Oral History of Steve Kirsch

Interviewed by:
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Steinbach: For the record, today is the 11th of October, 2016. We are recording the oral history of Steve Kirsch for the Computer History Museum. Thank you very much for being here. My name is Günter Steinbach, I am with the Semiconductor Special Interest Group of the museum. And with us is Marc Weber via telepresence and you can say yourself who you are.

Weber: And I'm the Curatorial Director of the Internet History Program.

Steinbach: Okay, so starting with just your background, where did you grow up, what's your family background?

Kirsch: So I grew up in West Los Angeles and had a fairly normal childhood I guess. I was a little bit interested in computers, I'd say at an early age, so in sixth grade in elementary school we had a computer called a Programma 101. So we were very fortunate in being able to have a school, it was a public school and we were able to get one of these Programma 101s and I was in sixth grade and I just was fascinated by it. So it's the equivalent of a programmable calculator today but back in those days this was 1960s, mid '60s, that was pretty hot stuff.

Steinbach: I'll say, yes, in the '60s. So what did you do for fun as a kid?

Kirsch: For fun, I was pretty into school work and making sure I got good grades so I'd be studying a lot but yeah, for fun I'd be into computers in my early days. So my spare time, it was first learning about computers and then taking more classes and learning more. I put together a computer club, a bunch of individuals and we had a relationship with a local computer training organization and we got access to an IBM 360 mainframe. And so I was programming that in Fortran and also PL/1 at the time. So learned about the famous IBM "Principles of Operations" book at that point, learned how to program card sorters and accounting machines and so forth. So I could wire up programs to program things, I knew how to program a keypunch with a paper drum. And so when I come to the Computer History Museum of course it's like going back to my childhood because I actually worked on those machines when they were at their prime. Yeah, so got a lot of experience at a very young age and a lot of exposure to computers because of generous people, adults who would normally not let kids access an IBM 360 mainframe, I was able to access and in some cases I'd be like the-- nobody else would be in the room, I'd be in the computer room typing on the console of an IBM 360, that's pretty cool.

Steinbach: Wow.

Weber: Were your parents in the technical field, interested in…

Kirsch: No. No, not really, my mom was kind of a stay at home mom and my father was a CPA and they got divorced when I was fairly young so I was mostly living with my mom. So she was taking care of the kids, but it was nothing super extraordinary, none of them were computer scientists or anything like that.

Steinbach: So you studied at MIT, so how did you get there across the country?

Kirsch: Yeah, so what happened was that when I was in high school, I got connected with the ARPA Group at UCLA and so they were kind enough to give me an office which I shared with Jon Postel at UCLA. So it was just kind of cool because you're sharing an office with the-- and sort of my sponsor was Jon Postel, so he's the guy who created the RFC system and email, so this was pretty cool. And I was actually the one who programmed the email system that they used to communicate, so I wrote the email system for the guy who invented email.

Weber: So what year, when did you start that relationship?

Kirsch: So that was in the early '70s, so about 1970 to 1974, so just before going to MIT and it was Vint Cerf, so I asked for advice and I said, "Where do you think I should go to school?" and Vint said, "I think you should go to MIT." So it's pretty cool to have the father of the Internet telling you where to go to school, I mean it's not your average situation.

Steinbach: So MIT at the time was already known for their computer science.

Kirsch: Yeah, they had a great computer science program, they had this machine called the DYNAMOD and they had this operating system, the, oh boy, the ITS, incompatible timesharing. Because MIT had compatible timesharing, CTSS, and that was kind of the mainstream and computer types tend to be renegades and so this group, this is Richard Greenblatt and so forth, I think they looked at that and they said, "Fine, if they have compatible timesharing, we'll be incompatible timesharing, so it's ITS. And the motto of ITS was security by obscurity. And so you would interact with the operating system using DDT, which is a dynamic debugging tool and there'd be all these totally obscure commands and you could do things like spy on someone else's screen and it was just really, really cool, a bunch of really cool smart people, just having a really good time. And so this was DEC PDP-10s which were kind of the rage back then.

Weber: This was in Tech Square?

Kirsch: Yeah, this is in Tech Square so this would be like early 1974. So yeah, Richard Stallman, Richard Greenblatt. Lisp Machines came later, Lisp Machines came about six years later in around the 1980s, then kind of Lisp Machines at MIT became kind of the rage. But back then, you were using CRTs

connected to a DEC system 10 and if you were cool you were running ITS on that and you'd be typing all of these obscure commands in to do things. <laughs> Some of which I may even remember. It's like a…

Weber: Who were the other main people, talk a little bit about that group?

