Interview of Bob (Robert) Wiggins

Interviewed by:
James L. Pelkey

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James Pelkey: If my understanding is correct, when you were recruited to join Paradyne it was a going company and had been venture capital backed but was struggling.

Robert Wiggins: That's correct. I joined Paradyne in April of 1974. At that time, the company was about five years old and doing about $2.5 million in sales.

Pelkey: Was it a modem company? Were modems in the product line at that point?

Wiggins: Modems were part of the product line, and a product called Pix, which was a system that provided for high-speed remote transmission.

Pelkey: And the modem business was a leased-line modem business?

Wiggins: It was a leased-line modem business, which was virtually the only part of the modem business at that point in time. Even though Paradyne was known as a modem company, at the time I joined the company, the company had no modems currently in production.

Pelkey: Because they had so many of them in inventory?

Wiggins: Well, the products that the company had developed were not really in demand at that point in time. One of the products required special tuning - even though it was an advanced type product - any time a terminal was changed, so it wasn't totally transparent. The company had in development a new high-speed modem at 9600 bits per second using LSI technology, which I believe to be the first LSI technology program for high-speed modems. The driving factor behind this development program was Datran, which was the original networking-type company, and they funded part of the development of the new high-speed LSI series, because they required that type of capability in their network.

Pelkey: Do you recall why they would have chosen Paradyne? Codex had a 9600 bps modem out at that point in time?

Wiggins: I don't believe anyone had a 9600 bps out at that point in time, although you can check the history and find out, but no one had a low-cost 9600 bit per second modem. If you recall, all modems used to sell at a dollar a bit.

Pelkey: A buck a bit.

Wiggins: A buck a bit, and what Datran was looking for was a modem that would sell for considerably less than that, because of the expense of putting together a nationwide network. I forgot exactly what the cost targets were for Datran for their purchase price, but it was in the area of $1,200, so they were really looking for a low-cost product.

Pelkey: So they helped fund this project?

Wiggins: That's correct.

Pelkey: And that was in progress when you joined?

Wiggins: That was in progress. Very difficult program, because not only was the design of the 9600 modem taking place, but at the same time, it was being converted to LSI technology, and LSI technology was not very far along in those days. So not only did we encounter design problems with the basic modem, but also we had some difficulty with the conversion to LSI technology. A company named AMI was assisting us in the program.

Pelkey: Down in Santa Clara? Did you ever hear of how or why Paradyne actually got started? Was it modems from inception?

Wiggins: No, the company started in Rockville, MD in 1969, and moved to Clearwater FL at some later date -- I forgot the exact date; maybe a year or so later.

Pelkey: Were the founders out of Rixon?

Wiggins: The founders -- two of the founders were out of Control Data.

Pelkey: Were any of them around when you joined?

Wiggins: They were all present.

Pelkey: And it was venture capital backed by Paul Ferry?

Wiggins: It was venture capital backed. Paul Ferry was with WestVen at that time, and Donaldson, Lufkin & Jeanerette were involved with their Sprout Groups. It's been a long time. There were several of them. One of the others -- Heizer Corp. out of Chicago, which was, I guess, the largest venture capital firm at that time, plus there were multiple other players.

Pelkey: Right. Now, when you came aboard, did the firm have capital, or did capital have to be raised?

Wiggins: There was virtually no capital at the time I joined the company.

Pelkey: And what had you done before joining?

Wiggins: Well, I had spent 13 years with IBM in marketing and product development, and had spent some time at a timesharing company, and had spent some time at GTE.

Pelkey: What was your reaction when you first were presented with the concept of joining Paradyne?

Wiggins: Well, I sort of enjoy a challenge, and actually I had some experience in the modem business in GTE, as well as the terminal business and the multiplexer business. It appeared to me that, in spite of what people were saying, that there was an opportunity in the modem area to build a fairly sizeable company, and I felt that the industry would grow simply because I didn't

see how modems could go away if we were going to have a communications industry. I had spent some time at IBM in the terminal part of a development program, and felt that terminals were going to be remote to a large degree, and that that would provide an opportunity for a communications company.

Pelkey: So when you joined, you had modems that weren't really selling, and you had this modem project in development, the 9600 bps. When did you complete that project, the 9600 bps modem?

