



## Women in Software and Cybersecurity: Suzanne Miller

featuring Suzanne Miller as interviewed by Eileen Wrubel

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**Eileen Wrubel:** Welcome to the SEI Podcast Series, a production of Carnegie Mellon University's Software Engineering Institute. The SEI is a federally-funded research and development center sponsored by the US Department of Defense and operated at Carnegie Mellon University. A transcript of today's podcast will be available on the SEI website at [sei.cmu.edu/podcasts](http://sei.cmu.edu/podcasts).

My name is [Eileen Wrubel](#), and I lead the SEI's Continuous Lifecycle Solutions Initiative team. With me today is my colleague, [Suzanne Miller](#). Today's podcast is a part of our new series on the careers of the women in software and cybersecurity. Suzie is typically on the other side of the table for these podcasts, but today we are going to get to learn all about her story. Hi, Suzie. Thanks for joining me today.

**Suzanne Miller:** Hello, it is different being on the other side, but I'll do my best.

**Eileen:** We have had the good fortune, I think, of working together really closely for the last several years. So I am looking forward to an opportunity for our viewers and listeners to learn a little bit about you, and maybe I'll learn some new things too.

One of the things that you and I have in common is that we both grew up as what you would call military brats. We both moved around a lot due to fathers in the Air Force, stationed across Europe and other parts of the world. I'm wondering if you can start...Tell me a little bit about your childhood. Did you have visions of winding up in computer science or engineering as a kid?

**Suzanne:** No. I mean seriously, I didn't. I was oldest of six children. In my family, I was known as second-mother-in-command because my dad was in the Air Force. But my mother was also in the Air Force, and they married after she got out of the Air Force. So, we had very, very military family. The traditions were much more towards the teacher, nurse, that kind of a thing. But I also had a father who basically said, *I don't care what you are doing, do it well. If you are in math class, do it well. If you are in English class, do it well. Do not mess up your grammar.*



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He was basically everything you do, you should do well, but he wasn't judgmental about what that should be. It wasn't really until we got closer to when I was going to be going to college that I really saw that he had a preference for me to go into tech industries.

His last assignment in the Air Force before he retired, and my last year in high school, we were stationed over in Belgium. He was with [NATO](#). He was with NAGSMA [NATO Integrated Communication System Management Agency]. I went to this very small Department of Defense school. One of the things about the school was that I had already gone through all the math that was offered here in the various places I had been, so I didn't actually have any math the year that I was a senior and I was choosing universities and all the rest. I didn't think anything of this. There was a physics class. I took the physics class. I wasn't completely out of things.

. So I did actually go to [UC Santa Barbara](#), and I started out in their [Computer Science department](#). I did suffer for the lack of a year of math, but I got through that. At the end of that first year, I was bored silly. Now, I'm a little older than you are, and so I had to deal with punch cards. Computer science, that meant a four hour turnaround. You had to sit around the computer center, wait for the stuff to come back. If you made a typo, which, thankfully my mother made us all learn how to type, so I actually didn't get typos very often. But whatever error you made, now you have got this turnaround again.

As part of graduation requirements, I had to do a bio kind of thing. For bio class I took human physiology. My reaction to that was, *This is so much more complex than this engineering stuff. I don't want to do engineering. I want to do medicine. I want to do genetics. I want to do something that's going to let me deal with these biological systems.* I pursued that. I pursued a lot of education for that and found that there is this intersection. A lot of this stuff that I had learned in the computer science that I had done fed into that. At that school at that time, they were just starting a degree in human-factors engineering, and it was a multidisciplinary kind of thing.

It was perceptual motor learning and psychology and environmental physiology and mechanical engineering and computer science. That actually ended up being the thing for me. That is what I pursued. I had no idea whatsoever what I was going to do with it when I got out, but I just knew that I couldn't just do the traditional engineering. I wanted to do something that got me into this other space where I am dealing with biological systems, ecosystems. You know I talk about ecosystems all the time, so that is where that came from.