Kirsch: Boy, yeah, hard to remember all the names there, Mike Dornbrook was involved, but there was a guy Al Vezza who was running the lab there and there's a guy who's like been there forever whose name I'm blanking on, oh, Dave Moon was there, and a bunch of other people, I'm sure all documented by history. Guilt by association.

Steinbach: So my reason for contacting you was as I said the optical mouse and I just wonder how did you even think of a mouse because…

Kirsch: It was easy because this was 1980, there were Lisp Machines, they were using Jack Hawley's mechanical mouse and you'd move the mouse and nothing would happen on the screen and so you'd have a 100,000 dollar computer in front of you that you're programming in Lisp with the cool cherry keyboards that had the Meta keys and so forth and everything worked but the mouse. You know, you'd roll it and nothing would happen on the screen. And that was such a frustrating experience and I thought, ah shit, there's got to be a better way than this, the mechanical stuff just isn't working, it ought to be optical tracking. And so from that idea, I built up a prototype using components at the time. It was actually, I used just discrete logic chips to do it, I didn't yet-- the first thing was just to do gates to see if I could design the analog and digital circuitry to track a pattern and I used initially a checkerboard pattern and a four by four detector which wasn't the best approach. And then after that I just thought oh it's better to take lines, because I was tracking in two dimension, the easiest way to do that is if you have a set of lines in one direction then you could use a quadrature detector, so you have four segments and as you're going over the lines you can detect the motion in that direction by taking these two and subtracting essentially these two and that way you'd eliminate the noise factor and could get the signals from the noise very easily and you could track it in one dimension. And then I used color, so I had different colored LEDs and different colored lines on the paper so the lines, one would absorb infrared and the other-- so there'd be two LEDs, there was an infrared LED and a red LED and under the red LED, the blue lines would look black and the infrared lines would be transparent and under the infrared light, the infrared lines would be black and the blue lines would be transparent. And so it allowed me to separate a two dimensional tracking problem which was fairly difficult into two one dimensional problems which could be solved with discrete circuits and just create a counter and that counter then could be read by a computer. And so later then I actually had all of that programmed in a little microprocessor, so I'd write an assembly language in the microprocessor and it would take the inputs and then output RS232 the other way, so I was running RS232 not with a chip but actually constructing the whole bits, so we'd go ones and zeros and I would be generating the whole RS232 stream just in software. So I built that as kind of the second version once I had the discrete version up and then I showed it to Steve Jobs and Steve Jobs

said, "Like the idea, lose the pad." And it was a fairly quick meeting with him but what was remarkable is that he got the concept really quickly that, okay, optical is a better way to do that and also that people didn't want to carry a pad around. And so you saw firsthand, there's the legend of Steve Jobs and there's reality and reality is, this is smart guy who could actually zero in on what's wrong with something pretty quickly and also appreciate a good idea. And so subsequently in later years when I started Frame Technology to do FrameMaker and Steve went over to NeXT to start NeXT Computer that we were one of the first guys that they talked to about writing applications for the NeXT Computer so we ported FrameMaker to the NeXT. So out of that relationship that we built when I first showed him the optical mouse. So this was when I was at MIT, I think I was a grad student at the time at MIT, this is about 1980 timeframe.

Weber: So how did you meet-- you came out here to meet Jobs?

Kirsch: Yeah, because I said, "Hey, I'm building a mouse, I'll bet Apple needs a mouse." This was I think around the time of the Lisa or something and I think-- so he clearly-- I knew he was building something that needed a mouse and so I went out to show him, "Hey, I got this idea," I'm this kid out of college with an idea for a…

Weber: But he went with a mechanical mouse.

Kirsch: He went with a mechanical mouse initially because he said, "Hey, lose the pad," right, the mechanical mouse didn't have the pad, so they built a reasonably good mechanical mouse but of course everybody's using optical mice now.

Steinbach: Right. And even then, I remember using probably one of your mice with red and blue lines on the Sun workstations.

Kirsch: Right, in Sun Microsystems, yeah. Yeah, and in the original versions you had to wind them up, you'd have to go in circles for 30 seconds and that's so I could get what's a black line and what's reflective. And when we went to the quadrature system then we didn't have the noise problems, the noise, right, because we had it set up, what's the threshold and the threshold depends on how your LED

was placed and so forth and so it was easier to-- you'd have to crank the mouse on the first mice that we built for Sun and then that went away when we went to this newer system.

Steinbach: Okay. So yeah, I remember not liking the pad, but it wasn't terrible.

Kirsch: Yeah, it wasn't terrible, yeah, especially in the newer versions where you didn't have to wind up the mouse, it would always work. And that's when we went to four sensors, a little, a two by two to a four by four array where this would be for one color and this array would be for the second color.

