



Interview of Roger Evans

Interviewed by:
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James Pelkey: Thank you for making time in your busy schedule to sit for an interview. What was the history of the founding of Micom?

Roger Evans: The antecedents to Micom were Case and ADS. American Data Systems was the company that Bill Norred was founder of. It was the company that brought out the first character interleave time division multiplexer which the timesharing industry just lapped up. This is now back in the late '60s. Case, which is a UK company that I was a founder of, became the European distributor for American Data Systems.

Pelkey: Do you recall what year that was?

Evans: Case was founded right at the end of 69, so that was '69. I think we actually were funded right at the beginning of 1970. I think ADS was funded around '67 or '68. t

Pelkey: Who funded its founding?

Evans: It was -- I know White Weld was involved in one private financing for them. Who the original investors were I don't recall. Suffice it to say that ADS was an absolute shooting star with its time division multiplexer product on the back of the tremendous growth in the timesharing companies in the late '60s. They went through a period where they wouldn't take orders without cash. It was that kind of a phenomenon.

Pelkey: Now, there were other companies out there doing time division multiplexing systems around that time?

Evans: They were ahead of Timeplex, and had a lead over Timeplex in character time division multiplexers, so --

Pelkey: Were they first with a TDM?

Evans: They were first with a character TDM, and a character TDM was a lot more efficient than a bit interleave TDM, and was more efficient at handling a mixture of IBM and ASCII terminals which were both supported by timesharing systems, and it was a much more attractive product for timesharing companies than bit interleave time division multiplexers. They got to market ahead of Timeplex, although by the time we at Case picked them up, Timeplex, very early in its career, signed an agreement with Racal-Milgo for Europe. Racal-Milgo was such a dominant data communications company in Europe that Timeplex essentially hit the ground running day one in Europe. So we at Case saw them as a major competitor at a time where ADS was saying: "Who's Timeplex?"

Pelkey: And this is around '71?

Evans: This is -- yes. I started peddling the ADS product towards the third quarter of 1970.

Pelkey: And you were president of Case?

Evans: No. I was running the Datacom side of the business. I was a director. I think I was called communications product manager or something of that nature. We had other parts of the business then. We had a data entry business. We had a terminal business and all the data com black boxes that -- we were all ex-IBM, so none of us knew anything about data com, and I was the junior member of the starting team, so I got stuck with it. We hadn't originally intended to segment the business by product line, but since we found that the only way our egos could coexist in a small company was for each of us to run a piece of the business, and we decided to go that way. So that was how I got involved with data com. I learned it the hard way, trying to sell those kinds of products to customers. At all events, right around the time that we got involved with ADS, they got into deep financial trouble because the

timesharing boom came to an end right around the beginning of 1970, or actually right around the end of 1969, and they --

Pelkey: Do you recall why?

Evans: My recollection is that it was simply a recession. That was the first recession since the computer industry had really taken off, and it was -- the computer industry proved to be not immune to recessions any more than any other industry was. Now, there may be some special factors relating to timesharing. I think that timesharing had become something that was something that people had started to spend money on and had probably got out of hand, and when the recession came, it was one of the first things to be cut back. A lot of those companies went out of business. ADS's demand went down the tubes. Their largest shareholder bailed them out. I don't know whether Rockwell were a shareholder from day one, but they were largest shareholder, and Rockwell bailed them out and underwrote their credit line with the bank.

Pelkey: Rockwell the corporation?

Evans: Yes, North American Rockwell, as well as Rockwell International. In 1973, Rockwell essentially gave up on ADS being able to grow fast enough to be able to even cover the interest payments on their indebtedness, never mind be in a position to repay it, and they just gave up the ghost, had an argument at a board meeting with the representatives of the bank, and pulled the plug and the company was put into Chapter 10. They didn't even bother going via Chapter 11.

Pelkey: Do recall who was responsible, who was the man in charge of Rockwell at that point?

Evans: I don't.

Pelkey: Because Rockwell also had a relationship with Codex.

Evans: That was after the period we're talking about. I think I'm correct in saying that, because the main reason why Rockwell had this relationship with ADS at that time was that they had actually sold to ADS the technology for their first automatically equalized high speed modem which, or licensed the technology to them, was the 4800 bit per second modem, and I think I'm right in saying that the Rockwell Codex relationship developed -- it may have been underway, but there certainly, to my recollection, was no product changing hands at that point. I don't remember the names of the people involved. Suffice to say that the company went into bankruptcy. We, Case, ended up picking up the non-exclusive manufacturing rights to the TDM product line, put Bill Norad into business in order to be able to provide us with ongoing consultancy to be able to build the product going forward, and he happened to want to put together another start-up. So we funded him. We funded him, I should say, by paying him in advance to convert some of the inventory we had bought from the receiver into finished product. We never actually had any equity participation in Micom. Its a historical antidote (sic) that Micom was called Micom because I arrived here the day after ADS filed for Chapter 10, in order to try and do a deal with the receiver. This is all irrelevant, actually, to the question that you asked but the day that ADS filed for bankruptcy, we were at most a week away from being awarded the largest time division multiplexer contract ever awarded outside the US by the post office, British Telecom as it is now. I leapt on a plane in order to do what was necessary to salvage that business. What I came here to do was to acquire the manufacturing rights, so that I could go back and tell the post office that the good news was that the product was going to be built in Britain, which is what they wanted in the first place. Needed Bill's help to do that. That night I arrived here. We talked at the Woodland Hills Holiday Inn, agreed that we needed to put a company together in a hurry so we could get some letterhead typed so I could take back an agreement to the customer, to show them that we had a company supporting us as well as the right to do it, couldn't decide what to call the company, and in frustration Bill said: "Well why don't we just call it 'My Company,' Micom," and that's how we came to call it Micom.

Pelkey: And this is in --

Evans: This is '73. So for a year, Bill -- Micom was in business manufacturing product for Case. During that year, we got into the manufacturing business at Case, and no longer needed Bill's manufacturing. In the second year, we converted our relationship with Micom to one where Bill provided us, under contract, enhancements to our time division multiplexer product line, including a version for synchronous channels. The version we had only supported asynchronous. So that takes us to the middle of '75. About that time, Case's business was continuing to do quite well. I was concerned that we were becoming unacceptably dependent on the R&D coming from Micom, and Bill was having a hard time putting a real company together, he couldn't find a marketing guy here that he clicked with. He and I had always felt we always worked extremely well together. He never really found a marketing guy before that he felt he could work with the way he felt he could work with me. So, to cut a long story short, we put together a deal whereby Case was going to invest in Micom, a minority position. It was a complex deal where other European investors were going to get involved too. I was going to come over here as the guardian of that investment, but also to add the marketing ingredient to Micom and, perhaps, sell some of the Case products we developed in the UK over here. Came here to do that in May of '76. A month later, instead of the deal getting consummated, Case ran into financial trouble, couldn't consummate the deal, so I decided to cut the cord and stay here anyway, and Bill and I decided to do our own thing anyway.

Pelkey: And needing funding.