Wiggins: Well, we had just about completed the program in 1976, and had signed a relatively large contract with Datran, and Datran went into bankruptcy. So we had had a $5 million backlog with them, which of course went away, and actually they were to be paid back the money they had advanced the company through a royalty on all commercial modems that were sold using that technology. We were sort of in the worst part of the situation, because we had to continue to pay to the trustee the royalty on the commercial modems and we couldn't recover the modems we had shipped to Datran, but they finally just settled for a lump sum with the trustee, the bankruptcy trustee. As a result of that technology program, the company became successful, because we had an LSI technology where we could build a 9600 bit per second modem, I believe, less expensively than anyone else, and we were very aggressive in pricing those products, and the dollar a bit went down rapidly, because technology permitted it to do so, and we needed to gain market share, because we had to have business.

Pelkey: You were known at that point as being the ones who broke the price barriers.

Wiggins: We probably broke the price barrier, but also we broke the technology barrier so we could build the product considerably cheaper. In those days, back in the mid '70s, we could build a high-speed 9600 bit per second modem for under $1,000.

Pelkey: You must have been aware of the kind of margins that, for example, Codex and Milgo were making on their modem business.

Wiggins: Well, yes, we had a good idea, because --

Pelkey: Those were very healthy margins back then.

Wiggins: Well, our margins were very healthy as well. If you look back at the history of the company, you can see that our gross profit margins were large and we supported and grew a very large end-user sales and service organization, which we thought would be essential to growing the company. So margins were nice in those days.

Pelkey: Yeah. It helps to grow a business when you have good margins.

Wiggins: Absolutely.

Pelkey: Now, in addition to using margin, you also took a different tack in terms of selling your product, if I'm not mistaken, compared to Codex and, specifically, Milgo.

Wiggins: Yes. Most people were going with distributors and various representative organizations. We decided that we wanted to control our own destiny, so we went with the end-user sales and service organization, feeling that it would be impossible to really grow the company the way we wanted to grow it if we couldn't service the networks. One of the real struggles was trying to service those first few networks when you have limited revenue and limited service revenue and requirements all over the country, but we persevered and, over a period of time, we grew a very, very good sales organization and service organization, which I think most people would attest to.

Pelkey: Now, at that point in time, you were in a different position as an executive, because you had this Pix line and you had the modem product, of seeing your business as a networking business, in contrast to some of the other companies that you competed with. They could have seen themselves as networking, but they more often saw themselves as data communication companies.

Wiggins: We always had a concept of networking and control of networks from a central site, and we introduced, fairly early, what we called an Analysis Diagnostic System. And we put diagnostic boards into the modems so we could bring back a lot of the line conditions, and interpret those line conditions and do some diagnostic type work, and actually circuit restoral by using dial backup through the network. So we pioneered in that as well, which, of course, gave us a lot of credibility, and when you have a lot of credibility, it's easier to sell.

Pelkey: Was that intentional on your part, to create that product?

Wiggins: Oh, absolutely, yes.

Pelkey: And it was driven because of your understanding of what the needs were?

Wiggins: It was driven as a result of the understanding of multiple people. I mentioned Bill Segrist. Bill Segrist was a real pusher in the analysis, central network control type capability. We had a good group of people, both in the sales area, service area, and development area. Everyone would get together and talk about what we should do, and we'd forge ahead and do it once we agreed on it.

Pelkey: Now, network management, in those days, was just starting to come on the scene. It wasn't really --

Wiggins: That's right. I think we were first, as a matter of fact. There were some systems that had been put out by a couple of companies that I can't remember the names of, but they were not systems that were really integrated systems. We felt that, to really control the network properly, you had to build all the pieces of the network, so you really needed the modems, and we felt you needed the terminals, so we had a line of terminals through our Pix line, and we felt that also you needed the diagnostic boards that fit into your general system, and that you needed to do the hardware yourself. Now, you could buy the computer hardware on the outside and bring it in,

but you needed to do the diagnostic programs yourself, and where possible, you could go out and buy pieces that would fit together and allow you to do a better job than anyone else was doing.

Pelkey: How much of you strategic thinking at this point was driven by your IBM experience of account control? How much of it was the hand you were dealt when you joined Paradyne, relative to having two product lines and needing to reconcile them within a larger context so you knew where you were going with your company? How much was the market pulling you that way? How much was it the competition leaving this opening for you?