Weber: How much did you know about the Xerox PARC optical mouse?

Kirsch: I knew that Richard Lyon had developed one that was more sophisticated optical mouse so hats off to him because that technique that he used, so he used a hexagonal pattern so it was a black and white hexagonal pattern and so he would look with a camera and basically say, "Hey, what was the shift between image one and image two?" And from that he could discern how far the mouse moved and especially if you're taking samples very quickly. So that was good. And his thing you could run on blue jeans and it would actually work, so it was sort of the precursor to today's optical mice which can run on any surface because they look at the microscopic imperfections in whatever surface that you're on even glass, like Logitech has a great mouse that runs even on glass, it's very impressive.

Steinbach: Also, he actually used a pad too.

Kirsch: Yeah, that's right, Richard…

Steinbach: The Xerox supplied…

Kirsch: Yeah, the Xerox one used the-- yeah, that's right…

Steinbach: …a pad with dots.

Kirsch: …yeah, there was a pad, it was a hexagonal type of pattern and yeah, so it was a bit more sophisticated so he could get by with a one-- because he had a more sophisticated sensor, he had more horsepower than I did, he was working at PARC, he had a lot of resources. I'm a little student at MIT, so I'm on my own with no funding.

Steinbach: Okay, so that gets us to you starting Mouse Systems, was there venture capital already at that time?

Kirsch: Yeah, but I'm fresh out of school and so I had 40,000 dollars in savings, I was in living at Fair Oaks West Apartments, so I remember having an apartment and I had my oscilloscope and I had a workbench in my apartment and I had the EPROM programmers and so forth. And so I was constructing the hardware and I ran into a guy Winston Chen who was one of the principals at Solectron and he offered to manufacture the mouse for us and he would extend credit so we wouldn't have to pay him until 30 days or 60 days after we shipped, and that was phenomenal for being able to bootstrap the company because these guys did the procurement, they did the assembly, the testing, all that stuff for me because there's no way I could have possibly done that out of my apartment. And so it was really Winston Chen being visionary to offer me a line of credit to get it started and it was good for him because it was good for his business as well and of course Solectron went on to be a pretty significant sized business.

Steinbach: So did that use a dedicated chip or did you still have to discrete components?

Kirsch: No, I still have sort of the old design because with 40,000 dollars and I was paying a guy, I got together with Carl Engelbrecht who was a designer out of ROLM and took him out of ROLM and employed him and there was a guy named Hugh McPherson who was in charge of our production and so we had a small staff of people and I had 40,000 dollars in savings and of course, today that doesn't go very far, but back then it lasted us, especially because we had Solectron doing the procurement and the building of the mice for us.

Steinbach: So it was microprocessor plus an array of photo diodes.

Kirsch: Yeah, it was a microprocessor design plus an array, plus two arrays, two quadrature arrays.

Steinbach: Okay. Yeah, I guess we've covered the mouse.

Weber: What about the-- I think you wanted to ask was there-- oh no, did you ask whether there was a chip design based on…

Steinbach: Yes.

Kirsch: Yeah, I mean later in life in Mouse Systems, so we started a company Mouse Systems to-- so I quit my job at ROLM Corporation and started the company Mouse Systems to go and produce this and this is 1982 time frame. So I used my savings to hire people, we eventually got capital into the company

from outside investors and brought in professional management and so forth and grew the company. And there was a guy names Carl Goy who was-- he used to work at Heathkit and so he joined and he hired some people and they sort of upped the level of design so that we had a comparable chip technology to what HP had.

Steinbach: Did Mouse Systems only build optical mice always?

Kirsch: Yeah, it was focused purely on mice.

Steinbach: Okay.

Kirsch: Do one thing, do it really well.

Weber: You said you quit your job at ROLM.

Kirsch: Yeah.

Weber: Talk a little bit of how you got from MIT to ROLM.

Kirsch: From MIT to where?

Steinbach: To ROLM.

Weber: You said you started working at ROLM.

Kirsch: Yeah, you do the job interviews at MIT, right and I interviewed with Jeff Rulifson, formerly of Xerox PARC and he had joined ROLM to do sort of office of the future stuff so I joined his group.

Weber: Oh neat. So the mouse came later but you were…

Kirsch: The mouse came…

Weber: And those ideas.