Evans: And needing funding, although Bill had -- it was a very tiny company. There were only eight people in the company, and what it was was an engineering job shop, basically. It was doing one-off projects for -- his biggest customer was Case, clearly, on the R&D front, but it had one or two customers here. The biggest one, unfortunately, here was Datran. I don't know if you remember Datran, but they were the digital network competitors of AT&T, an all data network. Unfortunately, they went bankrupt the summer of that year, owing us 110 grand as I recall, and they put us out of business essentially, or at least the day they filed, we decided we had two weeks in order to raise some money or we were out of business. And up until that happening, our plan had been to continue to bootstrap it. We were self funding at a very low level, and we were going to bootstrap it, and I was going to try to identify a strategy for us to follow through my exposure to the customers were interested in one-off specials from us. Well, we actually didn't divert from that plan. When we found ourselves all of a sudden in desperate straights, we needed to be made bankable in order to survive, we ended up, after talking to everybody who had any spare pocket change, including VCs, Klein & Perkins and people that might be interested, everybody we knew that might be interested in acquiring us, investing in us or whatever, and we ended up doing a deal with John Thornton, who actually approached us on behalf of WaveTech. The WaveTech board decided that he had made too many acquisitions, and they should get some of them to come good first before they invest in any other companies, so he got their agreement to do it personally, and the rest is history, as they say. Thornton made Bill bankable and we continued down the path of one-off deals, looking for a strategy. Along the way -- this was a time when what was happening in the multiplexer, in the Datacom business, and I'm now finally getting to answer the question, the data communications business was modems and multiplexers.

Pelkey: And multiplexers meant time division and frequency division.

Evans: No. Multiplexers by now, being --

Pelkey: Do you recall how large the financing was from Thornton?

Evans: Yes. \$21,000 for 51% of the company. I'd need to clarify that -- my recollection is that it was 20 or 21 or something like that, plus putting his name for a period of up to a year for up to 180 grand on our credit line, but that came off in six months or so, so the actual cash out was about 20 grand for 51% of the company. Anyway, I should say that I have no regrets about that. It was the best deal we could have gotten at the time, so that's life. The characteristics of the data communications industry at that point were that the microprocessor was just becoming a reality. It was just becoming the way that people were starting to think about implementing product with, but it was something that engineers were really having a tough time groping with.

Pelkey: This is the eight-bit processor.

Evans: Well, I remember, when we picked the Z-80; that was the classy product of the day. So the characteristics of the business were, in the multiplexer business, time division multiplexers were the norm and the way the industry had chosen to use microprocessors was to build -- what the industry had decided was that it was high end customers -- first, it's probably fair to say it was only high end customers who were into data communications at that point. So the industry was focused on what does the IBM networking user need beyond what he's got today. As they looked at what the microprocessor could do for him, what they say was that dynamic bandwidth assignment could allow the customer to get greater efficiency out of the use of a telephone line and a statistical multiplexer could do that and be implemented with microprocessors, typically lots of them, and microprocessors could be used to provide statistics on what was going on, and the whole approach to implementing statistical multiplexers was done with the big customer in mind, therefore with the kinds of thing that it was clear big customers would need was the ability to interconnect multiple statistical multiplexers in a world-wide network, and feed statistics back to New York from Hong Kong. The company that was in the lead was Codex with a product called the Codex 6000. It required at least two PhDs to install each node. It was a very complex product, and a real nightmare to configure.

Pelkey: Do you recall how much it sold for?

Evans: Oh, it was in the tens of thousands. Any time you said statistical multiplexer, you were at least four or five times in price up from a TDM. There was that -- it was thought of as a much bigger ticket item. Timeplex was selling paper tigers then, as it has ever since, so they had launched a product called, I even forget. It never saw the light of day. It was a high end statistical multiplexer to compete with Codex that of course did everything for everybody, except it never did. Actually, the guys who started the whole thing off and were shipping a few were DCA. DCA brought the first statistical multiplexer out, but under the Alderman management, never managed to ship -- once they shipped one product, they wanted to move on to the next one. So that was what statistical multiplexers were all about in those days: high end, very expensive products for high -end customers. The modem business was already, 9600 was where the action was. Multi-point 4800 baud networks were equally where the action was, and again, the orientation was toward the IBM networking customers, supporting multi-port networks supporting 3270 terminals all over the place. That was driving the leased line modem business.

Pelkey: And Codex was a major factor in that.

Evans: Codex and Racal-Milgo were the major factors, with Paradyne and General DataCom as challengers to them. What was driving the modem business was, given that the IBM customer was key, was multi-point modems and increasingly the need for network management on those multi-point networks. As we were trying to figure out what to do in business, it's interesting to recall that everybody in the -- Chuck Johnson, who always had the biggest mouth in the business, even in those days, he was the guy that was most public about, in order to make money in data communications today, you have to be in the system business. That was the big thing back then.

Pelkey: And this is '76?

Evans: This is '76. Or let's say '77. No, '76. It was the year I came out here. '76. The big thing was you had to have a service organization capable of getting to all the drops on a customer's network fast when he got a problem. Up time was key and the only way you provided up time was getting a service engineer there. The customer had an IBM mentality expected that kind of service, so the big push was, and it was the big push from -- Codex and Milgo were driving it, but Paradyne and GDC were trying to catch up. GDC never got close to catching up in those days, but Chuck was never the less the guy that was mouthing the words, he just couldn't figure out how to deliver against it. It was service, support, network management, multi-point modem networks. That was where the action was, and multiplexers were, relatively speaking, an afterthought. The size of the multiplexer business, relative to the size of the modem business, was very small.

Pelkey: Now, do you recall at that time, was the DAA still around?

Evans: Oh, yes, but that was on the dial-up side of the business, and the dial-up side of the business was almost a separate business, separate to the extent that Racal-Milgo and Codex weren't even in it.

Pelkey: That was UDS and Vadic.

Evans: Vadic was by far THE firm in dial-up modems.

Pelkey: Someone mentioned to me that when you were trying to raise money, that you approached Vadic.

Evans: We did, because we approached everybody that Bill and I knew, and at Case we had been the reseller of the Vadic product line, so that was how I had the Vadic contact. They ended up deciding they'd offer us a job, but they weren't prepared to pack a nickel for the business.

Pelkey: Now, even though the minicomputer, primarily DEC, -- a large part of the timesharing business had come from minicomputers, right? Or was that largely an IBM business?

Evans: No, we had already moved to the point where a lot of the new entrants to the timesharing business were using minicomputers. I remember Xerox XDS minicomputers were being used by a number of players in those days.

Pelkey: But in '76, the minicomputer guys weren't really a factor yet.

Evans: They weren't a factor at all. In Europe, I was only aware of them as a factor in the laboratory. Basically it was strictly an engineering environment. Here, they were only starting to be a factor in the timesharing environment, but it was pretty experimental, very early days, and certainly when I say the timesharing environment I mean dial-up timesharing from low speed terminals.

Pelkey: 300 and 1200.

Evans: Exactly. On my tour -- for the first year or so after I got here, I was the whole of the marketing and sales department, and I was out there peddling -- a salesman dream, actually. I was peddling anything the customer wanted that I could figure out we could build, and Bill and I, the reason why we had such a terrific relationship was that I knew him well enough and understood the technology at the block diagram level well enough and understood what he was capable of, and I never sold anything he couldn't build.

Pelkey: That is a great relationship.

Evans: Along the way, fairly early after I arrived here, I made a call on Gibraltar Savings down in LA, who -- we had reps. It was a joke, really. The only product that Micom had was the time division multiplexer that they developed for Case. We had allowed them to retain the US rights for. It was a synchronous channel TDM, or a mixture or asynch and synch channels. Bill, before I ever showed up, had hired reps to try and sell this thing.

Pelkey: Now these were reps that were already out there selling Vadic products?