Wiggins: Well, I think both of those things played a role, because it's obvious if you work for IBM for 13 years you can surely discover the power of a strong sales and service organization and account control, and you surely realize that your best prospect is your current customer. So our philosophy was that if we do a good job for our current customers, then we'll grow with them, and we'll try to be responsive to their needs. So, a lot of the ideas for future products would come out of our customers, and we would try to implement what our customers were telling us. In most cases, that proved to be true. There was also some very simple, common sense logic in the way we did diagnostics then. If you put in a network that includes all of your own equipment, it's very difficult for you to be displaced, because any time, if your doing a good job, your customer has an additional requirement, he will order more of your systems. Of course, we always tried to stay state of the art from a technology point of view, and offer increased capability at the central site. We could provide multiplexers, we could provide all-speed modems, we could -- either leased-line or dialed modems, so we had a very complete product line, and we could satisfy most of the requirements that our customers had.

Pelkey: Now, the leased-line, private line modem business was different than the dial-up business, the switched network business, in the sense that when someone bought leased-line modems, there was more of a need or desire for diagnostic network management, plus the two modems needed to talk to each other, so you could control that. In the switched, you really had to talk to AT&T.

Wiggins: Well, that's right, and our business was predominantly, of course, leased-line modems; we were very big in the multi-drop area. The dial back-up capability we had in the diagnostic systems was to restore circuits so that the customer wouldn't be down. Then, later on in later years, we developed a dial modem. Well, for years we had had a dial 48, and then we introduced a dial 24, but predominantly it was a leased-line environment; leased-line networking environment.

Pelkey: When you came out with the 9600, I presume you broadened your product line at that point. Once you got the 96 out, you must have --

Wiggins: Well, what we did, as a result of getting the 96, we cut it back a little bit and made a 48 out of it and also made a 72. The 72 was a popular speed at that time, and we had a switch on the modem so that, if you ordered it at 96 and you wanted to switch back to 72, you'd just flick a switch on it. If you ordered a 72 and wanted to cut it back to 48, you could flick the switch to 48, because remember, the lines weren't very good in those days. We also had introduced the first 9600 that would work on an unconditioned line. You have to remember, we were always

challenging the technology, and we were trying to do the unconventional, whereas other companies were saying: "You have to have conditioned lines to operate at 48 or 96," we were proving that you didn't, because I think we had a jump on the technology. One thing that created that jump in the technology, I feel, was -- I think it was about 1976. There was a lot of talk about a new service that AT&T was going to offer. It was supposed to do away with modems.

Pelkey: Right. The Digital Data Service (DDS)?

Wiggins: DDS, but there was another one as well, where they were going to control a lot of the networking for all of the customers. What happened in this period of time, when all these attacks were being made on the modem industry, was that, I think some of our competitors sort of believed part of it and did not put the money into development in the modem area and the technology area like we did, and so that enabled us to come out with the first software-driven modem, which was our MP-48 and 96 series. So, not only did we pioneer in the 9600 LSI, we pioneered in software-driven modems. At the time, people were saying that there was no way that you could program the functions of a 48 or 9600 bit per second modem. Of course, we knew you could do it because we were ready to introduce the product line. After that, of course, most modems following that came out as software-driven modems. If you look at what's happened today, the last technology we did before I left Paradyne went to the, really, software controllable modems, so that the function of the modem itself can be theoretically controlled by down-line loading a different software set that would make it perform at 96 rather than 48 without the customer swapping out his base asset. Our objective was to try to get a network in, and then allow the customer to grow based on a service fee for the speed of the service. And that's -- I don't know what the company has done with that totally. I know that it's at least ROM controlled today, and you can replace -- put a new ROM in out in the field, but our concept, at the time we did that, was to make the network reconfigurable through the software diagnostic control center, which was the way we felt modem networks should go, because it really created a crisis any time somebody wanted to upgrade. You had to put in new lines, you had all the problems of starting up a network, which wasn't necessary. The other area, I think, where we gained a lot of edge on our competitors - - we started developing a modem that would operate at 14,400 bits per second, and I remember the classic wisdom at that point in time was that you can't do that. It would never work. You couldn't get it through the line, and again, we were sort of amazed because we were doing it. So we introduced the 14.4 point-to-point, and that gave us another leap forward in technology.

Pelkey: That was a great embarrassment to Codex.

