

## Aaron Falk: A Serial Innovator With a Desire to Pioneer New Technologies and Help Others Succeed



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Aaron Falk knows more than a thing or two about innovation and launching a tech startup. A Ph.D. physicist with a specialization in optical systems, Falk is credited with over 40 patents.

For 11 years, Falk worked on high-profile optical meteorology projects for Boeing. After leaving Boeing, he founded OptoMetrix, a company specializing in laser-based test instruments for the semiconductor industry. Falk grew OptoMetrix, which he later sold, into a successful business with revenues exceeding several million dollars annually. Falk is currently vice president of new product and business development for Emergent Detection, a fitness technology innovator located near Seattle. Falk is also an active angel investor, nurturing the development of promising new technology startups.

I recently spoke with Falk about the challenges and rewards associated with launching a semiconductor industry startup business.

### Getting Started

**JE:** Aaron, please tell me about your technology background?

**AF:** I got my Ph.D. in physics in 1979. I did my post-doc work at a place called the Joint Institute for Laboratory Astrophysics. I was into defense and space for 13 years at Ball Aerospace and Boeing Co. In 1995, I decided to do things on my own.

**JE:** How did you come to develop your testing technology?

**AF:** I created a way to look inside semiconductors and to analyze what's going on inside of them. I had actually done some work at Boeing in this basic field. They were interested in a high-power microwave switch. We had to come up with some cute ideas of how to use light and lasers to probe those things. That program went away, however. Boeing had no interest in the test technology we came up with, so I went and chased after it.

**JE:** What did your technology do?

**AF:** It was in the field of failure analysis, to learn when a semiconductor chip fails and what went wrong with it. The first-order problem is that there are several million transistors in a typical digital circuit and about ten times that many electrical wires. So where in the chip is the failure? Our laser instruments pinpointed the location, and then users could use focused ion beam (FIB) tools and dig down into that part and look at in more detail to figure out what failed.

**JE:** How did you begin turning your idea into a business?

**AF:** A friend of mine had told me about a thing called SBIR [Small Business Innovation Research, a government program that awards grants to promising tech startups]. That was intriguing to me. So, in 1994, when Boeing had a break between Christmas and New Year's, I sat down, wrote an SBIR proposal and shipped it off. I sort of presumed I was wasting my time, but about four months later I received a phone call from someone saying, "Hey, we want to fund you." At that point I said, "Oops, I just started a company!"

**JE:** How did you find reliable advisors to guide your new business?

**AF:** In a number of ways. The SBA [Small Business Administration] and SCORE. There's also an organization called the MIT Enterprise Forum. At the time I was doing this, there wasn't an Internet as we know it today, so there weren't quite as many resources out there as there are now. On the technical side, since I had worked for Boeing, I had a lot of contacts.

**JE:** How did you raise capital?

**AF:** The SBIR was responsible for the initial capital raised. And there was a lot of sweat equity—I was three and a half months into the venture before I could pay myself anything. After that, it was a sequence of additional development contracts, including one from Sandia National Laboratories. We also got money from an organization called SEMI, which is a consortium of the big semiconductor companies. We pitched to them and they got interested. We also got some money from Intel. There was also a little bit of angel investment from friends and family and some from people that I was introduced to.

**JE:** Was there any point at which you felt you had to compromise your vision?

**AF:** The first product we worked on we threw away. Basically, we had started with one approach and actually had built and delivered a number of prototypes. I then happened to visit Sandia National Labs to look at some of the work a group was doing there. I saw what they were doing and I said, “Oh, that’s actually way better than what we’re doing!” At this point, I arranged to negotiate a license.

We did a quick shift. Luckily, a lot of what we had developed in terms of software interfaces and electronic interfaces was applicable across both platforms, so it didn’t require a huge change. We ended up changing about 20 percent of the product to integrate their technology into it and we basically abandoned the first product.

**JE:** How did you create your new business’ leadership team?

**AF:** Luckily, my wife is a CPA. I also took a lot of business courses to get as smart as I could as fast as I could on the business side. Then I brought in younger people from the University of Washington and trained them to be self-sufficient and self-starters.

