Timesharing/Professional Services Workshop: Session 4: Business Models: Making Money

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Table of Contents

Timesharing/Remote Processing Services
Session 4: Business Models: Making Money

Conducted by Software Industry SIG – Oral History Project

Abstract: This session explored the different business models that TS/RPS companies created in terms of packaging and pricing their services and the reasons for their selection. Topics covered include:

- How well these various business models worked
- The strengths and weaknesses of the different approaches
- Whether the initial approaches were modified after the start of the companies and, if so, how they were changed
- What the revenue structure looked like over the first few years
- What the principal cost elements were: marketing and sales, development, operations, customer service, management, finance and administration
- Whether additional financing was needed and, if so, from what sources
- The effect that changes in the hardware performance and pricing on the business models
- Sales compensation policies
- The approximate amount of revenues earned by various timesharing companies in the mid- to late-1970s

Participants:

Name	Affiliation
Burt Grad	Moderator, SI SIG co-chair
Dick Bayles	National CSS
Frank Belvin	Interactive Data Corporation
Chris Brook	GE Information Services
Rick Crandall	Comshare
Ann Hardy	Tymshare

Norm Hardy	Tymshare
Mike Humphries	Tymshare
Gary Myers	Tymshare
Dick Orenstein	National CSS
Nick Rawlings	National CSS
Ken Ross	Ross Systems
Dave Schmidt	Tymshare
Jeffery Stein	Online Business Systems
Mike Wyman	Interactive Data Corporation
Thomas Haigh	Historian, Univ. of Wisconsin
Chris McDonald	Historian, Princeton University
Doug Jerger	SI SIG member
Luanne Johnson	SI SIG co-chair

Introduction

Burt Grad: This session is called Business Models: Making Money. We want to talk about how you made money, how you got revenue, how you controlled costs, how you incented sales people, all the elements that have to do to with dollars. Each of you had somewhat different business models as to how you expected to make money, where you thought the revenue was going to come from. The one I'm most familiar with is National CSS. I spent a number of hours talking with Alan Rievman, the NCSS CFO for much of the time, who had his own vision but I've also heard views about how the original pricing was set. Let me start with National CSS on this one. What was the original concept of pricing?

National CSS Pricing Structure

Dick Orenstein: The original pricing came off the GE System, because we didn't have any idea how to price. We had no idea what was really happening, but we knew that GE was charging 40 cents a second, so we decided we'd pick 40 cents a second.

Grad: Define what a second is. <laughter>

Orenstein: We decided that a second was going to be while the machine was paying attention to a customer application, and the overhead wouldn't count. So there weren't 60 seconds in a minute, and we decided somehow 40 cents was the right number.

Chris Brook: Yes, we called them CPUs. It was what the mainframe was doing, working on the system for a problem state.

Nick Rawlings: CPU [central processing unit] second.

Orenstein: So we decided it was while the machine was working on your problem.

Grad: So if one took 40 cents per second, and multiplied that by the seconds in a minute and the minutes in an hour.

Orenstein: It wasn't 100 percent of the seconds.

Grad: I understand that, but what percentage did you think you were going to get.

Orenstein: We didn't know. <laughter>

Dick Bayles: This was not a sophisticated model.

Orenstein: This was done over dinner one night.

Grad: I love the scientific approach. <laughter>

Orenstein: We priced the storage, I think, based on twice the cost or three times the cost. I don't remember. It was, I think, $10 for 110,000 bytes.

Bayles: 120,000.

Orenstein: Thousand, as opposed to million.

Grad: Okay, we're charging for problem time, we're charging for storage…

Orenstein: Problem time, storage, disk space, and we just threw in $5 per hour for connect time. Nobody thought about it.

Bayles: I think it was 10 bucks.

Grad: Whatever.

Bayles: It has to be by the hour.

GE Information Services Pricing Structure

Grad: What were you doing at GEIS?

Brook: That's what we did. We did kilo characters, we did the connect time, which was so much, and then we had CPUs for the real work that was being done, which was the expensive bit. And then, what was the other thing, oh, kilo characters.

Grad: Storage, you charged for that?

Brook: No, storage we didn't. It just kind of fell out. If you had big storage, you paid for that.

Grad: What was your third element then?

Brook: There's the session connect time, CPU for processing time, and kilo characters.

Grad: What does that mean?

Brook: That's our data.

Orenstein: Thousands of characters of transmission.

Brook: If you put in a big report, it's more money than a little report.

Rawlings: We did charge I/Os. We charged disk I/O and we charged line print I/O.

Orenstein: We did?

Rawlings: Yes.

Brook: It was kind of in there, but rolled into the CPUs.

Interactive Data Corporation Pricing Structure

Grad: What did IDC do at the beginning?

Mike Wyman: IDC had a somewhat different pricing model, primarily because we had some very functional applications that we were selling, primarily the portfolio analysis system. And

also we were selling financial data, financial information. So we had a pricing structure which at least superficially mimicked what National CSS and others were doing, basically charging for connect time, CPU seconds and storage. Plus for people who were writing generic Fortran programs or whatever, that were accessing our financial databases, we charged data hits. I forget what it was, like 5 cents a data hit or something like that, where a data hit was a security, a price for one security for one day. And then the portfolio analysis system that we had, we charged something which we called export units, which had nothing to do with any CPU time. And basically, these were something that the end user could actually relate to, unlike CPU time, where you try and sell somebody something where you say, "We're going to charge you 16 cents a CPU second," and they say, "Okay, so?" It was like the cell phone companies nowadays or the broadband providers; they were going to cap your usage at 2 or 3 gigabytes. What does that mean to the end user? Absolutely nothing.

Grad: That's what's interesting about both these models. They're not couched in the user's terms. They're in terms of your internal machine terms, which normally when you market or sell, you try and put it somehow in terms of the user, what it is he's going to spend for doing what, rather than your cost.

Orenstein: We talked about that and I don't know that we ever implemented time shifts. Well, you could watch graphs and see coffee break time, lunchtime. You could watch the usage change during the day, and we had talked about changing the pricing to even out.

Grad: But still, you're talking about the use of your machine, rather than the problem solving capability.

Rawlings: Right, pricing based on the cost…

Frank Belvin: We had no other way to measure the problem solving capability, because it was the machine we were selling.

Cost-Based Pricing versus Value-Based Pricing

Grad: We're going to come back to this, because one of the things I just read in the database management materials was from John Maguire, who believed very strongly in value-based pricing. He said, "If it's worth this much to the guy, it's what I'm going to charge him. The hell with what it costs me." And he argues that a lot of other people looked at it from a cost-basis standpoint, where he looked at it from a value-basis.

Orenstein: Our costs were completely disassociated. We didn't know what the customer was doing at that point. In the early days, we didn't know what the customer was doing.

Mike Humphries: But there was an exception to that that all of us as companies faced, and that is, as the customer's bill got bigger and bigger, they started to be upset and complain. Did you guys go back? We'd go back and we'd negotiate sometimes roughly a fixed price. We'd figure out what their average was for the previous months and whatever. We were making plenty of money, so we would do a year agreement.

Dave Schmidt: We only did that with B of A [Bank of America].

Grad: Frank, you had a comment?

Belvin: I just wanted to clarify one thing. IDC's CPU second was not the same as NCSS's CPU second. They charged problem state time on behalf of the user. We charged all the overhead associated with that user.

