Oral History of John W. Rollins, Jr.

Interviewed by:
David Alan Grier

Recorded: May 18, 2010
New York, New York

CHM Reference number: X5652.2010

Table of Contents

John Rollins

Conducted by Software Industry Special Interest Group

Abstract: John Rollins describes his 32 years as CEO of AZTECH Software Corporation (initially named AZTECH Corporation) and how the company transitioned through six generations of technology platforms from punched cards to the Web while continuing to grow and serve its niche market of associations. He discusses the educational background that prepared him to be a successful entrepreneur, describes how the company came to focus on their market niche and describes the company culture which was so instrumental to its continuing success over such a long period.

David Alan Grier: This interview is taking place on May 18, 2010, and is part of the Oral History Project of the Software Industry Special Interest Group, which is affiliated with the Computer History Museum located in Mountain View, California. The interview is taking place at Jeffries and Company Headquarters at 520 Madison Avenue in New York City, New York, and is being videotaped and recorded. I am David Alan Grier and I am interviewing John Rollins. I'd like to start by getting all the basic background information. When were you born, where were you born, and go through the major milestones of your life so we just get that all on tape first.

Family Background and Undergraduate Education

John Rollins: Sure. I was born in Kansas City, Missouri in 1944, three days before D-Day. I grew up in Kansas City, lived there in just two houses with my sister and my parents until I went away to college 18 years later. It was a great place to grow up. Good middle American town, clean. I remember riding my bike anywhere I wanted to go around Kansas City, taking the public bus for 10 cents to go to the music studio where I took lessons on how to play trumpet and French horn—stuff like that. I was in the school orchestra. Good upbringing.

Grier: What did your parents do?

Rollins: Interestingly, I come from something of an entrepreneurial background. Both of my grandfathers had had their own businesses, one in civil engineering and one in farm products. Moreover, my mother had started her own business when she graduated from university because it was the early 1930s, the Great Depression, and there were no jobs. She started making marionettes in her father's basement and selling them to kids in the neighborhood. They caught on tremendously and eventually were for sale downtown in Macy's and then all over the country.

By then my grandfather had kicked her out of the basement and she'd started her own manufacturing facility downtown. She ended up moving several times and, over literally a 40-year run with her business called Hazelle's Marionettes, she grew it to be the largest puppet manufacturing firm in the world. My father, who had a background in engineering, and had graduated from the University of Missouri, the rival to my mother's University of Kansas, was really the genius that put the assembly lines in place for manufacturing the marionettes. My mother would have no idea how to do that because she was the artist, creator and designer. So he mechanized the processes for manufacturing the parts and contributed mightily to the growth of the company over the last 30 of those 40 years. And I also had an uncle who was a very successful entrepreneur. I don't know if it's in the blood or what, but he started a car wash company that he eventually franchised. Robo-Wash had franchisees all over the United States.

Grier: When did you go to college?

Rollins: 1962, when I graduated from high school.

Grier: And where did you go?

Rollins: To Dartmouth. My high school typically sent students to all the Ivy League schools. I learned later that my high school was one of the top ten high schools in the United States.

Grier: What high school was this?

Rollins: It's called Southwest High in Kansas City, Missouri and everybody went to college, even though there were over 400 people in our class. I selected Dartmouth based on the advice of my basketball coach. I had never been there, never seen the place until I matriculated.

Grier: What did you study in college?

Rollins: Well, thanks to my engineer father who convinced me I should study engineering, I started out at the Thayer School of Engineering. But then I fairly quickly discovered the math

department at Dartmouth because there were courses in math that were required to pursue an engineering major. I met a guy named John Kemeny, who was one of my first professors in math. He was inventing a new computer language that he called BASIC, and he needed some students to help him debug the first compiler. I put my hand up and volunteered and had a wonderful time working with him and his partner, Tom Kurtz, who eventually became my honors math advisor when I switched my major to math.

Grier: Okay, now, just for clarification, this is John Kemeny who became President of Dartmouth.

Rollins: That's correct.

Grier: At this point, he was still a math professor.

Rollins: He had become Chairman of the Math Department after an illustrious career with the Manhattan Project and at Princeton and great accomplishments that I really knew nothing about at the time he was my professor. He was just a guy inventing BASIC, which I had never heard of and had no idea was going to become the most widely-used computer language in the world.

Grier: Did the first course that you took from him involve computers or was it just a regular math course?

Rollins: It was a regular math course.

Grier: Calculus?

Rollins: Advanced calculus, yes.

Grier: And you became interested in computers and BASIC because he talked about them?

Rollins: Yes, he talked about BASIC and he ran a little session where in two hours he taught students how to program in BASIC. His purpose for inventing BASIC was to come up with a simple language that students could use as part of their curriculum without having to spend months or years learning Fortran or a more complicated language. You could learn BASIC programming literally in two hours. There are a limited number of commands, and he was just putting it together at that time and running it on the GE-635 time-sharing computer that Dartmouth had recently acquired.

Grier: Do you remember your first program?

Rollins: Actually my first program was before we got the 635. I was doing punch paper tape programming just because I was curious how it worked on an LGP-30 [Ed. Note: Librascope General Purpose-30] computer.

Grier: This is at Dartmouth?

Rollins: Yes, at Dartmouth. It was a vacuum tube computer that used a drum memory, one of the old ones, obviously before we got into the core memory in the newer stuff.

Grier: Let's go back for a moment. The programming you did there was in assembly language?

Rollins: I don't remember what the language was on the LGP-30. It's too far back for my brain to go at this point.

Grier: That's okay, but was it a higher level language, something like BASIC or Fortran?

Rollins: No, it was not high level. It was very low level. More like an assembly language, yes.

Grier: Do you remember what you did with BASIC?

Rollins: Oh sure. I wrote a lot of programs in BASIC during those years at Dartmouth.

Grier: Give us some examples.

Rollins: By my senior year, the time-sharing network was operating campus-wide for anybody that had taken the two-hour course. I was taking an engineering economics course, an elective. Because I had decided I wanted to go on to business school, I thought it would be appropriate to learn some engineering economics and how to compute present values and that sort of thing. So I built a model of how a business could select the optimal method of depreciating any given asset, optimal in terms of tax impact as well as book impact using either double-declining balance, sum-of-the-years digits, or straight line depreciation and at what point they should switch over to an alternate method. That was allowed at that time under the accounting rules.

Grier: Any other programs?

Rollins: Oh, probably in every class I'd write a program for something once the time-sharing system was up.

Grier: Okay, about 1964, 1965?

Rollins: That's right.

Grier: And if you were in a class and you saw a problem you wrote a program for it.

Rollins: Sure. Easier than trying to solve it by hand or with my slide rule.

Grier: <laughing> This is true, which leads to a question. Since you were one of the first generation to grow up when you had access to this, did you ever become proficient at the slide rule or did the computer take the place of it for you?

Rollins: In high school I carried my slide rule regularly. There was a lot of math focus in my high school. In fact, we had a math team that in my junior year in high school won the math championship in a seven-state region. There were three of us on that team. We all got 800s on our math SATs the next year.

Grier: There's a difference between math and calculation. I want to know what sort of things you learned to deal with using slide rules, what sort of skills you had with them.

Rollins: Actually, my bent was more toward calculation than theoretical math. Clearly, I had to learn a lot of theoretical math to be an honors math major at Dartmouth but I didn't take it that far once I passed those final exams. I was more interested in the practical applications.

Grier: Tell me a little bit about the course with Tom Kurtz.

Rollins: Numerical Analysis was his specialty and that was the only course I actually took from Professor Kurtz. I was an honors math major and he became my advisor. So I'd meet with him periodically in that role right up until senior year when we had some intensive exams for those of us that were on the honors side.

Grier: You talked about a senior math thesis. What was yours on?

Rollins: There was no thesis. There was an exam we had to pass, as I recall, it was on the history of math, something like that, in my senior year.

Grier: Okay, interesting. Did you take any other courses with Kemeny?

Rollins: I think I did have one other one after that freshman year course, Math 25. I can't tell you exactly what it was at this point. But Kemeny was a character. I mean, he was a chain

smoker. He only smoked unfiltered cigarettes and the classroom was just filled with smoke the entire time.

Grier: Were there any other courses or any training other than the two-hour session on BASIC that you did while in college? Did they offer anything?

Rollins: Training that I conducted?

Grier: Well training either way. Training that you conducted or training you were part of on the computer. Did you take any computer classes?

Rollins: I don't recall that I did take any outside of the normal curriculum.

Grier: So just that one two-hour training session was all you did?

Rollins: Yes, I sat in on other ones later and would be sort of an assistant to one of the professors that were teaching it, which would usually be Kemeny or Kurtz since they were the authors of BASIC. But I didn't really teach it. No.

Grier: In the process did you sort of learn or pick up by osmosis or learn from friends some of the basic ideas that we think of related to a computer like algorithms, sorting, data structures?

Rollins: Yes, that became second nature. In fact, in debugging BASIC, I remember coming across various weird results periodically, which I would report to Kemeny or Kurtz and they would deal with it. I remember the first one I found, I was so excited. BASIC used an up arrow and a 2 meaning take it to the second power. I discovered that if you did that you got a different result than if you multiplied the number times itself, and I was so excited. I took it to them and they fixed that bug within 24 hours.

Grier: Interesting. So you had a relationship that you could go back and forth and bring problems to them and they would tell you what's going on?

Rollins: Yes.

Grier: Did you get any insight into how they wrote the program or what they were doing with it?

Rollins: No.

Grier: It was all just a black box.

Rollins: Black box to me. I was a real neophyte.

Grier: Were there other students around you that were sort of part of a community, a computer community working on these problems?

Rollins: Yes, other undergraduates. I don't recall any graduate students because Dartmouth, as you may know, is very much an undergraduate college. But I do know Gary Broughton and other classmates of mine were working on some of the same issues with Kemeny and Kurtz.

Grier: You talked about going for an MBA. You made that decision as an undergrad.

Rollins: Senior year, yes.

Grier: Do you remember what pushed you in that direction?

Rollins: I didn't want to go to Vietnam.

Grier: That's a good reason.

Rollins: And I thought that my destiny was probably in the business world at that point, probably working for a company like IBM or some huge technology company.

Grier: Right after you graduate you go off to business school. And where was that?

Rollins: Actually I had a summer job in between that was formative in a certain sense.

Grier: Well, let's hear about the summer job and then we'll go to business school.

Programming for the Lunar Lander

Rollins: It was just a three-month stand in the summer of 1966, and I had the opportunity to work for the contractor on the first lunar lander. Hughes Aircraft in California had the contract from JPL, Jet Propulsion Laboratory, and the Surveyor, which was the predecessor to the Apollo, did the first-ever soft landing on the moon. Their contract called for seven landings, as I recall, over a period of several years in the middle 1960s and six of them were successful. The program I wrote—and this summer is when I learned Fortran—was a program that was a telemetry tabulator that would pick up the signals coming back from the moon and tabulate them

so that it would interpret the telemetry into actual scientific results as to what was being analyzed. They were doing chemical analysis of soil and other things on the lunar surface.

Grier: Can we just talk about that program? There are many questions there about this incident of your life, but talk about getting the telemetry. You were receiving data from the lander on the surface of the moon?

Rollins: That's right.

Grier: Can you describe the data? Is it just chemical analysis? Does it have a whole range of things?

Rollins: It was strictly numerical data and, again, I had blinders on due to the highly secure environment. I knew what the information was coming in and I knew what my program was supposed to do in terms of tabulating it and spitting out results. Frankly, I was so young and naïve I didn't ask a lot of questions about the big picture. Today I would ask a million questions about what was going on; but then I was eager at the end of the day to head to the beach and go surfing and whatever. I did what I was supposed to do and had a good time doing it. I got along with my co-workers and, in fact, I taught some of them BASIC because they had gotten a BASIC compiler and nobody knew how to do BASIC at that point. Of course, I was learning Fortran from them so it was very symbiotic.

Grier: Let's explore the things we need to do on this one. How did you get the job?

Rollins: I got it through my sister. She had been with Hughes for some time and told me where to send my application and who to write to and what to say. She knew that they were hiring people for this JPL project called Surveyor.

Grier: And your sister had obviously gone to the same high school you had.

Rollins: That's right.

Grier: Where had she gone to college?

Rollins: She was three years ahead of me in Southwest High School, went to University of Kansas, and then transferred to UCLA and got into computer science. In fact, she got her master's in computer science from USC.

Grier: What was her bachelor's in?

Rollins: Like me, she was a math major undergrad.

Grier: And so then she got a job at Hughes?

Rollins: That's right.

Grier: And you spent just one summer there?

Rollins: That's all. Drove up to Palo Alto a couple times to line up an apartment for myself for the fall. Other than that, I was working in El Segundo and living in West LA all summer.

Grier: Do you remember any of the people you worked with or your boss or the division that you were in at Hughes?