Wiggins: Well, I don't really know. We just -- and what we decided to do was return to the classic pricing and charge a dollar a bit.

Pelkey: Right.

Wiggins: Codex, of course, did not have a product, and Codex then announced a 14.4 at less money than ours and tried to freeze the market from a decision point of view until they could get their product in the marketplace. Then, of course, we followed that up with a 19.2, so we kept -- we realized early in the game that everything had to go faster. If you go back to -- oh, goodness,

go back to the early days of the computer industry. I recall reading a book -- this must be back in the '50s. It was written -- I don't know who wrote it. I might have a copy of it, but it was entitled Faster, Faster. That was the name of it.

Pelkey: Well, how about that.

Wiggins: And of course, that was talking about computers, but of course, as computers went faster and faster, then communication networks needed to go faster and faster. So it was, you know, they were really exciting days, and we did a good job for our customers. Our customers kept buying more from us, and from that $2.4 million in 1974, by the time 1984 closed we did $290 million. So it was quite a scramble.

Pelkey: That was a very interesting transformation that took place, from '76. When you joined at $2.5 million in revenue, not much of it on the modem side, you were an insignificant player. In the early '70s, there were hundreds of modem companies.

Wiggins: Absolutely. That's right.

Pelkey: There were a few of them that popped up, but trying to understand which ones emerged from these hundreds is an interesting process. But you came in, and maybe the reason that you were able to survive was this Datran development project, which gave you this leading edge technology at that point in time.

Wiggins: Well, I think that's right.

Pelkey: If it hadn't been for that, Paradyne would have -- could possibly never have been in the modem business in a sense.

Wiggins: Well, I think you can't say that, but I believe that Datran being willing to fund that help on that development program -- now remember, the venture capitalists funded it as well, because Datran didn't fund the company at all, and the patience of the venture capital people in those days played a vital role as well. We had a very solid venture capital group, and after we did the first sort of wash out financing, refinancing the company in late '74 --

Pelkey: Which is when you came on board?

Wiggins: Yeah, it was about six months after I came on board, because the venture capital people, after I got there and we found out how much difficulty the company was really in, they weren't eager to put up additional money. So we had a difficult refinancing of the company.

Pelkey: The first people to do it.

Wiggins: But they did, and the group always worked reasonably well together, and they were very supportive of the company. So we had a supportive venture capital group, and we required a lot of money, because technology, and growing a company as fast as we grew Paradyne, without access to tens of millions and hundreds of millions of dollars, you can't do it, but the

marketplace was right as well. The market was ready to expand. We went with the flow of the market. If our customers --

Pelkey: It was primarily a Big Blue customer base you had, right?

Wiggins: Absolutely, and we were selling our Pix system into the IBM network, because Pix was a remote communications system for IBM networks that allowed you to transmit without having VTAM and all the various other communications access methods software. So we could relieve the workload from the processor, because those days the hosts were not really that powerful, and you might consume up to 25% or 30% of the host to control the network. So we could go in and restore a lot of the CPU power, we could transmit information faster, we could drive IBM remote peripherals far better than IBM could drive them. So we just had a high-speed data pipe that would go out, and we could drive IBM CRT networks, or IBM high-speed printers, bank systems, anything. Of course, once you get into those accounts with your Pix system, then it was a little easier to get the modem business, so it all fed on itself, and the market was ready to grow. We didn't in any way force the growth of the market, although I think we responded very well and we were normally ahead of the game in taking a look at the types of systems that might be required two to three years out. What a lot of people don't realize in the technology game, people have always thought of modems as being very simple devices, but if you ever stop to think about what they have to do, from the standpoint of getting data over a line reliably, particularly in the early days, they were much more complex than minicomputers that everybody was wild about. So a technology program typically would be, before you sell the product in the field, four years, so you were making your decision in '76 what the new technology was going to be in about 1980, and if you weren't right, you were in deep trouble.

Pelkey: Having an end-user selling organization, at some level, must have given you a higher degree of confidence that, given that you had these long development cycles, you had a better idea of what was really needed out there, as opposed to these other companies who were going through distributors or going through reps --

Wiggins: That's absolutely right, and we -- it cost a lot of money to grow that sales and service organization, but it gave us a reliable base of information, of market forecasting information. You had to temper it a little bit, because salesmen want everything tomorrow, but at least we had some very significant accounts, and the people at those accounts were always interested in talking about what they required in the future. A lot of them would visit the plant, and we would have a session and say: "What are you going to need? How's your business going? Where is it going? What should we be doing?" So it was really sort of a cooperative affair between Paradyne and its customers, as well as all our people.