Kirsch: Yeah, I mean basically I had the mouse idea, I went and got a full time job, I licensed the mouse idea to Summagraphics, they ended up paying me minimum royalties and doing nothing with the technology because it was competitive with digitizers. And so I said screw that and competed with them, they sued me, they tried a preliminary injunction, they lost the preliminary injunction because you need to prove preponderance of the evidence and balance of hardships, they couldn't meet the balance of hardships test because I'm a little guy who would be put out of business and they're this big corporation that wouldn't be affected. So they lost their order to try to stop me and so we ended up negotiating an agreement where I was able to produce the mice.

Steinbach: Interesting. Yeah, in 1985…

Kirsch: Yeah, they basically tried to get an injunction but to get an injunction you need to meet the two tests, they only met one of the tests. If they had a smart lawyer they would have realized that they didn't meet both tests, they wasted my money and their money on that one.

Steinbach: Okay. So I guess then since Mouse Systems you founded like six more companies.

Kirsch: Yeah.

Steinbach: Can I ask you how did you move from one to the next?

Kirsch: Yeah, it's just based on ideas and interests and you run across a problem and you say, "Oh gee, I think I know how to solve this one." So once you've solved one then you say, "Okay, well that was fun." The fun part is in solving the problem and bringing the solution to market and then after that it's like turning the crank and ramping up sales and so forth. And so I enjoy the problem solving, I enjoy looking at the world and looking at problems. And so each one of the companies was all started on a particular problem. So I started an anti-spam company because I was getting a lot of spam. I'd say FrameMaker was a little bit different, I wasn't struggling to produce documents but I heard about this guy Charles Corfield who had written this program on the Sun workstation and was intrigued by that and thought it would be an interesting business opportunity to bring it to market because there's this company called Interleaf and the software was super expensive and not that easy to use. And so I partnered with Charles Corfield and David Murray and brought along Vickie Blakeslee from Mouse Systems and the four of us started Frame Technology which was much later-- it went public and then it was acquired by Adobe Systems for half a billion dollars. There was a lot in between that of course but yeah. So in most all the cases it's running into a problem that you have yourself, like I hate user names and passwords so I started this company called OneID to create a secure authentication and authorization system. And we succeeded in creating that technology but we couldn't get anyone to adopt it because of the approach that we took. It was frustrating, I mean we went to the government and said, "Hey, look, you guys ought to sponsor this and give it away free," because if we could go and give everybody really strong

authentication technology that was the same, that everybody had to just create their identity once and create the private keys once, and that could be leveraged over everything because the government would sponsor it, that would change everything, that would make it really easy for people to authenticate and it would make computers super secure and it would end data breaches because you could have the data encrypted with private keys that are only on your device so it would only be decrypted at the time that you need it to access the data which the third party could get from you and so they could decrypt your data at the time and then it would lose the decryption key. It would solve a lot of problems, so we went to the government and it was just, "Oh, you can't talk to us, talk to them, talk to them, talk to them, talk to them." And then I finally got to what I thought was the right guy and tried to talk to him but I'd call him 12 times, he would refuse to answer, I actually went to face to face with him once and it was like nothing happens. So you finally get directed to the guy who has the budget and then like zero, there was no feedback at all for, "This is why this is a stupid idea." And I published it on medium, I said, "Hey, here's how you can solve the problem with computer break-ins," because we're still using this old fashioned shared secret technology of user names and passwords and we have to move beyond that if we're really going to go and have any chance at all in making our system secure and still easy to use. There were like 2,000 people who read it, nobody had anything like-- they just said, "Oh, the government would never do it." That was the problem with my ideas, that it was too good of an idea, the government would never do it. And, you know, they were right, the government would never do it. And so we ended up selling the company off to another company and now it's being used for IoT. That was the biggest frustration I think of my career was to solve the identity problem, I had a system that nobody could break into and yet it was super, super simple for anyone to use, couldn't get any adoption. Google said, "Not invented here, we're going with FIDO." I said, "FIDO's unmanageable," it's just repeating-- you're just sort of moving up a level and it's going to create a management nightmare, nobody's using FIDO today that I've seen. And Yahoo said we were too small and PayPal said, "No, you're too secure." And it was like, Twitter said, “We’re experts. We know how to solve this problem. We don’t need you.” Evernote said, “Hey, I’m-- go away. We’re gonna fix our problems.” So, every time you got breached-- you couldn’t be an ambulance chaser. They wouldn’t talk to you. And then the guys that do the-- when you get broken in you call-- I forget the name of the company.

Steinbach: LifeLock or something?