Rollins: I had a buddy that had just started the same day I did. He'd come out of aeronautical engineering at Cornell and his nickname was Whitey, although that wasn't his real name. I don't recall his real name right now but we lived in the same apartment building and surfed together and did things together off and on throughout the summer.

Grier: You said you were programming in Fortran. Do you by chance remember the computer you were using?

Rollins: Yes, it was the big IBM 7094. It had the four extra registers that the 7090 didn't have. It was a 7094. Again, punch cards, good solid IBM product, yes.

Grier: Just thought that that would be good for the record. And you basically did this one program of tabulating?

Rollins: I did some other smaller projects but that was my big project. That probably took me four weeks just on that one but then I worked on other things on a smaller scale.

Grier: Do you remember any of those other things?

Rollins: No, I don't.

Graduate Education at Stanford

Grier: So you move up to Palo Alto in the fall of 1966 and start business school at Stanford?

Rollins: That's right.

Grier: Okay. What were your interests in business? You were in business school for two years?

Rollins: That's right. It was a full-time MBA program, a two-year program. Stanford's reputation—and it still is to a lesser extent—was a more quantitative program than Harvard's or Columbia's or the other schools and that appealed to me. Among other reasons, I wanted to go West after spending winters in New England. In fact, I remember the day that the admissions director came from Stanford Business School to Dartmouth. The snow was so deep—it was early January—and a bunch of us trudged up to the career center. We sat in chairs and he started showing 35 millimeter slides of the campus. It was the equivalent of today's PowerPoint—you know, a state of the art presentation—and it was palm trees, women around Lake Lagunita and the sunshine and beautiful Spanish architecture. When he finished his presentation he said, "Gentlemen, are there any questions?" Not a hand went up and that year more people went to Stanford Business School from Dartmouth than from any other university in the United States. He made a marvelous presentation <laughing>.

Grier: Convinced you all. So while you were there you said you were interested in the more quantitative aspects.

Rollins: Yes.

Grier: Something more like operations research or finance?

Rollins: That's right. In fact OR was one of my concentrations in the program.

Grier: Do you remember any of your teachers there?

Rollins: Well, yes, one stands out. They give you some exams when you start out and as a result of the exams I didn't have to take an economics course or an accounting course because I had already had that in undergrad. So I got to choose an elective. My first semester in B school, I took a 2nd year elective in electronic data processing from a guy named Ed Zschau who was the neatest guy. I got to know him well during that semester, and I probably learned as much about electronic data processing in that semester as I knew up to that point in terms of the big picture of what's going on with computer technology and how it can be applied to business to solve problems.

Grier: Can you talk about some of the topics that were in a course of that period on EDP?

Rollins: Yes, it had to do with applying EDP to business problems, how you select a type of computer, how you design systems on that computer and basically advance your business. Data processing was the popular term of art, as you recall, at that time—not software.

Grier: Do you remember any projects, any assignments, anything that you learned out of that specifically?

Rollins: I remember the group project and all the other guys in the group were older than I was. They were all second-year guys and they viewed me as just a young nothing, but I did some of the analysis and I wrote my section of the report and, as I recall, we did pretty well. But I got to know Ed Zschau and I guess that was the important thing. When it came to looking for a summer job, he told me about a job he knew of in operations research in Boise, Idaho working at the corporate headquarters of Boise Cascade. He told me if I was interested in that he would write a letter of recommendation for me and eventually that worked out well. I spent the summer of 1967 in Boise, Idaho, which is a neat town. I had a wonderful time.

Grier: What did you do in the summer job?

Rollins: I did modeling for Boise Cascade. Wrote computer models, again it was on an IBM 360 which was totally out of sight and out of mind. I submitted everything remotely the way they were set up at corporate headquarters, and I remember that the main assignment I had for the summer was to develop a model which would tell Boise Cascade which types of plywood to manufacture. There are all different kinds of plywood, depending on the two surfaces on the top and bottom, AB or CD and there's CD rough and CD smooth, various types, and so I developed a model which was based on inputs such as the forecasts of housing starts and what types of housing were going to be built and what type of plywood was needed to build the types of houses. So they would know ahead of time what to be producing in their plywood mills, which were all over the Pacific Northwest, based on the inputs from this model a year ahead of time.

Grier: And where would the housing starts would come from?

Rollins: Publicly available data; that's the leading indicator on what type of plywood sales are going to be made a year later.

Grier: So it's something like the census, or it could be the Department of Commerce, I suppose.

Rollins: Yes.

Grier: Do you remember any of the guts of it? This sounds like sort of a fairly straightforward transformation model. You have one set of data and you're transforming it into another set of data. It's not an optimization problem or anything like that?

Rollins: I don't recall the details, David. It's just been too long.

Grier: That's okay. It's just fascinating. And you were at that job for the summer?

Rollins: That's right.

Grier: And programming in Fortran?

Rollins: Yes. I did some programming in ALGOL too, but that was more on campus. I'd do that as odd jobs. I programmed in a lot of languages to make money or I'd tutor kids that were undergrads in math or computer programming, stuff like that, to earn some money on the side.

Grier: ALGOL on campus. Who was using ALGOL at that point?

Rollins: The Stanford mainframe was using ALGOL. I remember learning it for that reason. It was a hot language at that time.

Grier: It was probably a Burroughs B5000 I would guess.

Rollins: Might've been.

Grier: COBOL?

Rollins: I really never became expert at that point in my life on COBOL. Later on, I did, and we'll probably talk about that later with AZTECH.

Grier: Yes, we will. Any other languages while we're dwelling on your MBA?

Rollins: I think that's enough.

Grier: That's okay. On the optimization side, any contact with George Dantzig at Stanford?

Rollins: No, I knew the name but I did not have any contact with Dantzig.

Grier: So you came back for your second year. Courses? Anything that you remember that stands out in that period?

Rollins: I guess the one course that stands out most in my second year curriculum was again an elective, kind of like the one Ed Zchau taught the first year. This was a guy named Frank Shallenberger who was a serial entrepreneur who taught a course called Small Business Management. Today it would be called Entrepreneurship and in that course we had the opportunity to do consulting projects with startup businesses in Silicon Valley. I happened to get a software company for my consulting project.

Grier: That would've been 1967, 1968?

Rollins: Actually that was my second year in business school and I think it was second semester so it would have been spring of 1968 when I took that elective from Shallenberger.

Grier: Okay. Do you remember anything about the software company?

Rollins: Not much. I remember the light bulb coming on though at some point and I thought: My God, I could do this. I know as much as they do about this stuff and with the business education that I was just about to finish and get my MBA. I thought I should change my direction. Instead of aspiring to work for IBM or a major Fortune 500 company, I should think about starting my own business. That was really a turning point in my life taking that course from Shallenberger and realizing that entrepreneurship was really what I wanted to do. I hadn't really thought about it, but it was also a product of what my family members were doing. But I wasn't smart enough to put those pieces together before.

Grier: Because, of course, your sister was doing something?

Rollins: Actually, Nancy was the one working for Hughes Aircraft, the big aerospace contractor. It was the rest of my family that showed the entrepreneurial tendencies.

Grier: Do you have any recollection of what kind of business advice or what kind of problem they were facing as a company when you were consulting with them for your project?

Rollins: No, I don't. I know it was a distribution issue. It was a software product and they were trying to decide how to distribute it to go national and whether they should go through a direct sales effort or another model such as franchising or something else. But I really don't remember the details of the assignment or even how well I did on it. I just remember how important it was to me to realize that this is a genuine alternative to going to work for a big company.

Grier: Well just identifying that it was distribution is interesting because this is the very early age of software companies and if a company was wrestling with that, that is of itself significant. You end up with your MBA and you start your company.

Rollins: That comes a little later.

Tour of Duty at NIH

Grier: There's a little gap in here that I haven't quite figured out.

Rollins: Let me explain the gap. I needed to avoid being drafted because I was a healthy 22-year-old and I would've been drafted, I think, and my first instinct when it came time in the spring to start interviewing was to work for a consulting firm; so I interviewed with McKinsey in their San Francisco office. This is before I had finished the course in Small Business Management. I went through their whole bank of Rorschach and psychoanalysis tests and all that and got an offer from them. I was pretty pleased. I was thinking if I went to work for them, which is really what I wanted to do, I might get drafted, but then I decided that was not a good move because I probably wouldn't be there that long.

So I started looking around at other options and came across an opportunity in Washington, DC to become a commissioned officer in the U.S. Public Health Service at NIH, the National Institutes of Health. NIH had a big IBM 360 installation and they were looking to hire a handful of people to help develop software and software models in connection with a campus-wide computer network that they had recently installed.

Grier: And this would've been their campus up in Bethesda, Maryland.

Rollins: Exactly. They wouldn't fly me back for an interview but there were other companies that would, so I set up an interview with Exxon in New York City and then went from New York to DC to interview at NIH. I still remember the interview with Dr. Mohler. It was interesting because he had a cold that day and he insisted on sitting at the opposite end of about a ten-foot long table and it was the strangest interview sitting ten feet away from the person I was being interviewed by. But I did get one of the five offers that he made to fill these five slots in the Division of Computer Research and Technology, DCRT, Building 12 and 12A on the campus at NIH and apparently there were thousands of people that applied. That may be apocryphal, I don't know, but I was delighted to have that opportunity to work there for two years even though it was only $500 a month or something like that. Military pay as a Lieutenant in the U.S. Public Health Service.

Grier: Did you have an interest in public health before or was it just computers that pulled you?

Rollins: Just computers. That was the attraction, not health.

Grier: And so you served there for two years until 1970 and you worked in Building 12 and 12A.

Rollins: Right.

Grier: Can you talk a little bit about the problems that you worked on or anything that you recall from that period?

Rollins: Well most of the really coveted projects were the ones working in medical research where people had developed models and that sort of thing, but for some reason the main project I was assigned during my two years was working in a slightly different area. The Director of NIH, Bob Marston, Dr. Robert Q. Marston, was concerned with the physician shortage in the United States and he wanted to help solve that problem. He asked me if I could develop a computer model that would help forecast the need for different specialties in medicine so that NIH could put money into funding education for physicians in those specialties where the needs were the greatest and I remember working on that model. Again, IBM 360.

Grier: IBM 360 Fortran?

Rollins: Actually, no, it wasn't. It was PL/I, not Fortran. This was a time I learned a new language. I learned PL/I at NIH. I remember it was the be-all and end-all language of IBM for the 360. It stood for Programming Language One meaning the one and only language you'll ever need. It blends the greatest attributes of Fortran, COBOL, and ALGOL. For some reason they picked those three to name in their ads when they were saying what a great language it was; it blended business and science in a single computer language.

Grier: Those were viewed as the dominant languages at the time.

Rollins: Yes.

Grier: I could go into lengthy discussions of problems with PL/I. Let's just bring a couple issues together. First off, did the transition into PL/I make any change in your programming? Did you learn to do things differently? Was there anything intriguing or interesting about it?

Rollins: I liked PL/I. I mean the way you could manipulate strings, the way you could do substrings. There are a lot of capabilities in PL/I that I hadn't seen in Fortran or in BASIC or ALGOL before and I liked it a lot.

Grier: How were strings useful to you?

Rollins: Well, they became useful later when I started a part-time job working for AZTECH because AZTECH was doing business applications with, among other things, names and addresses. Names and addresses had to be parsed into strings to be manipulated. The state code separate from the zip code separate from the last name, etc., etc.

Grier: And when you talk about manipulating, were you doing it to gather statistics? Were you manipulating them to print them in a certain order?

Rollins: Mostly for reporting, yes. You'd print a mailing label one time in one format with the zip code over here, you'd print a membership card in another format, a little wallet membership card. You'd do rosters in a third format, that sort of thing.

Grier: Alphabetized or by state or by whatever?

Rollins: Any sequence necessary.

Grier: Before we get off of this, because this is going to lead us to AZTECH fast, I just have a couple other questions that I think would be useful. First off, everything you've done to this date has largely been around modeling something. Modeling a business phenomenon and I guess a physical phenomenon but modeling something. That's a pretty specialized skill and we now have courses in it. Is this something you just picked up? Did it grow out of your numerical analysis classes?

Rollins: I think it was just coincidence. I really don't think the telemetry tabulator was a model necessarily. In fact I hadn't really seized on that modeling thread that ran through several of the things I worked on, but you're absolutely right, that thread exists.

Grier: But it's just something you picked up as an application of your math to a specific problem.

Rollins: It's what people needed. Again by chance, the Director of NIH needed a model to do something and Boise Cascade needed another model, yes.

Grier: So you did the physician model. One of the ones I was a little intrigued with was strings. I was wondering if you were doing primitive computer graphics with them, doing graphical displays with the results?

Rollins: No.

Grier: Do you have other problems that you worked with during this time or was that your major task for your two years?

Rollins: That was the one I was in charge of. I worked with someone else on other projects from time to time.

Grier: Okay, when you say in charge, you had a team working with you? How many people?