Pelkey: I interviewed Jay because my sense of it was that you at Paradyne brought a level of professionalism to this data communications marketplace with your sales force which was really new to the industry.

Wiggins: I believe that's true.

Pelkey: It was more the IBM approach, of really a higher-level sale than had been previously made with a box, and you were selling systems. Some of it was because you had the Pix line and you conceptualized a systems business, but the fact is that you changed the way modems got sold. You upgraded the perception of modems because of the selling process.

Wiggins: Well, I think there's a lot of truth in that. That was our objective, at any rate, to really look upon the industry a little differently than our competition and make sure that we understood our customers and we understood that our customers were saying. You don't want too many filters between you and your customer, because your customer can be unhappy and you wouldn't know about it for a long time if somebody else was controlling your business. So, the thing that I had learned, of course, in IBM, and it's really common sense, is account control. You want a salesperson out there whom will control the account as far as your interests are concerned, and who will be there all the time, be available to the customer when he is needed.

Pelkey: How much time, in the late '70s, did you spend on understanding what your competition was doing? I presume you saw the competition as Codex and Milgo.

Wiggins: Codex and Milgo and GDC; primarily Codex, because we were always attacking the high-speed market, and Codex was there. So we thought that Codex was the competitor we had to beat. It's sort of interesting, at one time, we were OEMing our 9600 to General Datacom, and we had OEMed our 4800 at one time to General Datacom. So it wasn't unusual for people to sell their products to their competitors, because their competitors had gaps, and obviously, every company controls certain customers. We had adopted a philosophy that anything we developed was for sale, and if our competitors wanted to buy it, we'd sell it to them, because there were some accounts that they had and we would never get, and we thought that we should always be able to beat them in our accounts or for new business. So really, Codex was the one we looked at more than the others.

Pelkey: When they introduced their statistical multiplexers, the 68000 or 6800, was that, to you, a significant event?

Wiggins: Yeah, we thought it was very significant. We wondered whether or not it would work properly, and they did have a lot of trouble with that, but I thought that was a good product thrust for them. We, of course, had come into the market with a statistical multiplexer by way of Case, a company in England.

Pelkey: Did you OEM their product?

Wiggins: Well, at one time we made an offer to acquire them.

Pelkey: Do you recall when that was?

Wiggins: That might have been about 1978, and we actually were going out for an offering, and we included their financials in the offering circular --

Pelkey: A private placement offering?

Wiggins: No, this was a public offering, and I remember it well because we got severely criticized because they were losing so much money and we were buying them, but it turned out that, in the final analysis, we could not agree on the final price, so we did not acquire them, so we OEMed their product.

Pelkey: Were you public after you decided --

Wiggins: Well, we went public in 1978, and then --

Pelkey: Alex Brown and H&Q?

Wiggins: Through Alex Brown and H&Q. Then we -- a subsequent offering that might have been as late as '80, even, when we tried to acquire Case -- I forgot the dates. It was after the first, after the initial offering. What we had tried to do, realizing that it was going to be difficult to fund development programs in every area of technology, we set about trying to forge a working relationship. Case had a good multiplexer technology. They were not selling into the US, and we were furnishing them our modems, so we said what we'll do is forge an agreement in principal that will be a working relationship so that we'll keep you competitive in the high-speed modem marketplace, and you keep us competitive in the statistical multiplexing marketplace. That went along well for a while, and we were moving multiplexers pretty well, and then Case decided to buy -- to come into the US marketplace, and they bought the old Rixon company, and of course with them as a competitors --

Pelkey: Did they buy it from United Telecommunications?

Wiggins: I forgot whom they bought it from. They might have, but they bought the old Rixon company, so they then entered the US market in competition to us, which sort of wrecked our agreement to sort of exchange technology in various areas.

Pelkey: That must have been an interesting period of time.

Wiggins: Well, it was, but we felt that they would have a lot of difficulty being successful in the US, which proved to be true --

Pelkey: Right. And did you continue to sell their statmuxes?