Evans: As a matter of fact they were mostly Vadic reps.

Pelkey: And do you recall whether Vadic took instrumentation reps and tried to make them into data com reps?

Evans: Yes. All the reps were ex-instrumentation reps, almost by definition. That was the end of the business they had come from. Was GDC using reps at that time? No, my recollection is they were already into the mode they were in for several years after of using a mish-mash. The problem with GDC at that time was that it was available from so many different sources that --

Pelkey: No one wanted to handle it.

Evans: It was a real mess from a distribution channel standpoint.

Pelkey: That plagued General DataCom throughout this whole period.

Evans: It did, probably for the next five or six years. But Racal- Milgo for example was using reps in those days.

Pelkey: Oh, they were. I thought they were going direct.

Evans: They were one of the last. They used reps a lot longer than any other company in the system business. They didn't drop reps until --

Pelkey: So they went against -- Codex went direct.

Evans: Codex was direct and had been for some time.

Pelkey: Matt Kinney put the rep organization together to (unintelligible)

Evans: Well, he chose not to scrap it. He had had it from the beginning and he kept it for several years after that, and his reps were real fat cats. They really had a good deal going. Anyway, one of our reps took me into this account that he claimed he was about to close and he wanted my help to close it. Here was Gibraltar Savings. They had a minicomputer system, and my recollection is that it was from Datapoint. They used it generating mortgage deeds, trust deeds on-line. It had locally in the office there terminals and printers, and it did a super job performing that function, as all minicomputers do when you've got the video terminal and the printer with a cable connecting them to the computer. They work great. In fact, at 9600 bits per second . . .

Tape Side Ends

Evans: . . . They behave very much like an IBM 3270 terminal behaves, although they do it in a very different way. They're getting the data character by character from the computer, whereas the 3270 actually gets the block and error checks it before it puts it up on the screen, but locally they behave the same way. This organization had decided, had been sold, on the idea that it could put terminals and CRTs in its savings and loan branches in San Francisco and Fresno and what our rep was selling them was our multiplexers to allow them to run three CRTs and a printer on a 9600 bit modem link with our multiplexers remotely. I got in there and, first of all, it was pretty clear to me that we were going to lose this business to GDC. As I sat there listening to what this guy was planning to do, it blew my mind. First of all, I hadn't seen this kind of minicomputer being used for this kind of business application in the past. Secondly, the idea that anybody was going to put this kind of a document over a phone line with no error protection didn't make any sense at all. In fact, on the spot, given that I wasn't going to win the business anyway, I said: "Have you given any thought to how you're going to deal with errors?" He said: "What do you mean?" And I said: "Well, the best that you can hope to get out of the modems on this telephone line is one in 10 to the sixth, and frankly, if you plan on anything better than one in ten to the fifth, you'd probably be optimistic." I asked him how long the documents were. We figured out how many bits there were in a transmission. We figured out that he couldn't statistically get any documents there without an error in it, and his plan had been that if there was an error in it, he was going to retransmit it. We concluded that -- so I ended up walking away from that, first of all having made a friend for life because the customer had actually for the first time talked to salesman who had sold him off something, rather

than onto something. Secondly, I walked away saying: "If we could solve this, we'd have a real business here." Third, I've at least learned enough from this guy to know that there were quite a number of other guys in the area planning to do similar things. It wasn't Datapoint. I think it was Data General. It was one of the better known minicomputers. I got to talking to the systems integrator that had put the system together, who was in fact putting these things out all over the place, and who was making, as part of his pitch, that one of the pluses was that these terminals on our systems are as readily usable remotely as locally, which they are because they've got the magic EIA interface -- right, anything with an EIA interface is a communications device that runs over a modem just as well as over direct cable. So I was shocked in a way that I perhaps wouldn't have been if I had grown up with it about the fact that, in a way that wasn't true in Europe, these minicomputers were being used for business applications all over the place. They were growing like wildfire, and people were actually -- in some cases had actually put multiplexers in to do some of this stuff, and there were several things that were obvious. One, they desperately needed retransmission on error, just to make the thing usable at all. Secondly, they were paying an arm and a leg for 9600 bit per second modems to be cut up into four 2400 bit channels where the terminals were hunt and peck in one directions and only sporadically used in the other direction, so the data traffic was minimal, and it was the classic case where a statistical multiplexer comes into its own. As I got to thinking about what a Codex 6000 really did and what it did for customers that were buying it, the IBM guys actually got tons of traffic on these telephone lines, because it's computer to computer stuff, and it's multi-dropped, so the gaps between data traffic aren't that great at all. A statistical multiplexer really comes into its own the more the gaps there are. So I looked at this application and said: "This is classic statmux stuff," plus the retransmission on error that's so easy to implement in a statmux, the IBM guy doesn't need because his traffic is error protected anyway, but this guy needs it desperately. What this guy doesn't need is all the bells and whistles that Codex puts in a 6000. He doesn't need to be able to get statistics in Hong Kong from London. All he needs -- he doesn't even think of having a network at all. What he wants is links to remote offices that can allow terminals in his remote office to behave the same way as they do locally. And, if we can strip down a statmux to its absolute base essentials, and price it at a level that this guy is going to be able to afford, we got a pretty interesting business here. Then, as I got further into the implications of that, we realized that most of these minicomputers were being sold through systems integrators, and we'd have to offer the kind of discount that they were used to getting on the computers and the rest of the gear, so we'd have to build that into our pricing structure. As I talked to potential customers, I ended up concluding that the real market probably lay with a list price that was similar to today's TDMs, that there probably wasn't much opportunity to charge a lot more than today's TDMs.

Pelkey: Which is what kind of pricing?

Evans: Which, in those days, was around a couple of thousand dollars for a four channel box. I came to that conclusion because these customers, by and large, were looking to transmit over much shorter distances than the large customer, so when they looked to the cost of the phone line, the purchase price of the multiplexer was a much bigger ticket item relative to the phone line rental than it was for a guy going coast to coast. We also realized that, whereas Codex and Racal-Milgo expected to install their equipment with an engineer that understood communications, that we were going to be reliant on systems integrators or the end customer himself, neither of whom knew anything about communications. So ease of use, built in test facilities were absolutely key, and do it yourself installation was much more important than anything else. On the other hand, flexibility for expansion ad infinitum, which was a very costly capability that Codex had to provide to its customers, we didn't need to provide. We needed to provide something that was low cost, ship and forget, basically. So all of that added up to a product line that not only was attractive because it satisfied a real customer need out there, but was very attractive because it caused us to go against the grain of what a Codex customer really needed, and therefore allowed us to position a business that not only looked attractive for the customers we were targeting, but wasn't that easy for the major companies --

Pelkey: To come in under you.

Evans: without totally changing their strategy, and when you get those things together, you've got a real winning combination. So that's how we embarked on our statmux product line.

Pelkey: How long did it take between when you came back from that Gibraltar meeting and when you decided you were going to do a statmux? Did you come back and say: "Wait a minute, I'm really going to go and investigate this and go talk to these systems integrators." Did it become a real high priority at that point?