Rollins: Just one other person. Small team.

Grier: A small team. And you were in charge of putting that together?

Rollins: Yes. I had another programmer.

Grier: When you worked on teams, did you have other specialists who might have worked on a team with you?

Rollins: No, I don't recall anything other than programmers. I mean, I would report on a day-to-day basis to the Assistant Director of NIH for Program Planning and Evaluation, not to Dr. Marston himself, but he was apparently the one that was interested in this particular model.

Grier: Okay. The transition from NIH to AZTECH is next, correct?

Rollins: That's right.

Grier: How did that transition take place?

Employment by AZTECH

Rollins: Well, I was approached through a friend of a friend by a guy who was starting a new computer data processing company called AZTECH Corporation. He needed someone to write the programs for him and I agreed to do so. He didn't have any money, so he was going to pay me in stock in his company.

Grier: Can I ask just a little more about the connection of a friend of a friend? Is there anything more concrete you can tell us about this connection?

Rollins: Yes, the friend and the friend, person one and person two, and it was person two that introduced me to the head of AZTECH. Both of them later became members of my Board

of Directors at AZTECH. The first one was a roommate of mine in Georgetown where I lived in D.C. and had been a classmate at Stanford B School, a guy named Terry Eakin.

Grier: So it was a connection through Stanford?

Rollins: That's right. Yes, to Terry and then Terry's introduction was to a guy named Ted Rogers, who was an attorney in D.C. Ted was also on my board later and one of my investors like Terry was and Ted knew Bob Miller, the guy that was starting AZTECH.

Grier: Tell us a little bit about Bob Miller and the founding of AZTECH, which you know is the pre-history before you got there.

Rollins: That's right.

Grier: What's his background?

Rollins: Bob Miller had majored in physics and didn't really know how to write computer programs but he saw the potential of the computer to solve problems for organizations. He knew several organizations in the Washington, DC area that had problems that needed solving and he would get contracts with these organizations and then he needed somebody to develop the programs and that's where I came in. And the thing that struck me as unusual about the organizations is they were all over the map. One of them was a labor union, one of them was the Bureau of Indian Affairs, part of the federal government. A lot of programming I did was for the BIA over a period of several months. This was moonlighting, okay. I'm 9 to 5 at NIH and then after 5 I work on software for this little startup company called AZTECH.

Grier: So this is moonlighting and this is occurring about 1970 right after you arrive in Washington?

Rollins: Maybe six months later. I think he started the company in the fall of 1968. I know he incorporated it in March of 1969 because I still have the corporate seal and everything from the original incorporation. I think I started working in late 1968 doing some programming for him.

Grier: And it's incorporated in the District of Columbia?

Rollins: It was a Delaware corporation.

Grier: And where was Bob Miller from? Was he local to Washington?

Rollins: He's a local Washington guy.

Grier: And when you say he majored in physics, Georgetown grad?

Rollins: Don't know.

Grier: Where was AZTECH located at this point?

Rollins: He had a little office in a garret on the fifth floor of a five-story brownstone on Connecticut Avenue near Dupont Circle.

Grier: Just north of Dupont Circle near Columbia Road?

Rollins: As you work your way up Connecticut toward Columbia Road, exactly. It was between Q and R on the east side of Connecticut.

Grier: Yes, more or less across from the Washington Hilton.

Rollins: Down Connecticut a little bit from the Washington Hilton.

Grier: So that's the original location.

Rollins: Yes.

Grier: Any reason why he chose the name AZTECH?

Rollins: AZTECH was a contraction of A to Z Technology. He had a partner briefly, a guy named Harry Clarkson, who allegedly came up with the name. Harry's background was in advertising and PR and I thought it was a cool name. As you recall at that time companies all went by initials and it was just alphabet soup, particularly in Washington where all the government agencies go by their initials. And then you add to that the associations, second largest industry in Washington, and they all go by their initials. So we had a real name, a word you could pronounce, AZTECH.

Grier: Yes, and that leads to all sorts of good graphics and images.

Rollins: Right.

Grier: Okay, he's selling computer services to whoever will buy in Washington. What computer is he using?

Rollins: He didn't have a computer. He would leave it up to me to find a computer to run the jobs on.

Grier: And where did you find a computer?

Rollins: Right near NIH on Wisconsin Avenue in that stretch of Bethesda, before you hit the NIH campus, there was one of these street-front service bureaus called Spectrum Data Processing on the west side of Wisconsin. Spectrum had an IBM System/360 Model 30 and they sold time on it by the hour. I remember negotiating a bulk purchase of hours that were outside of the main 9 to 5 time and getting a deep discount on that time. When I couldn't do all the programming myself, some of my buddies at NIH who were equally adept at PL/I programming as I was would do the programming and we would pay them something for their hours. There were five of us that got hired at NIH. I was the only one from Stanford. They were three guys from Harvard Business School and one from MIT Sloan school. We all could program pretty well. Two of them in particular, Will Kaffenberger and Bob Klein, who did a fair amount of programming for me at that time on a moonlighting basis.

Grier: Now there's question after question that you've hinted at. First off, you're very quickly the one finding the computer but you've placed yourself in a group of four other employees. Were you sort of the senior programmer at this point? Did you have a special relationship with Bob Miller?

Rollins: No, I think the five of us at NIH were peers except for the fact I sort of became their manager when they'd moonlight for AZTECH. Yes, I was the one who was communicating with Bob Miller. They were not.

Grier: So you were chief among peers if you will.

Rollins: Yes, only in the sense that I brought them some work. When we'd do work at NIH together we were peers though.

Grier: But when Bob Miller had a job he would communicate it to you and you'd communicate it to your friends and say, "Need your help here," or "Could use your help."

Rollins: Yes, or if I couldn't handle it myself, I'd get them to work with me as essentially subcontractors. I wouldn't pay them out of my pocket. AZTECH would pay them so they became employees of AZTECH.

Grier: So Spectrum was your data processing center but you had to prepare the programs.

Rollins: That's true.

Grier: Where and how did you do that?

Rollins: We'd do it at Spectrum. Typical street-front service bureau that had the 029 keypunch machines and had no charge for using their keypunch machines or their cards. They'd provide you unlimited numbers of cards and then you'd pay for the time when they were run through the computer. And then you'd come back with your list of error messages or whatever.

Grier: So you'd spend evenings or after work going down to Spectrum, sitting in their store front typing away.

Rollins: Yes.

Grier: And then you'd run it through and do the usual debugging.

Rollins: Right.

Grier: You also talked about negotiating the purchase. Do you have any recollection of how much computing time cost an hour at that point when you got started?

Rollins: I could probably look it up in some old financial records but I can't tell you off the top of my head what it was. I do know it was a fraction of the price to be able to do it after midnight. So we'd often use the graveyard shift for a lot of our work. We'd do the keypunching before midnight and then our time on the machine would be after midnight so we could get a lower price.

Grier: Did you have direct control of the machine at this time or were you just delivering cards and they were delivering output back to you?

Rollins: It was a hybrid situation. They had one person there that was a computer operator that would load the cards and hang the tapes and do things for you to the extent you wanted to use them, or you could do it yourself. I'd maybe occasionally put my own cards in the card reader and ask him to go and hang certain tapes and load my 2311 disk pack, that sort of thing.

Grier: So you learned a few basic operation skills. Did you ever get full knowledge of how the machine operated or did you always leave that to the operator?

Rollins: I tried to leave it to the operator.

Grier: Good for you. Often people who get involved in this kind of work at this time in computing history talk about how they were able to squeeze experiments—their opportunity to learn more about programming, about systems, about development—in between jobs they were working on. Did you ever do any of that?

Rollins: I was more interested in the business side actually than trying to learn more about that material.

Grier: Okay, so you would go there and prepare a program on a specific problem. Can you describe any of the problems at this point from that era?

Typical AZTECH Projects

Rollins: Yes. I remember the first job that I needed to program was for an association. It was called the Printing Industries of America, which is a large trade association headquartered in Washington, one of the thousands with their national headquarters in Washington. PIA had never been automated before so it was taking manual records that had been keypunched—I didn't get involved in any of the actual keypunching—and putting them into a computer format and then manipulating the data using substrings and whatnot to print mailing labels, rosters, and various reports. They did a lot of statistics and analyses for different types of printing firms and different geographies, and they wanted the computer to provide these reports.

Grier: So this was in effect helping them build a database.

Rollins: Exactly. It was a database application. The records were: Name, address, when their dues would come up for renewal, how much they paid, what level of membership category, whether they were in the $100 or the $500 category of membership, or a student member. All the membership categories.

Grier: You talked about replacing a manual system, do you have any recollection of what that meant? Were their names kept on file cards? Was it an old IBM punch card system?

Rollins: With that particular customer, I never saw how they got converted to computer. With others later I saw how a lot got converted, mostly from addressograph plates. That was the standard thing that associations used, these steel plates that they would bang through a machine that would print out the information.

Grier: Right, and these were smaller than a 3 by 5 card.

Rollins: Yes they were. Maybe 2 by 3-1/2 inches or something like that, little metal plates.

Grier: And that would have their address but would it have other information as well?

Rollins: They would sometimes have an expiration date or something like that on the top line above the name and address.

Grier: And so the conversion process on that would be, I suppose, printing them all out and then giving them to someone to keypunch? There was no automated conversion?

Rollins: No automated conversion. No free lunch, although later on AZTECH came up with a technique for converting large volumes of manual names and addresses into computer data using a Selectric typewriter with a special font. You could buy these little golf ball fonts that would go on Selectrics and there was one we discovered called OCR font. There was a cottage industry of women in suburban Maryland just outside of DC that would have these Selectrics at home and would type information that needed to be put on the computer because computers were new at that time. Everything before that had been manual until we came up with a very low cost approach for associations to convert to AZTECH and to our data processing system by employing these women in their homes.

Grier: We need to flesh this one out and, for those of you reading the transcript, this is going to be out of synch. But we're on the topic. OCR stands for optical character recognition and that was a special font for which IBM and others had machines that could convert that into punch cards or I suppose onto discs and tape.

Rollins: It would go directly onto tape through an optical scanning machine, which actually was not an IBM machine but was a specialized type of scanning machine that would scan these ledger sheets that had been typed on the typewriters using this OCR font.

Grier: So the process is you'd give these women a stack of records and they would retype it using the OCR font, and that would produce a form that you could then take to the optical character recognition machine. And that would take it and convert it into an electronic form on tape.

Rollins: Right, on nine-track tape in most cases.

Grier: And nine-track tape in this case was the half-inch standard tape of the era.

Rollins: Yes.

Grier: Someone might be interested in this and I just wanted to give them a fuller sense of what that was. I have us right now, except for this little diversion, more or less in the fall of 1969. And you are working at two places, apparently not sleeping much. Tell me about the transition. You talk about how you're interested in the business and interested in the job. There's going to be a transition from NIH into AZTECH full time.

Rollins: That's right.

Grier: How does that work?

Developing a Business Plan for AZTECH

Rollins: I was committed to NIH until June of 1970. That was my two-year tour of duty in the Public Health Service. But starting about this point in fall of 1969, the one key person at the AZTECH office on Connecticut Avenue during the day was a vice president named Doug Fisher. Doug was basically running the office and also doing sales. He had brought in a former colleague of his from when he'd been overseas with the Foreign Service, a woman named Mary Dawson, to do the secretarial and administrative work, and she was very efficient. So Doug Fisher and Mary Dawson were really kind of keeping the office afloat on Connecticut Avenue while I was working on programming at Spectrum with my co-workers from NIH.

Grier: When you talk about running the office, it's in effect keeping the business records going.

Rollins: That's right. And Doug was involved in making sales in addition to running the office; he was a very talented guy. He and I became closer and closer during this period of time and Miller kept making the same claim he had from the beginning that he was going to raise some money to capitalize this business so it could really become something. And Fisher and I were losing patience due to his inability to do so. He didn't know what a business plan was and he didn't know how to write one or do much of anything. So Doug and I undertook to write a business plan and come up with a strategy for this company.

Grier: So at the moment there was no capitalization' was there a bank loan or personal capital?

Rollins: It was Doug's personal capital and I was working for stock. And basically the contracts that he was getting paid for when I would deliver the programs was being used to pay my colleagues at NIH for their hourly wage for writing the programs, as well as to pay, I guess, Miller's salary and Doug Fisher and Mary Dawson.

Grier: So you're not getting any money at this time but you're slowly accumulating an interest in the company.

Rollins: That's right.

Grier: That's always a good strategy. You're about to write the business plan. What year and what month?

Rollins: I'd say it was late 1969.

Grier: All right. And what does that business plan say?

Rollins: Well, first we had to do some research to figure out what we wanted to do because we had customers that were just in assorted industries, a lot of cats and dogs of customers. Doug started by calling—and I helped him with some of the phone calls—some 200 names in the yellow pages under the heading "Data Processing" just to find out what the competition was, what people in data processing were doing in Washington, DC in 1969.