Wiggins: We continued to sell them for a while, and then we developed some of our own, but it would have been nice. I forgot what -- today they have special names for it, but our objective had been to try to have these agreements with people who were not competing, like Case, but it simply didn't work out, but it still makes a lot of sense.

Pelkey: When you first saw the Micom statmux, did you have any reaction? It wasn't particularly in your sector, the way I understand it.

Wiggins: Well, the way we originally looked upon Micom, I thought they did an excellent job, and they set up a great distribution network, but they were really selling boxes. Most of their business was a black box business. We really were interested in the networking business -- well, we were interested in any business we could get -- but the principal thrust of the company was really in the networking area.

Pelkey: When I was talking to David Forney, he said that later, when they looked back on it and they saw the 14.4, that the technology he had in the 9600 could have run at 14.4 because the line quality had improved so much, but they had failed to look at the line quality, and they were really embarrassed how you took it to them, took it away from them.

Wiggins: Well, a lot of people missed that because -- I thought people would have understood, when we introduced our LSI 96 to run on unconditioned lines, that not only had we made improvements in the modem technology, but the general condition of the lines had improved across the country. We actually, that particular modem, we went out and ran a lot of tests at 14.4, but we decided that it would not quite do the job, that conditions weren't quite right, and we learned a lot by running those tests, so we incorporated those changes in the next modem generation. Of course, the lines continued to improve, because the telephone company did a much better job, so -- it didn't take, and then our competitors finally reached the conclusion that the lines had improved out there, but they were probably two or three years late in realizing that.

Pelkey: He was a bit embarrassed by it. He turned red when he was telling this story. He was embarrassed by it. I made a comment earlier about the fact that in the '72 time frame; Frost and Sullivan had made this projection that the marketplace was going to be a $70 million market, which proved obviously to be an error. In the late '70s, you said you kind of went with the marketplace and the marketplace kind of took you. What were your opinions then? Did you have a view as to how long this modem marketplace was going to last or was there always this felt need that, while you had to push the technology, and it was going to go a little bit faster, that there is a limited size to this market and we better figure out what we're going to do next? When you started to think about the size of the market and what kind of company you were going to create later, what was your thinking?

Wiggins: Well, we didn't really see any reasonable limits to the size of the market. I remember the name of the AT&T service, in 1978. ACS was the new service that AT&T was going to come out with, and then they were going to take over all the network and store data for people, and of course that never got off the ground. It made it harder for us to go public in '78, that's how I recall it, but it you remember the modem industry back in the '72, '73, '4 time frame, there was always a threat to the modem industry. LSI technology: all modems were going to be on a chip. That was a threat, and these chips were then going to go in terminals, and so there was going to be no need for stand-alone modems. We typically did not believe that, and we felt that a network of modems driving terminals could be put together, and the diagnostics required could not be furnished by those people who might try to do an LSI single-chip modem. Then, we realized a lot of that was just talk, because there was no way you could put a complete LSI 9600 bit per second modem or 14.4 modem on a chip. I mean, the technology didn't permit it. So we didn't worry much about the market going away. It made it a little difficult to finance the company in the early days, though. Of course, we thought that the Pix line would also grow, and that gave us

some protection against any slow down, but we were forming a company that would be a dominant factor in networking, and we felt along the lines that you could build a very sophisticated company just in the networking area, but you would have to start incorporating other people's products into your networks, so you'd have to open your own network up. You'd have to be able to put IBM devices into the network and some of the other devices out in the marketplace.

Pelkey: When Codex sold itself to Motorola, and then Milgo was acquired by Racal, did those events strike you as being significant in terms of shaping the competitive environment going forward?

Wiggins: No, we were sort of pleased with it, because we felt -- and this might be somewhat naive -- that it's much easier for a small technology company to do well and survive on its own than it is under a big corporate umbrella, because there are things you need to do that don't fit in with the overall corporate scheme of things, like how you want to pay your sales people, what you have to pay your engineers, and after a while, in a large corporation, somebody looks around and says: "Those people are making more money than we're making," and so you begin to get a lot of the bureaucratic type problems that exist. So we felt that, with those companies being bought out, it increased our opportunity, because we felt they would not be quite as good as they were before.

Pelkey: Did the fact that Codex --

Wiggins: -- Sold at a handsome price; three times revenue, as I recall, for Codex, which was not bad.