The thing that I got out of moving around and doing all that is I was flexible. It didn't bother me that there wasn't a math class. I knew that there would be something else, and that I would figure out. I think that was a gift that my dad didn't even know he was giving me by moving these places, but it is one that sort of stuck with me, I think.



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**Eileen:** Your career also took you to some pretty interesting places.

**Suzanne:** I have lived in a few places, yes.

**Eileen:** Can you talk about any particularly defining moments in your career that really set you on the trajectory that I know you on today?

**Suzanne:** Probably the first one was when I went for an interview at [Lockheed Missile and Space up in Sunnyvale](#). There was a guy named Bob Bowles who was the guy who interviewed me. He was interviewing me for a job writing code. So I just had this lovely, bachelor's degree that I had finished in human factors engineering. He saw on my very short resume at the time that I had done [FORTRAN](#), and he wanted a FORTRAN programmer. I am like, *I don't have a CS degree. Why do you want a FORTRAN programmer? Why do you want me for this job?* And he says, *I don't care that you don't have a CS degree. You've done enough language that I know you can learn another language.* He says, *What I looked at is—I was what's called a Regent's Scholar, which is a University of California thing. And he says, I know if you're a Regent's Scholar that you will try to do your best at whatever you do, and that you'll probably succeed. So I don't really care that that isn't what you were trained in. I will train you,* and he did. I learned all kinds of languages and did all kinds of things at Lockheed.

But he was the first one that really got me into thinking about, *It's not what you knew, it's what you can learn. In many of our settings, it's really important.* He was a mentor in that sense and helped me to navigate being young, female, in an engineering role. In my first job, we were in field operations for one of the missile programs, and it was all retired military guys: Navy, Army, Air Force. I knew the culture but I had never dealt with that culture as an adult. So he was also very helpful in helping me to navigate, *How do I deal with this kind of a culture?* That was probably one of the real defining moments of, *I can do anything even if I don't know how to do it.* He really helped me through that.

**Eileen:** You know how important mentoring is to me.

**Suzanne:** Yes, I do.

**Eileen:** Are there any other mentorship lessons, if you will, or things that you really took away from other professional mentoring relationships or personal mentoring relationships that you'd like to share?

**Suzanne:** One of them is...It doesn't sound like a pleasant lesson, but it was a very telling lesson. I got my master's degree while I was at Lockheed, and I got a job in the department that I had been in, but a job at the director's level as the technology consultant for that directorate. I was like, *Great, we are going to bring in new technologies and all these kinds of infrastructure*



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*things, and that is all wonderful. There was this guy that was one of the directors that worked for the higher level director. Every time he and I disagreed about a technology choice, he won. And you know me well enough to know that I don't sit on that for very long. So I went to my boss after about three of these and I said, *OK, you hired me to be your technology consultant. But every time I give an opinion, and it varies with this other guy's opinion, he is the one who wins. What is going on here?* He sat back, and he was very thoughtful about it. I mean, he wasn't just dismissive at all. And he said, *Huh. I don't know. I have to think about that.* So he thought about it, came back, and he says, *You know what? You need to leave.* And I said, *Excuse me?* He says, *I realize that when I first met you, you were in charge of the overhead budgeting for this department, and you did a great job at it for two years, and I still see you that way. You are not the technology consultant person that has all this great education, which I encouraged you to do and I love what you do, but he says, My fault. I cannot see past that.**

**Eileen:** He couldn't get out of the mental model of you being in that specific role.

**Suzanne:** ...the young person in that role.

**Eileen:** Which is often why young people need to leave a company or go to another team.

**Suzanne:** And he says, *I will help you find a job somewhere else.* I didn't leave the company. He said, *I'll help you find a job somewhere else, but you need to find a job somewhere else.* He says, *You may come back to us some day, but I need some space to be able to see you differently.* I can't even tell you how many people I have said that to, that, *If you get some extra education, build some extra skills, you can't always stay where you were and have the opportunity to use those skills and to grow more.*

That was a really hard lesson. I loved the people I worked with. I really didn't want to leave that job, but it's actually what led me here. Leaving that job is what led me here. Because the next job that I had was over in the Space System divisions where I worked with a guy who started the Software Quality Engineering Department at Lockheed. That got me into all the things and the [CMM \[Capability Maturity Model\]](#) and everything that I worked with at the SEI. So he actually changed, he doesn't know it, but he changed my whole career path by kicking me out.