Grier: And what did he find out?

Rollins: He found out that virtually all of them were doing work for the government during the Vietnam War, working for the Navy or for the Air Force or for the Pentagon or for NSA. And some had niches in maybe professional services for doctors or some other niche. But the interesting thing that we found out was that there was only one that claimed they could provide services for associations. And based on our calculations, associations were—in fact, they are still—the second largest industry in the Washington metropolitan area.

Grier: Hold the associations for a moment. Go back and tell me as much as you can recall about those 200 data processors. Was there a distinction between those who provided computer services and those who provided machine time for people like yourself who would write a program and take it to the data processor to be run?

Rollins: Some were providing both, particularly for the federal government when the federal government would outsource certain software or data processing tasks to them. Many were of the street-front variety where they would do anything for anyone. And the one that claimed they could do work for associations was SBC, Service Bureau Corporation, our old friends from IBM.

Grier: Do you remember anything else—scale, size, what else you learned about those 200 businesses at the time, where they might have been located?

Rollins: No David, I don't. The astounding conclusion was that we had pretty much free rein in the association space with only SBC as a competitor. And as you probably know, SBC was not the cheapest guy in town and they would do virtually anything for anybody. So they didn't have a vertical market expertise or specialty in associations, which we decided we would write into our business plan as our domain expertise.

Grier: So the only one you're going up against is SBC. You're looking at associations as your expertise. You're putting together a business plan. What else do you remember from the business plan at this point?

Rollins: I remember it had projections, estimated sales that we would make monthly over a period of time, all to associations. We'd actually put together a rough brochure at that time, a little brown brochure that we could hand out that talked about ARMS, the Association Record Management System. We later dropped that name because during the Vietnam War, we decided it was not the right acronym to be using, but it was an association record management system.

Grier: So you designed the system before you had software for it.

Rollins: Yes. Well, we were doing one-off systems for associations like the one I'd written for the Printing Industries of America, and I think by the time we were doing the business plan, I may have written another one. I think the next one I wrote was for National Tire Dealers and Retreaders Association. But the way I'd write it, I'd take the deck of cards from the last one, dupe it and then go through and make modifications. You learn how to put your thumb on the card and alter a few of the columns and then copy the remainder of the card to make a new system for a new client.

Grier: You had done a lot of programs for individual people, one-offs you said. Can you talk about redoing them and reusing them?

Rollins: Yes. It was tedious. Again, with punch cards, you use your thumb to dup a card in the keypunch machine and customize it for the next client and do something different. But that was all I knew at that point. I didn't have the time really to stop and step back and say "Let's do a fully generalized system." Plus, we had a lot of other more urgent things, like trying to raise some money and see if this was going to be a real business.

Grier: So, you had put together a business plan and you had this association records management system which you had designed, although you had not written it as a program.

Rollins: Not a single, generalized program. I'd written it for Printing Industries, I'd written it for National Tire Dealers, and could do the same for others.

Grier: You knew the basic blocks of how this was going to work.

Rollins: Exactly.

Grier: What else did you have in the business plan that might be of interest at this point?

Rollins: I recall that the financial projection that was in there showed exactly what the negative cash flow would be month by month. We had a 12-month projection followed by, if I remember right, quarterly for year two, and maybe annually for year three, four, and five—or something like that, which is pie in the sky. You can't really accurately estimate that far out. But I remember in that first 12 months it showed us breaking even on the cash flow part of the projection in month 10 and a cumulative negative cash flow. Cumulative losses through those 10 months was $43,000 and Doug and I talked about whether we should we raise $43,000? What should we do? And I told Doug a story about Professor Shallenberger saying if you're going to start a business, you want to have a cushion, and Shallenberger's recommended cushion was 2x. He said for $43,000, you'd want to raise $86,000 —the old Shallenberger formula. And so Doug and I set out to try to raise $86,000, and that was 1970 dollars. It's about a half a million today I think, just based on inflation.

Grier: Where'd you go looking for your money?

Rollins: Friends and family. It was mostly friends and networking. Doug got a little bit from his parents. I got a little bit from mine but neither of us came from really deep pocket families. It was mostly through networking, starting with Ted Rogers, who I'd met through Terry Eakin. Terry invested. Ted invested. They each introduced me to other people—doctors, dentists, lawyers—whoever you could find that was interested in this new computer revolution that was about to make everybody rich.

Buying Out the Founder of AZTECH

Grier: So you sort of shared the work equally while you were getting the process going. What happened to the founder? What happened to Bob Miller?

Rollins: Part of the negative cash flow was buying him out. That was in the $43,000. It was money to buy him out and he actually authorized us to go after the money. He didn't know that part of the money was to buy him out, but he said "Yes, go ahead and go out and present your business plan that you've written and try to capitalize this company for me." He didn't really understand what was going on and he wouldn't even go to the meetings when we'd try to raise the money. Of course, you go to a meeting like this and people ask the obvious question "What's this guy, Miller, doing in here? Why is he part of the thing?"

And so by the time we had commitments for nearly all the $86,000 we needed, I decided I'd go and have a one-on-one with Miller. I sat down with him and explained that we were going to go ahead and based on input from all our investors, we were going to buy him out so he wouldn't have to be part of the operation any longer.

Grier: How did he take this conversation?

Rollins: I probably would've handled the meeting very differently today than I did then. I was a kid and he was angry. He didn't understand things, and at one point I mentioned that one of the investors was a member of his family who had actually endorsed my approach. I never should've mentioned that. My 30 years at AZTECH are a story of lessons learned, and that was my first one I guess.

Grier: We all learn many things. How long did it take you to raise the money?

Rollins: Probably six months, by April. The meeting with Bob Miller was probably in March and then we closed on the deal in April and bought out his shares. By then, we had his attorney and our attorney meet and we signed an agreement. I can't remember what day it was in April of 1970 when it became effective and he stepped down. I became the CEO. I appointed a new board. This is all in a matter of hours. My board members were my friends, including a couple of pretty wealthy investors that I'd met through this networking process: a gentleman named Burton Gray, who was a University of Chicago economist in DC; a guy named Adam Foster, who was a retired Foreign Service guy in DC who was very interested in computer technology and its future. They'd each invested significant amounts. It was also significant that I invest whatever I could but having just put myself through Stanford Business School, my entire savings at that point was $400 and I committed my $400 to it, as my symbolic gesture. So I think we had 22 or 23 shareholders altogether that managed to cobble together this $86,000.

Grier: And the board was drawn primarily from that group?

Rollins: Well, these two wealthy guys plus Eakin and Rogers, so I had four outside board members and then Fisher and myself. So there were six on the board as I recall.

Grier: Largely Washingtonians?

Rollins: Pretty much, yes.

Grier: That leads to one question that we've not spent much time on. Were you married by that point?

Rollins: Interesting. I'd just started courting in early 1970 and I don't know how our relationship survived all this but we dated in 1970, 1971 and got married in 1972, which was at a time that I was working basically 16 hours a day. I'd take a break and go see my friend, Anne Whiting, for dinner. We might go out to a National Symphony concert or a play or something like that. And then after that, I'd go back to work. And she tells a better story than I could about that difficult courtship.

Grier: But it survived.

Rollins: It survived, yes.

Grier: She was from Washington?

Rollins: No. She was from the Philadelphia area and she'd moved here after she graduated in 1969 from Wheaton College in Massachusetts. I guess I met her at the beginning of 1970.

Grier: During this period, the office was still on Connecticut Avenue and you were still living in Georgetown.

Rollins: That's right.

Break-even Date

Grier: Let's get to the next key date, which would be roughly February 1971. Wouldn't that have been when you're supposed to break even. Did you make it?

Rollins: Yes, but we didn't do it the way we thought we would. Our forecast had been very much linear—make a sale each month and grow it to the point that you break even in February. But we had a little topsy-turvy roller coaster during that 10 months and then, unbelievably, our break even month was February of 1971. Just pure coincidence. We happened to get a big contract that paid off that month. I think it was with AGC, Association of General Contractors, and so we did break even in February but it was a ridiculously funny curve. And instead of spending the $43,000 negative cash flow that we had forecast, we spent $83,000 of our $86,000 of cash.

Grier: What happened?

Rollins: Well, it turns out Miller had owed money to Clarkson. Remember, Clarkson was the guy that came up with the name AZTECH, and we agreed in the end to pay Clarkson what

he had been owed. And there are other simply unpredictable aspects of any new business. It always costs more and takes longer than you think it will.

Grier: So the rule of getting twice what you needed was a good one.

Rollins: It was a damn good one. Thank you, Frank Shallenberger.

Grier: But also in April you're starting with an idea and with a system, but do you have code? Do you have programs you can use and are they going to be general enough so that you're not always just duping things for the next client?

Rollins: We continued duping while we tried to make sales, and that continued for a while actually because everybody wanted something a little different. Occasionally, you'd sell one that was a knockoff of one you'd done before but our sales technique, our value-added approach, was basically not to charge them for the software up front—they didn't know what software was—but to charge for the outputs. So we would get paid per thousand mailing labels printed—Cheshire labels, the state-of-the-art mailing label—or per thousand wallet membership cards, or so much per hundred invoices. They cost a lot more so we did those on a per hundred basis instead of per thousand, or so much per name and address keyed into the computer, or so much per address correction made in a database. We were using the 029 and 129 IBM keypunch and key verification machines.

Grier: From a customer's point of view, it's really money per service rendered.

Rollins: Precisely. Money for service rendered. And the beauty of it, it's a long term proposition. Once they become a client and you've made some small investment—sometimes zero, sometimes significant—in getting the software set up for that client, you've got them hooked long term. Associations, it turns out, are very slow to make decisions and so it would take us an average of maybe six months to close a sale, but they'd stay with us long term.

Grier: Because most of them have a board of governors that rotates, and they have a permanent staff which may be one person and a secretary.

Rollins: That's right. Or maybe a handful of staff. But they're nonprofits and they don't really work the way commercial businesses do where they're always looking to get the best deal. If they're happy with the service, if it works and it solves their problem, we kept them as clients forever it seemed.

Grier: Where was most of your business?

Rollins: Interestingly, DuPont Circle, which was where we were located, was really the nexus of most associations at that time because the zoning was such that they could be in townhouses in that part of the city without going into commercial buildings downtown. We did have some clients downtown or on K Street but a lot were on Massachusetts Avenue in those big buildings that have all the nonprofits that line Massachusetts Avenue and Connecticut above the circle. So again, as luck would have it—and you've got to be lucky sometimes—we were in exactly the right place to service these customers.

Grier: So it was low-cost marketing.

Rollins: Exactly, exactly.

Grier: Were you still using Spectrum Services as your back-end at this point?

Rollins: Yes. But we switched at some point as we lost our connection to the guys at NIH doing programming for us. Actually, we had one guy that had been a classmate of mine at Dartmouth who became a commissioned officer in the Public Health Service. Hector Motroni finished his two years at NIH a year after I did. He continued programming for me for a year longer than the other gentlemen, whose names I mentioned earlier. But once Hector finished his tour at NIH, we switched to another service bureau, still a street-front type of service bureau that was in Rockville, Maryland but was a fraction of the cost, maybe half the cost of Spectrum. And so we would drive out to Rockville at midnight and run the jobs on their machine during that period in our history.

Grier: You talk about the people leaving NIH. When do you start building your own programming staff? Is it as they leave NIH?

Rollins: Yes, as they leave NIH, I was starting to bring people in.

Grier: How big does it get in the early days?

Rollins: It was one at a time. My goal was to try to hire the best person at each point in time, and I'd never hire multiple people. It was one hire at a time, try to find the very best person. The best hire was really our number three executive—this was in 1971—a guy named Ed Murphy who had his MBA from GW. He'd gotten it while he was in the Army here and had a strong background in information technology. He became the third member of the executive team with equity and a private office, that sort of thing. And he did a great job for us for more than a decade in terms of the growth of AZTECH.

Grier: When do you start having sort of a standardized product, a standardized piece of software that you're using across different clients?

Rollins: It was a while later. We kept duping decks and just making the changes for each new client that came along. The first real standardized product was probably mid- to late-1970s when we finally got our act together and came up with a completely packaged approach.

Grier: Your newsletter talks about minicomputers, particularly Data General machines.

Rollins: That's right.

Purchase of IBM S/360 Model 30

Grier: Does that mark the transition away from these storefront service bureaus?

Rollins: Actually, we purchased our own computer after we became profitable. I think it was late 1973. The amount we were paying for the street-front service bureau computers exceeded what we would have as a cost if we bought our own. And so Ed Murphy took on the assignment of getting bids to buy our own 360 Model 30 and install it nearby. And these 360 model 30s, the list price from IBM was something like a million dollars, and we had thought we might be able to get one for about a third of that if we bought it used.