Evans: We did two things. First of all, I decided I needed to talk -- to find more customers to verify that there was a real need out there. Secondly, I embarked on a search for a customer who would pick up the tab for us developing either this product or the hardware vehicle we needed to implement this product with, and I found such a customer right around the end of 1976, an outfit called Reynolds & Reynolds in Dayton, Ohio, who did us the favor of not wanting a statmux. They actually wanted a device that was a terminal controller, sat in an automobile dealer -- they provided systems for automobile dealerships, and they wanted a device that would allow several terminals to be essentially polled from their minis. It was a very low price point that they had established, because they already had another vendor that was offering a very dumb product to do this for them. We came up with a much more intelligent way of doing it, but to meet the price point that they had already established, we really had to sharpen our pencils and throw out a chip here and a chip there and it was that that caused us to get a hardware vehicle out the door on somebody else's nickel, with a cost structure that met the goals we had established for -- because when we first put this thing together, we said: "I don't know how we're going to get there from here." It was this project that allowed us to get there.

Pelkey: And you conceptualized it as a Z-80 when you first looked at it, or did that come as a consequence of the Reynolds & Reynolds?

Evans: The Z-80 was driven more by the Reynolds & Reynolds project. I think the Z-80 was at the top of our list as the chip we would use, but it was the Reynolds & Reynolds that we threw out a chip here and a chip there to meet, and then ended up concluding we still hadn't thrown away too many chips to be able to implement statmux code and make it work. So, by the time we got the Reynolds & Reynolds job, we were already convinced that there were enough customers out there who would be interested in this thing. In fact, by then, there were so many of them, that I was convinced that we couldn't possibly be the only company that had identified the opportunity.

Pelkey: Did Bill share your enthusiasm?

Evans: Oh, yes. We came from the same heritage.

Pelkey: Do you recall his reaction when you came back from Gibraltar?

Evans: I don't think we ever had that kind of a euphoric reaction to it. It was more me that was puzzled by it, because I hadn't seen it before, and his reaction was more like: "Yeah well that's happening." It was more, when I positioned -- when I pulled out -- where we were at, just to tell you how far away we were from planning to go this direction in the first place, we had already concluded that if we were going to go into multiplexers, we were going to have to go the Codex 6000 direction, and that being in the system business, which was probably where the business lay, was just something that would dilute us so badly in terms of the start-up costs of building a systems oriented data communications company, that we were in parallel exploring -- we actually registered as a company name 99 Com. We were planning, as an alternative strategy, getting into a mail order catalog business to sell data com products and accessories, the common ingredient or which would be that they'd all sell for \$99. We figured there was a real opportunity for that kind of a business, and that was the kind of a business that we could possibly --

Pelkey: Manage within your capital base.

Evans: And so while we were trying to find ways to build a product business more like what we had been used to in the past, we were looking at 99 Com as a possible alternative, and we really got to the statmux opportunity just in time, basically. After the Gibraltar Savings visit, I was convinced that it looked like there was something real there, but what caused me to get real excited and to get Bill convinced this was

absolutely the way to go was more as the pieces came together and I was able to point out that not only is this an attractive business opportunity for us, it's not an attractive business opportunity for the entrenched competition out there. It was when we started to put all that together that he started to say: "This looks like something we've got to take real seriously." In parallel, I may say, Bill was working on the development of a data PBX product, which was something that he got to know about because Case distributed Gandalf products, and he'd always felt that that was backward technology and he could do a better job there. And it was only towards the fall, I guess towards the end of 1977 when we were getting ready to (unintelligible) the statmux that we said: "If, when we're ready to launch the statmux it looks like we really have the field clear, we'll stop everything, focus on the statmux, and become a one product company for as long as it takes for us to dominate and have resources to spare, because the rest of the world's being stupid enough not to see the opportunity now, but they sure won't be once we bring the product to market."

[Interruption in the Interview]

Pelkey: You were commenting on the process of getting into the statmux business just kind of happened at the nick of time. If that hadn't happened, you were going to proceed with 99 Com and that this whole process came together very conveniently. Did you name it a "concentrator" right up front?

Evans: Yes.

Pelkey: Why did you name it a "concentrator."

Evans: Because we were, in those days, it didn't change very fast - - we've been credited by the trade press with significantly impacting their advertising revenue stream because prior to Micom coming along, I don't think a data communications company had ever run an ad that used color, or maybe more than one color, and all the ads were oriented to the technical buyer and the communications engineer in a large company. All the brochures were spec sheets basically, for the same audience. Since we were selling to a new to data com first time buyer, either through a systems integrator or directly, we needed to take the mystique out of data communications and sell a solution to a problem, rather than a piece of technology. So, as well as taking that into account in the way we built the product and made it easy to use and not something where you needed to -- you were expected to plug in cards. You were expected to, if there was something wrong with it, lift up the box and not get a hernia in the process, and stick it in the mail and send it home. I wanted to call it something that sounded less intimidating and explain what its function was, and also provide literature that did the same job, that was inviting and talked to the customer's problem and how we solved that problem, and gave him an education about what multiplexing was about, but not sell him a multiplexer, if you see what I mean. So we called it a Data Concentrator for that reason. We went for the oranges brochure because we wanted to sell concentration rather than a piece of technology.

Pelkey: So the orange campaign was launched in the end of '77 when you started shipping the Concentrator?

Evans: Yes. It was -- the very first ad, they're all up on that wall. The ad up on the top left was before -- when we were trying to just sell the hardware alone while we were still developing the software, and it's a personnel recruitment ad as well as a product ad, to give you a feel for how tight a budget we operated on. Then we went to the -- we didn't run any ads for a while. We started with the brochure, and used the brochure through our reps, with no advertising budget, because the brochure itself was about two and a half times my entire advertising budget, but I was so convinced that it was right that --

Pelkey: Where did you come up with the idea?

Evans: I met a free lance artist -- I inherited an advertising agency and fired them in a hurry because we didn't have any money to spend, so they weren't paying any attention. I met a free lance art director guy about the time I was getting positioned to do something with Data Concentrator --

Pelkey: Which would have been the summer or early fall of '77?

Evans: Yes. When I was trying to tell him, at our first meeting, or the first meeting after I decided he was an OK guy, what I needed out of this brochure -- among the things I told him, beyond the user friendliness aspects that I was trying to get, we are three men and a dog, and we are about to launch a statistical multiplexer product. Timeplex has been in the business for years and is nowhere close to shipping a product it's been claiming it was going to deliver for two years. This is a grave -- GDC had done exactly the same. Codex was the only guy out there, and they were losing money because it had proven to be a much taller order than they realized, and we're going to come out with a product that we're going to offer at TDM prices and we run the risk of having people laugh us, just kill themselves laughing, that some start-up comes out with a product that offers all this capability for no money, you've got to be crazy. But the thing was real, and I said what we've got to do is have a piece of sales literature that is so quality and Fortune 500 in its feel, that nobody could even question whether this company is for real. And secondly, I'm going to write copy that's so tutorial and detailed about how we do what we do that nobody's going to have any doubt, once they've read it, that this thing is for real, or nobody would ever have written that kind of material in the first place. I gave him a brochure. It happened to be a General Automation brochure. It was a brochure, the point of which was: "Don't compare apples with oranges," and it had a perfectly photographed apple and an orange and a knife with a glob of juice on the knife, and I said: "Now, that's what I want. I want still life photography, full color, and if you can do as professional a job as that, then I will get what I want, a literature piece that obviously comes from a company of substance." So he came back with various creative ideas and the orange juice concentrate can and the orange came out of his creativity, my giving him that apple and the orange, and deciding to call this thing a Concentrator, and he put that together and came up with the can and the orange, being the old fashioned way to start your day, and the concentrate can being the new, efficient way to get your orange juice in the morning. Hence the analogy: the old fashioned way of transmitting data being the orange and the new fangled way, or the efficient new way, being the concentrate in the can. It was an obvious, such a fabulous concept, and the shots that he did were so exactly what I wanted from a professional -- he had a terrific photographer. They guy just did wonderful work for us. It was a ton of money, but it had to be, so we spent the money on the brochure, and within six months, I's day, almost everywhere I went, people would say: "Oh, you're the guy from the orange juice company." The oranges made an incredible impact because, for a company in our kind of business, it was unheard of to do that kind of thing. And it never created any antagonism. It was one of the few pieces of symbology that didn't have women's rights or somebody getting upset about it. So it became a fundamental part of Micom and what we stood for.