Grad: So you loaded.

Belvin: And our charge must have been cheaper.

Orenstein: Yes, it was.

Grad: But that had no meaning to the customer.

Belvin: But that had no meaning, and I don't know, it was probably the wrong decision for us to make, because it didn't give us incentive…

Wyman: To reduce the overhead. When we first started out, our CPU second was based upon both problem state and supervisor state. We recognized that we couldn't control what the user was doing in problem state, but we could control what the computer was doing in system state by making it more efficient. So we changed our CPU second. Instead of being a CPU second, it became a system resource unit, which consisted of a number of different components, bundled into something which sort of approximated what a fully loaded CPU second was.

Grad: But again, it's a resource, your machine-based, resource-based charge, not a usage charge.

Wyman: And we could make resources more efficient to produce, keep the customer's charge the same, but our cost goes down.

Grad: Make more money.

Bayles: Our approach had the same result. You charged for problem state. If your supervisor state is using 70 percent of the machine, you're not going to be able to make money doing that.

Rawlings: As a matter of fact, that's exactly what happened.

Bayles: Which is the way it started. And so we had an incredible incentive to get the supervisor state down to 20 percent, instead of 70 percent.

Brook: That's what we had. We did the same thing. We did computer resource units, CRUs, which was exactly that. And we used to measure against IBM, because IBM's overhead was like about 85 percent and we were down to about 15 percent, I think, by the end. So we were billing 85 percent with the IBM system.

Rawlings: We finally got ours down to where it could make money. We also changed ours to something we called an application resource unit, an ARU, and if you were running just your own program, an ARU and a CPU were the same. A CPU second and ARU. But if you were running one of our proprietary packages, including a proprietary package provided by somebody else, we could make the ARU be for fewer actual computer resources. So you spent 10 bucks but only 5 bucks of it went for computer resources. The other five was our attempt to value-add.

Grad: Well, for example, if they were using RAMIS.

Rawlings: So if you used RAMIS.

Bayles: Or InfoTab

Rawlings: Or if you used SewNet, we charged you 50 cents per sewer, manhole cover. And we had [a circuit board design product] called SciCards [Scientific Calculation, Inc.] and we charged on the number of nodes, remember that? Then we had the financial analysis, FinInf, and some other things, where we charged based on what we considered to be the value. We tried that. It never really amounted to a huge amount of our revenue, but it was something we tried. We thought we could justify it.

Tymshare Pricing Structure

Grad: Let's talk about Tymshare.

Gary Myers: We did all of the same things. Started out with CPU seconds, connect time and storage, then we quickly evolved to something quite different, because as our customers changed, we had to change. One of the biggest monkey wrenches that was thrown into our pricing was the multiple machines. So we wanted to be able to encourage some guys to move from the [SDS] 940 to the [DEC] PDP-10, ultimately to the [IBM] 65. So we came up with a Tymshare Resource Unit, and we had one factor in there that you could tweak up the application value. So if you were running a high value database application, we could tweak up that TRU to add a premium, or if we were running Express, which we had to pay a royalty on, we could build the royalty payment for Express into the TRU.

Grad: So give me an example. If I'm using Express, and I'm a customer, how could you tell me what it was going to cost me to use it?

Myers: We'd run a benchmark. We'd run a typical program and say, "You don't understand TRUs. We don't either. Only Norm [Hardy] does, so consequently, what we're going to do is run a benchmark and so it will cost you $200 to run this program." <laughter>

Grad: And then that would be a model.

Myers: Yes.

Grad: This is typical. You run 30 of these, it's going to cost you… Is that what you would do?

Myers: That's right.

Dave Schmidt: I just have to say this: you said moment ago that there's no relationship between your cost and your sale.

Grad: I didn't say that.

Schmidt: Well, there isn't any relationship.

Grad: That may be true, but I didn't say it.

Schmidt: And then, in fact, it works, because there's so many cases where you may want to do a deal with a customer, depending on that explicit circumstance. For instance, if you have a big customer, the value's X. You haven't developed X yet? You want to get him to pay for X, right? So you don't try to charge him what it's worth to him necessarily. Maybe it's way below that, because you're going to save money on development, okay? That's one pricing method.

The other way is you turn it around and you try to figure out what's of value to the customer, and that's not easy. That's very difficult to find that value, but when you find a value, then you can charge for the value, not for your cost.

Cost-Based Pricing versus Value-Based Pricing (continued)

Grad: The argument always is: if you don't know what the value is to the customer, how do you sell him on paying the money?

Schmidt: That's precisely correct and the whole trick here is to learn how to get the value out of the customer. And you get that a lot.

Ann Hardy: I think one of the things was that it was so new that even the customers didn't know what their value was. It just all seemed to come together very quickly, but in the beginning, nobody knew what it was worth.

Rick Crandall: What's the value of a cell phone to you?

Grad: Suppose I'm not a business man.

Crandall: I don't care. You're a user. What's the value of a cell phone? Tell me. Can I charge you 1,000 bucks or can I charge you 100? What's the value to you? You can't tell me.

Grad: You're correct.

Crandall: But you know you need one, and that's what was going on.

Grad: But the point is, I wouldn't pay the 100 bucks. I would probably do without a cell phone. At some point, it costs more money than it's worth to me.

Orenstein: And I'm sure we had customers that at some point said it was more money than it was worth.

Crandall: Right.

Grad: I'm trying to picture a sales proposal, sort of referring to our previous session. We've talked here about how you were pricing your product, but part of that equation is, how did you convince the customer to part with his money?

Crandall: So here's the sales pitch: you presently are not getting enough computer time. You're not getting your job done well. The cycle time of you going from concept to solution to your problem is too long, or forever. I'm going to give you a way that you can get incremental debugging, incremental development, shorten the cycle time of getting your application developed. You're going to succeed at your job with this where you can't the other way. It's a strategic value.

Grad: It's only going to cost you this much, or don't you care?

Crandall: You know what, it depends, because how many hours is it going to take you to get the job done submitting it one batch a day for the next year, versus using an intense amount? You're going to work day and night, you're going work three hours a day. I don't know what your work habit is, but you can see intuitively that if you do it this way, you're going to be far more productive and it's going to cost a lot less. How much? It depends how extensively you use it, and how long your job is and how much more work you do because you're doing it this way and getting more done. So it's an intuitive sale.

Grad: It's a value sale, but not a dollar value sale.

Crandall: Correct.

Rawlings: There's one other thing and that is, in addition to our convincing him to spend the first hundred dollars, we had an incredible incentive to make sure it was worth $100 so he would spend the next $100 and the next. If we ever were at a point where he thought it was more expensive than it was returning to him in value, he would stop using it, and he did.

Grad: And the other argument was his alternatives. He had different alternatives at different points in time.

Humphries: And they'll come out in the late 1970s when we get to the minicomputers, because that's when they did it to us.

Schmidt: I want to add one more thing. There are two factors that go into this and they have forever, as far as I know. Number one, sometimes you go out and you buy the business. You cut your prices and you undercut your competition. You get the business and you expect to make it up down the road. People do that all the time. We did that. The other one is that a lot of really large corporations are just pure bureaucracies, and they will decide to cut something off and it'll hurt them badly, but they'll cut it off anyway, because management up here doesn't understand what's going on. So they'll give it the ax, and those are all sales situations you have to deal with.