We found a broker in Texas that did a search for us and found one in California. It belonged to Wells Fargo Bank and they had outgrown this 360-30 and presumably upgraded to one of the bigger 360s. We got it through this broker for $195,000 delivered to Washington, DC. They actually put it on a truck and drove it across the country from San Francisco to Washington, DC. I'll never forget it. It was painted a bright cherry red. I don't know if that was Wells Fargo's color or whatever, but we called it Big Red. We built out a computer center starting 60 days before it arrived so it was all ready to install with the raised flooring and the special air conditioning. And we had a crane put the air conditioning condenser on the roof of the office building across the street from AZTECH where we leased a thousand square feet of space for our new data center.

Grier: As I recall, that neighborhood is more of a storefront rather than a row house kind of space.

Rollins: Actually, this happened to be a high rise office building at 1666 Connecticut Avenue, on the corner of Connecticut and R.

Grier: You made a comment about this being a breakeven point. You were managing your funds very tightly and building models for your costs so that you knew how much you were costing, you knew the prices of machines at the time, and you bring the IBM 360 on board. That's your doing, part of your management philosophy?

Rollins: Yes. If it's less expensive to buy than rent, let's definitely do it. And we had enough volume at that time to break even with maybe 10 hours a day out of 24. But then obviously, you could fill it up and improve your margin as you do so to the full three shifts of the 24/7 operation that it eventually became. In fact, it only took a couple of years until we pretty much filled it.

Grier: You've got breakeven in February of 1971.

Rollins: That's on the P&L.

Grier: When do you really start turning a profit, 1972?

Rollins: Well, no, on the P&L there was a profit in February of 1971. That was real profit. The breakeven on the computer rental is when we bought that machine, so the rental expense went away and instead, we had depreciation on a $195,000 machine that we bought. And we actually had to take out a bank loan to handle that. We'd accumulated some cash through our profitability between 1971 and 1973 and, as I recall, the loan we took out was $90,000 from Union Trust Company, which was our bank. It was a six-month bridge loan that we could pay off with the cash flow from the new business we would sell over that six-month period. And interest rates were huge. I looked that up recently to see what it was because interest rates in the late 1970s were double-digit. In fact, the prime rate was 12%. We paid 14% interest on that bridge loan, so we wanted to pay it off quickly.

Grier: You're going into a recession period at this point. This is the Nixon recession.

Rollins: The long lines at the gas stations.

Grier: And of course the two oil shocks that year. The business is still growing at this point?

Rollins: Associations are more or less immune to recessions. I've studied it over the years. They do feel the effects of a recession but they feel it about six to twelve months later than the rest of the economy. It's a ripple-through effect from their members, and it doesn't hit them until later when they have members that don't re-up on their dues, or they don't come to conferences or whatever the revenue-generating schemes are of the associations.

Grier: I'm still looking at this minicomputer timeline. Is that a next point that we jump to? Is there something in between?

Shift to Online Data Entry

Rollins: There's one thing in between, and that was putting our customers online for data entry. You may recall that there were a number of companies that offered key-to-disc operations that eventually made the keypunch machines and the old IBM cards that you used to punch holes in obsolete. We adopted a new technology from a company called Entrex. They were on Route 128, in Boston, where a lot of these technology companies were, and they had a wonderful key-to-disc system. The reason we were attracted to that one versus a couple of Entrex's competitors is this one would work over a dedicated phone line.

So we could put the main Entrex computer in our office and used it in lieu of keypunch machines for our staff. At that point, we had 24 keypunch operators, with eight machines running three shifts a day doing keypunching at our offices there on Connecticut Avenue—actually in the carriage house behind the brownstone. But anyway, we eventually phased out all the IBM keypunch machines, replaced them with the Entrex and the direct key-to-disc, and then had customers using the key-to-disc. It required a dedicated phone line from their office to our Entrex machine and I think it was 1,200 bits per second. By today's standard, you think "Wow, too slow," but actually it wasn't because there were no graphics and there was no color. It was just all monochrome on a screen with just a character-based, green screen type of application. So actually, it would process easily at the speed someone typed.

Grier: The 24 key operators, these are people that you added between 1971 and 1973?

Rollins: Probably started in 1970 after we capitalized the business, but, yes, over that period of time, it did grow rapidly and it was an IBM punch card intensive business.

Grier: So by that point, you have a computing staff. How big is your sales staff at this point?

Rollins: I think there might have been a second person working with Doug at that point. Carolyn Lowe, I think, was the woman that was working with Doug at that point in sales.

Grier: What's your next milestone?

Rollins: Well, the whole industry, as I recall, had its most cataclysmic event when IBM announced its minicomputer in 1975. That was the System 32, the midrange computer as they called it and unfortunately for us, when IBM made that announcement, they mentioned in all their announcements that this System 32 was perfect for solving the problems of doctors, lawyers and they named certain other industries, and one of them was associations. The good news was that they didn't have any software. There was none for any of these industries.

You'd have to hire a programmer, and also the System 32 was a single-user machine; it had incredible limitations. But still, because it came from Big Blue, from IBM, it made a huge splash and was all over the papers and magazines for the rest of that year, 1975.

Grier: Someone in your company was keeping track of how technology is advancing. Was that you?

Rollins: Ed Murphy and I both did. We'd joined ADAPSO a few years before this, probably in about 1972 and Ed was the active member at that point who would go to the management conferences and keep up with things. By 1977, I had become AZTECH's lead contact in ADAPSO because Jerry Dreyer, the executive director, tapped me to be the chairman of ADAPSO's big 40th management conference in 1977 at the Shoreham Hotel in Washington, DC. I remember spending several months before that meeting planning it with Jerry and the ADAPSO staff, lining up speakers and sessions and keynotes and all the stuff you do when you're planning an ADAPSO management conference.

Grier: So many of your ideas about technology would come from that. I assume you were visited by salespeople and others who were trying to promote new technologies?

Rollins: Absolutely, yes. We were reading all the trade press, *Datamation*, all the magazines at that time, *Computer Decisions Magazine*. I used to get a stack of them just to try to keep up with it. It was a period of rapidly evolving technology as you know.

Grier: If you're doing well, there are going to be other people trying to enter the business. Did you start finding competitors for association work?

Rollins: Absolutely. Service bureaus were cropping up to compete with us. We attracted a number of competitors.

Grier: Any that you can name?

Rollins: There was one called Executive Systems. And another over on Wisconsin Avenue that I'm blocking on the name of. But yes, there were a number in the area who were active competitors.

Grier: In this timeframe, basically mid or latish 1970s, did you make any business changes because of competition at this point?

Developing a Turnkey System

Rollins: Yes. We really were driven to go with this online Entrex approach by everything that was happening in the world of computers. More and more people were saying "Well, why can't I have direct access to the computer?" It gets back to the old time-sharing thing. We were running batch basically, and so by putting the Entrex terminal in the customers' offices, they could do everything online in terms of data entry. We marketed it as "online transaction processing," but it was very limited. Later on we'll get to a system that we offered on the Data General a couple years later where they could actually do real online database manipulation, but that was after we developed a relationship with DG, which was 1979. We actually spent a year doing what we called Project 79, in which we determined what hardware vendor we wanted to affiliate with in going forward into this new world of minicomputers.

Grier: You didn't have standardized software for the IBM? Different clients had different programs?

Rollins: Each client had their own decks of cards, yes.

Grier: So did Project 79 also include getting one standard set of software?

Rollins: Yes. That clearly was part of the plan and we had some experience with it. We'd come up a couple years before that with package software for low-end customers. We called it the Consortium system and it was very inexpensive, but it was designed for associations at the low end, from 500 members up to 5,000 members. So they weren't huge databases and they could place their orders once a week. We made an analogy to the Metro subway system, which had just opened in Washington in 1976, and we said this is like the Metro and it comes by once a week. You place your order on Tuesday and everything is delivered to your office by Friday. In between, those three days, we key punch, we key verify, we set up the jobs, we process it, we print it out, we decollate it, we burst it, we bind it and we deliver it to your door on Friday and it's a very low unit cost. You can get orders printed in any desired sort sequence, in any one of a number of different output formats, with any selectivity applied to it. It was really the first time that we'd come up with a fully generalized package system. And it was very popular.

Grier: To do that, you must've had a fairly substantial staff and supervisor of that work. What kind of structure did you have working on that?

Rollins: I actually wrote that system myself. It wasn't that complicated. It was a pretty simple system but I built into it as much flexibility as I could.

Grier: Who operated it day-to-day?

Rollins: Each client had an account manager. The basic structure of AZTECH at that point—let me back up, I haven't covered this—was that we had a very flat management structure. We had account managers and they all reported to one person. It was Ed Murphy for a while and then later on, we had to hire someone who reported to me that was the Director of Account Management. Todd Malkoff was that person. And we had many account managers. I think we may have had a dozen at one point and an account manager could handle a dozen clients. Basically, it was a very personalized relationship, where they'd go out and meet with the customer to understand their unique needs. Most ordered over the phone, but they'd meet periodically in person. And they were college graduates whom we taught enough about data processing to really understand how to put the orders in, how to do enough coding in PL/1 to tailor routines that needed to be coded to do everything the customer would need.

Grier: And that brings us to Project 79?

Rollins: Right. Exactly.

Grier: Project 79 begins when, 1978?

Rollins: No, actually January 1 of 1979.

Grier: This is your initiative?

Rollins: Yes. It was a consensus. Our board understood what we were doing. Doug Fisher, Ed Murphy—we were all collaborating on this but the handwriting was on the wall. We had lost our first customer in the history of AZTECH after we'd been in business for seven years. It shows that the customers are very sticky and they stay with you a while. And in 1975 when the System 32 was announced, we had two customers that year that said "We're going to go out and buy a System 32." They didn't know what they were getting into because IBM had no software for associations. You spend 50 grand on the hardware. In fact, in our advertising, we started depicting it as an iceberg where the part above the water line is the hardware and the 90% below the water line as the programmers, the computer operators, the supplies, the maintenance and all the stuff you don't see when you make the investment in the System 32.

Some of those customers never got their systems implemented at all because they had to hire a programmer to reinvent what AZTECH already had. But we saw the handwriting on the wall that this was something that associations wanted. Remember, they're nonprofits—we were discussing it a minute ago—and your goal if you're the executive director of a nonprofit, your compensation, your ego, is based largely on your staff size and the equipment and what you have in your office. If you have a lot of fancy stuff, it looks much better for you. So getting in this shiny new IBM System 32, even though it wouldn't work, might've actually helped your job security.

Grier: Your response to that is you're going to provide a minicomputer turnkey system?

Rollins: Precisely. We were going to be the first vendor to have a complete turnkey system, every single thing included, the software, the support, the maintenance, the supplies. We actually sold them whatever computer paper and supplies they needed. It was a complete package. Just as though we had been a service bureau before providing the complete solution on an outsourcing basis, now we were going to provide a complete solution for their in-house operation.

Grier: So Project 79 is preparing this solution, getting this product, if you will.

Rollins: And making the choice between—I think we started out with 19 vendors that we were analyzing, manufacturers of minicomputers. The goal was to choose which was the best and most cost effective of these 19 vendors for our association clients.

Grier: Which would have included IBM, Data General and DEC?

Rollins: DEC was in the fight until the end. It came down to two finalists at the end, DEC and Data General.

Grier: Honeywell, HP, Burroughs?

Rollins: And Wang.

Grier: The usual crowd. Why did it come down to DEC and Data General? Why did Data General win?

Rollins: Data General won for two reasons that I remember. One is that they had a slightly better price performance ratio than DEC. They were a scrappier company. They were a little younger. Edson De Castro had founded it when he left DEC and took all the DEC knowledge with him when he started Data General. They were both Route 128 companies like Wang and a lot of others around the Boston area. And the second reason—and this was the one that appealed to me the most—was software compatibility on everything that they built. Associations came in all sizes and I'd been spoiled with the IBM System 360, which was the first family of computers in the world that was software compatible from top to bottom. Well, except for the 360-20, which we'll forget. But basically, everything was upward compatible and Data General, even though they had a huge range of computers, from the small Novas to the large Eclipses, everything was software compatible in COBOL.

Grier: All in COBOL?

Rollins: Yes. So we transitioned from PL/1 to COBOL.

Grier: How does the project unfold? It starts January 1979.

Rollins: Right. Well, we had to make the choice and it was a tough call. But we went with Data General. The next step was getting some expertise on Data General on board that we really didn't have. We ended up hiring two people who had been former Data General employees, one in the systems side to look after the system itself, the operating system and the hardware; and the second was in sales. Looking back on it several years later, we decided that that was probably an overreaction, that really what we needed was more domain expertise in charge of that, domain meaning association software applications expertise. These people didn't know anything about associations. They eventually left or we let them go, whatever happened. But it gave us a level of comfort to implement Project 79 and proceed with the development of what we named AZTECH*Ware, which is the packaged software. And again, we had had this Consortium system I'd written years before that was sort of a kernel of what AZTECH*Ware was to become. AZTECH*Ware became much grander. And I had nothing to do with writing a single line of code in AZTECH*Ware.