**Eileen:** Well, it's an important lesson to learn, that sometimes you can only make the best use of your skills in another opportunity because of things that you can't control.

**Suzanne:** I'll go back to the flexibility part. Because I moved around a lot, I knew I could. That is the thing I see with some of the younger people. If they've never done anything else and they've lived in one place, and a lot of people grow up in one place, get educated, and stay. And that is great. There's a lot of things I miss because I don't have that background. But I have the background of being able to know that the next place may not be better, probably won't be



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worse. It will be different, and that's OK. That is a lesson that is hard to teach someone who has never had early experience of being sort of bounced around and surviving.

**Eileen:** It's a different perspective on the risk of moving along from something you are comfortable with, because we didn't grow up getting too comfortable anywhere.

**Suzanne:** Not really. I mean, my longest was four years. I don't know what yours was.

**Eileen:** Five.

**Suzanne:** Five. Oh, beat me by one.

**Eileen:** I did have a friend whose mother once said she knew they would get orders when she found the blender. Well, she finally found the blender after their last move, they would get orders that week.

**Suzanne:** Yes, I hear you.

**Eileen:** Let's move forward to the present day, since you talked about how that set you on the path to the SEI. I know all about what you do at the SEI, but why don't you tell our viewers and our listeners a little bit about what is typical for you. I know you are going to laugh at that because nothing is typical. You travel a lot. You do a lot of different kinds of work with our clients. Can you talk little bit about all that?

**Suzanne:** I went to this workshop one time where—it was personal visioning and all this kind of stuff—they try to get you to figure out, *What are you? How do you define yourself?* I actually came up with something that I do hang onto inside, that I think lays over everything: *I am a cartographer. I'm a mapper.*

**Eileen:** You are.

**Suzanne:** I create maps. I create organizational roadmaps. I create physical maps. I create maps of ways you can navigate a certain topic. That is what the CMM's was, the Capability Maturity Models. It was a map of how you can improve practices. It didn't always get used that way, but that was kind of always my vision of it. Everything I have done here, you can see that in what I do. As long as I am helping illuminate some topic by giving you maps, I am a happy girl. That means that I go out to customers. I help them build maps. What I learn from them, I bring back and sometimes can build the map that is sort of the more general map. Sometimes it is going out and researching a topic in a more traditional way to build a different kind of map. It doesn't matter what the technology is, I am creating maps about it. That is what guides everything.



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**Eileen:** I had never thought about it that way, but as soon as you said cartographer, it completely made sense.

**Suzanne:** I'm a 21st century cartographer.

**Eileen:** And we are very grateful that you are.

**Suzanne:** Don't go ahead and tell a customer, *Hi, you just hired a cartographer. Aren't you happy?*

**Eileen:** *Here is our senior cartographer.*

**Suzanne:** But the problem-solving that comes along with that. I mean, we've talked about how puzzles are something that we both appreciate. That goes back to that intersection of technology, ecosystems, human systems. The more complex puzzles are the ones that involve how technology affects an organizational space, not just an actual mission, an individual mission. It's how it affects everything. That is where we need maps, so that is what I do.

**Eileen:** Speaking of maps—you see where I'm going to go, thinking of maps—I would like to follow the highway a little bit north of Pittsburgh. Let's go outside of work and talk about things that you like to do outside of work. I know that every year you go the [Pennsic War](#) up in Slippery Rock. I would love to tell people a little bit about that, and about that informs how you see the world and how you relate to people around you.