Grad: One of the things I've been concerned about, I want to bring up here, is that the nature of the business you went into was a very high investment business, in contrast to professional services where you could cut expenses off if you needed to. If you didn't have work for the guys, goodbye Charlie. Larry Schoenberg, who co-founded AGS Computing, used to always say that the cost of entry was practically nothing. In your cases, with the exception of the games that Jeffery played to get the machine time, the rest of you had to invest in real machines, in real software, major development groups and so forth. And therefore you had to have a certain size business to make it worthwhile. I was just interested to see that the pricing models that were used were all fundamentally internally based. You were trying to recover costs, but I don't know how you determined your cost. How did you determine what it was costing you, other than your machine costs; did you add in your people costs?

Orenstein: The other guys did, but what happened to us was, we were getting $60,000 a month in revenue. The machine was running flat out and costing us $65,000 a month and we said, "This doesn't work."

Grad: In my view, that is not a good business model.

Rawlings: This wasn't a model. This was reality.

Grad: That's exactly my point. Did you all sit down ahead of time and say, "This is what has to happen for me to make money off of that $60,000?"

Orenstein: I did.

Rawlings: After, yes.

Grad: But not before?

Rawlings: Not before.

Comshare Pricing Structure

Crandall: I did up front, I used a model.

Grad: What did you do?

Crandall: It's 40 percent of revenue goes to sales and marketing and support. About 16 or 17 percent of revenue went for hardware. Fifteen percent of revenue went for R&D. Eight percent of revenue went for overhead. When you add it all up, you have about an 18 percent or

so profit margin. Basically the way we did it is we took the computer units and the storage units and multiplied times six, because that's where you get 16 percent of revenue for that. That provides for everything. What's left over is the connect time, which we related to the network cost. And the reason why we priced things that way, was because what was visible to the customer. We saw ourselves as a pre-utility, and we were concerned that when it got added up across the company, and they finally did a cost analysis, we wanted to make sure that they saw a rough relationship between what they were paying for connect time and what the network cost was. And what they were paying for the hardware, the storage and everything, and what those charges were. The one area that we always had to work hard to make sure that the customer understood was the cost of service and support. That was always the piece that was most invisible to most DP departments, but very visible to the end user, and we had to cross that bridge. That's how we priced our services. In the final analysis, when the center filled up, it worked out. We were at 15 or 16 percent profit margins.

Grad: In effect, you had to fill every seat on the airplane before it would work out.

Crandall: No, no.

Grad: How many of the seats did you have to fill?

Crandall: If you computed what a realistic capacity was, which was usually somewhere around 80 percent, you could make money. See, we didn't have virtualization and some of the technologies of today, where you could get really efficient, a fungible pool of processors. It was more difficult than that.

Brook: That's exactly what we did do. We had what we called it a cluster. So we'd take four big Honeywell processors, and this number of users would be using the file system, which is where the data was. That's all we need to get to – that guy wants his data and his programs. So we'd have that, and then we'd have a thing called processor redirect, so that every time a new user came on, the processor he's connected to would check all the other processors, see who was least lightly loaded and send him there. So that way, we'd load balance across the cluster.

Crandall: But you were load balancing by user. You weren't pricing applications across multiple processors.

Brook: Yes, we were.

Crandall: You were? We weren't.

Brook: Yes, if a guy starts his application up, then his application's running in that machine, therefore all future users, for that application, will go to that place. But otherwise, that means that guy will be full up pretty quickly, so everybody else who wants to go in that cluster will go to a different processor or different three processors.

Crandall: Well, I don't know what you were using as a percent of realistic load.

Brook: We ran 80 percent.

Crandall: That's what we were getting, so I guess we were doing it a different way.

Brook: They would all fill up to 80 percent was the theory, unless you've got a heavy TP [teleprocessing] job on one machine, in which case you're dead.

Bayles: I think the point Burt was making is that at one point, you only had one customer on one machine.

Grad: And you can't make any money.

Brook: Absolutely right.

Bayles: You've got to get so where you can fill it up.

Grad: And my point is, did you price based upon assuming you would get 80 percent load?

Orenstein: He said he did.

Grad: Did you price based upon 50 percent load? Do you price base upon what?

Orenstein: We didn't do any of that.

Bayles: It was too complicated for dinner.

Grad: But my question is, can we follow that through? You priced for an 80 percent load. How did you get to the 80 percent load? How did you think you were going to make it?

Brook: Sell a lot of business.

Crandall: Sell a lot of business.

Brook: You don't buy a new computer until the old one is 80 percent full.

Grad: That's not what he had. They bought computers before they had 80 percent load, I'm sure.

Crandall: Oh, sure. I mean, in the early days, you don't make money. That's why we went public, is to get some capital.

Grad: What's wrong with that equation?

Crandall: What's wrong with it?

Grad: I went public because I wasn't making any money. <laughter>

Crandall: Well, there's such a thing as startup investment. A software company today, when all is said and done, if you're going to be an enterprise software company and you can't start with 50 million bucks in a couple of rounds, you're not going to get there. I mean, the startup costs, that's what it is. It's expensive. It's either development effort or it's equipment or whatever. It's not like professional services.

Online Business Systems Pricing Structure

Grad: How about you, Jeffery, your pricing? Yours was a little different.

Jeffery Stein: Only because we were much smaller than the companies everyone else is representing right now. I wanted to raise $800,000 to get the company started so we could have a data center. So I put my first business plan together. I remember taking one day off and going through every single piece of cost and then making it into rates. We would look at disk and what are disk costs and how much floor space it took up and how much electricity it took up, and what the load might be. Then we wanted to come up with so many cents per thousand bytes. And then the CPU, the floor space, the operator, the electricity. We used those rates probably for the first ten years on personnel, on all the computing, because we charged for the disk, we charged for so many thousand lines being printed and on and on. We had all this broken down. And here's what happened in a nutshell: if you were going to only be with us on a month-to-month basis, and you were going to spend less than $5,000 a month, you got the standard rate sheet. No questions asked, they paid for it. They paid the bill and that was fine. But when you got over $5,000, we would sit down and negotiate with each client, and we had a billing system that would handle it all, almost all of it, not everything though. Like on the

Princess Cruise's application, we just basically charged them for some equipment charges and things like that, but we put into it that for every passenger reservation in the system it was so many dollars, and that was the end of it.

Grad: I'm sorry, for the passenger reservation or the system? You said system.

Stein: Princess Cruise's passenger reservation system. For every online reservation they made, we charged them X number of dollars and that was it, nothing else. And then like US Leasing, we would just charge them so much per lease. But the other thing, too, is if it's a computing contract, we would get very aggressive, and if you committed for a year, two years or three years, the prices would change enormously. In some cases, we would just make it a flat, fixed price. And in the contracts, it would be a minimum they would use every month. There would be an exclusive, they would not use any other data service provider, and so we'd negotiate on each one.

Grad: But you were on an application usage base, like passenger reservation and things like that. That's a different kind of model.

Stein: Right, some of them were, right.

Grad: Who have we left out? I guess we've covered them all. Let's ask about the commissions.

Thomas Haigh: I've got a question that goes with this. We've really been talking about the billing from the supplier perspective, so I was wondering from the customer perspective, what level of granularity would they have, is one question. If you've got a group that's got 15 users, do they each have a log in and you see individual user?

Myers: Yes.

Haigh: Do they get it broken down by application and so on? And second, related to that, would customers have an incentive to use more in terms of a lower price per unit, if they have heavier use?