Grier: 1979 is probably the year when Data General gets this big boost because of Tracy Kidder's book "Soul of a New Machine."

Rollins: Wasn't that a great book?

Grier: It was a great book. Did that play a role in your marketing, in your decision?

Rollins: No. I'm a big reader and I'd obviously read the book. Or maybe I read it right after we made the choice of Data General. I'm not sure what the sequence was, but I recommend the book. It was a good read, but no, it had nothing to do with the decision. The book is really about developing the first 32-bit super minicomputer, which was the MV computer, which we later bought one of. Our first Data General computer was the predecessor to the MV. It was 16 bit. It was called C-350 and we used the C-350 in two roles; one was to develop AZTECH*Ware on, so the COBOL programming staff used the 350 to develop the product including the central database product, the membership module, the subscriber module—the initial group of modules. And secondly, it was used for time-sharing, so that we could offer yet another alternative to our service bureau customers for their file maintenance. They could have full online access to their database from their desktop via dial-up terminal to the Data General and do any kind of manipulation at all.

Grier: I'd like to get some of the timeline of all this. You start making this decision process in January 1979. When do you decide on the Data General?

Rollins: I think it was probably about summer. Don't pin me down on this. I'm having a little trouble with dates. It got blurry.

Grier: Order of magnitude is fine. So you do five, six, eight months, something like that, of decision on hardware. When do you start work on the software product?

Rollins: Immediately.

Grier: So you take delivery and you set up a new software staff, or do you move some of your old staff over?

Rollins: We did both. We hired a couple of COBOL programmers and then we started moving some of ours over. And again, the lesson learned looking back is the guys you move over that understand the application are the ones that work out the best in the long run. They may have started on PL/1 but then they became the greatest contributors. We had a guy named Paul D'Angelo who was just a spectacular PL/1 programmer and an equally spectacular COBOL programmer on the Data General later.

Grier: When was your first customer of this new system?

Rollins: Early 1980 if I'm remembering correctly. The first new customer on it was actually using the C-350 in a time-sharing mode. They were using it with terminals in their offices. People today think of a PC as being a terminal. These were dumb terminals.

Grier: These were things like DEC PT100s?

Rollins: Yes, exactly. They were green screens, basically monochrome terminals, with no graphics and no processor on site. It's just a hollow box of a terminal and keyboard with a cable that connects over a phone line to the intelligence, which is the computer at our end—a Data General C-350.

Grier: How long do you think your old system lasted as a product with the new one in line? You ran the two in parallel for some time.

Rollins: The old system being which one? The Entrex?

Grier: The Entrex, yes.

Rollins: Oh, it kept going because it was less expensive and clients didn't have to pay for having their whole database online. It was really just for online data entry. And many clients

would prefer that. And basically they would have us deliver printed outputs for all the mailing labels, dues notices, and everything they needed.

Grier: Did it last for another decade?

Rollins: No, I'd say it was probably another six or seven years.

Grier: But still a substantial part of it?

Rollins: Yes, it lasted quite a while. It was a very successful product. It was an easy transition getting into it. I look back on it and think, "I wish I'd had more business opportunities that worked out as well as the Entrex ultimately did." In fact Entrex later got acquired by Nixdorf, the German computer company. Nixdorf eventually came out with one of the very competitive plug-compatible mainframes. We were at that point close to Nixdorf through our Entrex relationship. Nixdorf came out with a very hot mainframe called the 8890 Model 40, if I remember right. They offered to put one in our data center as a free trial. They knew what they were doing. We became enamored of it. It was a fabulous machine. It cost about half as much as the next upgrade we were going to have to make with IBM. So we went to the plug-compatible mainframe made by Nixdorf for our central processing computer.

Grier: And this is about mid 1980s?

Rollins: Early 1980s, I think.

Grier: So you're now running a mixed shop. You've got an IBM shop, and you've got a Data General shop running in parallel.

Rollins: That's right.

Grier: And you're doing turnkey systems where you're supporting them in other people's offices.

Rollins: That's right. We got both going at once.

Grier: So the organization, at this point, is substantially bigger than you were in the early 1970s.

Rollins: Absolutely, yes. And it was a difficult business to manage. I mean, getting into the turnkey systems business, selling the AZTECH*Ware on the Data General computers was more of a cultural change than we had bargained for.

Grier: In what sense?

Rollins: It was really quite different. You're training people to do all the work in their office that we had done in our office before with our account management staff. So now we have to have trainers. Okay, they're going out, teaching people how to operate the Data General with the AZTECH*Ware. We have a training facility set up at AZTECH, a really nice, professional training room where we teach courses on each one of the modules—the Member*Ware, the Subscriber*Ware, the Conference*Ware—all the different modules of the AZTECH*Ware family. We didn't realize how different the business was going to be. It kind of snuck up on us and we had some trouble. There were capital requirements. You're buying $100,000 machines that you're reselling for a little more than that. But then you're selling the software with it. Managing the cash flow was difficult. The people, the language, there were a lot of transitional issues. It took a while to really get comfortable compared to what I was describing with the Entrex, which was a cakewalk.

Grier: Yes, it does sound it. You actually were reselling. You were buying the computers and then leasing them to them.

Rollins: No, we partnered with a leasing firm, but always got paid in full for the hardware and software we sold. They used to call us an OEM which is a bit of misnomer. Later they started calling us a VAR, Value Added Reseller, which is a better name.

Grier: Which is a better name?

Rollins: VAR is a better name than Original Equipment Manufacturer, OEM.

Grier: Okay. At some point during this period, you move. You leave your Connecticut Avenue office.

Move to Bethesda

Rollins: Yes, that was about 1989, or 1990. We outgrew it. An interesting business side note. In December of 1976, we bought the building we were in on Connecticut Avenue. We had looked at buying one across the street. We needed more space, and the rent was going up. As we were having an architect draw up plans to renovate the building across the street, suddenly a sign went up on our building saying, "For Sale."

So, I approached the owner whom I'd never met before since he was an absentee landlord. I had my accountant draw up a proposal to buy it from him on a basis which would be a tax advantage for him—an installment sale over a period of years, so his capital gain would be spread out. And we would make a down payment based on our own collateral. He accepted the

proposal. We bought the building for $400,000 in 1976, a five-story brownstone with the parking lot in back and the carriage house.

And, within a year or two of that we renovated the carriage house, and expanded it. We moved our mainframe into that from the space across the street in the high-rise office building that we'd been leasing. So we now had a 19th century carriage house on an alley behind our brownstone. And the whole first floor was a nearly 21st century data center with the raised flooring, and all the security, and everything of a modern IBM mainframe data center.

Grier: Okay, and that, of course, kept you in your community at that point?

Rollins: It did. It kept us where we wanted to be.

Grier: And then you moved out in 1988, you said?

Rollins: 1989, I think it was. We actually sold the building a year or two before that. When I convinced the board of directors to buy the building, we had just before that converted from a C corporation to an S corporation. So everything was on a tax flow through to the individual owners because we had had a terrible problem with double taxation before that, because we were generating earnings before interest and taxes, EBIT, of like 40 percent. It was a pretty profitable service bureau in the pure service bureau days before we started getting into turnkey systems and all that.

We had very high tax rates when you take into account paying a dividend. I think we figured that if we made a $1,000 profit and paid the dividend after our corporate tax to a shareholder, and then that shareholder paid his tax on it, out of that $1,000 there would be like $250 left. And so you're basically in a 75 percent double taxation trap. So we converted to Sub S and began paying quarterly dividends to the shareholders. So that whatever income they were responsible for on the flow-through basis, they'd have plenty of cash from the dividends to cover that.

But then buying the building took something out of that cash flow. I remember the presentation I gave to the board. I said, "If we spend $400,000 on this building, we think within a decade it should be worth at least $550,000" And based on that, if you did the analysis, it was a rational decision, based on the rent savings from owning it, and the appreciation from $400,000 to $550,000. Luckily we ended up doing a little better because the Dupont Circle Metro stop opened across the street from us. And the real estate around the Metros in Washington, D.C. went up in value much faster. So when we did sell it 10 years later, we sold it for a lot more. I think it was $2.4 million. So, as a sidebar, that worked out as a good business venture. But it had nothing to do with the computer business.

Grier: And in 1989, you're moving out to Bethesda?

Rollins: Yes.

Grier: Okay. There's sort of two tough periods of economic difficulty. There's the 1973, 1974 period. And then there's the early Reagan period. You talked about how you were buffered a little bit. These are the two periods you were talking about? That the recessions didn't affect you as much?

Rollins: That's right. They did not affect us as much. Associations are really buffered from recessions as Washington, D.C. is to a certain extent. But they're buffered even more because they're shielded by their members who are paying dues. And in fact there's one argument I've read more than once that associations are counter cyclical because in tough economic times the members spend more time going back to the association, which is where they get information about how to improve their businesses and overcome adversity. And how to better operate their businesses.

Grier: Right. When you're moving in 1989, you've had PCs for a decade. You've had the IBM PC for seven years. How is that starting to affect your business?

Rollins: Well, we moved from Data General gradually. Our AZTECH*Ware software could run on PCs. We found a COBOL compiler which ran on PCs and PC networks that would accept all the same software with only very minor changes. ACUCOBOL was the name of the product we found. We could run ACUCOBOL on MS-DOS, so when the PC was invented in 1982/1983, we started selling it on small computer networks. Probably in 1984/1985, we ran an ad targeting associations saying you can have your entire hardware, software turnkey system in your office, including an IBM PC, for $10,000. And that was true. People couldn't believe it—that for $10,000 you could buy a whole AZTECH*Ware turnkey system. It was just a 386 PC, a low-powered one by today's standards. The hard disk was not very large or very fast compared to anything we know today. But that was literally true at that time in the mid-1980s.

Grier: So you're basically at this point now running three sets of products.

Rollins: The software is the same on all the turnkey systems. It's all the same version of COBOL whether it's on Data General or on the PCs.

Grier: All right, it just sort of begs the question from my point of view how your company managed all of them and kept track of what was there. I assume you had someone in charge of software who had the responsibility for all that?

Rollins: Yes. We had two people on our org chart that reported to me. One was the Director of Systems Analysis doing all the design work. And the other was the head of the programming staff. So, yes, but you're right that there were a lot of moving parts.

Grier: Lots of moving parts. Jump back to the 1970s when you had different software for so many different clients. It's sort of like you had a hook on the wall and said, "This is their software." And you had to remember which piece of software you'd need to use for which people?

Rollins: That's right. It was very complicated keeping track, and that was on the operations side. When an order would come through to print such and such an output for such and such a client using this sort sequence, this selectivity, etc., etc., it had to be done very carefully, and the quality control person there in the data center was a critical individual.

Grier: Did you ever have challenges with using the wrong software and things going awry?

Rollins: We did. Never at a calamitous level. There would be minor glitches.

Grier: You'd run the software, look at the output and say, "My God, what is this?" And then rerun it.

Rollins: That's right. I don't think we ever had one where we used the wrong data, or the wrong program, and delivered something to a customer that would have revealed something that we shouldn't have revealed. We never had that kind of a disaster.

Grier: But things that were irritating and cost you money.

Rollins: Yes, and we did an acquisition of a competitor in December of 1981. And every single one of their customers was like ours with a totally customized system where they'd copied it from an earlier one and made changes to it to make it work. And these were all in COBOL but not the Data General standard COBOL. It was a different COBOL.

Grier: So how did that process go? Who was the competitor?

Acquisition of the DC branch of NLT Computer Services

Rollins: The competitor was a firm called NLT Computer Services. It was a division of National Life of Tennessee in Nashville. And the headquarters of NLT Computer Services were in Nashville, but they had one branch office in D.C. that did nothing but associations.

Grier: Okay, and they were started about the same time as you?

Rollins: Later.

Grier: Okay.

Rollins: They were on East-West Highway in Bethesda, and they had a remote batch operation where all the processing was done in Nashville over a high speed connection with Bethesda. Fortunately, I didn't have to learn that technology because when we acquired it, we just moved everything to our mainframe on Connecticut Avenue. By then we owned the building, so we had enough room to put their staff in our building. There were 10 or 12 people that came down to Connecticut Avenue with that acquisition.

Grier: Okay, so it was in effect just moving business from their computer to your computer. And it was the same kind of computer at that point?

Rollins: Right. But it made this complexity problem you were describing that much greater because now we had all these new customers. I can't remember how many there were.

Grier: Dozens? Hundreds?

Rollins: More keys hanging on the wall you had to keep track of.

Grier: But would it be like dozens or hundreds?

Rollins: Dozens more.

Grier: Multiple dozens.

Rollins: Yes.

Grier: And I assume that the goal at that point was to move them onto your software as quickly as you could?