Kirsch: Not LifeLock. No, these are professionals. The guy named the company after himself and then they merged with-- was it FireEye. FireEye bought them. Anyway, they were, like, “We don’t even want to learn about your system. We don’t even want to hear about it.” I guess because if they heard about it and they promoted it to their customers, then their business would go down because there’d be fewer break-ins. So, it was absolutely amazing to me. And then the banks wouldn’t want to do it because it was, like, “So, well, who else uses this?” And “We’re a bank. We don’t do--” you know. And, so, everybody’s, like, sticking with really old-fashioned technology to solve a high-tech problem. So, I started this company Token, which is doing it, open APIs for banks and, so I kinda snuck in secure identity technology as part of that. And that works great. Right? They don’t even know they’re getting secure identity as part of it. They’re-- we’re like saying, hey, open APIs, this is really good. These are really powerful APIs. You can

charge for your APIs calls. Under the covers: totally secure identity system. It's great. It's the way to do it. You know, if at first you don't succeed, try, try again.

Steinbach: So, that's being adopted now?

Steve Kirsch: Yeah. Big time. And, in fact, there's a regulation in the EU called PSD2 that requires banks to adopt on open APIs and, so, hey, I can leverage all this strong technology stuff that I developed at-- at one ID and use similar concepts to provide secure identity without any user friction, very minimal user friction.

Weber: Given that you've done so many things I think if you're willing we should probably do a second session. Can we go back to the chronology and sort of, you know, as Mouse Systems segues into Frame, and just pick up there. Then we'll stop whenever you need to stop. Does that sound good?

Kirsch: Okay. Sure. So, I was doing--

Weber: With Mouse Systems, I mean, you were aware of Logitech at some point.

Kirsch: Oh, sure. Oh, yeah, very early on. When we first went into Sun Logitech was trying to sell its-- they had a hemispherical mouse with three buttons in the front. So, it was like a red half sphere and there were three black buttons that you would press. And, so, you would put your hand around it and they have a ball in the center and so forth. And, so, they'd always been around and we'd always been friendly with those guys. I mean, I had a lot of respect for their accomplishments. I mean, they were really-- they have a very good product. They do a great job.

Weber: They were mechanical in those days.

Kirsch: They were mechanical. I was optical. You know, I kinda won in that they eventually are now producing just all optical mice, you know, in that sense, but they-- we got acquired by a Korean company, KYE, and that-- the company that tanked after that. So, you know, it's great that Logitech is around, you know, and they build high quality optical mice. I mean, today I use Logitech mice. So. And I also use a Logitech camera, and also their little, you know, presentation thing and so forth. So, I'm a big user of Logitech products. So, no hard feelings at all.

Weber: And you said you got acquired. What year was that?

Kirsch: Mouse Systems got acquired maybe ten years after we started the company. The company was started in ’82.

Weber: OK, You had already left by then.

Kirsch: Yeah. I left. I left because I saw this shiny new object with Charles Corfield and Frame and decided to do something different, ‘cause I’d been doing optical mice for a while.

Weber: And what was your role at Mouse Systems? You were--

Kirsch: I was the founder, CEO, chief architect. You know. I designed and built it, run the company, hire the people. Yeah, that was my business experience.

Weber: And how many employees did you have?

Kirsch: Oh, jeez. Maybe about thirty people.

Steinbach: By the time you left?

Kirsch: Yeah. Might have been less.

Weber: So, then talk about the genesis for the idea for Frame.

Kirsch: Well, Frame was-- there was a guy, John Gage who worked at Sun Microsystems. John Gage was kind of like your chief scientist and he’d roam around kind of aimlessly and discovering interesting things. And John Gage ran across this guy named Charles Corfield. Corfield had contacted Sun Microsystems, ‘cause he was interested in computers and doing something with Sun workstations. And he talked Sun out of getting a loaner Sun workstation to develop software and Sun, of course, wanted to give out workstations to people creating software, so there’d be more Sun workstations sold. So, they had a loaner program. Charles got a loaner workstation and he started writing this desktop publishing program and I think we were the ones who named it FrameMaker, because it had a concept called Frames in it. And, so, his notion was, oh, you could have a text box and you can have this text linking from this box to another box and so forth. And, so, that ended up being a pretty good idea and we ended up starting a company out of it. We got funding from Toshiba, who bought source code rights and DEC who bought source code rights. And, so, we funded it partially through selling source code. And, so, we succeeded ‘cause we built up a great team of people. David Fuchs was on the team. Ken-- I’m blanking on his last name-- was a big contributor. David Murray, Charles Corfield, worked on it. Ken Keller.

Weber: And who was your target audience?

Kirsch: Our target audience were people in Tech Pubs. We definitely focused on the Tech Pubs marketplace.

Weber: Which is <inaudible>

Kirsch: Yeah. Yeah. Even--

Steinbach: Yeah, we used it at HP.