Myers: Oh yes.

Bayles: It's called negotiation.

Further Discussion of Pricing Structures

Orenstein: Remember that fellow I told you was the best salesman? We had a guy in California who said that. He said, "I'm using more and more. Can't I get a discount?" And he turns to the customer and he says, "If we do that for you, we have to charge more to the other customers." And the guy said, "Right." So he said, "Well, the problem is, if I make a list from biggest to smallest, I can't tell whether you're going to end up getting charged more or less." He was our largest customer in California. And the customer never mentioned it again. <laughter>

Crandall: We actually did because, again, our model had a fairly high percent of revenue that was attributed to selling and support. And so if we came to an arrangement where, for example, they were willing to contract with us for a year at a significant volume, we justified a discount based upon the fact that we weren't going to spend 40 percent of revenue on sales and support. We were going to spend 20 percent or 25 percent. So we did model what we thought we could discount, but we wanted something more than 30-day cancelable, so that we could count on it for a period of time.

Grad: Did you lock in the amount they had to do over that period of time?

Crandall: A minimum.

Grad: You did set a floor.

Wyman: We also offered commitment discounts, where the customer would commit to using our service for a given amount of time, for which we'd offer a discount. There's one other thing with respect to charging that we did. I don't know who else did this. We offered a service called batch, which for the customer would have their CPU cost and eliminated a connect charge. And basically, it was an overnight batch system, where the customer would put together a script, if you will, which we would manually run for the customer overnight. We had the operator log on the user's ID, type in a special code that says, "This is a batch job." We'd run the batch job for them, for which the customer would get billed the discount.

Rawlings: We did it.

Grad: So the overnight batch was another pricing model.

Brook: Yes, we did the same thing. That's using excess capacity. That's a good technique. It was much cheaper to run at night than it was during the daytime for anybody.

Grad: Gary?

Myers: I'd like to just say that we started talking about pricing CPU and then resource units. You need to look at the timeline here, too. I think all of us didn't really know how to price by application or value added as David suggested until much later on. But if you look at the timeline, we started with resource pricing, CPU, storage, connect, but later on, we could identify very specific applications. I'm reminded of the fact that we were doing computerized tax return preparation. We would charge by a tax return. Later on, there were very specific applications where we could identify the value to the customer. We had more experience further down the timeline. We could charge by application. I was reminded also that we would make special arrangements. Lockheed was spending a hell of a lot of money with us, so I went in and I proposed a dedicated system. It was a facilities management deal, as it ended up, where we would have the 940, then it was a PDP-10, and then it was ultimately an IBM 360, run by our operators, our power, our software, supported by our people in their offices, but they were paying a fixed rate for it. So I think it's a function of the timeline in our industry, reflective pricing.

Grad: Did any of you look at return on investment, though, as a major thing? I'm sure Rick did. But here you're going to invest $100,000 or a million dollars or something like that. He said a 16 percent return on revenue. He didn't speak about a 16 percent return on his investment. Return on investment is a different way of viewing. Most of us have done all of our analysis in terms of revenue.

Crandall: Well, we were leasing all our stuff, so it wasn't like we were doing capital purchases. You could do that calculation, but we didn't.

Grad: Were the rest of you all leasing?

Ken Ross: We bought, but the cost of the computer that we bought was so small relative to its actual revenue generation capability that we didn't look at it like that.

Grad: This is an interesting point, because I've always considered this part of the business, the processing services side, as being a relatively high investment business compared to the professional services. Also the software products side as a high investment business. A lot of upfront costs before you start to get any benefit on the thing. But the other point was that with processing services, you continue with that high machine cost over a period. You said your machine costs were only about 15, 20 percent.

Crandall: Of revenue.

Ross: And the machine costs kept going down and the machines would get smaller, and data centers got cheaper, for us anyway.

Ross Systems Pricing Structure

Grad: Ken, you were not here when we asked people about their pricing algorithm. How did you price?

Ross: Our pricing algorithm was probably like other people's. We charged per CPU second. I have to laugh. We were getting like 25 cents a PDP-11 CPU second. Charge for the disk storage and charge for the connect time. I think early on, we charged a little bit more for 1200 baud versus 300 baud. By the way, very recently, because a lot of our documentation is on the website here, I went back and pulled out one of our timesharing agreements and took a look at the amount, the way we charged for disk storage, and I compared it to what Amazon charges today. It was interesting. It's like Amazon is 15 cents a gigabyte a month, and we were 50 cents for 1,000 bytes. It turned out to be like 60,000:1 or something like that.

Grad: Incidentally, I'm going to interrupt for a second. Ken took the time and effort and money to scan his personal files.

Ross: It was interesting. About ten years ago, somebody sent me a box of old Ross stuff. I was between jobs and I scanned it and we had some videos. So you can look at some of these old DEC VAX videos we have. Remember the DEC Pro 350 personal computer? We've got some cool videos up.

Grad: If any of you have personal files, things like that, and would like to spend a little time doing the scanning, that makes it available to people. We do some of it on selected documents, but it's an expensive process for us, because we have to hire somebody to do it. But if some of you are willing to do it, I'm sure Ken will give you advice and counsel.

Myers: You can wait till he's between jobs.

Luanne Johnson: And if you really want to know what Ross's pricing was, the agreement's right up here.

Ross: Oh, you've got it up. What did we charge?

Johnson: [Reads the online document at http://corphist.computerhistory.org/corphist/index.php > Ross Systems > Documents] Connect time per hour, prime, is $12.50 and off hours is $11. Overnight batching, $10. CPU time per second, 22 cents per second for prime time,

17.176 cents for off hours. It sounds like a gas price. And then 13 cents for overnight batch, so it's all right here.

Crandall: What about weekend?

Johnson: I don't know. Let me read the fine print.

Tymshare Sales Compensation

Grad: Let me move ahead. I'd like to talk about one of the major costs which obviously was the sales expense, the commissions and so forth. Let's talk about how did you reward and incentivize your sales people? Gary, you were going to start on that and I interrupted you. Tell me about it.

Myers: Basically it was 50/50. You get some sort of a guaranteed salary or a draw for 50 percent of your targeted income and then your incentive, which was really broken into two areas, constituted the other 50 percent. The incentive part was broken into retaining business, the ongoing revenue that you had to continue to maintain. And 50 percent was devoted to what we called new accounts or new business.

Grad: How much per dollar? How did you price it?

Myers: You couldn't relate dollars to the incentive. It wasn't like the old IBM dollar a point arrangement that we used to have. No, it didn't work like that at all. Different machines generated different dollars, so you couldn't relate it, but you'd set up a target…

Grad: I'm a salesman. Target of what?

Myers: Target of what you would like the salesman to earn per year.

Grad: I want to make $100,000 a year. Tell me how you measure whether I'm earning my $50,000, which is the incentive part. Tell me how you measured it.

Myers: You're measured on two things: how well you renewed the existing business. Let's just arbitrarily take a number. Let's say if you've got $50,000 per month of existing revenue from existing clients that would be 50 percent of what your $50,000 income…

Grad: So if I maintain the $50,000, I'd get that.

Myers: That's right. And then you'd get your other $50,000 of incentive income based upon new accounts. And your new account revenue is probably not going to be a $50,000 per month. It might be a very substantially lower revenue dollar amount, but the fact is that it's a harder sell.