Rollins: Which was not easy. That's another lesson learned here among many lessons learned. But it was about a 30 percent increase in our revenue when we made that acquisition. And we took on some debt. They financed it for us over a period of years. The payout was like four years or something like that. So we had a lot of debt on our balance sheet at one time from the purchase of the real estate, purchase of a Data General computer that we're running on a time-sharing basis, and then purchasing NLT Computer Services.

Grier: What was their interest in selling to you?

Rollins: They wanted to get out of the business.

Grier: Okay, and why?

Rollins: Well, I knew these guys through ADAPSO, Doug Altenbern and Tom Collins, although not at an intimate level. I always looked up to them. They had a big operation down in Nashville. The two of them never came to Washington, D.C. They had a local manager here. And they made the strategic decision to get out of the association software business. Maybe it was too much trouble or maybe too much complexity for a big company to worry about.

Grier: Or pulling them in the wrong direction. But there's obvious advantage to you. You would have increased your business and increased your hold on the market. Were there other competitors at this time that were trouble? Or that you ended up merging, or taking their business?

Rollins: We made an offer to one, as I recall, before we bought NLT. And that offer was rebuffed. But we were sort of bottom fishing. We were trying to get a good deal. And we did get a good deal from NLT in terms of the cost of the business. The price we paid was a small fraction of the annual revenue. So we thought it was a pretty good deal.

Grier: Okay. We're sort of in the 1980s. Are there any things in the 1980s that we have missed at this point?

Transition from DG to PCs

Rollins: DOS, PC Networks, Novell Networks, which was the operating system that connected all the PCs in the client's office. Novell Networks really began to supplant Data General at some point because it was more economical. People wanted PCs on their desks. And Data General offered a dumb terminal, a green screen terminal without any computing power of its own which was not what people really wanted by that point.

Grier: But Data General, in effect, goes out of business in the mid-1990s as I recall?

Rollins: They were acquired by EMC.

Grier: Yes. But their computing line very quickly disappears after that.

Rollins: I don't know what year that was. Actually they lasted longer than DEC. DEC was acquired by Compaq before Data General was acquired by EMC.

Grier: Right. DEC had the distinction in 1988, as I recall, of having the largest number of installed bases of computers in the world.

Rollins: I remember that.

Grier: And it was gone in seven years.

Rollins: Isn't that amazing?

Grier: Yes, it shows you the speed of change. Okay, we're moving into the 1990s. You've mentioned several events. Why don't you just summarize? Transition from DOS to Windows?

Rollins: Right. In the 1990s we go from DOS to Windows. And then by the end of the 1990s from Windows to the Internet or the web. In summary, looking back from the beginning, it started with punch card batch processing. Got into remote online time-sharing, if you will. The third generation of our business was the minicomputer Data General business. The fourth generation was DOS. And then where we're going next would be to the fifth generation Windows, and then the sixth and final generation which is the web.

Grier: And during this whole time as I've read your newsletters, your customer base never varies. You're always going at this target of associations?

Rollins: Yes, from the beginning the business strategy was what's called a niche market strategy or a focus strategy in an entrepreneurship course. We teach that there are three basic strategies that are the best ones for an entrepreneur to adopt. And that's one of the three. Being the low-cost provider is the second one. But you usually don't recommend that because it's hard to compete with K-Mart if you're just coming into the business. And the third one is a product differentiation strategy, which is more like Apple's strategy where you've got a different type of product. And you focus on the product rather than on the market. And we wanted to focus on a market, or a niche, so we followed that first strategy. And stuck with it! There were many times during that 30-year run that people would come to us and say, "Hey, you know, in addition to your association business, why don't you get into x, or y, or z?" I'd take a look at it and Doug Fisher would help me. And each time we decided not to. We decided to stick to our knitting to be the specialist in this second largest industry in the Washington D.C. area and not to deviate from that.

Grier: Did you have any customers who were not associations? Who might be similar to, or just sort of a notch off?

Rollins: Yes, we were opportunistic in that regard. In fact, when we started selling the Data General, we had a little bit more time available on the IBM mainframe. So we decided to undertake a direct mail specialty. I joined the Direct Marketing Association of Washington and got involved in selling a lot of direct mail applications. And this was a time when we actually

licensed third party software. Group One is a company that offers software for direct marketing. Or they did. Excellent software. So we licensed their whole line of direct mail software, which would do everything including address correction, zip code correction, carrier route coding, bag tag printing, and all the things that the big bulk mailers had to have to survive. And we offered all that as an ancillary product. We probably had 15 or 20 clients that were not associations that had a need for direct marketing.

Grier: But in effect you were filling up your computer time?

Rollins: Exactly. And it was a related application. We were doing some of the same direct mail applications, direct marketing applications for the big associations.

Grier: So you're just selling the same services to someone else to keep you busy?

Rollins: Exactly.

Grier: During this period did anyone ever look at you to buy you out, to take you over?

Rollins: You know, we kept waiting for that. When we converted to Sub S back in mid 1970s, we had a whole series of meetings with our board to decide what we wanted to do when we grew up some day. And we decided we didn't want to go for a quick sellout, or an IPO, or anything like that. We wanted to hang in there as a privately-owned company to grow steadily and organically for as long as we could. And we wanted to be acquired someday. We thought that day would come fairly soon. That was our long-term business plan. We were enjoying it. We were having a good time at what we were doing. I loved it. It was my passion. And I didn't want to see it disappear too soon. But then, finally, the knock came on the door in 1999.

Grier: So, but before that you were basically on your own.

Rollins: Yes.

Transition from DOS to Windows

Grier: Let's talk about converting from DOS to Windows.

Rollins: DOS to Windows was an agonizing decision. It was inevitable that a GUI, a Graphical User Interface, was going to take the place of DOS, because DOS was clunky and non-graphical. The question was which GUI do you go with? IBM had a wonderful operating system for the PC called OS2. It ran on the IBM PCs. Steve Jobs had left Apple by then. He'd been replaced by John Scully and Jobs had started a company called NeXT Computer which all the techie magazines said had the very best Graphical User Interface out there. There was the

company in Redmond, Washington that had DOS and was talking about a Windows product as they called it. The first version was so buggy most people weren't really willing to consider it. So we were in a quandary—which of these three do we go with?

Grier: No consideration of UNIX workstations?

Rollins: We didn't look at that as a serious alternative because we were into PCs at that point. So any one of these three would have worked, and it was not clear which way we could go. And so we sort of deferred, and waited, and waited. And clients would say, "Well, we want a Graphical User Interface. What are you going to do, AZTECH?" And we'd say, "Well, we're going to make a decision by the end of the year." So, we'd sort of procrastinate a little bit. And finally it became clear to us that the new version of Windows really had a very good chance of succeeding.

Grier: So, Windows 3.03.1?

Rollins: Yes. They were up to Windows 3.x when we finally made the call and announced we're going to go with Windows. And so then we began rewriting the product. Our fifth rewrite was for Windows.

Grier: So this is basically 1992, roughly?

Rollins: For us it was, I think, 1993.

Grier: You've got to do a complete rewrite. Does Microsoft come knocking with its developer kit?

Rollins: No, we're too small. We're off their radar scan. In fact, our greatest fear was that we would be put out of business if Microsoft discovered our lucrative little niche market here in Washington, D.C. And so, we didn't want to get them interested in what we were doing. And they didn't come knocking.

So we undertook it ourselves. And worked through ACUCOBOL which was the COBOL we were using. Meanwhile, ACUCOBOL had gone with Windows, so that gave us a pathway to a full Windows product. And they provided some tools. Then we integrated some third party accounting products to flesh out our products with modules for accounts receivable, accounts payable, general ledger. We integrated those so all the accounting functionality was fully integrated so that when payment data came, say, into the membership module, it would flow right through the general ledger.

Grier: But this also shows something interesting about companies this size at this time, and software at this time. You're providing a service. You're providing a service from someone else's hardware. You have code—I assume it's still the ACUCOBOL code that you wrote back in the early 1980s—that's the central part of your product. You've got a database that runs off of that. You've got ACUCOBOL providing you tools for that. Who are the third party vendors who are now giving tools that you're hooking into?

Rollins: The main third-party vendor providing the accounting software tools—they had a dozen different modules in the accounting area—was called SouthWare out of Auburn, Alabama. They had developed their entire family of accounting modules in ACUCOBOL independent of us. It was just a happy coincidence. They had been running it on Data Generals, and then morphed to the PC and Windows. So they had gone through the same historical cycle we had.

Grier: So they're very much working in parallel with you of the same sort of goals, the same kind of ethos of the programming team. So it's very natural.

Rollins: It was.

Grier: Well, what's the business relation you have? Are you in effect licensing their software from them?

Rollins: That's right. We're basically a reseller of the SouthWare software. And there were many other resellers all over the country offering SouthWare.

Grier: But you're integrating it into a service product?

Rollins: Exactly. And into the total turnkey solution that we offered to the associations.

Grier: So when the association buys a product, you now have to start divvying this up, and say, "We owe this to SouthWare. We owe this to ACUCOBOL. And of course the PC which we set up for them was another cost."

Rollins: One of the neat products we integrated back in the early Data General days, when it was still all the green screen, was WordPerfect. It was written for the Data General before it was written for the PC. And it was a marvelous word processor as we all remember. And it was just an integral part of the AZTECH family, which really helped us! It made it much easier to make sales to all of our customers because we'd offer WordPerfect with the AZTECH*Ware product that ran on Data General.

Grier: Okay. 1992, 1993, 1994, when you're making this conversion is the time that the Internet is going from being a private academic network to having a public face. You've got 1992, and Al Gore pushing forth his legislation. You're getting Internet Service Providers being invented. I assumed you had been following the Internet technology as well because it's the same time as you're adopting Windows.

Rollins: No, we really were too busy trying to convert to Windows at that time. We didn't worry about the Internet for a few more years. We could see it coming, and actually began very early setting up our own website, probably in 1994. We used AZT.com and were doing e-mail. But for our customers we really did nothing with the web or the Internet. Because we were too busy transitioning to keep this rollercoaster of 30 years going. And converting to Windows from DOS was not an easy thing at all. A lot of coding. A lot of changes. A lot of design.

Grier: But still in COBOL, correct?

Rollins: Yes, still in COBOL. A lot of work and we're adding new modules as we go along, too.

Grier: And this is all done internally. Your programmers are working in your offices under your employ.

Rollins: Right. We had started AZTECH*Ware with three modules: Central*Ware, Member*Ware and Conference*Ware. And then we ended with something like 25 modules by the mid-1990s that we were trying to convert to Windows.

Grier: In effect the modules are the units that the customer buys and pays for.

Rollins: That's right. But you had about 25 AZTECH*Ware modules that we had written. Then another 25 other modules from SouthWare, and WordPerfect, and other vendors—a report writer that was integrated. And so we had close to 50 modules altogether by the end of the 1990s that we were offering to an association. It was like a menu. They just checked off the ones they needed to run their business. And if they needed 30 to run their business, we'd license those 30 modules to them out of the 50 total.

Grier: So in some ways it's the exact reflection of what you were doing 20 years before when you were saying, "You pay for the reports you want. You pay for the labels you need."

Rollins: Yes. Except there were vastly more applications.

Y2K and Transition to the Internet

Grier: All right. Y2K? What does that do to your company?

Rollins: We viewed it as a great opportunity because everyone was so concerned that the world was going to end. We knew how to fix the problem. Basically we had to go through every single line of code in every program, and change the 2-digit years to 4-digit years. So instead of saying 97, it would say 1997, so the "greater thans" and "less thans" couldn't give you the wrong answer. That's all Y2K was, an issue with going from 2-digit to 4-digit years. So we went through and made those changes.

But the opportunity for us was to get everybody on full level maintenance. So we were able to improve our revenue and our margins as we approached Y2K just because of the fear factor everybody had. They wanted us to be on call, to be there 24/7 as the day approached. And it ended up being a great business opportunity but, as we know now, once everybody skated through Y2K pretty seamlessly, there was a real drop in spending, because companies had spent so much leading up to it.

Grier: You went through and changed the date coding and the date fields in your databases. You didn't recode the system? A lot of firms did.

Rollins: We were constantly upgrading the software and that was the same point in time when we finally were going to the Internet in the late 1990s. It was just another upgrade like in early 1993 when we went to Windows. In the late 1990s we went to the Internet and became Y2K compliant. And we were always making other functional enhancements. But we didn't, on a wholesale basis like some companies may have done, go through and rewrite everything for Y2K. A complete rewrite could introduce a host of new problems.

Grier: But companies did that nonetheless, primarily when they wanted to get rid of old languages and old systems; old architectures.

Rollins: Yes, well, we had COBOL which was timeless.

Sale of AZTECH

Grier: As we all have learned. All right. The last part of the story I think we need to get to at this point is your departure and what has happened to the company. You said that you were expecting a buyout or a suitor at some point.

Rollins: Yes.

Grier: Is that what got you out of it?