Pelkey: Did you conceive of the training seminars?

Evans: To be honest, with the training seminars, I don't want to take credit for something that isn't ours. Vadic had already developed a data communications seminar, primarily oriented to modems, and we, even before this product was launched -- their reps coordinated these seminars and invited their other data com principals to give a piece on their products that fit in with the Vadic products. It was Vadic that had driven the idea, but the reps actually put the seminars on. We, I guess about a year or two out, came to the conclusion that we wanted not to simply be a multiplexer -- actually, sooner than that. In the first year of our statmux business, our Data Concentrator business, we decided that we were right about our target customer, that we didn't want to be just part of Vadic's seminar for general purpose data com use, that we wanted to tailor a seminar for a minicomputer user, and target a seminar totally at that guy to insure we got an audience that was homogeneous, as opposed to the heterogeneous audience that you get if you invite people to come, whoever your are, to a data com seminar. So it was that focus on a target market that was key to our success.

Pelkey: The other thing was the stocking rep. My understanding is that Vadic innovated the concept.

Evans: We claim we did, but to be honest, Vadic --

Pelkey: You really made it something.

Evans: We made it something. Vadic was dabbling with it, but we were the guys that did it right.

Pelkey: Why did you do it and how did it get done right?

Evans: We I think, when I say we did it right, we came up with a much better -- first of all, on the distributor side, we came up with a set of policies and programs and support that was better than Vadic's. We both did it for the same reason, that the box products that we had really lent themselves to being sold through distribution, but we had products, in our case particularly the data PBX, when we launched that, which we came back and launched two years after we got into the statmux business, that couldn't possibly be sold through distribution, and we had to decided whether to go direct and sell them or sell them through the same organization, but with a rep commission, and we decided that that was the way to go, because it didn't involved any conflict. It allowed one organization to sell both the box products and the products that really needed to be sold direct, and have them operate as reps in one product area and distributors in another. That was the reason that we did and the reason that Vadic did. They had a central site modem system that was best sold through reps and stand-alone modems that were best sold through distributors, so they had a similar reason for doing it.

Pelkey: Do recall that Robinson-Patmans and anti-trust were issues for you?

Evans: I didn't know anything about any of that stuff for probably two years or so after I needed to know about it, and when I started to learn about it, I almost had a cardiac arrest. It turns out that we were able to gracefully transition our agreements into conformity with the law, without materially modifying what we were trying to achieve, but at the detail level, we had to change quite a few things. I probably would have had more hang-ups about what we did if I had known about the law, but I didn't and it turned out ok.

Pelkey: Who came at you first? Recognizing that you had identified a market and a need and priced the product into it?

Evans: You said: "Who came to us first." --

Pelkey: No, what competition emerged?

Evans: That's very simple. Timeplex, the week after our press release went out on the Micro 800, we had a call from Ed Botwinick, to say that he was in the area and wanted to stop by. I'm sure he had just flown in especially for that.

Tape Side Ends

Evans: So, Ed Botwinick came by to say he had heard about our product and it certainly sounded very interesting, and of course it was very unfortunate that we had no sales and marketing capability, and therefore we were really going to have a hard time doing justice to this product, but he had the perfect solution. I'll never forget that meeting because Bill and I always did things together, so we were in there. He had come to see the president. He didn't know what the hell I was doing in the meeting. He consciously turned his back on me and, bottom line is, that we said that we did have a pretty clear understanding of how we were going to take this product to market, and he, in considerable irritation, then moved into threat mode, that if we wanted to have Timeplex compete directly with us, then I'm afraid that was the way it was going to be. We of course welcomed competition, so he left threatening to compete with us, and in fact, came out with a product called the MicroPlexer, the low end of which really wasn't very successful. He then came out with an E Series that was intended to really take us apart. The fact is that he never came close and the main reason why he didn't come close is the same reason that the other guys didn't, because he was focused on a high-end customer. We, as you know, actually signed OEM agreements fairly early on with Codex and GDC and Paradyne. All of those guys took a lot of product from us. In unit terms, relative to their own products, they took a lot of product from us. When, as the business really started to take off, I guess it was probably the Interface show in '79, where by then I had decided that in order to expand our revenues further what we really needed to do was put a modem in the product. We could get the modem revenue with no modem technology if we built the modem into our product and sold it to our customers as something where you just attach the phone line, instead of --

and so concluded that Codex had the best modems, and I collared Art Carr and told him that I thought it was a real opportunity for Codex to get into the OEM modem business, which they had never done up until that time. Micom was an ideal candidate to do it with because we didn't compete with them in the marketplace at all. We'd bury the modem in the box, and it would be a tremendous incremental opportunity for him. I remember, the guy was trying to get away, and I remember him saying: "Well, how many modems do you think you'd want on an annual basis?" I said: "Well, we'd probably start with 10,000," and I remember, we're talking about 9600 bit per second modems, the guy's jaw dropped and he said: "How many multiplexers are you moving?" We were already substantially above -- we must have been at a 20,000 run rate, something like that. He thought they were kind of monopolizing our production. They were taking what he thought was a ton of boxes from us, and we spent the evening talking about "where could all these things be going that you guys are -- "

Pelkey: So he wasn't interested, but once he heard 10,000, he was now interested in talking?

Evans: Absolutely. We ended up becoming their first OEM customer for high speed modems.

Pelkey: How long had you been OEMing to him?

Evans: Probably nine months, or something like that.

Pelkey: Was that a difficult decision for you, to OEM to Codex and the others?

Evans: No, absolutely not. My position all the way along was it was part -- we decided that we would shut down everything and run like hell because we knew that we basically had done the first four-minute mile. We hadn't done anything that, once people could look at our box and see what we had done, it wouldn't be that tough for them to emulate it. In fact, everybody that did try to emulate it was stupid enough to look at our list price and say: "Hey, we could make a lot of money doing that." Our planning was always base on 40 off list, because that was what we expected to get for our boxes. Everybody that came in told their engineers to build a product where they could make their margin at list, which is why nobody ever came close, from a product cost standpoint, to meeting what we had done. But, in addition, I couldn't predict going in that that was going to happen, that's what actually did happen, but what we decided was we would try to get our volume up so fast that we would get down the cost curve just on a volume basis to where we'd be untouchable because we exploited the lead in the market. We also were convinced that we were clearly going after a target market that had never heard anything about Codex or Paradyne or Racal- Milgo, and that those guys could take product from us, and it would be totally incremental to what we'd be sending through our channels, so it wasn't a tough decision at all. It was part of the original game plan to get the volume up and get the product into those big customer applications that we were going to touch --

Pelkey: Technology: the Z-80 microprocessor made it possible -- although technology never played a particularly important role --

Evans: Software did for us. We were always -- I think what was key in terms of our technical expertise was that we focused on getting power out of eight-bit microcomputer designs in a way that nobody in this industry has come close to doing. It's become less important in recent years because much more power had been available for much less money, and so some of the advantages of high-level languages, even when they produce inefficient code, give you some flexibility now that's affordable because hardware has come down in price. In our day, the hardware was still a significant cost element, and we derived power from eight-bit designs that's never been rivaled in this business.