Grad: But you related it to the revenue per month or per something that the company was getting.

Myers: Yes, right.

Grad: So that was in effect a commission related to that.

Humphries: Yes, but it wasn't a straight commission. Remember, we called it incentive based compensation programs. That also allowed the company to base the compensation in California different than in Texas, different than in New York. So basically, as I recall, it was based on a percentage of your base salary, which was 50 percent. And then if you did 100 percent of your number for what was called your installed base – that was your existing business – and 100 percent of your new business, you would get 100 percent on your incentive base, and your incentive base was 50 percent. So that's 50 percent plus 50 percent. That's how you got your 100 percent, which is very different than saying, "If you bring in $100,000 worth of revenue, you're going to get 6.5 percent of that revenue."

Grad: Suppose I exceeded that now. I've done better than the target number. How do you reward me? What percentage?

Humphries: We had accelerators. I don't remember the accelerators, but the accelerator, once you got above 100 percent, to like 110, instead of 100 percent on the incentive base, you'd get probably 110 percent, right? I think we were pretty simple minded, how we did it.

Grad: So it wasn't based on the actual dollars of sales per se.

Myers: In a new territory, there's no existing revenue and you want to really incent the guy to do well, so you couldn't relate it. That's why we set up a disconnect between the dollars of revenue the company enjoyed to the dollars of commission the salesmen enjoyed.

Ross: I think there's a key thing in the timesharing business, that people were billed and paid monthly. So then the business had to decide did they want to incent the salespeople to increase the sales out of the current customer base, or did they want to pay more for brand new customers. It was always back and forth, because if you had a great customer, you wanted them to grow, but that was usually easier to do than it was to bring in new customers, but more new customers added problems. At some point in time, the business migrated. Our

business migrated to more of an enterprise sales model, where it was new customers and you paid commission based upon the sales they brought in. And today, people have migrated to the SaaS [Software as a Service] model. I'm on the board of a SaaS company, where the commission issues are almost identical to the way they were in the 1970s. How do you want to incent people, and renewal rates. The only difference, of course, in the SaaS model today, people are willing to pay upfront, like for a year. So sometimes you'll bill people for two years in advance, and we never did that in the timesharing business. It was always pay as you go. Too bad, too.

Interactive Data Corporation Sales Compensation

Grad: Let me go to IDC next. Any of you know about the sales commission plans and so forth?

Belvin: I can talk a little bit about it, but first I should mention that this is a part of my history that I'd like to block out. I was a chairman of the salary committee. <laughter> One of our, it seemed like weekly, chores was to deal with, "I want quota relief" for so and so. “Something happened to this account.” The salesman didn't have anything to do with it.

Ross: Not my fault.

Belvin: It wasn't matched by the other side where a windfall came in, totally unrelated to the salesman, and he drew that extra commission.

Grad: Those are the bluebirds. Is that what you called them?

Belvin: The bluebirds. So I'll start with disclosing my bias, and I don't really remember the details. We would start salesmen, I think, on salary for maybe half a year, until he could build up something, and then he went on 25/75, 25 base, 75 commission, 50 base, 50 commission. I don't remember.

Wyman: I thought it was even more leverage than that. They only got paid on incremental revenue.

Grad: That's like the IBM model, basically.

Belvin: But because of quota arguments, you almost never had a situation that followed the commission plan. Almost never. It was all handout. The only additional thing I'll mention is, there was a presidents' club established for those people who made 100 percent of quota, and

those selected individuals would go someplace exotic once a year with the president to enjoy something.

National CSS Sales Compensation

Grad: Dick?

Orenstein: I think now – Dick Bayles may remember it differently – but I think it was basically the same thing, a commission against a quota. We expected you to do this kind of revenue. You held your revenue, you got this much money, each new dollar was worth this percent and old dollars were worth that percent. And there was one point at which somebody said that NCSS stands for "new customers sustain success." So there was an incentive for new customers, but I think basically it was the same kind of thing. When we had one problem, we asked the salesmen to come up with the plan for the next year.

Bayles: At one point, we actually – this lasted for only a year, I think – we gave a flat dollar amount for every new customer. Forget the revenue side.

Orenstein: I think I remember that.

Bayles: You've got X dollars for retained revenue. You've got something for new revenue, but you got X dollars for a new customer, regardless of what they spent. But what happened was, salesmen gamed the system and so we ended up spending a lot of money on new customers that never spent anything.

Grad: The thing I'm concerned about is just this: if I sell a software product, I've got a defined amount of revenue up front. Then I'll get my follow on maintenance contract for years, and I have a certain experience in terms of renewal rates and so forth. So I know pretty much how much total money I might get off of that thing. If I get a professional services contract, if I'm just selling bodies, it'll go on or may not go on. Or if I have a something like your service, the amount of money you usually start with is relatively small in a sale, but can grow if you do good things. You're into the account, you help get more and more things out of the account. And measuring that and fairly rewarding that salesman who opens that door and keeps that account growing is very tricky, it seems to me.

Orenstein: What's tricky for the salesman, he figures out how to get another project and get it applied to this timesharing mechanism for doing it. Well, that's what the salesman does. Exactly how much revenue, he probably has an idea of how much revenue it is.

Grad: But you certainly can measure it. If he has a certain customer that's his, you can measure how much money you're getting off that customer over time, right?

Orenstein: Correct.

Bayles: You can't forecast it, but you can track it.

Grad: That's the problem.

Ross: You can pay it over time, but if a salesman has a customer base, the other complicated thing in the timesharing industry was end of the year, you're going to reorganize, you're going to reallocate territories. And you go through all of the bullshit and the argument, because you're going to take away the big customer, give the salesrep a different territory. How do you measure that, how do you compensate him? Then you have the big customer decide that they're just going to pull the plug on you and who's responsible for that? Nobody, right?

Grad: That's the kind of thing. Rick, I'm sure you were very thoughtful about your compensation plans.

Crandall: Well, no. It changed every year.

Myers: You thought about it every year.

Ross: Burt, you said the fair word. How to fairly compensate, and fair is in the eye of the beholder, right? The CEO might think fair is one thing. The sales guy might think fair is something different.

Grad: I'm off topic slightly, but one of my sons is a salesman for an information services company, and another son runs a life insurance agency, and he's asked me to come up with a sales compensation plan for his agents that will incent them to do what he wants them to do, not what they want to do. So the kind of policies for the companies that are to the benefit of the people, but still making money for him. I've been very much into this issue. That's why I'm trying to learn from this experience. Let me finish up with Rick here. Go ahead.

Comshare Sales Compensation

Crandall: We actually did study the insurance industry, with the concept of a high percent of the first year's revenue, and then essentially what the insurance industry calls a residual [renewal]. That concept worked, but there were all sorts of negotiations. You sat down with an individual rep. How much territory are they going to get? That was one of the factors which was very important. What customers are you assigning me, because a percent of your base of sales reps turns over every year. So what do you do with those customers? Who do you

allocate them to? Who gets them? And then what's the quality of each one of those customers? This was a very individualized thing that rippled right through the sales management structure of the company. So you had this concept that was up on top for the global commissions plan, and then it got interpreted and reinterpreted as you rippled it down through the levels. And then it got renegotiated during the year, as people started arguing. "This wasn't my fault," and "You gave me a bum one over here," and so on. It was a constant nightmare, and what you were looking for at the end of the day were sales reps who basically went out there and got the business. And they were either happy or unhappy with what they were making. The good ones were so far above that they were basically happy, and the bad ones were so far below that they were basically unhappy. You had very few people who were on plan.