Pelkey: Very, very nice. Did the fact that Codex had this relationship with Rockwell, and then being bought by Motorola which was a semiconductor company, and as you've remarked you were very much aware of the fact that the higher and higher level of reduction through semiconductors was an important part of this business, did that seem to give them any kind of an advantage?

Wiggins: Yes, as a matter of fact. We felt that they had an advantage because they had signed this agreement with Rockwell to develop LSI technology. So it made us scramble a little bit harder, because we realized that we were much smaller, but we still felt that it's a little easier to do it yourself than it is through those types of relationships. That probably was one of the reasons we kept looking at other ways to do the modem beyond just LSI; looking beyond simply LSI circuits to really putting intelligence in the modem.

Pelkey: Hence, the software defined --

Wiggins: Hence, the software defined modem, which is, of course, the way the modem had to go. I mean, if you just look at the history of the computer industry, you would then, having grown up in the computer industry business-wise, it was just logical to me to think that modems, one day, would be software defined, rather than hardware defined. It was not -- perhaps coming out of a different background, one that was computer oriented and software oriented, as well as

communications oriented, was of some benefit. You knew what could be done; you didn't know that you could get people who could do it, because it was not easy, always, to say to a traditional engineering development group: "We're going to program this modem. We're not just going to do hard-wired circuits. It's going to be programmable."

Pelkey: Right. You were really a different executive, at some level. Again, looking at Codex, the management team there was very stable, had been there for some number of years by then. The Milgo management team was a relatively stable team that had been there and had experience in the business and had grown with the business even some years before you, even though the business was not an overly large business when you got into it.

Wiggins: They were all considerably larger than we were.

Pelkey: Yes, they were considerably larger, and they had experienced teams of personnel. Where you had the problem of having just done this wash-out financing, and you had this LSInproject, and then this Datran thing hit you, and you had to build a management team, and you didn't know anything about the business. I mean, you knew a little bit, as you say, at GTE you sold some modems, but you were way behind the curve.

Wiggins: Oh, sure, we were behind the curve, but we scrambled well.

Pelkey: How did you overcome that?

Wiggins: Well, the people really overcame it. We just had, really, super people. Most of the engineering people had come out of Honeywell. They had learned a lot about the modem design business over the course of three or four years. They were willing to work very hard. They were creative. We backed a lot of the ideas. We backed the ideas of some of our marketing people, like Bill Segrist, when we were discussing networking. So we just simply made decisions and they turned out to be the right decisions; strengthened the organization over a period of time, from a management point of view, but basically Paradyne, when I got there, had a lot of talent, and good people.

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Pelkey: How had it gone wrong then?

Wiggins: Well, no one ever knows. It's --

Pelkey: Even when they go right.

Wiggins: When they go right, you don't totally know why they go right either.

Pelkey: You're just thankful they do.

Wiggins: Basically, it's very tough to start a business, and it's probably even tougher to start a technology business, because development programs never tend to stay on schedule, and that

doesn't help you much if you don't have much money, because then you don't get the product to the marketplace, and then sometimes you can get carried away with the grandeur of the idea and you can think that the market is much larger than it is, and you can start over-producing without having the demand, and then if you're dependent upon reps, you can listen to your reps and your reps tell you they need a lot of product and they don't. So that's another reason why it was good to have our own sales organization. We could meet with them on a regular basis and pretty well know what they were doing. Paradyne, even though it was out of money, and was struggling, just had a nucleus of extremely good people, and people who were still willing to work hard. You know, sometimes, in a venture capital funded company, if the company has struggled and has not achieved the results, then the people get sort of fed up and they don't want to do it anymore, and we didn't have that situation. That, when you talk about stability, that modem development group, basically, is still at Paradyne. It's been enhanced somewhat, but we felt, at one point in time, that we probably had about 50% of all the top modem designers -- high-speed modem designers -- in the world, so we had great stability in the development organization; almost no turn over, and that's absolutely essential.

Pelkey: How much of that -- clearly, some of it was management. You had a successful company and you gave the engineers the opportunity to do what they wanted to do, in terms of their professional skills, but how much of it was because of --

Interruption in the interview

Pelkey: Were there other issues, in terms of either compensation or incentive or the fact that you were in Florida and there weren't a lot of other people trying to hire them away? Were there any other factors?