Kirsch: You know, when people came to us they said, “Do you do tables?” We said, “Tables? What are tables?” You know, it was funny. We were learning on the job. Right.

Weber: Were you plugged into the SGML community at that time?

Kirsch: No, that wasn’t big at the beginning. It was more Postscript, you know. So, we were trying to demo this thing. You know, and Charles wrote this great program and the one thing it didn’t do is print. And we said, you know, “Printing is actually pretty important for a documentation thing.” And, so, he said, “Yeah, you’re right.” And, so, he got a copy of the post-script manual and read it and then he figured out how to make FrameMaker print. And, so, that was, like, an amazing experience. We had a-- we rented a house in-- in Morgan Hill, because David Murray lived in Morgan Hill. So, Charles wanted to live near David. So, we rented a house. We were doing all the development of Frame out of a rented house in Morgan Hill that Charles rented and then, you know, David dropped in on, ‘cause he was-- he lived close by. And, so, the two of them were the primary authors and David was amazing and Charles is an amazingly smart guy.

Steinbach: Yeah, we used it at HP to write papers.

<overlapping conversation>

Steinbach: I was gonna say we used it at HP to write papers for publication.

Kirsch: Yeah, it was awesome. I mean, David was just a real stickler for great user interface design and great documentation. It was amazing the quality of the work coming out of these guys.

Weber: I used it. It was a great program.

Kirsch: Yeah. We spent a lot of time, you know, user testing and David was just an awesome UI designer. He was, you know, like pixel, move this thing here and he could-- he had great sense of design. You never run into anyone--

Weber: Yeah, there was a sense that it was put together as one piece, not sort of an aggregation.

Kirsch: That's right. Because there were only two guys that really were the primary architects. And then David Fuchs and Ken Keller were added to it later. And, so, we had a very small core team of guys that-- guys who were really brilliant, off-the-charts brilliant, designing that. That's why you had-- that's why it was easy to use and it was consistent: 'cause it was designed by a very small team. And then we brought in other people, you know, later on as we expanded the team and grew the team. So, people like Gus Fernandez on the Mac product and this guy named Kevin Lynch was managing the Mac product for us. And, of course, Kevin is now sort of-- I guess he's like the CTO for Apple. So, Kevin kinda got his start. And, you know, when Kevin was working for us people said, "Oh, you know, this guy's gonna-- he's gonna do great things later on in life." So, we had a prediction there.

Weber: You said the original idea was coming more out of the page.

Kirsch: I'm sorry? More out of--?

Weber: More out of page design, was the original goal more than structured documents or--?

Kirsch: You know, we were doing long structured documents because we realized that a page-by-page thing wouldn't cut it. And, so, as we were designing FrameMaker we designed for large documents since Apple Tech Pubs adopted it and so forth, because it was really, really strong. But then we added SGML capability later.

Weber: When was that?

Kirsch: Pretty late. I think it was, like FrameMaker 5 or FrameMaker 6.

Weber: 'Cause there was a very small niche. The whole kind of niche was to be well-structured documents.

Kirsch: That's right.

Weber: Sounds like that.

Kirsch: Yep. Yeah, so the SGML thing was kind of an after-thought. We had this Maker interchange format called MIF that was used to get-- so we could go in and out, so you could do things and process in other programs and then bring it-- dump it back into FrameMaker and not lose anything. And that was nice because it was sort of a tag language very much SGML-like. And that was our sort of extensibility-- our open strategy, because the Maker file format was proprietary and we would change it over time, but the MIF was designed to be compatible over all generations. You know, so that if you wrote MIF 1.0 it would be really readable even though you were in MIF 3.0.

Weber: I used it on the Mac, but what was the bulk of your market?

Kirsch: Primarily on the PC-- let's see. Well, the UNIX workstations I think was really what-- really was the big thing and then we ported it to Mac and the PC. But the Unix drove-- that was our initial focus. 'Cause these workstations were big. They had big screens and so forth. And you were able to do big documents and also we could charge a lot. We charged 2,500 dollars for the-- you know, I remember we had 2,500 dollars for prototype FrameMaker 0.6, so it's pretty cool that you could sell prototype software for 2,500 bucks. And we had it packaged on a tape, right? So, that you'd take the tape and you stick it into the Sun Microsystems computer and that's how we sold FrameMaker. So, the original thing was that, you know, we'd make these tapes and we'd label them FrameMaker 0.6. And, yeah, it was-- those were the days. <laughs>

Weber: Can you talk a little bit about the company, who were the initial investors, what kind of board did you have, what was your role--?