Grad: There's this ABC curve. There are relatively few salespeople, normally, who account for a very significant percentage of the revenue. Isn't that correct?

Crandall: Right.

Grad: The 80/20 rule. Is that true with you guys or not?

Crandall: We used to sort of obfuscate this issue partially, in that we would find a couple of sales reps that just knocked it out of the park. We used to love making a big deal at the end of the year writing a $300,000 check and having a ceremony and everything else. Look what you can do if you really hit it out of the park. I remember one year, we wrote a million dollar check to one sales rep, which, you know, we're talking about whenever it was.

Grad: Then it was a lot of money.

Crandall: That was a lot of money then. It's getting to be a lot of money again.

Grad: But this is my point, is that commissions turn out to be a fairly significant part. Your sales costs are a very significant part, and if you want to grow, you need that new business. It doesn't just grow organically, does it? That was one of the things I was wondering. To what extent, once the customer was in with you, did it just grow on its own without the salesman having to pay attention?

Crandall: No, that didn't happen. However, it was much easier to grow once you had a contract with the company, you had the right to be there on site. You could wander around the halls. It was really different than, for example, selling enterprise software, which is a whole different set of difficulties. So eventually, they figured that what they didn't want was timesharing reps wandering around the halls. Next thing you know, there was an infinite increase in the size of the expenditure. But for ten years, it was relatively easy.

Rawlings: Let me make a couple of comments. One is that we had some special products that we were pushing sometimes. The marketing department would decide we would really like to be selling these products. So we would count revenue from those sales more than revenue from other sales. We also had professional services consulting and we would encourage our sales force [to sell those services]. Sometimes we figured that a consulting dollar would bring us ongoing revenue that would be better than just another timesharing sale, so we would have different incentives for different kinds of dollars that came in. We also did something else. We had the territories, mostly, but we also chose to have one group just sell to the phone company. We had vertical sales, was the idea, where one industry would get a concentration. We tried that for a while and there were elements of that that were successful.

Myers: Same thing with government, like federal government.

Rawlings: Well, that was an idea and I don't think we ever were successful in that.

We did have the 100 percent club, the sales club, and we also invented something for the tech reps, the technical folks, where once a year the branch office that hit 100 percent of its quota, we let the technical person go to a couple day event. The last thing I'd say is that we had a one year quota, and so what we discovered happened is that toward the end of the year, a salesman would get a whole lot more for every dollar that he was selling, than he would at the beginning of next year. So he had a tremendous incentive to get his customer to spend in December rather than to spend that same money in January. Because maybe he would get $2 versus $1. So he would really cause sales to occur and we said this is a Christmas tree business, so we tried to go for a second hump.

Bayles: Midyear.

Rawlings: In the year.

Bayles: Do you remember the two humps? Christmas in June.

Rawlings: So we tried for, and I think we were successful, that we would have a September quota, rather than a December quota.

Orenstein: I think they had a contest.

Rawlings: We also had sales contests and we had balloons.

Grad: The software products business was noted for the fact that you made half of your sales or more in the fourth quarter, whatever your fourth quarter was. I didn't think you would have that kind of issue here.

Humphries: When you have recurring revenues, you don't, by definition.

Grad: Yes, that's what I thought.

Humphries: Enterprise selling, it comes in one lump. I could explain to you why that happens. I want to address your insurance problem real quickly though, because it's a real simple answer. Find three other agencies out there that are doing really well, find out what their compensation plans are and use the one you like the best. Don't listen to everything you've heard in the room here and put one together, because it'll take you ten years to get it tuned.

Grad: My son has the most successful life insurance agency in the area.

Humphries: Then don't mess with it.

Grad: I'm working for my son in this case, so he wants to mess with it, I'll do what he tells me to do.

Humphries: It's interesting that at National CSS, you guys paid premium commissions for like a new product or a special product?

Rawlings: Yes, yes.

Prizes as Sales Compensation

Humphries: We took a different tack almost every time at Tymshare. We had contests, usually to get people acclimated to a new product, or to re-emphasize a product they weren't paying attention to. The prize – it was invariably a prize – might be a three-day trip to a dude ranch in Arizona with your wife or whatever. But it was almost never cash. I always used to wonder about that, because I had friends in other companies that got paid cash. It turns out that a dollar is a dollar, and your dollars all got mingled together, and you didn't remember at the end of the year often times that you got more money, but you almost always remembered if your wife went on a trip to Palm Springs with you, or something like that.

Bayles: The wife remembered.

Brook: We did the same thing, had the quotas and all the rest of it. If you did 110 percent of quota or whatever it was, then all the salesmen that made that would go to Acapulco, or wherever it happens to be, with your wife or whatever. That was a huge deal. That was really appreciated. The other thing that went with that, to try and share the gold around the place, was the sales guys could nominate anybody else in the company, particularly engineering people, who'd helped them with a sale and invite them as well. That was even more appreciated.

Grad: Let me ask a question. As a rational human being, money is fungible. Cash, I can spend any way I please. And I've always found the result in talking to salespeople that these rewards, these president clubs, these special trips, seem to have more meaning than the inherent dollar value.

Multiple voices: Absolutely. Yes.

Brook: It's public recognition, as opposed to private recognition, which the cash is.

Crandall: Same thing with stock options. They always attribute a lot more value to them than they ever produced for them.

Grad: It's interesting, because that's not a rational decision.

Belvin: Who said that salesmen were rational?

Bayles: We know that customers aren't, so…

Grad: So why should salesmen be?

Brook: It's public acknowledgement.

Stock Options as Compensation

Grad: How many of you used stock options for employees?

Myers: Everybody.

Grad: How many of you used stock options for salespeople?

Crandall: Sales managers.

Grad: Not salesmen. That's unusual. I don't remember it being used for salespeople.

Ross: We had options for almost everybody.

Grad: Did you find that stock options were meaningful? Did you vest them? How did you handle those? Salespeople don't last five years typically, do they?

Rawlings: Turnover was fairly low.

Grad: Really?

Rawlings: Once they got over the initial chunk.

Bayles: If they were at NCSS a year, 18 months, the odds are, they were going to stay for a long time.

Grad: How about the Tymshare experience. Was that similar?

Myers: Yes. I don't know exactly how far down the option list went, but I know certainly all managers got options, and I think some of the senior salespeople did as well. But options were used as a very important incentive, particularly early on. We were trying to recount when Tymshare first went with its over the counter IPO. I think we said, what, 1968?

A. Hardy: 1970.

Myers: 1970? So it was used prior to that time and then we had another listing on the New York Stock Exchange, and that was a big deal. And so there was a very substantial awareness that public valued stock was a very good incentive, and we used that down fairly low into the ranks.

Grad: When did the companies go public? This is one of the questions I have on this list. You went public, you got public stock?

Crandall: November 1968.

Grad: November 1968. The rest of you?

Bayles: January of 1970.

Grad: IDC?

Belvin: Didn't go public. It's just gone public now, but it didn't go public then. It was bought by Chase Manhattan Bank in 1965, and all the options vested then.

Grad: GEIS, GE?

Brook: We were part of GE, so we got GE stock options.

Grad: Did they give options to your people?

Brook: Oh, absolutely.