**Eileen:** Yes, so one of the things -- The Pennsic War is an event that is sponsored by a group called the [Society for Creative Anachronism](#). And it focuses on—it's not really reenactment per se—but it's medieval style living for two weeks in a camping setting. We do take sanitation seriously. That is where the creative part comes in.

**Eileen:** You're not purist 15th century?

**Suzanne:** No, we're not purists. No, not when it comes to sanitation to just be clear. Pennsic is so completely different than what I do that it helps to give me distance, and that distance helps me to come back with different ideas. I've been doing it for 25 years. It's something that I look forward to.

It's crazy stuff because you're camping in the heat of Pennsylvania August, no air conditioning, cooking over... We do use a camp stove. My back can't cook over a fire anymore. Living in a tent until I spent some money to build a gypsy wagon of my own, so I don't actually have to put up a tent anymore. It's a completely different setting. And pulling away from the technology, I do have—just because my dad is old now and needs to be reachable—I do have a cell phone. But the computer stays at home. It's not a place where technology intrudes very much, so that is a



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way that I deal with all the kind of overload of everything else, is by sort of having that planned escape. I have only violated it once. There was one time, one year that there was an event that was happening the first week, and I went to the event and then only did the second week. I was so cranky when I came back, everyone says, *We will never try to keep you from Pennsic again*, because I just didn't get enough of that distance.

That's the thing I'll say about being involved in tech. You have got to find your balance, your own balance. If you don't have something outside of that, it will consume you in many cases, and that's not good either. My balance is a little more extreme than some peoples, but yes, that's what I do every two weeks. And actually on my away message, I have something that says, *Other people leave the country for their vacation. I leave the century*. And I actually had somebody from outside the US one time that I was talking to on some research topic that sent me a message afterwards and said, *What did that mean? You leave the century?* Because he had no context for any of these kinds of reenactment activities. So that was kind of funny. I had to explain it to him.

**Eileen:** Yes, I think that's so important. It's so easy in this day and age, right? We have laptops. We have cell phones, and so the office isn't the office. The office is where you are. It's so easy to get sucked into, *Oh, I got a text message; I should deal with that now*. Or, *Oh, I'll just spend five minutes reading my email*. The next thing you know, your work has become all-consuming. Consciously making that break for your own health and enjoyment and exploration of your hobby and self-actualization, I think.

**Suzanne:** It also does one other thing: it helps me to know where there are gaps in my mentoring of others. You, my other colleagues know if you call me, I will answer, and if it's really an emergency, I'll deal with it. The more of those calls I get, the more I know that I'm not giving you the tools that you need to do the work that we are doing together. So I have to take some responsibility when I get back to make sure that I transfer some of that knowledge that I didn't know was sitting in my head and get it out on to a real map instead of just the map in my head.

**Eileen:** Something I heard once that always stuck with me is that in your job you want to strive for the balance between being indispensable but not so indispensable that you can't be out of the room, you can't leave the office.

**Suzanne:** I call it the *single point failure syndrome*. I learned the hard way early in my career that being a single point failure makes you very popular, but it makes you not be able to have a life. I try not to go there. You don't always succeed, but I try not to.

**Eileen:** And we strive for that kind of balance on our team.

**Suzanne:** Yes, we do.



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**Eileen:** We talked a little bit about the deluge of things around us. How do you keep up though with the areas that you're interested in terms of work? What do you read? Do you listen to podcasts? What do you tell other people like me? What do you tell us to go to?

**Suzanne:** I'm kind of old school. I haven't gotten into the podcast thing yet. I always find it amusing, it's like, well, you can get these podcasts everywhere. I don't do that. I just got my first [Audible subscription](#). I am trying to move into that, but I'm so reading-centric that I got a Paperwhite Kindle before I got an audible subscription, right? That was the more important thing for me to get.