Wiggins: Well, I think there were numerous things. We couldn't pay our people a lot in those days, but we treated them well with stock options and I think we listened to them, and a lot of times, if you listen to people, that makes them feel better, and they began to see success in the products that they put out, and the more success you see, the more you like it. That's what we all do these things for. So, they simply got better and better, and their satisfaction, I believe, was not only the increase in the value of the options, but also it was the fact that the products met with success in the marketplace. That's the major factor.

Pelkey: Did you take any -- joy is the wrong word, but -- when Milgo and Codex engaged themselves in this lawsuit against each other?

Wiggins: We didn't pay much attention to it. Actually, in Paradyne, we simply tried to achieve our game plan. We actually didn't worry too much about our competitors.

Pelkey: When did you leave Paradyne?

Wiggins: Finally, in '87.

Pelkey: '87, and -- in terms of all these problems, digressing, when did that come on the scene?

Wiggins: Well, late '82, early '83, was with the lawsuits.

Pelkey: Before that, in the late '70s and early '80s, you were easily seen as one of the best-managed companies in America.

Wiggins: Well, I never heard that, but that's gratifying to hear. I thought we did a good job.

Pelkey: I remember hearing you at an Alex Brown conference in '82 or '83, at a luncheon, at you were very, very impressive, and I think the marketplace was very receptive to your story.

Wiggins: Well, thank you. I think we did a good job at Paradyne. I think we had a group of people who wanted to succeed, and that was true in all parts of the company. It was true in the production area, it was in sales, it was in service. We just had an unusual group of people who worked closely together and enjoyed it, and that's what you need.

Pelkey: One last questions: it seems to me that the die got cast after you came aboard and you established your presence. You had this networking strategy and you built your sales force and you increased the technology content. At that point in time, it was really a matter of execution. You had to continue to do things, and broaden your product line --

Wiggins: A lot of it was execution: refinement of the basic plan.

Pelkey: Refinement, and just build an organization, worry about execution and operations and so on. The PC came along, and really you weren't there during that period of time, but in '82 to '86, you were there, but -- Paradyne didn't see as much of the impact of the PC during this period, only because you weren't in the dial-up portion, and that the PC really hadn't started to displace the terminals as it does today.

Wiggins: We had a line of terminals going back several years, and we drove those terminals off of our own Pix boxes, because the thought occurred to us, after a while, that we had this Pix line, and it was good at driving remote devices, and we were driving IBM remote CRTs, so while we're out there selling, we should have a line of 3270 compatible CRTs which we developed, and we could offer them at a lower price than IBM CRTs were. So we started selling CRTs. We never really got into the PC business.

Pelkey: PC business began to impact Paradyne somewhere along the line, though.

Wiggins: Well, it might have impacted. I don't know how the Pix business has gone. We had some fairly sophisticated networks installed. I would assume that -- you're talking about PCs from the standpoint of communications, going on Pix, or --

Pelkey: Well, that plus --

Wiggins: Or PCs in general.

Pelkey: PCs in general, replacing the terminals and demanding different kinds of communications.

Wiggins: Well, we were never -- you know, if you look at a company that might have been doing $50 million in terminals, it's not that severe an impact, but I think the difficulty, as we talked earlier, in the technology business, is trying to be technologically ahead in multiple phases of the market. We could, of course, do an outstanding job in the modem and the network management area. We did a good job in the Pix area, but never really could come up with the resources to really expand that overall capability like we had in the modem area. So it gets to be very difficult to raise the money and, at the same time, produce profits every quarter to remain competitive in all the markets, and find the talent.

Pelkey: Is there anything that was significant at Paradyne during this period of time, in terms of how it developed, or the industry, that we haven't touched on?

Wiggins: Well, I think one thing that we had, and it's always necessary to raise money, is the company was doing well, and we always -- after we went public, the stock was highly regarded, and thus we were always able to raise money. Without the ability to raise capital, the company could not have grown, obviously, because you couldn't finance the growth. Financing the growth is one of the most difficult parts of any business, so we had a combination of factors: we had the technology, the markets were there, we were in a position to take advantage of the markets because we had developed an end-user sales and service organization so our strategies had been right, and the money was there through the equity marketplace. So those are the factors that you really need in order to be able to grow a company.

Pelkey: Thank you very much. I appreciate your time.

END OF THE INTERVIEW