**JE:** How important is market research to a startup business?

**AF:** Absolutely essential. One of the mistakes a lot of people make is that they have, technically, a brilliant idea, but they don’t necessarily check on whether or not somebody wants to buy it. You can waste a lot of time and money producing something that essentially isn’t a viable product. So it’s very, very critical that you go out and figure what the market is and validate that market as early as you can. In our case, since companies like Intel and SEMI were giving us money to make the product become a reality, they provided pretty good market validation points.

## **On Being an Entrepreneur**

**JE:** How does one start becoming an entrepreneur?

**AF:** Being an entrepreneur is an attitude. It’s an approach to things. You could almost say it’s dissatisfaction with the status quo. You have ideas that you think can change things. You don’t just say, “Well, I can do this,” and move on. You actually have this inner urge to go make it happen. And that inner urge... Well, I don’t know if you can learn that—it’s just there, it’s innate.

**JE:** How do you balance your technology and business skills?

**AF:** You juggle a lot. I would spend half my time on each. I’ll say this: anybody who’s smart enough to figure out how to solve a differential equation is also smart enough to figure out the business side. It just takes some time and effort to learn those components.

**JE:** What’s the biggest challenge associated with being an entrepreneur?

**AF:** People. You’re dealing with people as employees, but if you’re getting development contracts you’ve also got sell your business to people, whether they’re investors or whoever. You’re constantly interacting with people, and people can be difficult at times.

**JE:** Can entrepreneurship be learned?

**AF:** If you look at little children, they’re all entrepreneurs. They’re out there exploring their world, they’re dropping things and seeing whether mommy will pick them up. And then we un-learn this. For an entrepreneur, it’s mostly a matter of being able to hang onto that desire for exploration and not letting it go.

**JE:** Are entrepreneurs control freaks?

**AF:** I’m not (laughs). You’ll actually be more successful by building a team of competent people who you can trust to get the job done without standing over them and beating them with a stick all the time. That’s the classic thing you see in the movies, but I think it’s very much untrue.

**JE:** Is there an ideal age for being an entrepreneur?

**AF:** You get the two ends of the spectrum. When you’re fresh, young, out of school, you have a lot of energy, but you don’t have a lot of

experience. Then you get to the other end of the spectrum—which would be me—where you have a lot of experience, but you're slowing down a little.

When is it exactly right? It depends upon the person. I started when I was 45. The young guys that I'm working with now are all in their twenties. But in their case they've had the sense to find some older expertise.

**JE:** Do most entrepreneurs have balance in their lives?

**AF:** Probably not. They tend to be fairly driven people. It takes a lot of time, a lot of work. Yet they need to find balance. When I started my company, I didn't take a vacation for two-and-a-half years because there was always something important coming on. Then I finally decided: "This is stupid. There's always something important coming on. Go take a vacation!"

**JE:** Are most entrepreneurs serial innovators?

**AF:** You see that. I'm always surprised, from the angel investing side, when I see some guy come in saying, "This is my fourth company." And I'm looking at him and thinking, "Didn't you make any money at those previous companies? Why are you here a fourth time?" And the answer is: "Yeah, he's kind of driven."

**JE:** What skills would you advise an entrepreneur to acquire?

**AF:** The first one is communication skills. You can have the best idea in the world, but if you don't know how to communicate that—verbally and written—you're going to fail. You've got to communicate to potential investors and to your employees. If you can't do that, you're in big trouble. After that, for the engineer types: get out there and take some business classes. Find out and understand what business is about.

### **The Pursuit of Entrepreneurial Happiness**

**JE:** Are entrepreneurs happier than other people?

**AF:** I would say that they wouldn't be happy if they weren't doing what they're doing. In my case, I can look back and feel that we really did make a difference and made some positive things happen. People have chips now that wouldn't have necessarily been there or would have been significantly delayed without our instrument to help the manufacturers figure out what's going on. I've had a great time with employees, helping them become better at what they do. There's a lot of good stuff that happens when you do this. But then there's times when you're awake all night worried about where the next payroll is coming from.

**JE:** Are there any entrepreneurs who inspired you?

**AF:** HP—Bill Hewlett and David Packard. *The HP Way*—that book can inspire anybody.

**JE:** At what point does a company cease to be a start up?

**AF:** Hopefully never. You should never lose the entrepreneurial spirit.

**JE:** Does an entrepreneur ever stop being an entrepreneur?

**AF:** No. It's an attitude, an approach to life. It permeates all of an entrepreneur's life in terms of how he sees the world and how he deals with the world.



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