customer, to the marketplace, to employees.

It's not enough just to have the passion and vision. You have to be able to communicate it and get other people excited about it also, for instance, raising money. So, I think my communication skills probably have helped me.

The other is that I tend to be very forward-looking. I am always willing to question. I'm very open-minded. So in terms of when you try to think about, "Well, how did you decide to start a company in this area?" that whole notion of being able to look at what is available and what isn't and how can you take technologies that exist and maybe do something different with them.

So the whole arena of being able to question what is out there, question myself, be honest, and do kind of a self-assessment about where I or the company is at any certain time, I think has helped.

There are some entrepreneurs that go in one direction until they hit a wall. The ability to self assess and question oneself and what you're doing without becoming wishy-washy, but just a healthy amount of it, I think is important.

Then last I would say leadership. I love building teams of people and leading teams of people. I think the teams of people that have worked for me appreciate the relationship and the environment or the culture that we created. So I would say leadership is probably the last.

**Lucy:** That's great. I sense you have learned a ton through all the startups you have built.

**Judy:** I have. I would say leadership style is really what I am talking about.

**Lucy:** So, one of the things about which we are always curious is, being an entrepreneur, especially with the phenomenally successful companies you have built or as an executive at Cisco, how have you brought balance into your personal and professional life.

**Judy:** I would say that until I had my son, which was in 1990, in our second company, I didn't. All I did was work. I had no balance in my personal/professional life. The only reason it worked is Bill and I cofounded the companies together. So our personal and professional lives just melded into one. We didn't do anything except work.

Having a child forced me to have balance because my son became my number one priority. It doesn't mean the companies weren't important. But there was no question in my mind about what my number one priority was.

Then I had to begin to juggle. I think that what I always tell people is that you can do it but the first thing you have to realize this is really hard to acknowledge to yourself because you can't do everything.

So you have to prioritize and figure out what you are not going to do. You know, I couldn't be at every event at his school. I could pick the ones I wanted to be at. I had to make trade-offs and establish routines where I would leave work at 5:30 in order to be able to spend time with my son. But then I, at 8:30 or 9:00 would go back to email and work some more.

So an analogy I like to give people is when you're juggling, good jugglers know how many balls they can juggle. They don't ever pick up any more than that. I think the mistake people make is at each stage of your life, if you have children at each stage of their lives, the number of balls you can juggle changes because the balls change in size. The different phases of the company take different amounts of attention.

So in six month increments in my life, I have always said, "OK. How many balls can I be juggling?" because if you pick up one more than you know how to juggle, they all fall down. So you're much better off putting one down so that you can continue to juggle than having the whole thing fall apart.

The other thing is learning to ask for help. That was very hard for me to learn how to do. Whether it's getting help in your personal life or getting help at work and delegating and getting other people to do things that maybe inside you know or think you could do better, usually it's just that you think you could do better and other people can do them just as well and you need to learn how to do it.

Now that I am older and I'm in a different phase of my life, I try to more consciously balance personal and professional. I think for 25 years when I was running companies it was coping. Now I'm spending more time consciously saying I need to make sure that I pay attention to myself as well as others.

**Lucy:** So, I think juggling is a wonderful way to describe it. It's a wonderful analogy. We have talked with a number of people who have also talked about integration and we have had other words. I think juggling is terrific.

So you have really achieved a lot. There is a lot about your career at that we haven't even touched on in this interview. But we always like to ask our interviewees what's next for them. What is next for Judy Estrin?

**Judy:** It's been an interesting couple of years in terms of changes in my life. For the first time I'm not running a company. A couple of years ago, I picked up my head and said, "What's next?" and decided that I wanted what's next to be something very different, that I do not want to start another company at this point in time.

I do have my Board seats, which I spend a lot of time on and love. But I decided to write a book. I started

about a year and a half ago and hope to have it in bookstores in the August timeframe, August '08. That is a very, very different type of endeavor than running a company.

But the reason I did it was the same reason. It was passion for a topic. The book has to do with innovation. But it has not specifically targeted it as 'here is how to make your business more innovative', which is what most of the innovation books are about.

It more looks at how you create cultures of innovation for science and technology and where we are as a country and the fact that we have lost some of the elements that made us so successful have eroded. So it's really a little bit of a broader perspective on not just businesses but the country and what we need to do to cultivate sustainable innovation looking forward.

**Lucy:** Well, I've had the pleasure of seeing some of your early remarks that you gave a group a couple of months ago. I'm very much looking forward to the book because you have had very thoughtful ideas. So hurry up and finish it.

**Judy:** I'm working as fast as I can.

**Larry:** All right.

**Lucy:** Really, thanks a lot, Judy for your time. I know you're really busy and we really appreciate you taking time out to talk to us.

**Larry:** I want to thank you so much. You echoed one of my feelings that over the years we have learned more from our mistakes and failings than we have from our successes.

**Judy:** No question. One of the big things in my book is that you need to failure as a step to success and not an end in itself. So if you're not willing to fail then you never try anything.

**Larry:** That's right. Judy, I want to thank you for joining us today. By the way, you listeners out there, would you please pass this interview along to people that you know, that would be interested and maybe even should be interested. It's an excellent story.

Just go to [www.ncwit.org](http://www.ncwit.org) and that's where you can see all of the different interviews along with [w3w3.com](http://w3w3.com). Thank you much.

**Lucy:** Thanks Judy.

**Judy:** Bye-bye.