Kirsch: Yeah, the initial investors, like, I remember Hambrecht & Quist and Menlo Ventures were investors in Frame technology. So, Cristina Morgan from Hambrecht & Quist was there as an investor. DuBose Montgomery from Menlo Ventures. And, so, I was CEO for a while. We brought in-- later on as we grew as a company, we brought in professional management. Some of these guys flamed out pretty quickly. There was a guy named Bruce something or other who ran the company briefly and then Paul Robichaux ran it and then it was acquired by Adobe. I think there was another guy after Paul Robichaux before it was acquired by Adobe.

Weber: What kind of board did you--?

Kirsch: For Frame, do not remember. But it was a public company. So, I'm sure that would be in the record somewhere.

Weber: Sure. I was just wondering if they-- it sounds like they were not playing a big day-to-day role.

Kirsch: Yeah. No, I mean, they let the management team--

Weber: It's not an activist--

Kirsch: Yeah, let the management team run the company. And there was this crazy guy, our VP of sales, Steve Clann. He used to be-- worked in Interleaf and he was always-- and he brought in this guy named Max Hoffman who was this killer application engineer and it-- I think he probably is still at Adobe to this day. But if you want to know history of FrameMaker, talk to Max Hoffman. He has, like, an encyclopedic knowledge of everything that happened.

Weber: So, what led you to your next-- in the beginning of the--?

Kirsch: Yeah, I kind of got burned out on doing Frame and then someone introduced me to this thing called Computer Library and I looked at that and I said, "Man, this is great. Wouldn't it be great if you had a search engine that would search over other-- all these publications for a lot cheaper than what Dialog charges?" 'Cause Dialog charges were, like, ten dollars a search; nobody could afford that. I thought if you brought the cost down to ten cents, I thought this would be killer and you could search through all these computer magazines and other things. And, so, the original idea behind Infoseek was "Let's make search lower cost." It wasn't "search the Internet". And then one of the guys said, "Hey, you know, why don't we offer free Internet search," and I said, "Nah, we can't offer free search 'cause then we're not gonna make any money. So, it'll be the first ten hits are free." Then if you wanted more than the first ten, then you'd have to subscribe for, like, ten dollars a month or ten cents a query or whatever. So, that was the initial model, was to charge. Because how else were you gonna go and charge for search? And, so, it wasn't until later that one of the guys suggested, "Oh, you know, you should-- we should sell advertising and give away this search." And then we said, "Mm.. that's an innovative model. Let's give that a try." And, so, that ended up being-- so, we ended up creating the banner ad because of that. And we hired a guy who we brought in to do the ad sales who came up with, you know, this concept of the banner ad. So, we created the original-- this would be the standard size format for banner ads and, so, that's how we monetized the free search. 'Cause otherwise we wouldn't be making any money. And that worked pretty well actually! <laughs>

Weber: And what year did the banner ad, what year--

Kirsch: That was probably-- yeah, you know, early 90s, I think. I may be getting my years wrong, but I think it's like 1992-1993, somewhere around there. I'm sure there are history books on that.

Weber: But you had already--

Kirsch: Yeah, we were like the pioneers on the banner ads. And then we were tied it to key words and then we would sell key words and that's how we were monetizing. Gee, sound familiar, huh?

<laughter>

Kirsch: Yeah, so, all those concepts were something that I think we pioneered and there are Lycos and some other search engines and I'm not sure how they monetized it, but they probably copied the same sorts of ideas.

Steinbach: Did you patent this, the banner ad?

Kirsch: I don't think so. We were too focused on how do we make money at the time to think of that. You know, and that probably wouldn't have been good for anybody, if patented that.

Weber: GNN had banner ads in '93. There's a bit of jostling as to which group came first.

Kirsch: Yeah. I don't know. And I'm not trying to "Hey, I invented the banner ad!" Whatever. I just know that we went to this paid model to giving it away free and charging for ads and that worked better.

Weber: And you say it didn't start out with Internet search. So, you were gonna have your own database to search?

Kirsch: Yeah. It started out by-- we were trying to go to Computer Library and license their database and IAC to license their database and, you know, that took a while to license and come up with the terms and we'd have to charge people a monthly fee and all this stuff. And, so, it just worked out better. You know--

Weber: You were trying to be a cheaper Dialog.

Kirsch: Yeah, cheaper Dialog. Right, Dialog for the masses.

Weber: Or Lexus Nexus.