Grad: At what level?

Brook: Certainly all the managerial levels. Some of them, you got an annual bonus if you were a certain level as well.

Grad: Did salespeople get options?

Brook: As far as I know, I think it was everybody in the company could get them.

Grad: Didn't realize that. That's interesting. How about you, Jeff? Did you go public at any point in time?

Stein: No, we sold the company almost 20 years to the exact day later.

Grad: Is that right? Did you issue options or equivalents to your people?

Stein: Yes. Several employees had stock and they did fairly well.

Grad: But you didn't do it for salespeople in general.

Stein: A couple, yes, a couple.

Grad: How about you, Ken?

Ross: Ross Systems went public after I had sold it to another group, but we had options for almost everybody in the company and then they paid it out when the company was acquired.

Grad: It's interesting, because you can't value an option if you're not public, in a sense. And people still found them valuable, is what you're telling me.

Ross: Well, it's the dream. Look at today, Silicon Valley.

Grad: But this was 30 years ago.

Ross: Yes, but look at Intel.

Rawlings: Also vesting was an important issue. If you got a stock, you couldn't use it. It wasn't like compensation by the buck or the trip to Vegas. It was in the future, and two things had to happen. One is, you had to be there, and the other, the company had to do well.

Ross: It's a great incentive. I sort of remember that people, even the salespeople, really were motivated by getting options. And we'd put options in as part of the incentive compensation plan. I don't remember the formula, but if the sales guy made his quota for the year, they might have gotten some options.

Use of Cost Analysis Models

Grad: Okay, we'll switch again. Going back to something Rick started with. Did you analyze what your principal costs were of running the business? As a consultant for many years in this field, I had a series of models similar to what he's describing, different for software products, for professional services, for processing services. I was wondering if any of you built those same kind of models for your business. Go ahead, Frank.

Belvin: Well, I think probably Ed Greaves, our financial VP did, but the only thing I remember is one year, and I wish I could remember when it was, he brought in a graph that he'd made, showing time – I think it was probably two years – and dollars. It was two lines. One was hardware costs and the other was personnel cost. And it went like this. <laughter>

Grad: The hardware costs were going down.

Belvin: Hardware costs went down, personnel costs went up. It was a breathtaking presentation.

Grad: And what did you do as a result of that? Stop buying hardware?

Orenstein: Stop paying people.

Brook: That's something we talked about. We talked about it earlier, because the machines were a huge expense in the early days, and people were a tiny expense. That's exactly what happened. Hardware went through the bottom and people were still rising.

Grad: That's the interesting part here, that shift in the machine costs, and yet our people costs didn't shift with it, did they? They went the other direction.

Rawlings: They went the other way.

Grad: Answer my question, though, why did they go up? I can see one thing that if they stayed level on a dollar basis, but why should the people costs go up, just because machine costs are going down.

Belvin: I'm talking about the late 1960s, early 1970s. Inflation was running rampant then. We had, gosh, I remember munis were paying 13 percent.

Grad: I don't remember inflation going up in the early 1970s. It was the late 1970s.

Brook: It was a relationship. What we were measuring was the relationship. Hardware costs is this much of your total expenses.

Grad: So you're talking percentages.

Brook: Yes, percentages. That was the huge difference, percentages.

Myers: The two aren't correlated. The fact that machine costs are going down and personnel costs are going up are two independent measures.

Grad: So you're looking on percentage basis.

Belvin: And people were making competitive machines so the price of IBM hardware was going down. Memorex and people were making peripherals.

Crandall: On a percentage basis, there was another factor going on, because at some point, we all started unbundling the services that we were providing for customers, in other words, the implementation services started becoming an actually business for a fee. And so

that had a whole different margin characteristic associated with it in terms of people cost as a percent of revenue than did the other revenue. So that changed. You had more people per dollar of revenue, as you had more of these services that you were providing.

Grad: The professional services model was 50, 60, 70 percent for implementation costs, the people who actually do the work. It's a very high number.

Brook: There was another thing with the hardware cost, at least for us, because we used to buy big machines and amortize them over seven and a half years and we'd usually keep them for that long. So after seven and a half years, it's free, so your costs changed pretty dramatically once you hit a certain point.

Grad: Were the machines valuable that long?

Ross: I was going to say, but obsolete.

Brook: The last three just closed down two months ago. That's 40 years.

Grad: Really?

A. Hardy: We ran our 940s for 20 years.

Crandall: Yes, so did we.

Grad: How did you keep them maintained?

Brook: There's two guys left who knew anything about it. It's amazing.

Humphries: We bought up all the used [machines] and used them for parts. And we had a machine shop in Cupertino that made the parts that we could no longer source.

A. Hardy: We acquired a company that knew that, just to do that, just to keep our machines running.

Crandall: We had a whole used equipment business. We bought up all this extra stuff, took them all apart. In fact, I'm sure we sold parts to you, we sold parts to anybody.

A. Hardy: Yes, I'm sure we swapped things back and forth.

Ross: I'm looking at how fortunate I am, because we just relied on DEC and we shifted from PDP-11s to VAX's and everything was compatible and we sold off our old machines and we never dealt with that.

Grad: So you were buying. Somebody was talking about leasing, but obviously if you kept them for 40 years, you bought them at some point in time, I assume.

Crandall: Well, these were lease with purchase options, so at some point…

A. Hardy: Eventually you pay them off.

Grad: So you owned the things. That was not an issue any longer. Let's take the next step of the thing, the people costs. Did you analyze what kinds? He talks about his marketing, he talks about his R&D. He talks about administrative and management. Did you do analysis of those kinds of costs? Any of you.

Schmidt: Yes, but I don't remember.

Brook: Yes, absolutely.

Orenstein: Surely we did this stuff and we looked at it, and we saw what was getting out of whack.

Bayles: This was all after the fact.

Orenstein: Well, you'd look at the trend, as to what was happening.

Grad: I know at NCSS during the 1970s a lot of those financial equations and models changed as your usages changed and things happened. I gather there were periods that were up and down. Payroll was tough sometimes to meet, that there were some times when the cash flow wasn't quite there.

Orenstein: There were only one and a half times.

Rawlings: That's right, one and a half times on the people.

Bayles: One big.

Orenstein: In the worst time for National CSS, we had a half a million dollars in the bank, at the worst time.

Grad: That's not what [Alan] Rievman says.

Orenstein: That's what we had.

Grad: How about the rest of you?

Orenstein: We thought we were going to run out of [money] in two months.

Grad: You were spending it at a pretty good clip. How about Tymshare? Cash flow problems at any point in time?

Myers: Maybe early on. I think we were very cash positive, almost a cash cow with our initial timesharing business. But then the models all got mixed up, because we started installing PDP-10s, and had a high cost there relative to the 940s. And then when we went to the VM/CMS system, the cost of the hardware suddenly took a leap. So we had a very disparate set of models to worry about. Let me throw one other thing in, relative to the business model, and that was that we did a lot of acquisitions and acquisitions are notoriously hard to value in terms of ongoing cost. We acquired Dial Data, Computer Complex down in Houston. A lot of different kinds of acquisitions. Even before they started the acquisitions that Bernie [Goldstein] and Al [Eisenstadt] brought to us.

Grad: Session 10 is on acquisitions. You're saying it changed the models and the cost picture.