There's, I think, three sources for me that I go to a lot. One is family. I'm one of six, and all six of us are in tech. I've got a cybersecurity guy. I've got a software development manager guy. I've got all over the place. When we get together for family events, when we are talking on the phone and whatnot, somebody will share something that they are reading. And it is like, *Oh, what was good about that*. And my father, so my father is 89 years old and he still reads techy stuff. I gave him [Dan Pink's Drive](#), and he read Drive. Then he read the next one. He says, *Well, I don't like that one as much*. But he still stays active in contemporary stuff to read. Sometimes I get stuff from him, so family is a big source.

I do the same thing you do. I listen to what my colleagues are talking about, and I let them filter some stuff for me. *Oh, I read this book. Oh, I didn't like that book, but try this one*. One of the things that I am not religious about, but when I am feeling like my list has gotten too small, or I don't like the things that are already on my list, because I do keep a list, is [LinkedIn](#). I just go to LinkedIn and Google. I have got three or four groups that I am a part of. Sometimes I will even say, *Hey, has anybody read anything good lately about X*. I am not as systematic as sometimes I think I should be. When I really get into reading stuff is there is this particular kind of strategic planning workshop that I do, and it requires that you have a whole bunch of really broad kinds of information about different topics. That is when I will do a search, and then that search really makes my list long. Then I have to work it off, so those are some ways that I do it. I'm a list person. The list grows and gets reprioritized and fed off of, but it is still mostly reading. I am not a podcast girl yet, so maybe I will be in the next couple of years. We'll see.

**Eileen:** Despite all of the podcasts that you record, you are not quite consuming that yet.

**Suzanne:** No, I'm not. I am trying to get modern, but, you know...

**Eileen:** Not quite the barefoot cobbler.

**Suzanne:** No, not quite. No, no. I do have sandals, at least.



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**Eileen:** If you could give—well, I won't even limit you to one piece of advice—but talking to somebody that is looking to enter computer science, a STEM, an engineering career, what advice would you give to somebody young and just starting out?

**Suzanne:** One thing is this idea that tech is a part of everything. Like I did, I got desperately interested in human physiology and human biological systems. Don't say, *Well, if I do that, I can't do tech.* It's everywhere, and you may find it... You may become a bioengineer and make the next bionic man. You don't know where it's going to lead. If you don't love what you are learning, it is really hard to be good at it. Whatever it is that that makes you feel like it's worth staying up until two in the morning to finish that book, that is the thing that is probably the thing that's going to drive you. If you end up with tech as a secondary aspect of your life and not the primary one, so what? But if you are driven by the passion of the technology... I have one brother, he looks at a piece of machinery, and all he can think about is how to take it apart and put it back together better. I don't have that, but he does. That is his passion. Find that passion and learn what you need to learn. If the people that are trying to teach you what you need to learn, if it's not working for you, find somebody else to learn from.

We have so many sources of learning. Some of them are interactive. Some of them you just go out and find out on the internet. I am amazed at the things that we have access to today. Use all channels, I guess that's the thing. Use all channels to learn what you need to learn. And don't let anybody tell you that just because you didn't get an A in their class, that you're not capable. That's just hooey. That is the nicest thing I can say about it.

**Eileen:** On that note, thank you so much for sitting down with me today. I have enjoyed working with you for the last few years. I won't say how many. You do so many of these podcasts, and it's really been fun to, A, get to know even more about you, but B, share about you to our viewers and listeners.

**Suzanne:** Thank you.

**Eileen:** This podcast is available pretty much anywhere you get your podcasts: [Soundcloud](#), [Stitcher](#), [Apple Podcasts](#). It's also on the SEI website at [sei.cmu.edu/podcasts](http://sei.cmu.edu/podcasts), and our [YouTube channel](#). As always, if you have any questions, please don't hesitate to email us at [info@sei.cmu.edu](mailto:info@sei.cmu.edu). Thank you.