Kirsch: Yeah, essentially what the Internet is today. We were trying to do that, but the guys wouldn't budge. It'd be like, you know, before iTunes, right? You know, you'd be-- the record companies wouldn't release their stuff, right? So, you couldn't get to it. You know, and now, of course, there's Spotify and other services like that where it's much, much more affordable. You pay one price and you get access to anything. That's kinda what we wanted. That was our sort of model for information, but of course now everybody is like, "Yeah, I search the Internet and all this stuff is available for free." Some of it sits behind firewalls, but, yeah.

Weber: But, so, how long were you going as a Dialog-type company? A while?

Kirsch: No, a fairly short amount of time and then we realized that web search was where we were getting the most traffic. Didn't take long. We'd watch what people were doing.

Weber: Were you looking just, like, Ways [ph?] or Jeeves [ph?], things like that as a model to switch to the Internet?

Kirsch: Yeah, we knew about Ways and what they were doing. But it really didn't cause us to take any detours.

Weber: And your secret sauce was really web search, right?

Kirsch: Yeah. We licensed initial search technology from University of Massachusetts in Amherst. There's a guy named Bruce Croft and he invented this really cool search system called Inquiry. So, we used a lot of techniques from that. Didn't quite get the page rank stuff that Google did, right? So, that was a really brilliant insight that Larry Page had.

Weber: And who were the main other people early on?

Kirsch: At Infoseek Andy Bensky, this guy named Todd Jones, Tsara Heimo [ph?]-- let's see. William Chang, Ray Sorsa [ph?]. Ray went to LoudCloud later. Mike-- there's a Mike Schwartz, but there is another-- yeah. So. If you showed me the names I'd remember them, but yeah. So, it was a while ago.

Weber: And you were the founder and CEO?

Kirsch: Yeah. Yep.

Weber: And, so, you became-- once it went to web search, then you set up the company direction with-- tell me about the regression step.

Kirsch: Well, I started the company as a search engine company and we just grew and grew and grew after that. You know, we became the official button on Netscape and so forth. We got venture capital money, hired a professional CEO-- he didn't work out. We hired another guy from CNN and that worked out really well.

Weber: And who were the main investors then? I mean, in the beginning.

Kirsch: Yeah, Menlo Ventures was in it. Battery Ventures was in it. Yellow Pages, I think, invested, their Matt Stover was on our board from Yellow Pages or White Pages or whatever. It was something “Pages”.

Weber: And this was the era when Yahoo was doing directory search, not keyword.

Kirsch: Yeah, yeah.

Weber: I mean, how do you see keyword search--

Kirsch: Well, Yahoo did-- Yahoo was doing a directory and then added search, and we were a search engine who added a directory. Yeah, so.

<laughter>

Weber: Oh, you did add a directory.

Kirsch: Yeah, we did add a directory later on, but it was kinda like too little, too late. And, of course, it was Excite@Home -- it was Excite and then Excite became Excite@Home and so forth. So, there were other people in that space.

Steinbach: But directories have kind of gone away.

Weber: Who was your main competitor--

Kirsch: I don't know. I mean, it was a very-- there was a series of competitors. You know, Excite@Home was pretty aggressive. Lycos was aggressive, then came AltaVista and they then became the new kid on the block. And then Google, you know, came on after that.

Weber: Ask Jeeves..

Kirsch: Yeah, Ask Jeeves, they were kind of a niche player.

Weber: And, so, AltaVista by '96 was getting very big.

Kirsch: Yeah. Yeah. I mean, DEC put a lot of their guys on it. That was-- it was like a sales pitch to "Here's why you should buy these big DEC machines, 'cause, look, it powers AltaVista and is super-capable." So, they were kinda doing it to really promote DEC hardware, I think, rather than DEC trying to be in the search business.

Weber: And who were the main people behind doing the crawl for Infoseek?

Kirsch: For Infoseek I wrote the original crawl software in Python and did it multi-threaded and then other people improved the work since then.

Weber: And how different was it from what had been done before in terms of the crawling--

Kirsch: Oh, you know, crawling is pretty standard stuff. I mean, you start at a root and you just let it loose and you can start at multiple roots. And then you figure out whether you want to go-- you know, normally you do kinda breadth first rather than the depth. And, so, you just go. And we tried to limit our stuff to popular pages, like, the ten million most popular pages so you wouldn't get a lot of crap if you typed in a word. You weren't gonna get a lot of crap. So. And we would rate the pages based on relevance to your query. And, so, Google's invention about rating it based on sort of importance and how many links are pointing to it. We incorporated that sort of thing later, but Google, you know, that was a great insight. That was, you know, that was just a multi-billion-dollar idea to do that. It's amazing how powerful that idea was. And that gave them better results than we had. We gave you relevant pages, but they gave you pages that you were more likely to-- were thinking about when you typed in that search term.

END OF THE INTERVIEW