Pelkey: You did assembly language, I presume?

Evans: Yes, and we just had a lot of expertise that we developed in terms of software architecture, where we have background, middle-ground, foreground software structures where we've been very smart about which parts of the code are time critical and have to be very tight, and which parts can operate

behind them from a priority standpoint, and it's that that's made us be able to deliver incredible performance with a low cost piece of hardware. We also wrote such tight code that we kept the memory down, and that meant we could do things with 4K of code that other people took 16K of code to do, and in the days when PROMs cost money, that was a big plus.

Pelkey: Now, as you started to sell your Concentrator, capital obviously became an issue.

Evans: Never did. Absolutely never did. We never needed a dime of capital in this company from day one until forever, basically. We --

Pelkey: But you took venture capital.

Evans: Not because we needed it.

Pelkey: Why did you take it and when did you take it?

Evans: We took venture capital, and I think we're unique in that regard in having bootstrapped from day one, the only reason we took venture capital money was because one of our directors, David Goodman, was so convinced that Micom was one of the real winners, that he was concerned to try to head off the likelihood that we would sell out, that we'd receive a fancy acquisition offer and would sell out too soon and take the money and run. And although John had 51% of the company, between the two of us we had 49%, so we had an opportunity to make a lot of money. So what David suggested was that, in order to -- that it would be a good idea if we got some venture capitalists in to buy some of our stock in order to allow us to give our wives the benefit of some early taste of success, and give us, therefore, the where with all to get committed to this thing for the long haul. I think it was a very smart idea.

Pelkey: And Greylock came in?

Evans: The other thing we decided -- that the board as a whole felt strongly about was that, in order to position us to go public, if we picked the right venture capitalists, we could get some real savvy advice. What we did, we had everybody beating the door down to get a piece of the action at that point, so we didn't need to advertise the fact that we had decided to do this. The board decided on a valuation, which was a very fancy valuation, and we picked four firms --

Pelkey: Do you recall what that was at the time?

Evans: I don't, to tell you the truth. Put a valuation out. We picked four firms that we thought met the criteria in terms of contribution at the board level that we were looking for. Hambrecht & Quist was on the list because we thought they probably be people we want to take us public. Greylock, Oak, Stu Greenfield and Fidelity Ventures. H&Q agreed to be represented by Greylock or somebody on the board, so we ended up with three of them on the board. All four of them said: "You've got to be joking, of course," to the valuation. We intended to pick the one -- to try to whittle them down to one that would go with it. They all walked away and said: "No way," and they all walked back and insisted that none of them would go away, so we ended up splitting the deal between all four of them, which wasn't what we intended to do in the first place. So that was how we came up to getting four of them involved. There wasn't a heck of a lot of money involved. They just split it between the four of them because they were all determined to have a piece.

Pelkey: When was this? '79?

Evans: No, we went public in '81, so it would have been about '79. My recollection is we were probably coming up to our 15 million year. The year ended where we did about 15 million, so probably about '79.

Pelkey: Was it difficult in those days to get management talent or technical talent into the organization?

Evans: No.

Pelkey: What were the biggest challenges that you and Bill faced in those days, having created this new way of looking at the marketplace?

Evans: The biggest challenge was, and has always been, when you're growing very fast on the marketing and development side, you tend to bring in people who know something about a business, and the biggest problem by far that we faced was that everybody that came into the company knew the data communications business on the marketing and development side knew it from the vantage point of a Codex. So they all came in with this idea of -- the Codex's of this world, they were nervous about us. We weren't nervous about them, they were nervous about us because they assumed that we were just getting started, what we really wanted to do was be like them. So their assumption was, from the very beginning, if these guys ever make it, their obviously going to move up market to join us. Given the rationale for doing what we were doing, the reverse was true and as you know, what we actually did when we took the next step was to move down and buy Black Box. So everybody that came to work for us came in with this mentality too, that here was a company that was going places and was probably on the verge of doing all the bigger things that it obviously needed to do if it was going to be anybody.

Pelkey: I always remember Bill on the lecture set, when he was talking about being in the box business, not the system business, and everybody wanted to be in the system business. I'll always remember that very distinctly. A question: Why do you think companies like yours didn't participate in the LAN business?

Evans: Well, we did see the LAN. I know exactly why we didn't develop a LAN. I can't talk about other companies. We had a very simple, extremely simple minded approach to running this business, which is why we were so consistent from a profit standpoint for so many years. We had a purely top down budgeting approach in this company. What I mean by that is that for each year we put the annual operating plan together, we looked at what our sales projections were for the year. We knew that we were going to make 20% pre-tax, so that was a given. What was left was, after we applied out what we knew would be the manufacturing costs for the revenues we were planning, and we were pretty good at being able to project that. We ran a pretty tight ship from that standpoint. What was left was operating expenses, and we divided that up against a formula that I don't think we changed from one year to the next, in terms of the percent of operating expenses that went to marketing and development and G&A. That's one of the reasons again, if you look at our financials, that it was totally predictable. It's one of the things that Wall Street loved. The way we got there, however, had some side effect. One of the side effects was that the development pot was, if you will, fixed. It was fixed in the sense that there was never any attempt to decide that, strategically, we had to do certain things, and therefore we might need more bucks in development to accomplish them, and something else might have to give, maybe even pre-tax profit. We never went through that cycle at all. It was totally pre-ordained what the development dollars were. Secondly, we came, Bill and I, from -- he came from a bankruptcy, I came from a Case environment which had been very rocky and we were both extremely conservative and our approach, and particularly -- well, I think we both felt the same way, that when it came to figuring out priorities from the product development standpoint, the number one priority was protecting our position. We had seen far too many companies lose a market position that they developed by getting so enamored with other areas that they allowed somebody to come up behind and take away what was rightfully theirs. We focused on protecting the high ground that we had already achieved with our number one priority. Our second priority was adding enhancements to increase our revenue potential on the high ground. Number three was developing new products that were closely allied to the areas that we were already in, and if there were any bucks left, and there never was, going into significantly new product areas. We identified LAN as something we should really be in sometime before we bought into LAN. Unfortunately, given the way that we ran this business, it never got funded. The benefit of hindsight, I understand in spades now that that's not a very appropriate way to run a business in an industry that's as fast moving as this is. You've got to do strategic planning which forces you to make the tough decisions about what you have to figure out how you afford to do. This business moves so fast that protecting your rear isn't good enough, because your existing business may go away in a hurry if technology is changing so fast as the PC in this case caused it to change to where being in the LAN business became a key issue, relative to being in the

data PBX business. So, we should have been in LAN. Whether we should have been in T1 or not is a wholly different question.

Pelkey: Was T1 the same phenomenon, i.e. something that you knew of?

Evans: No. T1, we knew all about. Yes and no. Yes, we knew all about T1. It was never on the list. It wasn't on the list because our target customers had no interest in T1 at all, and in my judgment, were light years away from having a requirement for T1.

Pelkey: But your customers were interested? You were seeing evidence of interest on the part of your customers in LAN?