Myers: But to come up with a reasonably coherent model when you've got all these variables, you're turning lots of different dials, different machines, different operating systems, and different life cycle of the customer. And then you've got an acquisition or two thrown in. I really don't think we did a very good job of business modeling, quite frankly.

Grad: This to me is fascinating, because, as I say, I consulted to this industry. This is one segment that I didn't have any view of customers, except for the technical project there. This was a business I thought you really could project well. That the customers were there, you had your recurring revenue stream as your primary stream. They would tend to grow or somewhat die away, but this was a very, I thought, predictable business and it sure as hell wasn't is what you're telling me.

Orenstein: This was a new technology, in some sense.

Grad: But I'm talking the 1970s by the time you get over that first hump.

Rawlings: We could smooth fairly easily the revenue on a daily basis, and we would be concerned if we saw a very significant daily drop. But over time, it was growing, and we could somewhat predict that as long as we didn't do something majorly stupid, that it would grow.

Grad: I thought you had a pretty predictable revenue stream, but maybe I'm wrong.

Rawlings: It was and then it wasn't.

Grad: Well, that's my point. Something happened, and then you have a discontinuity. But until you do, you have a fairly predictable business.

Ross: The thing about this business that was the best that never existed after the late 1970s was every day, you could log on and you could see how much money you made. You know, the accounting system. As soon as you moved to enterprise sales, you were on a quarterly basis, you never had a clue. Today, you don't have a clue. You could log on, it was unbelievable. Never again.

Grad: That's interesting.

Humphries: Well, the two disconnects, the first one was the aerospace business. You talk about, it was, until it wasn't. So when aerospace went away, all of a sudden, that reliable recurring revenue stream dramatically changed. And it happened again when minicomputers came in, but more gradually, because they didn't all sell your customers the first day. But it's exactly the same as what's going on now with software as a service. I've got clients with software as a service, and I was at Oracle during the heyday when we had to sell a ton every quarter, because you had to make that nut. One of the guys I know right now with software as a service, new sales are not happening for him either, but he's got the recurring revenues that we had. So his problem is not one of laying people off or anything else, because it's covered with his recurring revenues. He's got the luxury actually of saying, "Okay, what do we do different now?" in a very calm manner for new sales. And that's kind of the situation that we all had, because the recurring revenue was a very dependable thing.

Revenues in the Mid- to Late 1970s

Grad: Growth of the companies in revenue dollars. That's going to be the last subject for this session and then we'll go to the others. I have some revenue figures from the mid-1970s. Do some of you know your revenue fixtures? Rick gave me some numbers.

Ross: My financial statements are all online there.

Grad: Comshare, in 1974, $12.3 million, plus unconsolidated 8 million overseas. So this wasn't brought into it, but you had $8 million additional sales?

Crandall: We started with a financial source that helped us expand in Europe. So initially, we did not have a controlling percentage. A couple of years later, we acquired it, and then it became 100 percent consolidated.

Grad: A company called Computer Network?

Crandall: ComNet in Washington DC.

Grad: Three point eight mil. National CSS.

Orenstein: It was 35 million.

Grad: Well, it was $32.6 million; that's pretty close. Now Online Systems I don't think is you. That was the other people there on the east coast.

Johnson: OSI. Online Systems, Inc.

Stein: No, they were Optimum Systems, Inc. and then there was Online Business Systems and then there was Online Systems.

Grad: Yes, I remember Online Systems was in New Jersey.

Stein: No, I think they were a Berkeley outfit. They offered a lot of modeling. They had modeling software and a service that goes along with it.

Grad: Eleven point four mil. Rapidata, which you admired in terms of their marketing practices and so forth, was 7.2 mil. Tymshare, 1974, any of you got an idea?

Crandall: I think they were also 12 or 13 million, no?

Grad: Not according to this.

Myers: It should be much more.

Grad: Twenty-eight mil.

Crandall: Oh, yes, yes.

Myers: Is that a quarter, or is that a year?

Grad: That's a year, supposedly. United Computing? Who's that, UCC or is that somebody else?

Brook: Is this revenue or profit?

Grad: It says revenue.

Crandall: That must be University Computing Corp, UCC.

Grad: UCC, University Computing was its original name. I don't know who United is, 8.6 mil. Sounds too small. UCC was bigger than that.

Crandall: United Computing was, I think, a small service provider.

Grad: Was that the thing that Jim Mann and Bernie Goldstein put together?

Crandall: No, that was United Data Centers.

Grad: Keydata, 11.7 mil. Anybody big? Service Bureau Corporation [SBC]. GEIS, I don't have your numbers. Do you know?

Brook: Which year was this?

Crandall: 1974.

Brook: It was about 300 mil.

Grad: Really? How much of that was professional services then? Not much.

Brook: Not then so much.

Grad: SBC, anybody have any idea how big they were?

Stein: Wasn't a lot of that revenue captive also?

Brook: What does captive mean?

Stein: Revenue from various GE divisions and companies.

Brook: Oh no, 2 percent of our revenue came from GE. It was a big matter of honor. We were foreigners. It was amazing.

Grad: Wow. I always thought it was a big chunk, too.

Crandall: We all did.

Stein: Yes, we all did.

Brook: We used to go after it. Everybody assumed that.

Grad: I thought it was a big chunk. It wasn't, huh?

Brook: No, they refused. There was many a fight in Fairfield over that.

Grad: Was SBC in that same ballpark or larger? By that point, they were part of Control Data. So I have no idea how big they were.

Ross: They were pretty big.

Grad: I have a feeling that SBC and GEIS were by far the two largest providers in this field in the 1970s. That's my guess.

A. Hardy: Yes, 1970 or 1974.

Brook: It was interesting that our revenue went up significantly when the recession hit, because everybody switched off in-house services to us, because it wasn't on their books any more. So we could always predict recessions in the 1980s as well. It went huge blip and then you could tell the recession was ending because it would kind of go back to normal again.

Grad: That wasn't the high point though. When was the high point in your revenue, late 1970s?

Crandall: Yes, 1978, 1979.

Grad: You guys got acquired in?

Rawlings: Seventy-nine.

Grad: Your revenue was considerably higher, I'm sure, when you were acquired, than earlier.

Rawlings: Hundred and fifty?

Bayles: I thought it was 125.

Grad: How about IDC?

Wyman: IDC's revenue just kept going up. Probably of all the companies here, we were the least impacted in the early 1980s.

Humphries: So I looked ours up in 1982 or 1984 in the *New York Times* for this kind of a question, and we were almost 400 million, annualized at Tymshare.

Grad: Jeffery, how big had you gotten at that point in time?

Stein: Seventy-four, we were probably about 3 million, three and a half million.

Grad: How about 1978, 1979.

Stein: Seventy-nine, we were about 10 million.

Grad: So you kept growing.

Stein: Yes. We were kind of like doubling. Then we had the acquisition in 1980, 1981, then we doubled overnight.

Ross: We were small in 1974.

Johnson: You hadn't even really started the timesharing services then, had you?

Ross: We didn't start till 1975.

Grad: How about the late 1970s?

Ross: The late 1970s, we were probably six or seven million. Our growth really occurred more in the 1980s and the issue was we had timesharing going down and enterprise sales going up.

Grad: So you were a different business by that point.

Ross: By then, we were in a different business.

Grad: Who got left out? I think that we covered all of you. It is now time for our next break. I know this was a long session. Come back in 15 minutes please again and we'll keep going and finish up for the day.