Rollins: Well, we actually sold the company in two pieces. In 1990 we sold the legacy batch processing piece, what was left of it. It was a former competitor, Executive Systems, that acquired it. Executive Systems had been bought by an individual I had met through ADAPSO, named John Puhala. John was basically aggregating batch processing applications on a huge mainframe somewhere in Maryland. And so he acquired our batch processing business at that point, which was about 50 percent of our revenue in 1991.

And of course, we grew so rapidly during the 1990s that when we sold the business to GoMembers.com on March 1, 2000, it had grown to be much larger and more profitable than the business was before we'd sold Executive Systems that piece in 1991. It was because the software business in the 1990s grew at a very rapid rate. I recall the compound growth rate was over 20 percent a year during the 1990s.

Grier: So when the batch processing business was sold, in effect you're selling your services as is and freezing them in time, I assume?

Rollins: Right.

Grier: Then the buyer is not going to develop them?

Rollins: That's right.

Grier: So that the people who have those systems have an incentive either to get out or what?

Rollins: Well, he had programmers working for him, so he could make some changes. But for the most part they lost the AZTECH expertise when it was acquired by Executive Systems. But he did have programmers, and they would be able to do some changes.

Grier: Do you have any sense of what happened to those customers and how long they stayed in that format?

Rollins: None whatsoever.

Grier: They didn't come dribbling back to you after a while?

Rollins: No, we didn't hear from them. That was good news, I guess.

Grier: Okay, and then?

Rollins: We became a pure software company in a sense after we spun out that legacy mainframe batch processing business in 1991. We were really just selling the AZTECH*Ware, running on either Data General or Windows at that point.

Grier: So, you're not doing turnkey systems? You're not getting them set up and trained?

Rollins: Yes. We are. When I say the software business, it's the whole turnkey system with the training, with the support on Data General, on DOS networks, on Windows networks, whichever they have. And over a period of time they were all, of course, moving from Data General to DOS to Windows. So by the time we sold the business everything was off of DOS and onto client server networks running Windows. And with the web modules in place so that they could do e-commerce over the web, the members could go online to their association's website to change their address, pay their dues, etc. That was all part of the AZTECH*Ware product. We called it AZ*Web.

Grier: And that's sort of the last piece that you have before you turn it over to others?

Rollins: AZ*Web was the last module, that's right.

Grier: How did the offer come? Were you looking to sell? Did someone come to you finally and say, "We like your niche?"

Rollins: Yes, I had a phone call from the CEO of a firm out of Chicago. It was a competitor called GoMembers and they were backed by venture capital. The venture capitalist wanted an exit at some point and wanted to go public. To accomplish that goal they needed a couple of things. They needed more critical mass, more customers, more revenue. And we were the biggest in the space where we served something like 700 associations or other organizations.

And the second thing we had was the Washington, D.C. area headquarters because we had actually moved to Bethesda, Maryland at that point. But that offered credibility for them because Washington is the center of the universe for associations worldwide. They were in Chicago, which is the number two city for associations. So by acquiring AZTECH they got their headquarters moved here. And they got the critical mass of customers.

So they wanted to acquire us, and we negotiated starting in probably September of 1999. And by January, we had pretty much agreed on the deal. It was going to close on March 1, 2000. They were going to do some due diligence during that final month, meeting with our staff

members, and going through all the records. Making sure everything was squeaky clean, which they did. And then we closed the deal.

I had tried to negotiate for some stock. GoMembers had a full web-based product, which was really Software as a Service. They were the only competitor that offered a SaaS product. With their venture capital, they had the money to invest, to really have an advanced product. So we were doing it partly for our customers. They would have a pathway to grow into a full Software as a Service product.

But also, I'd been doing it for some 32 years. It was time for a change for me. But I did ask the CEO a couple of times during the negotiation if we could have some equity, because his company was growing so rapidly. And he said, "Absolutely not. We can't do that. We're going to be going into a quiet period here soon on our IPO. And I can't have any equity changing hands whatsoever." He said, "This has to be an all-cash deal." It was the only way he would sell. So we did that on March 1, 2000.

Grier: And so that was it, and you're now out of the business?

Rollins: Yes. And again, it was just lucky timing. As you know the NASDAQ peaked on March 10, 2000. That's when the bubble burst on the dot com world. They never were able to do their IPO. However, they're still profitable as an independent company.

Grier: Yes, I would have to imagine that they didn't crash like many of those companies?

Rollins: No, they didn't. They had a good solid customer base, including all the AZTECH customers. And they're still running well to this very day. I don't know what their venture capitalist has done, or what their new exit strategy is.

Grier: He never exited. What stories have I missed? There must be something in there that has either come to mind or you came prepared to discuss that we didn't touch on? An interesting customer? An event that was seminal in your thinking about your business? An employee?

AZTECH User Group

Rollins: One thing that was really critical, starting early-on—you may have seen this in some of the newsletters you reviewed—was our AZTECH user's group. We haven't talked about that. But when we set up AZTECH*Ware (commonly referred to by clients and staff as AZ*Ware), we shortly thereafter set up AZ*Share which was a users' group of all of our

customers that were using the AZ*Ware line of products. And we would have annual user group meetings which were wonderful occasions.

Grier: You set it up about 1981, 1982 after launching AZTECH*Ware in 1979?

Rollins: I don't remember the exact year, but it would have been after we had a critical mass of users, about the mid 1980s.

Grier: An independent organization run by the users themselves with a leader selected by them?

Rollins: They selected their leader. We were actually kind of running it behind the scenes because the leader was a volunteer. So we'd organize the meetings after getting the elected leadership involved in setting the program, the agenda, the speakers, and some of those things. But it was a wonderful way of staying in touch with customers in a very non-confrontational, non-sales mode. But at the same time getting them educated on what the new products were, and what opportunities they had to enhance their internal operations by licensing new software modules from AZTECH.

Grier: What kind of access would you give them to your staff or to yourself at these meetings? Would you all attend them?

Rollins: Yes.

Grier: Would you sit down and have appointments?

Rollins: We'd roll out the red carpet. We would meet with them if they wanted to meet with us before the meeting, after the meeting, or, to a limited extent during the meeting. We had meal functions. We wined them and dined them. There was, I think, a small fee they paid to attend. But we basically underwrote all the labor costs, which is our whole staff that we'd have there for two days for the meeting. And really try very hard to make it a fun, enjoyable two-day event.

Grier: Did that last all the way until you sold the company in 1999?

Rollins: Yes.

Grier: I know a lot of those things started falling apart in the 1990s.

Annual Strategic Planning Meeting

Rollins: Now, we were not the kind of company whose culture would allow us to let things fall apart. In fact, I have another example of something that we started doing early on—probably in the 1970s—that we would continue right up until the end. Every single year we would update our strategic plan. Something that I tell my students about to this day when I'm teaching business planning is that if you write a business plan just once and raise your capital, and then put it on the shelf, and never look at it again, you're missing a huge opportunity. You really need to revisit it every year and update it. And figure out what new strategies you want to pursue.

So I would have a retreat every year in November. The purpose of it was planning for the upcoming calendar year. What do we want to do differently? And we had this methodical approach that I developed largely through talking to people at ADAPSO who had done it before me. People like Tom Collins, and leaders of other companies that had been doing this for years on a much larger scale than AZTECH.

We'd start by reviewing the mission statement. Do we have everything in there we want? Do we want to change it? We'd do a SWOT assessment; strengths, weaknesses, opportunities, threats. We'd go through an environmental analysis. What is the competition doing? What's happening in the data processing or software industry? What are the changes there? What's happening in our association market that we're serving? What are the changes there? One year, somebody pointed out that PACs, political action committees, were a big deal. And so we came up with a module called PAC*Ware. <laughs>

Before the meeting we'd gather input, not only from our users' group, but also from our staff. It was sort of a bottom-up, grassroots approach to coming up with great ideas for new products, new services, whatever. One of the most profitable ideas was because one of our customers said, "The phone numbers in our database are a mess because the area codes keep changing." Across the United States they were running out of digits and phone numbers. You may remember the significance of this in the 1990s.

Grier: Right, it was the cell phones and fax machines.

Rollins: It was cell phones and fax machines, exactly. They ran out of 7-digit numbers in many of the area codes. Use Maryland as an example. It was all area code 301. And they used up all the available numbers in 301. So they split the state down the middle. The western half kept 301. The eastern half became 410. If our customers had to go in and change all those by hand online or on their PC network system, whatever they had, it would have taken them years. We licensed a product from Bell Labs, which was a map that would translate based on the exchange code. The three digits after the area code are the exchange code which could be translated into a corrected area code. And with that product we came up with a module of

AZTECH*Ware which would do that automatically for all our customers. It was actually a fairly trivial piece of code.

Grier: It's a fairly trivial thing but it's a one-shot thing and you can make a bundle off of it.

Rollins: Yes, but it wasn't one shot. They had to keep buying the maintenance on it because every year there would be a bunch of new area codes that would be split. This happened all through the 1990s, until they stopped doing the splits, and they started doing overlays. With an overlay you'd never again change your area code. You would just have another area code over the top of the old. The new area code 240 in Maryland, to continue my example, is on top of 301. So the 301 people will never change. And if they run out of 240s then they'll assign another three-digit area code on top of that. So, as long as they were doing splits instead of overlays it was a great business to be in. And we kept selling the updates to that database. That came through the annual strategic planning process. Some customer threw that idea in the hat and said, "Why don't you come up with this product for us?" And I contacted somebody at Bell Labs, and researched it, and found out for a few hundred dollars we could license the database.

Grier: And you found this by contacting Bell Labs?

Rollins: Yes, I did.

Grier: Through ADAPSO?

Rollins: No, just on my own. And it took a while to find the right person. And get the right paperwork because they were a bureaucracy. They were still a separate company at that point. We licensed it and then we'd update it every so many months. They would send us the new tape with all the updates on it and then we would relicense it to our customers. We had to encrypt it. They had certain rules that we had to follow. But we could encrypt it before we sent it out. That wasn't a problem.

Grier: It's fascinating.

Rollins: But the annual planning was remarkable for the ideas we'd come up with. I don't think we could have survived the rollercoaster of the 32 years of technological change had we not been doing that every year. And saying, okay, let's look ahead. Let's look at the competition. Let's look at the technology, the environment. And think strategically. Where do we want to go next year? What do we want to do differently? And it would be very thoughtful. It was very much worth spending two days on a planning retreat.

I'd take all my direct reports, which was usually six people, with me. We'd go off to the Eastern Shore of Maryland or to someplace in West Virginia. You never want to go to a luxurious place because it's a working retreat. But you would really get down to nitty gritty decisions. You go through all this environmental analysis, and SWOT, and figuring out exactly what your strengths and weaknesses are, and who the competitors are that are eating your lunch. And consider who are the ones that you might want to acquire. All that kind of stuff.

Then you say, "Okay, let's get down to our action plan for next year. What do we want to accomplish in each quarter of the upcoming year?" We'd come up with initiatives. People throw out ideas for initiatives. Let's write the PAC*Ware module in the third quarter. Let's do this. Let's do that. We'd figure out, okay, what's it going to cost to write it? What's the ROI going to be? How many can we sell compared to what it's going to cost to design, code and test the module?

Or, if we want to go to a new report writer, what's it going to cost to build the links to it from AZ*Ware—versus the return we'll get on it. We would sit there and go through all these different options. At the end of the two days we'd choose the initiatives we wanted to undertake for the next year. They would be ones that would hopefully meet our goals for growth.

We'd also look at our financial goals. Part of the process was looking at the history of our profits, our financials and our profitability for the past year. And figuring out what our targets were for next year. Our initiatives, ideally, would achieve these targets for the next year. So it's moving forward with some thought in mind as opposed to just reacting to what's going on around you. And I think that is what I credit in large part for AZTECH's survival over the 32-year period.

Grier: Over those 32 years—this is not meant to be embarrassing—did you ever have a time when you took a loss during a year?

Rollins: Sure. When we were making investments in new technology.

Grier: Did you actually fall below your projections?

Rollins: Oh, I'm sure we must have some years. But the nice thing about Sub S, in a way, is there's a silver lining when you lose money because that loss flows through to the shareholders. <laughs> They get to take a write-off on their taxes and get a tax refund. And in the years when you make money shareholders get a check. So, they didn't mind it if we got in that situation periodically. I think the first time, David, we got in that situation was right after Project 79 when we started offering the Data General turnkey systems. It was such a major change in the culture of the company to be supporting computer centers in our customers' offices instead of us as a service bureau providing everything. It took a while to get that working profitably.

Grier: And walking into the Reagan recession.

Rollins: That too. Same timing, exactly.

Grier: 1982, 1983, that period.

Rollins: Right in the early 1980s there. It was a tough period for us, but we made it through fine.

Grier: This has been a great story. Anything else?

Rollins: I think we've hit the high points. Thank you.

Grier: I think we have too. Thank you.