Evans: Absolutely. We were -- what was always on the list were products in the PC communications area, and the LAN area, driven by the PC.

Pelkey: My sense is that the PC business really did change the statistical multiplexer business.

Evans: Dramatically, and far faster than we projected it would.

Pelkey: It really reduced the size of the market.

Evans: Absolutely, because -- and particularly for our customers, actually, because it was our customer - - In large multiplexer, the large IBM networks, the multiplexers are typically being used to support batch terminals and 3270s and host to host. Our dumb terminal user uses our multiplexers to make those dumb terminals deliver computing capability to him on his desk that's sitting someplace else.

Pelkey: Did you have that conceptual knowledge? Had you conceptualized what you just said back when the PC first came out and said: "Wait a minute, this could really impact us," or did that conceptualization come later?

Evans: No, I think it came later, and I'd be hard pressed to tell you how much later. I think that we were in the majority of people who totally failed to see the rapidity with which PCs would replace terminals on the desk. We just didn't call it right, and one of the reasons why we didn't call it right, too, was that, like so many companies that grow big in a hurry, I for one, and I suppose I was the chief planner and strategist, was too far from our customers. I wasn't spending much time with our customers at all. I was spending a lot of time with our stocking reps and our distributors, but frankly --

Pelkey: That phenomenon was almost unknown to them, I would imagine.

Evans: Frankly, they were making so much money from their relationship with us that, with the benefit of hindsight, most of the time I spent with them was probably more of a celebration of our own success than anything else. They weren't asking the tough questions either because they were doing so well with our products that they just loved us.

Pelkey: You had an incredibly loyal channel.

Evans: We did.

Pelkey: They were making a lot of money --

Evans: And I spend more of my time trying to figure out what we needed to do to our existing products to ward off the competition, we had a lot of people nibbling around us and we were working to try to insure that we kept them at bay, and not doing enough to say maybe the battleground -- maybe we're defending a battleground that's about to disappear.

Pelkey: This isn't the war anymore.

Evans: That's right. Very late in the day did we realize that that was the mistake that we were making.

Pelkey: Now, would you say the same thing happened relative to the tariff thing of T1, that the tariff rates changed so rapidly that T1 became an issue for your customer base?

Evans: I think there are two sides to that. Number one, we sold data PBXs to much bigger customers than we -- the data PBX got us directly into quite a lot of what I'll call Fortune 200 customers that we never really expected or intended to get involved with. To be honest, we sold a product to them that, that, as front ends to the multiple minis that those guys started installing, was the only product in town that really did the job for them, and I remember on many occasions saying: "I know every time I'd hear from the sales channel or from the customer themselves in many cases, we need synchronous this and synchronous that, you realize that we get our data communications equipment from Codex and they do a nice job in this," and my response was: "Yeah, that's why should stay with Codex, cause we've got a different business here," and frankly what happened was that the data PBX became such an important part of our revenues and established a position with us in so many major accounts that when those customers quit needing more data PBX and the revenues started to fall off, they needed something different and it wasn't statmuxes. They need higher end networking equipment. They weren't ready for T1 at that point, but in part, I was influenced by -- the middle range of our customers intended to be less interested in what the high end were interested in because I felt that was where we competed with Codex. They probably for the last two years, have been moving in the direction of T1, those high end customers. It was only in the last year or so that tariffs have come down to where that mid-range, the real heart of our customers, are going after T1. So I don't have too guilty a conscience about us being late to T1 for the heartland of our customers. We missed the an opportunity with the high end, but we missed it more consciously because we didn't feel those were our --

Pelkey: Almost like cream skimming the high end. If it happened it happened, and if it didn't, that was fine. You really wanted that data PBX to be positioned to support the customer base that you established through your statmux.

Evans: Yes. I think it's probably fair to say, too, that the tariff shift has been so rapid and that the lead - ime involved to build a sophisticated T1 product is so long, that -- I'll say this. If we had embarked on a T1 product development plan two years ago, we would for sure have tailored it to a lower end application and I don't think it would have been successful. The Spectrum product is ideal for our requirements, because our customers have smaller networking applications, but they are technically astute buyers in a way that the typical IBM customer isn't so much. The all-IBM customer typically, if it comes from IBM -- the guy's got a single vendor orientation because he wants somebody else to take care of his problems for him. Our customers don't have a single vendor orientation at all. They are what we call network builders. They want to build their own networks. They want to make sure that what they're buying, product by product, has got the best price performance and functionality on the market. That's one of the reasons we weren't very successful in modems on a stand-alone basis. We didn't offer enough in our modems. Customers didn't buy Micom modems because they were buying Micom Data Concentrators unless it was part of the package. Our customers say: "Why would I buy this relative to a Codex modem? Is this better? I know I buy a lot of gear from you, but I'm not going to buy your modems unless they're better than Codex's." That's the mentality to our customers. So what they need, now that they're interested in T1, they don't want a point-to-point mux from a data tel. They understand why NET is providing all these nice, soft-fail automatic rerouting capabilities for their high-end customer and they want it as well, but not at the price and at the scale of the configuration of an NET. So what we spec'ed, and then found Spectrum met it, was an NET level of functionality in a smaller package, and I couldn't be more delighted with the technology we found as a fit for that.

Pelkey: Now, when you bought Interlan, Interlan had a direct selling organization.

Evans: No, it was just in the process of starting to put one together.

Pelkey: Right. And your data PBX was really . . .

Tape Side Ends

Pelkey: The purpose of question has to do with the fact that channels of distribution have had such an important part to play in terms of success and failure. We've talked about General DataCom and its channel issues. In fact with most new technologies, it's not only the technology but also the innovation of a channel. I think, as much as your statmux product, I think it was your advertising and product positioning and implementing stocking reps -- the PC was because of this new channel of distribution, the retail store so you just can't have a new product. You beat the big guys out of the picture by a channel distribution change. You did that in spades.

Evans: That's right, and where we were at at the time we acquired Interlan was that the reps side of the stocking rep arrangement was working ok in general for our data PBX business, despite the fact that quite a number of our larger customers insisted on dealing with us direct. It was working acceptably, but it was becoming an increasing issue, and we were essentially therefore adding selling expense and doubling up on the selling expense --

Pelkey: But not catching the margin.

Evans: Yes. Well, no, it's not a margin issue, it's strictly a selling expense issue, because you're talking about paying a rep commission and a direct salesperson commission to go to work with an account who insists on working with the factory, so what I'm saying is, we were adding more direct people to take care of the customers that insisted on dealing direct, but because we still had the rep arrangement in place, we were still paying the commissions, so the selling expense was starting to get out of hand. We realized, as we looked to make the step into LAN end- user systems, that LAN systems -- we'd sold the data PBX not really as a system product. We sold it as bits and pieces and the customer had taken responsibility for putting the pieces together, but we decided that we weren't going to be able to sustain that strategy as we moved into the LAN area because LAN systems involved, in particular, putting boards into a DEC host, so you've got to take the skin off the computers to put the thing in, you've got software problems potentially on the computer that you're going to have to be in a position to resolve, you've got special cabling that needs to get put in, you're in a position where the customer's going to insist on dealing with the manufacturer. We made the commitment that, as part of the Interlan acquisition, we would transition to a direct sales organization, and we would restructure our relationship with our reps and essentially phase them out.

Pelkey: And that step at that point in time -- Equinox formed to take on your data PBX product, and came in when your reps organization was starting to feel uncomfortable and said: "Wait a minute, are you leaving us because of Interlan?" And Equinox came in and wooed away some of your channel.

Evans: No, I think that was a very minor factor in the Equinox issue. What Equinox did, relative to distribution channels, was came to market with a data PBX for distributors. We had never offered our data PBX to distributors. Our distributors wanted it to be a distributor product. We had always refrained from doing that because our data PBX went up to a pretty high ticket item and we wanted to control the price at which the product was sold, it's that simple. We didn't want to be in a position where somebody did a lot of -- it's not a commodity item. There was a lot of selling to do to get a customer to the point where he was going to order your data PBX, and we didn't want to have it in the hands of a distributor, which would allow a distributor to work with a purchasing agent and take an order just as it's about to pop out and offer it for 10% less and take the business, so we made a very clear policy decision not to be in the distributor business. To be honest, although it's not generally known, for a very short period of time, we offered our data PBX through distribution and learned the hard way what the down sides of doing that were, because there's one particular organization that, for a period of about six months, had every major purchasing agent wired -- in his first month as a distributor, he picked up well over a million dollars worth of data PBX business that he hadn't moved a muscle to generate. Frankly, it was a nightmare, and we managed to get out of it without legal action and that was great. What Equinox decided to do was to produce a product that was designed for distributors. They were smart about it. It wasn't just that they

decided to use distributors. When they put that thing together, they put it together to be a lot easier to demo and sell through distribution, and they did a very -- they did a Micom on us is what they did, very successfully. It was the way the thing was designed, as well as the fact that it was offered through distribution, that made it such a tough challenge for us. It wasn't that they took advantage of our rep situation, because we didn't change our distributor relationships in any -- We left those guys as distributors.

Pelkey: Your user was not buying modems in scale from you because they were buying the best boxes. Just because you had the best statmux, that didn't mean they were buying your modems.

Evans: Except to the extent that we put it in the multiplexer box itself.

Pelkey: When you looked at the LAN business, did you perceive that the same process was going to happen, that the user would compare that product the same way?

Evans: I expected it to be a system business. The whole purpose was that Interlan was transitioning the system business. They'd got Sanders, for example as a terrific example of the direction they were headed, and the LAN business, then for sure because TCP/IP wasn't around, wasn't a mix and match business at all. You couldn't mix Bridge LAN components with Interlan components. It was a system business, or it was an OEM board level business. It was one of the two, but as you are selling to the end-user, it was a system business.

Pelkey: But once TCP/IP became available, and everybody had to begin to conform to this, it changed the LAN business.

Evans: It could be a mix and match business. It still hasn't become that much of a mix and match business from an end-user standpoint. It's on its way to being, but it hasn't been to a large degree yet. To the end-user, it's still a system business.

Pelkey: Your moving into LAN business really was recognizing that the customer was going to the PC, that had impacted your Concentrator business --

Evans: Actually, it wasn't the Concentrator, it was the -- what drove our getting into the LAN business was the data PBX side of our business. It was the data PBX customer, who by the way we were close to because we sold to him direct, who was increasingly putting PCs on the desk where terminals had been, didn't want the connectivity we provided through the data PBX for the PC because he wanted to be able to talk to them at a much higher speed than we could talk through a data PBX. He was increasingly saying: "If you're going to stick around, you're going to meet our needs going forward, you're going to have to provide high speed communications in your local network product. The data PBX is fine for our terminals, but not fine for PCs." And then, in parallel with that, we have DEC essentially making their very open statement that it was going to murder the data PBX because its whole strategy was going to be based on convincing its customers that if you didn't have a capability of taking 10 megabits to the desk, you were living in yesteryear. And all of a sudden we were the guys that, to sell a data PBX, you almost had to wear a grubby raincoat because, if a customer was going to buy a data PBX, he wore a grubby raincoat because he didn't want anybody to recognize him doing it.

Pelkey: Now, X-25 is now a hot topic. And X-25 standards really came out of the ARPANET and that protocol, then was given to the CCITT and it moved very quickly through and became X-25. For most of the '70s and early '80s it hadn't been a factor and now it's becoming a factor. Do you have an opinion as to --

Evans: It would have died a death if it had not been pushed in Europe by the European PTTs, so that at least created a real market for companies to develop product that was X-25 compliant. Here, it didn't take off, in my view, primarily because networks in the US, private networks, are primarily IBM networks, and so most private networks are SNA. The amount of non-IBM data communications -- the only reason to go

X-25 is because it's a clean solution to multi-vendor connectivity, networking. There hasn't been a lot of -- we were the first guys to target the non- IBM customer from a data communications standpoint, and as we know better than anybody, our customers -- the nationwide networks are essentially all IBM. It's only -- our customers are all regional customers or application specific networks.

Pelkey: Corporations have many of them, but they were designed for a specific application.

Evans: And they'd be managed totally separately too, by and large, and it's only in the last few years, as customers have started to look at the cost savings available through bringing their applications together, as much as anything driven by T1 which has caused people to start to think of the benefits of putting their eggs in one basket, they've started to say: "Hey, maybe there's some benefit at the data only level to coming up with a common data network, rather than having multiple application specific networks." And then they turn around and say: "How do we do that?" There's only one answer to that, and that's X-25, and it wouldn't be there had it not been nurtured in Europe.

Pelkey: When you look back upon this period of time, '76 to '88, were there specific events where collections of people got together or things that happened that changed the basis of competition or was a source of energy?

Evans: Well, I don't think there are any that you don't already know about. Deregulation of AT&T has given a -- first of all, it's what's brought all the tariff changes about that -- it's what has made the T1 business what it is today. Secondly, it is what has made network management such a significant issue for everybody in a way that is was only for the largest customers in the early days. The PC has made profound change in the way people want to network, both by its impact on LANs and also by its impact on leased line communications, which has in many cases been replaced by dial-up communications. If you look at the traditional data communications companies who built their business -- one has to remember that Racal-Milgo and Codex and Paradyne and General DataCom, they're modem companies. Everything else is incidental. They're modem companies. More than that, they're leased line modem companies. I know General DataCom's got a lot of dial-up modems, but their leased line modem companies. The leased line modem business was significantly impacted by the PC, and it's a dying business.

Pelkey: And tariffing because the dial-up rates --

Evans: The funny thing is, everybody wrote it off for the wrong reason years ago. They wrote it off for DDS. DDS never really made a dent in the modem business relative to what everybody was expecting. What has made a dent in the modem business is the PC and the fact that dial-up modems are being used a lot more, relative to leased line modems, than they used to be, and we're increasingly seeing high speed trunks replacing lots of lines with modems on them.

Pelkey: DDS is --

Evans: Digital Dataphone Service. That was what was supposed to wipe out modems when AT&T introduced DDS service.

Pelkey: Which never came about.

Evans: It came about, but they didn't get it in enough cities. The big users didn't cut over to it because the multi-point networks that they got, they by then got used to network management facilities that ran out of band on the analog phone lines with facilities that were included in the modems from Racal-Milgo's and the Codex's. The customers were so dependent on these that -- they couldn't get that from DDS. It wasn't part of the service. It caused a lot of them to say: "We'd rather stick with phone lines and network management systems that work than go to something that you guys claim is more reliable, except we can't get it in enough cities and it doesn't give us that network management capability." I'm down to my last minute.

Pelkey: I greatly appreciate you taking the time.

END OF INTERVIEW